Environmental Assessment and Review Framework

Nepal: Disaster Resilience of Schools Project

June 2018

Asian Development Bank

CURRENCY EQUIVALENTS

(as of 8 February 2018)

Currency unit	–	Nepalese Rupee (NRs)
NRe1.00	=	$ 0.0097
$1.00	=	NRs103.41

ABBREVIATIONS

ADB	Asian Development Bank
AP/AG	Affected People/Affected Group
BoQ	Bill of Quantity
CBO	Community Based Organizations
CDO	Chief District Officer
CLPIU	Central Level Project Implementation Unit
CSA	Concerned Sector Agency
CSSF	Comprehensive School Safety Framework
DCC	District Coordination Committee
DDR	Due Diligence Report
DEO	District Education Office
DFO	District Forest Office
DLPIU	District Level Project Implementation Unit
DOE	Department of Education
DOF	Department of Forest
DRM	Disaster Risk Management
DRSP	Disaster Resilience of Public School Infrastructure and Community Project
DSC	Design and Supervision Consultants
EA	Executing Agency
EARF	Environmental Assessment and Review Framework
EIA	Environmental Impact Assessment
EMIS	Education Management Information System
EMP	Environmental Management Plan
EPA	Environment Protection Act
EPR	Environment Protection Rules
ES	Environmental Sustainability
FGD	Focus Group Discussion
GON	Government of Nepal
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
IA	Implementing Agency
ICT	Information, Communication and Technology
IEE	Initial Environmental Examination
LAC	Local Area Committee
LPG	Liquefied Petroleum Gas
Ls	Lump sum
MOEST	Ministry of Education, Science and Technology
MOF	Ministry of Finance
MOFE	Ministry of Forest and Environment
NEGSIFMN	National Environmental Guidelines for School Improvement and Facility Management

NGO	Nongovernmental Organization
NOCs	No-Objection Certificates
NRA	National Reconstruction Authority
O&M	Operation and Maintenance
PPTA	Project Preparation Technical Assistance
REA	Rapid Environmental Assessment
RM	Rural Municipality
SIDA	Structural Integrity Damage Assessment
SMC	School Management Committee
SPS	Safeguards Policy Statement
SSDP	School Sector Development Plan
STD	Sexually Transmitted Diseases
TLC	Temporary Learning Centre
TOR	Terms of Reference

WEIGHT AND MEASURES

Cm	–	centimeter
cm/sec	–	centimeter per second
dbA	–	decibels
Ha	–	hectare
Km	–	Kilometer
M	–	Meter
Mm	–	Millimeter

NOTES

In this report, “$” refers to US dollars.

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I. INTRODUCTION

A. Background

1. The fragile and young geology of the Himalaya, unstable slopes, high topographical variation, low-lying areas in the plains, extreme climatic events, and environmental degradation have made Nepal one of the most vulnerable countries in the world in terms of natural disasters, such as earthquake (11th most vulnerable country in the world), flood risks (30th most vulnerable countries in the world)[1], landslide, drought, cold and heat waves, thunderstorm, fire and avalanches. Nepal is identified as the 13th most climate change-vulnerable countries in the World.[2] Erratic weather patterns, unpredictable and intense rainfall causing flash floods, reduced snowfall at high altitudes, and increasing temperature are the results of global warming changing the climatic regime. Sitting precariously above the Nepal has witnessed massive earthquakes roughly at a gap of every half century causing significant casualties, physical damage and losses to the economy.[3] In this context, the country witnessed devastating mega earthquake in 2015, the damages and losses due to which is estimated at $7 billion, with 8,790 casualties, 22,300 injuries, and overall 8 million people were affected.[4] The earthquake damaged many private and public buildings, and damaged 7,800 school buildings at various level.

2. School safety is identified as an explicit objective in the 2016-2023 School Sector Development Plan (SSDP) being implemented by the Ministry of Education, Science and Technology (MOEST), Government of Nepal (GON).[5] SSDP is an on-going Result Based Lending (RBL) program of ADB and supported by a group of eight joint financing partners. In 2009, the Ministry of Home Affairs integrated school safety in its National Strategy for Disaster Risk Management in Nepal and designated them as the key centres for raising disaster awareness and reducing the vulnerability and exposure of communities. Comprehensive School Safety Framework (CSSF), 2017 has recognized various activities under the safe learning facilities, school disaster risk management, and risk reduction education.[6]

3. The Structural Integrity Damage Assessment Study (SIDA, 2016) estimated 2,234 schools being heavily damaged in the severely affected 14 districts of Nepal by the 2015 earthquake. These damaged schools are not in use[7], whereas 3,569 partially damaged schools are in use in these districts but require retrofitting. All of these schools are vulnerable to future seismic events.

4. In this background, the Disaster Resilience of Schools Project (hereinafter referred as the "DRSP" or "the Project") was conceptualized to support in disaster risk reduction and meeting the school reconstruction needs. The Project aims in achieving SSDP objectives to improve the quality & access to school education and management.

B. Impact and Outcome

5. The expected impact of the Project is disaster risk management for human resource development strengthened. The expected outcome of the project is disaster resilience of schools

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1 UNDP 2004, A Global Report: Reducing Disaster Risk
2 Climate Change Vulnerability Index 2012, Maplecroft CC and Environmental Risk Atlas
3 Documented earthquakes in 1934 (8.4 magnitude), 1980, 1988, 2011 and 2015.
4 The Impact of Nepal's 2015 Gorkha Earthquake-Induced Geohazards. International Center for Integrated Mountain Development, Kathmandu, Nepal, May 2016.
5 Ministry of Education. 2016. *School Sector Development Plan*. Objective No. 6.
6 United Nations Office for Disaster Risk Reduction. *Comprehensive School Safety Framework*. March 2017.
7 Department of Education and the World Bank. 2016. *Structural Integrity and Damage Assessment*. Kathmandu; and forms the basis of categorizing climate risk impact on the project.

and communities increased and learning environment improved. The Project has three outputs: (i) heavily damaged schools reconstructed and improved; (ii) unsafe schools retrofitted and disaster risk reduced; and (iii) institutional capacity for disaster resilience strengthened. School Management Committees needs to be trained in disaster risk management. Considering the widespread retrofitting needs that may remain, the Project will pilot community-based retrofitting in a few selected municipalities to develop practical and readily scalable set of methods that could be replicated under government/municipal funding.

6. The Project was screened for environmental impacts by using ADB's Rapid Environmental Assessment Checklist (REA), and was categorized as environment Category B. Hence, an IEE and Environmental Management Plan (EMP) of the Project was prepared. This Framework was prepared based on the findings of the IEE.

C. Potential Elements of the Project

7. One of the components of the Project is safer school infrastructure reconstructed with improved facilities, and schools in use retrofitted to reduce the exposure to vulnerability of the school communities. The activities envisioned under the physical infrastructure component in the 174 secondary and lower secondary schools in the 14 affected districts are following:

i. Reconstruction of destroyed buildings and construction with better facilities including library, laboratory in 163 schools (the number of the schools could slightly change during project implementation)
ii. Retrofitting of existing facilities to earthquake-proof standard in 138 schools (the number of the schools could slightly change during project implementation)
iii. External environmental improvement (construction of girls' toilet, boys' toilet, water supply)
iv. Community based retrofitting of school buildings to earthquake-proof standard, which will be a pilot in remote communities and serve as a model (total 3 nos.).

D. Purpose of the EARF

8. This Environmental Assessment and Review Framework (EARF) is prepared for the DRSPP. It outlines the procedures that will be followed in the environmental assessment and review of the school subprojects to be prepared after ADB Board approval[8] in order to comply with the safeguards provisions of the ADB's Safeguard Policy Statement 2009 (SPS) and Environment Protection Act 1997 (EPA) and Environment Protection Rules 1997 (EPR) of Nepal. The EARF is shared and agreed with the Government (NRA and MOE).

9. This EARF guides the key institutions on the process of selection, screening, and categorization of school subprojects, and environmental assessment, monitoring of implementation of the environmental management plan (EMP), and reporting as per the requirements of ADB's SPS, and EPA and EPR of the Government of Nepal (GON). This EARF (i) provides overview of the project and its component outputs; (ii) explains the generally anticipated environmental impacts and mitigation measures for the school subprojects selected during project implementation; (iii) specifies the requirements that will be followed in relation to environmental screening and categorization, assessment, and arrangements for meaningful consultation with affected people and relevant stakeholders, and information disclosure requirements; (iv) specifies the safeguards criteria that are to be used in selecting and excluding

[8] An IEE of the initial six sample subprojects was prepared along with identification of typical mitigation and monitoring measures to avoid, minimize or compensate the impacts during construction and post-project maintenance stages. All these findings were referred to while preparing this EARF.

subsequent subproject; (v) assesses the adequacy of the Borrower's capacity to implement national laws and ADB's requirements, and identifies needs for capacity building; (vi) specifies EARF implementation procedures, including the budget, institutional arrangements, and capacity development requirements; and (vii) describes the responsibilities of the Borrower/executing agency and of ADB in relation to the preparation, implementation, and progress review of safeguard documents of the subprojects.

10. In preparing this EARF, relevant environmental safeguard practices, compliance, and past experience in the sector were reviewed. The review also included central level consultations; qualitative and quantitative assessments of environmental safeguard compliance processes and capacity assessment of the executing and implementing agencies. The EARF also refers to the requirements of the National Environmental Guidelines for School Improvement and Facility Management in Nepal (NEGSIFMN), 2004.

II. ASSESSMENT OF LEGAL FRAMEWORK AND INSTITUTIONAL CAPACITY

A. Legal Framework

1. National Legislation

11. **The Constitution of Nepal 2015** defines the right to live in clean environment as one of the fundamental rights of its citizens (Article 30). The Article 30 (3) confirms for a proper balance between environment and development in the development works of the nation. Article 51 f(2) calls for development of environment friendly and sustainable infrastructure. Article 51 g(1) states to protect, promote and make sustainable use of natural resources. Also Article 51 g(7) stresses to adopt appropriate measures to abolish or mitigate existing or possible adverse environmental impacts on the nature, environment or biological diversity. Proceeding from and conformable to the Constitution, the Government of Nepal has passed a series of environmental laws and policies and implementing regulations and standards. These legislations that provide the framework within which the environmental assessment is carried out in Nepal are presented in the following Table 2.1. The subprojects (individual schools) selected for implementation under the Project shall comply with these environmental laws, rules, standards, and guidelines while preparing, monitoring and reporting environmental safeguards of the project.

Table 2.1: The Relevant National Environmental Policies and Legal Provisions of GON

SN	Environmental Policies and Legal Provisions	Description of Requirements
1	Three Years Plan, 2017-2020, GoN	Requires all projects to be formulated and constructed based on methods that optimally utilize local skills and resources and generate employment opportunities. Attention is paid towards minimizing the impacts of climate change and protecting environment. It aims to minimize adverse impacts on human, property, culture, environment and economy by disasters. The policy aims to integrate disaster risk management in all development activities in order to reduce loss of human and properties.
2	National Environmental Impact Assessment Guidelines, 1993, GoN	Provides 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.
3	Climate Change Policy, 2011, GoN	The policy includes climate adaptation and disaster risk reduction; low carbon development and climate resilience; access to financial resources and utilization; capacity building, peoples' participation and empowerment; study, research, technology transfer, climate friendly natural resources management and institutional set up with legal provisions and monitoring and evaluation.
4	National Water Supply and Sanitation Policy 1993	Water quality shall be monitored that is supplied to school and labor camps.
5	National Environmental Guidelines for School Improvement and Facility Management in Nepal, 2004	Provides guidance to project proponent to ensure environmental safeguards in school facility development activities.
SN	**Environmental Policies and Legal Provisions**	**Description of Requirements**
6	Wastewater Management Policy, 2006	Government of Nepal is currently drafting a policy on Wastewater management (Draft Wastewater Management Policy 2006) to develop policy guidelines for planning, development, operation and management. Financing and delineation of role and responsibilities of different stakeholders in wastewater management. The

SN	Environmental Policies and Legal Provisions	Description of Requirements
		proposed primary objectives of the policy are: a) improving sanitary condition by ensuring compliance to the wastewater standards, b) reducing morbidity and mortality rates with appropriate wastewater management, c) facilitating construction and management of storm and sanitary sewerage systems, d) improving sanitary condition of local streams, rivers, lakes and ponds and other water bodies, e) establishing coordination and integrated approach among the stakeholders for planning, construction, operation, maintenance and management of sewerage system, f) establishing partnership between the government and private sector for promotion of appropriate technologies for wastewater disposal and management and financing, and g) developing mechanism for knowledge dissemination and awareness building among the stakeholders and beneficiaries. The Policy restricts disposal of wastewater into nature or open space without treatment to a safer level.
7	Environment Protection Act, 1997, GON updated time to time	Any development project, before implementation, shall pass through environmental assessment, which may be either IEE or an EIA depending upon the location, type and size of the projects. Provision for dealing with pollution control, and conservation of national heritage. The IEE/EIA shall be approved by the government. The EPA (i) sets out the review and approval process of IEE and EIA; (ii) stipulates that no one is to create pollution that would cause significant adverse impacts on the environment of harm to public life and health, or to generate pollution beyond the prescribed standards; (iii) specifies Ministry of Environment being in charge to conduct inspection of approved projects to ensure that pollution prevention, control or mitigation is carried out according to the approved IEE or EIA; (iv) provides the protection of objects and places of national heritage and places with rare plants, wildlife, and biological diversity; and (v) states that any person/party affected by pollution or adverse environmental impact caused by anybody may apply to the prescribed authority for compensation to be recovered from the polluter/pollution generator.
8	Environment Protection Rule 1997 (amendment), GON updated time to time	The EPR and its schedules clearly provide various step-wise requirements to be followed while conducting the EIA/IEE study. It also obliges the Proponent to timely consult and inform the public on the contents of the proposal. Provision for dealing with pollution control, and conservation of national heritage is also present. Schedule 1 listed projects require IEE and Schedule 2 listed projects require EIA study. The criteria are based on size of projects and cost. It also lists environmentally sensitive areas where any proposal regardless of size and cost will require an EIA.
9	Solid Waste Management Act, 2068-2011	Article 4 rests the responsibility of the solid waste management under the prescribed standards with the persons or institution that has generated the waste; Article 5 mandates reduction of the waste at source and making arrangements to dispose the disposable (biodegradable? Organic?) solid waste within their own area or making arrangement for the reuse thereof and discharging the remaining solid waste thereafter; Article 9 make the institution responsible to transport the solid waste to the waste disposal facility; Article 18 provisions for the service for the solid waste management; Article 21 make local body responsible for the monitoring of solid waste management; Article 38 stipulates discharge of solid waste without the consent of the local body as an offence and Article 39 provisions for the punishment /penalty in case of offense.
10	Solid Waste (Management and Resources Mobilization) Rules, 2013	Solid Waste Management Rules has provided authority to local bodies for the segregation, transportation and disposal of solid waste as well as operation of sanitary landfill site. Local bodies may also empower the company, organization and agency, producing solid wastes, for segregating, reducing the solid wastes at its source, reuse and recycling use solid wastes and mobilize community and non-

SN	Environmental Policies and Legal Provisions	Description of Requirements
		governmental organization for creating awareness for the management of the solid waste. Local bodies have also the authority to determine service charge for solid waste management.
11	Lands Act 2021–1964	The Act maintaining inventories of the lands, landowners and tenants in a modern fashion and making timely improvements in the provisions pertaining to current cultivation of the lands subject to land revenue; Article 4 provisions the registration of land parcels and maintain and inventory of the land owners. It spells for provisions of recovering land revenue; and prohibits cultivation on public lands and registration of such land.
12	Land Acquisition Act, 1977 and Land Acquisition Rules, 1969, GON	Specifies procedural details on land acquisition and compensation with an aim to minimize hardships on project affected persons/families.
13	Labor Act, 2017	Labor Act, 2074 is applicable to entity, which has been defined to include company, private firm, partnership firm, cooperatives, association or other organization ("entity") in operation, or established, incorporated, registered or formed under prevailing laws to undertake industry or business or provide service with or without profit motive. • Labor Act has provided flexibility in hiring providing different modes of hiring as per the requirement of the entity: • The entity should formulate the safety and health policy as per the Regulation or Directive. Such policy should be registered with Labor Office. • Labor Act has set out the duties of employer towards workers which include making appropriate safety and health arrangement, arrangements ensuring no adverse effect on workers from use, operation, storage or transport of chemical, physical or biological liquids, disseminating necessary notice, information and training related to safety and health arrangements, etc. It also sets out the general obligation of employer towards non-workers such as putting the signs to indicate the safety or health hazards, to manage the gas, chemicals waste of the entity so as not to cause adverse effect on local animals, people or environment, etc.
14	Labor Rule 1993	Labor Rule 1993 advises the working hour for women and minor (14-16 year old). The Regulation guides the circumstances in which non-Nepali citizen could be employed. The regulation also describes salary, benefits and welfare provisions. These are fixed by remuneration fixation committee. The Regulation also guides on compensation upon injury or death, and categorize type of disability with compensation. It also details leave and medical leave for workers.
15	Child Labor (Prohibition and Regularization) Act, 2001	It prohibits engaging children in factories, mines or similar risky activities and to make necessary provisions with regard to their health, security, services and facilities while engaging them in other activities. Child having not attained the age of 14 years is strictly prohibited to be engaged in works as a laborer. Engagement of child in works as a laborer against his/her will by way of persuasion, misrepresentation or by subjecting his/her to any influence or fear or threat or coercion or by any other means is prohibited.
16	Building Act, 2055 BS	Building Act, 2055 BS (1999) has the necessary provisions for the regulation of building construction works in order to protect building against earthquake, fire and other natural calamities, to the extent possible. It has the provisions relating to design and approval of design/map of building, and states that the building shall be built under the supervision of a designer.

17	Forest Act, 1993 (amendment, 2007), GoN	Requires decision makers to take account of all forest values, including environmental services and biodiversity, not just the production of timber and other commodities. It includes several provisions to ensure development, conservation, management, and sustainable use of forest resources based on appropriate planning.
SN	**Environmental Policies and Legal Provisions**	**Description of Requirements**
18	Ancient Monument Prevention Act 1956	Digging of ground for building, water supply pipes or sewerage in an area declared as preserved monument areas shall have prior approval/permit from the Department of Archaeology (Clause 5, Article 3).
19	National Park and Wildlife Conservation Act, 1973, GoN	Addresses the conservation of ecologically valuable areas and indigenous wildlife. The Act prohibits trespassing in park areas, prohibits wildlife hunting, construction works in park area, damage to plant and animal, construction of huts and house in park area without permission of authorized persons. It lists 26 species of mammals, 9 species of birds, and 3 species of reptile as protected wildlife.
20	Soil and Watershed Conservation Act, 1982, GoN	Article 10 prohibits the following on land within a protected watershed area prescribed as those on which floods may occur, without the prior permission of the concerned Watershed Conservation Officer: (i) block, store or divert in anyway water from any stream, rivulet, waterfall or underground water for any purpose; (ii) cut or destroy natural vegetation and other forest products; (iii) cause accumulation and sedimentation of accumulated boulders, rocks, sand, soil, mud etc.; (iv) extraction of natural aggregates; (v) dumping of solid waste.
21	Explosive Material Act, 1962, GoN	It requires prior approval of Chief District Officer to purchase and use explosives.
22	Local Government Operation Act, 2017	Local Government Operation Act, 2074, formulated in accordance with the spirit of Constitution of Nepal, grants the local level units legislative, executive and judicial rights. Local governments now have authority to manage teachers, staff and education up to the basic level—Grade 8—and oversee basic medical care. The local legislature has the power to formulate local laws in line with the Act drafts provided by the Centre, while the local judiciary can decide cases related to irrigation, daily wages and pastures, among others. The smallest units among three tiers of the government can set up their own city police force, issue land ownership certificates and collect revenue on property, besides registering births, deaths and marriages. They are also allowed to levy the taxes on house rent, entertainment, property, tourism, among others, in compliance with the tax laws of the Central and Provincial governments.
23	Solid Waste (Management and Resources Mobilization) rules, 2013	Solid Waste Management Rules has provided authority to local bodies for the segregation, transportation and disposal of solid waste as well as operation of sanitary landfill site. Local bodies may also empower the company, organization and agency, producing solid wastes, for segregating, reducing the solid wastes at its source, reuse and recycling use solid wastes and mobilize community and non-governmental organization for creating awareness for the management of the solid waste. Local bodies have also the authority to determine service charge for solid waste management.
24	Water Resources Rules, 1993	The Regulation sets out the procedure to register a WUA and to obtain a license and sets out the rights and obligations of WUA and license holders. Rule 12 to 21 stipulates the provision and procedures of licensing for the water resource utilization; Rule 32 to 35 stipulates provisions, procedures and

		responsibilities for the acquisition of land and property for the development of water resources;
25	Forest Rules, 1995, GON	Elaborates legal measures for the conservation of forests and wildlife. Tree cutting clearance is required from Department of Forest. Expenses incurred for cutting trees and transportation shall be borne by the infrastructure developer.
26	Nepal National Building Code, 2060	The national Building Code of Nepal was endorsed in 2060/4/12 BS (July 2003). It deals with the strength of buildings, consideration safety and fire hazards, construction materials etc.
SN	**Environmental Policies and Legal Provisions**	**Description of Requirements**
27	National Drinking Water Supply Standard, 2006	The Nepal Drinking Water Quality Standards and Guidelines (including standard limits, guidelines for the required frequency for water quality monitoring, and the process and schedule for measuring the standards in active use in the country).
28	Nepal Ambient Air Quality Standards 2012 (2069B.S)	Limits of the ambient air quality parameters around the construction sites
29	Nepal Noise Standards 2012 (2069 B.S.)	Noise levels for different land use categories and noise generating equipment.

2. International Environmental Agreements

12. Nepal is party to the following international environmental agreements that have broad relevance to works and environmental assessment of works under the project: (i) World Heritage Convention, 1978- for parties to ensure the protection and conservation of the cultural and natural heritage situated on territory of, and primarily belonging to, the State; (ii) Convention on Wetlands of International Importance, especially as Waterfowl Habitat (Ramsar Convention), 1987- conserve and wisely use wetlands (i.e. maintaining their ecological character) as a contribution towards achieving sustainable development locally and throughout the world; (iii) Convention on Biodiversity, 1992- require the environmental assessment for projects that are likely to have significant adverse effects on biological diversity with a view to avoiding or minimizing such effects; (iv) UN Framework Convention on Climate Change, 1992 and subsequent protocols- take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate it's adverse effects; and (v) Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, 1996- minimize the amount of toxicity of hazardous waste generated, manage the hazardous and other wastes they generate in an environmentally sound manner and as close as possible to the source of generation. The Project shall also refer the World Bank's Environment, Health and Safety (EHS) Guidelines to follow the pollution prevention and control technologies consistent with international good practices. When host country regulations differ from these levels and measures, the Project will achieve whichever is more stringent.

13. The relevance of the aforementioned environmental agreements to the project are on their emphasis for human activities (such as development projects) to: (i) take on/institute measures to protect the local, as well as global, natural resources and/or environment; (ii) prevent and/or reduce the causes of climate change, and (iii) anticipate and mitigate the adverse impacts of climate change.

B. National Environmental Assessment and Review Procedure

14. The EPA and EPR are the key legal provisions governing the environmental safeguards in Nepal. Section 3 of the EPA mandates project developers to carry out environmental assessment of projects at the level of IEE or EIA. It prohibits implementation of any project without receiving environmental clearance from the GON in the form of approved EIA or IEE. Rule 2 and 3 of the EPR requires a project developer to carry out IEE or EIA for the type and size of projects as listed

in the Schedule 1 or 2, respectively. List of building infrastructures requiring IEE or EIA study, as per the EPR, are listed in the Table 2.2 below.

15. **Project Proponent** is responsible for (i) preparing Terms of Reference (ToR) to prepare the IEE and seeking government approval; (ii) conducting the appropriate environmental assessment following the approved schedule of work and ToR; (iii) conducting the required public consultations; (iv) preparing the corresponding report following the outline prescribed in the EPR or the outline in the approved ToR; (v) submitting or applying to the appropriate government body for approval; and (vi) implementing the IEE along with the terms and conditions of the approval.

16. **Concerned Sector Agencies (CSA)** are responsible for the: (i) review of applications for approval of IEE schedules of work and ToRs (ii) review of submitted IEE reports; (iii) approval of IEE Reports; and (iv) monitoring and evaluation of project implementation impacts.

17. **Permits.** The following permits must be obtained by the project prior to construction: (i) IEE survey permit within forest areas from the Department of Forest; (ii) Tree cutting clearance from the Ministry of Forest and Soil Conservation, or Cabinet approval for occupying forest areas for development work; and (iii) Permit from the Department of Archaeology for work in sensitive archaeological areas.

Table 2.2: School Infrastructures requiring IEE or EIA level study according to EPR

Particulars	IEE Threshold	EIA Threshold
• Residential or commercial building	• Construction of residential or commercial building and their combination with a built up area or floor area between 5,000 to 10,000 sq.m.; • Cinema hall, theater, community hall, stadium, concert hall, spot complex with a capacity of 1,000 to 2,000 people to pass at one time;	• Construction of residential or commercial building and their combination with a built up area or floor area more than 10,000 sq.m.; • Cinema hall, theater, community hall, stadium, concert hall, spot complex with a capacity of more than 2,000 people to pass at one time;
• Residential area evelopment	• Development of residential area on 1 to 4 ha. size of land;	• Development of residential area on more than 4 ha. size of land;
• Land development	• Land development program of 10 to 100 ha. size;	• Land development program of more than 100 ha. size;
• Pavement construction	• Construction of hard surface pavement of size more than 10 ha. (for example dry port, bus park, parking lot etc.);	
• Earth management	• Development of site with cutting or filling of more than 20,000 cu.m. earth;	
• Tall building	• Construction of buildings above 10 stories or 25m height to 16 stories or 50m height;	• Construction of buildings above 16 stories or more than 50m height;
• Forest area	• Construction work that may require clearing of up to 5 ha. forest area;	• Construction work that may require clearing of up to 5 ha. forest area;
• Value of work	• Any construction work not listed in the schedule of EPR and that cost between Rs.50 million to Rs.250 million.	• Any construction work not listed in the schedule of EPR and that cost above Rs.250 million. Environmental Impact Assessment (EIA) is required for any infrastructure to be constructed in historical, cultural, and archeological sites; national park, wildlife

Particulars	IEE Threshold	EIA Threshold
		reserve, wetlands, and conservation area; and main source of drinking water supply
• Work in sensitive areas		Any project located in following areas: (i) Historical, cultural and ancient areas (ii) National park, wildlife reserve, wetland and conservation areas (iii) Water source areas for public drinking water supplies

*Source: Environment Protection Rules (EPR, 1997, amended 2007)

18. **ADB Safeguard Policy Statement 2009 (SPS).** The ADB's SPS guides environmental screening, categorization, assessment and monitoring of projects, and preparation and use of EARF. The Asian Development Bank (ADB) uses a project classification system for environment to reflect the significance of a project's potential environmental impacts. Projects are categorized based on the significance of impacts, including type of impact (direct or indirect); level (high, medium, low); extent (local, regional, or trans-boundary), reversibility (reversible or irreversible); inter-related results of on-going activities (cumulative); and induced impacts in the project's area of influence. The SPS has classified projects in the following four environment categories (Table 2.3):

Table 2.3: Environment Category

Category	Impact	Requirement
Environment Category A	Likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented, and covers wider than project area.	EIA is required
Environment Category B	Potential environmental impacts are less adverse than those of category A projects. They are site-specific, few are irreversible and can be mitigated readily than Category A projects.	IEE is required
Environment Category C	Likely to have minimal or no adverse environmental impacts	Environmental assessment not required, but environmental implications needs to be assessed.
Environment Category FI	Involves investment of ADB funds to or through a financial intermediary.	Environmental and Social Management System (ESMS) is to be prepared for Environment Category A and B projects.

19. EA and Implementing Agency (IA) shall observe full compliance with the provisions of the EMF, which covers the environmental laws and regulations of the Government of Nepal and the environmental policy requirements of ADB.

20. All subprojects will be screened using the rapid environmental assessment checklist (REA) of ADB. Environmental implications of subprojects falling under category C and hence not requiring IEE shall be assessed for any residual impacts and an environmental due diligence report shall be prepared with environmental management plan. The subprojects requiring EIA will not be considered by the Project.

C. Assessment of Institutional Capacity

21. The Ministry of Forest and Environment (MoFE) is the lead agency for environmental management in Nepal. It is primarily responsible for the implementation of the country's environmental policy. However, since subproject requiring EIA will not be considered by the

Project, role of MoFE will be limited to periodic monitoring and preparing project audit after 2 years of operation of the project- which is mandated by the EPR.

22. The line ministries are mandated to review and approve all IEE reports for projects under their sectoral jurisdiction.

23. The National Reconstruction Authority (NRA) is the Executing Agency (EA) and the central and district implementation units (CLPIU and DLPIU) under NRA are the Implementing Agency (IA) of the Project. The following Table 2.4 presents capacity analysis of the proposed EA and IA.

Table 2.4: Capacity of EA and IA in Environmental Management

SN	Agency	Existing Capacity		Existing Resources		
		Knowledge & Experience in Environment Management	Staffing	Environmental Section/Unit/ Desk	Annual Plan, Program and Budget to Safeguard Section/Unit/Desk	Logistics and Facilities
1	NRA	X√	Safeguard Unit has a focal person and is supported by an environment specialist to address environmental safeguards. However, the consultant's inputs is intermittent and for limited period.	Yes	Yes	Yes
2	MOEST	X	No institutional setup or staffing to address environmental safeguards.	No	No	No
3	CLPIU	X√	Engineer assigned as Safeguards Focal Person to look after environmental safeguards in additional to technical responsibilities. They have basic but inadequate knowledge on environmental safeguard requirements.	No	No	No
4	DLPIU	X√	Sub-Engineer assigned as Safeguards Focal Person to look after environmental safeguards in additional to technical responsibilities. They have basic but inadequate knowledge on environmental safeguard requirements.	No	No	No
5	SMC and teachers	X	Basically unaware about environmental safeguards.	No	No	No

Legend: NRA- National Reconstruction Authority; MOEST- Ministry of Education, Science and Technology; CLPIU- Central Level Project Implementation Unit;
DLPIU- District Level Project Implementation Unit; SMC- School Management Committee

Note: X: Lack of capacity; X√: Basic Knowledge; √: Adequate capacity

Table 2.5: IEE Preparation Procedure and Responsibility in EPA/EPR

SN	Steps in the Process	Responsibility
1.	Refer to Schedules 1 and 2 of the EPR for the prescribed environmental assessment (IEE/EIA) to carry out for the proposed project.	Proponent
2.	Preparation of schedules of work/TOR and environmental categorization A. If proposed project requires an IEE Prepare an IEE schedule of work/TOR using the format prescribed in Schedule 3 of the EPR and submit this to the CSA for approval.	Proponent
3.	B. If proposed project requires an EIA:	Proponent

SN	Steps in the Process	Responsibility
	Drop the subproject (subproject requiring EIA will not be eligible for funding by the Project).	
4.	Conduct of IEE and preparation of IEE Report: Carry out IEE according to the approved work schedule. Prepare IEE Report using the format prescribed in Schedule 5 of the EPR or the outline in the approved TOR, incorporating the opinions and suggestions of stakeholders on potential impacts proposed project's implementation on the environment (requested to be sent within 15 days from date of notice posting at concerned Rural Municipality/Municipality, Office of the District Coordination Committee, school, hospital, and health post, and of notice publication in a national daily newspaper).	Proponent
5.	Submit 15 copies of the IEE Report along with the project proposal and recommendation of the concerned local bodies to the CSA.	Proponent
6.	5. Review and approval of IEE report: If review reveals project implementation to have no substantial adverse impact on the environment, grant approval within 21 days from receipt of Report. If review reveals the necessity to carry out an EIA, drop the subproject..	CSA Proponent
7.	Implement approved IEE Report and any terms and conditions given with the approval.	Proponent
8.	Monitor and evaluate impact of project implementation. When necessary, issue directives to the Proponent to institute environmental protection measures.	CSA

D. General Safeguards Principles to be Considered

24. CLPIU shall follow a set of environmental protection approach in implementing the works to ensure environmental sustainability. The general principles for environmental management shall incorporate the following, among others:

- CLPIU shall be responsible for undertaking overall environmental compliance in the project activities.
- Environmental Focal Person at the DLPIUs shall be responsible for undertaking overall environmental compliance in the subproject activities in the district. A qualified person (program coordinator or his/her assigned official, preferably site engineer with environment/social experience shall be designated to lead the Safeguard Focal Person and S/he shall be assisted by environmental monitor of DSC for subproject specific EMP compliance monitoring and reporting.
- All the subprojects to be funded under the project shall be subject to environmental screening/assessment in order to prevent adverse environmental impacts.
- Comply with the National Environmental Guideline for School Improvement and Facility Management prepared by the Government, the National Building Code, and design guidelines for school building construction to avoid or minimize environmental impacts;
- Child-friendly (well lighted and well ventilated), earthquake resistant, aesthetically pleasing school shall be promoted following the model designs developed by the Ggovernment;
- Design of school infrastructures shall harmonize with local surroundings, manage disaster risks and adopted with the risks of climate change;
- Priority shall be given on the use of locally available construction materials.

- Avoid sensitive ecological areas, and encourage planting trees for vegetative barrier and promoting green development;
- School buildings at vulnerable areas with risks of slide, erosion or flood shall consider the risks in design to minimize them;
- Schools shall be resilient to the impacts of extreme climatic variations (raising plinth level to protect from flood, keeping buildings above highest flood level on struts, increase strength of building to resist storm, avoid river bank erosion area, avoid or stabilize landslide areas and retrofit to reduce risks of earthquake).
- Provision for emergency preparedness and response, including fire safety shall be provided.
- Alternative solutions and final designs shall be subjected to community consultation, particularly with students and teachers, and their suggestions shall be given priority;
- Water availability in school area shall be ensured. Promote rain water harvesting in schools;
- Annual water quality monitoring shall be carried out on all the installed tube-wells under to ensure safe drinking water to the students and teachers;
- Keep provision for adequate sanitation facilities for teachers and students. The toilets for girls and boys shall be separate with privacy and water facility;
- Environment friendly and energy-efficient options (solar power) shall be promoted;
- Prefer use of local construction materials.

III. ANTICIPATED ENVIRONMENTAL IMPACTS

A. Potential Impacts and Mitigation Measures

25. The subprojects of the projects to be prepared under the Facility may cause environmental impacts during implementation due to their location, design, construction, and operation and maintenance activities. These impacts need to be considered while conducting environmental assessment of the subprojects, and addressed in their environment management plans. Some of the anticipated beneficial and adverse environmental impacts at different stages of the subprojects (design, construction, and operation and maintenance) are presented in the Table 3.1 and 3.2 respectively.

Table 3.1: Likely Beneficial Impacts and Proposed Enhancement Measures

Impacts from the Subproject	Benefit Enhancement Measure
Increase in employment opportunity for local beneficiaries	Maximize manual work and provide employment to local poor, vulnerable, and women. Assist them to invest the amount earned from wages in small enterprise.
Increase in skill of stakeholders including SMCs in both construction and operation of school infrastructure.	Provide awareness and training to local stakeholders including SMCs, who will be responsible in future to operate and maintain their irrigation systems.
Increase in know-how; local networking and increase in environmental awareness level.	Organize skill training programs and income generation training; Priority of employment to indigenous people.
Gender development for health, sanitation, and sustainable environment	Implement GESI action plan.

Table 3.2: Likely Adverse Impacts and Proposed Mitigation Measures

Category	Potential Impact	Mitigation Measures
Slope stability	Landslide or gully erosion on slopes that may cause risk to the school infrastructure.	• Follow National Environmental Guideline for School Improvement and Facility Management for site selection, design and monitoring activities. • Avoid or maintain adequate distance from landslide or erosion areas. • Adopt right angle of cut on slopes. • Stabilize slopes by engineering and bio-engineering measures including check-dams. • Measures taken to avoid undercutting of hill toes that may cause slide. • Use check dam and channeling of water to avoid erosion and slide. • Do not exert excess load on slopes by disposing spoil.
Spoil disposal	• Damage of surrounding agriculture and forest land • Drainage blockage causing erosion • Spoil tipped over slope may cause slide	• Minimize spoil by balancing cut and fill wherever possible through proper landscaping within the school premises • Restrict disposal of spoil on surrounding open space, agriculture land or forest area without proper planning and engineer's approval • Manage spoil to reclaim land with landscaping and vegetation • Do not dispose spoil blocking natural drainage path
Drainage Management	• Drainage congestion • Water logging • Vector proliferation	• Design adequate drainage passage following natural path; • Fill ditches in and around school premises; • Arrange for smooth drainage flow with proper downstream protection; • Cover bigger size drainage channels; • Drainages shall be with required sand traps, generally at 20 m intervals.
Water Availability	• Lack of water supply. • Sub-standard or	• Ensure availability of adequate drinking water supply to the school. • Regular testing of drinking water at least once a year.

Category	Potential Impact	Mitigation Measures
and Quality	inadequate drinking water provided to workers and students. • Students fall sick due to waterborne disease.	• Adequate water for sanitation is available. • Promote efficient and rational use of water, incorporation of rain water harvesting system in schools. • Assess alternative if existing source of water is drying up due to climate variations.
Loss of land	• No additional land will be required, as all construction work will be done within the premises of school. Any new area required will be through voluntary donation by land owners or buying in the market through direct negotiation.	• Resettlement and or land acquisition problems are not anticipated in DRSP. The project will not do any involuntary land acquisition. All donations and purchases, if any, will be voluntary. The project will not only ensure that land donations are fully voluntary, but also that such donations do not involve physical displacement or any significant adverse impacts upon incomes of the donor household. All voluntary land transactions will meet the criteria as mentioned in resettlement framework of the Program.
Location of School in protected areas, buffer zones, and critical habitats.	• Encroachment in protected areas • Impact on biodiversity • Disturbance to wildlife habitat	• Avoid national parks, conservation areas, wetland and other ecologically sensitive areas for establishing school • Restrict disturbance and harassment to wildlife. • Restrict use of catapult by students • Do not work at night near high biodiversity areas • Plant trees around school infrastructure.
Clearing of trees	• Trees removed for construction of school infrastructure. • Loss of habitat.	• Felled trees are replaced by compensatory plantation at minimum 1:25 ratio. • Plant trees at periphery of school to serve as dust and noise barrier. • Be careful not to block air flow, natural light and sun light reaching the class rooms.
Quarries and borrow pits	• Pollution, disturbance and damages (slope failure, bank cutting) from quarry operations • Safety risks from abandoned quarries or borrow pits	• Quarry shall be approved by Engineer. • Quarries safely closed by re-grading slopes, protected by structures, and vegetation, as necessary.
Stone crushing	• Dust and noise pollution	• Locate crusher plant, if any, away from settlement, school, and forest area. • Enclose and use water sprinkler to arrest dust. • Buy required material from authorized operating plants.
Air and noise pollution	• Dust nuisance to children from construction works • Air pollution generated due to old school buses Dust and noise generated by vehicles passing by schools	• Dust generating type of work is done during off-school time. • Labors use mask and safety gears. • Water sprinkled on road surface and work areas. • Cover material during transportation. • Plant trees to act as dust barrier. • Old school buses shall be well maintained. • Exhaust pollution test regularly done. • Traffic sign shall be kept mentioning “School Zone”, Speed control measures like bumps shall be kept. Plantation of trees around periphery of school will act as dust and noise barrier.
	• Noise during construction of schools	• Arrange work schedule at off-school time to minimize disturbance while doing work that may generate noise above the threshold.
Employment Opportunity	• Local people employed in project activities	• Construction methods shall be within the skills of local people • Contractors encouraged using local labor, wherever possible.
Separate toilets for boys and girls	• Girl student out of school due to lack of separate toilet facility	• Provide separate toilets at adequate distance between boys and girls. • Water supply is available in the toilets. • One latrine should be designed for about 30 pupils.

Category	Potential Impact	Mitigation Measures
Ensure safe drinking water to schools	• Arsenic and pollution contained drinking water hazardous for health • Lack of sufficient water for drinking and sanitation	• Arrange water supply facility as the first priority in schools • Adopt rain water harvesting for non-drinking purpose • Annually test water quality • Practice conservation of water and train students not to waste water • Protect and keep source of water clean.
Occupational health and safety	• Lack of minimum required facilities of space, ventilation, sanitation, light and safe drinking water in camps • Lack of safety tools • Lack of safe construction practices • Vector disease	• Insure all workers • Provide adequate space with ventilation, clean toilets, solid waste management, light and safe drinking water in camps • Provide mosquito net at labor camps • Keep camp and work area clean and without water logging • Highest priority to safe construction practices • Provide safety gears to workers working in hazardous areas • Keep first aid box ready at work areas and camps
Solid waste management Hazardous waste	• Spreading of waste, pungent smell, deterioration of aesthetics • Use batteries, laboratory chemicals disposed haphazardly.	• Proper solid waste management system shall be introduced in schools with segregation of waste, and its proper disposal. • Encourage composting to use in school garden. • Awareness raising on solid waste management with waste minimization, recovery and recycling. • Ban use of plastic products in schools. Safe disposal of hazardous waste.
Health, hygiene, and food safety	• Unhealthy living condition in school • Food related diseases	• Promote health, hygiene and sanitation measures in schools. (hand washing facilities, safe disposal of human excreta, supply of clean and treated water, etc). • The norms prescribed for toilet by NEGSIFMIN shall be followed.
Community health and safety	• Project related hazards to communities	• Identify and assess risks to potential impacts during all stages of project • Establish preventive and protective measures • Conduct public health information and education program for critical issues like STDs and HIV/AIDS • Fencing and posting warning signs at work areas
Orientation of school	• Impact on comfort of students. • Impact on energy efficiency.	• Design and construct climate friendly school buildings. • Orientation determines magnitude of natural heating and lighting available inside the building. Orientations shall be based on the climate type of the place where school facilities are planned. • Natural lighting and orientation of school building shall be integral part of design. Use of renewable energy like solar shall be promoted. • In hot climate, using GI sheet roof in school means subjecting school kids to high temperatures. Innovative ways need to be looked at to address such issues. • Use of energy efficient bulbs and equipments in schools. • Awareness generation of students to bring a change in culture to be environment friendly.
Use of wood as construction materials cooking and heating by firewood in camps	• Deforestation	• Minimize use of wood for construction. • Use local materials as much as possible. • Innovations shall be integrated in design for making schools more child and environmentally friendly. • Contractor shall supply kerosene or LPG at camps and restrict cooking and heating in firewood
School safety (fire, earthquake,	Damages to school properties. Possible human harm.	• Incorporate safety measures during site selection and design of physical facilities.

Category	Potential Impact	Mitigation Measures
hail stone, thunder storm, flood etc)		• Create awareness about natural calamities and extreme climate to teachers and students. • Retrofitting of old structures for safety against earthquake. Make new structures earthquake resistant. • Construction of flood protection for schools in flood plain areas. • Allow safe passage to storm drainage. • Necessary preparedness and emergency rescue measures shall be an integral part of the program. • Awareness generation among students in the event of disaster.
Emergency situation during disaster	Increased risks to students during disaster.	• Schools shall prepare emergency plan and conduct regular drill • Establish emergency contact and communication system • Ensure emergency equipment and facilities like fire extinguisher/water hose, first aid boxes, whistles, torch lights etc. • Establish evacuation route, exit point and meeting points In addition, following shall be followed: • School building design shall be seismic resistant (NBC) • Install fire alarm system and firefighting system as appropriate • Establish disaster management committee and draft site-specific disaster risk manual and a "teacher's handbook" for disaster risk reduction • Provide to the students the disaster preparedness/survival kits

B. Climate Change Impacts

26. Climate Change has become an inevitable fact. Hilly and mountainous areas of Nepal are more vulnerable to the effects of environmental and climate variability, such as change in precipitation patterns, higher rainfall intensity causing accelerated soil erosion and landslides, drought, pronounced warming in high altitude regions resulting in snow and glacial melt, among others. The lower terai plain is vulnerable to water induced disasters like flood, sedimentation, river bank erosion, and water-logging.

27. The design of specific projects under the Facility shall consider the following climate change adaptation measures:

- Assess the likely effects of climate change on source of water and its yield;
- Examine the possible short and long term impacts of climate change on building infrastructure;
- Avoid unstable slopes, high risk soil erosion prone and landslide areas, and water logged areas;
- Make provisions and arrangements for required climate resilient infrastructure and timely maintenance of the system;
- Consider plans to protect watershed of water sources by controlling deforestation and re-plantation in participation with local communities;
- Use climate change and disaster risk screening tool developed by ADB for climate screening of projects;
- Training of stakeholders in climate change adaptation and use of climate resilient crops.

C. Forest Clearance Requirements

28. The GON has developed and approved the “Working Procedures for Providing Forest Land to Other Provisions” in February 2007 as per the provision in the Forest Act, 1993. The conditions that are to be met by the projects in such context are as follows:

- The project shall do plantations in an area of land equal to the area occupied by the project’s physical structures designed under the Facility in a forest, in the locations as preferred by the District Forest Office (DFO); and
- The project has to plant and grow 25 tree saplings in the area referred by the DFO for the loss of each tree above 10 cm diameter felled in the project area. The project shall bear all costs of plantations, maintenance, and protection of the plantation areas for five years, and such areas shall be handed over to the DFO.

IV. ENVIRONMENTAL ASSESSMENT AND ENVIRONMENTAL MANAGEMENT PLAN (EMP)

A. Environmental Criteria for Subproject Selection

29. Following environmental criteria shall be adopted, in general, for selection of subprojects:

- Subproject shall avoid areas prone to instability, frequent landslides or flooding;
- The subproject area shall not lead to drainage congestion, salinization, and water logging;
- The subproject shall avoid environmentally critical habitat areas, and shall not incur any measurable adverse impacts or likelihood of such. The environmentally critical area includes national parks, wildlife reserves, conservation areas, wetland areas, world heritage sites, and other areas such as known religious and archeological sites (EPR 1997) and those defined by the SPS of ADB; and
- Any subproject classified as environment Category A requiring EIA study will not qualify under the Project.

B. Environmental Screening and Categorization of Subprojects

30. An environmental screening using Rapid Environmental Assessment (REA) checklist of ADB shall be used to ascertain environmental category of each school subproject (Appendix 1 Findings of the environmental screening shall conclude if an IEE is required or a brief DDR will be adequate for the subproject. IEE shall be carried out for environment Category B subprojects. IEE will not be required for Category C subprojects, but a Due Diligence Report (DDR) shall be prepared. The REA checklist shall be filled prior to detailed design of the proposed investment.

C. Environmental Assessment Procedure

31. The procedure discussed below was formulated within the expectation that subsequent subprojects will be: (i) Category B activities under ADB classification; and (ii) within the thresholds prescribed in Schedule 1 of the Government of Nepal's EPR. The environmental assessment procedure for each subproject shall be as follows:

a. Environmental Screening

32. The environmental screening of the subprojects shall be done by using the Rapid Environmental Assessment (REA) checklist (included as Attachment 1). The REA checklist shall be filled prior to detailed design of the proposed investment. Findings of the environmental screening shall conclude if an IEE is required or a brief DDR will be adequate for the infrastructure. The IEE or DDR report shall be attached with detailed design of the infrastructure.

b. Process for Environmental Due Diligence

33. The environmental due diligence report will be a brief environmental statement of the subproject with only significant impacts, if any. The report shall be prepared by adopting following procedure:

. **(i) Collection of information**. The information is based on observation, public consultations and documents review. Coordination shall be maintained with the safeguard focal person of DLPIU, and technical team for documenting site- specific environmental concerns. Local stakeholders including teacher and students shall be consulted during documentation of the information.

. **(ii) Preparation of environmental due diligence report**. The information on physical, biological and socio-economic and cultural environment of the subproject area will be compiled in coordination with the technical and social team. The environmental due diligence report shall be prepared with REA checklist added with any site-specific and significant environmental impacts.

D. Process to prepare Initial Environmental Examination (IEE)

34. Scoping and preparation of TOR for IEE Study: An IEE scoping is a planning exercise to determine the scope for the IEE study. Scoping quickly assess the existing environmental status of the project area, lists the likely environmental impacts, and advise methodology of assessment. The TOR also advise team of experts for the assessment and study schedule. The TOR shall be approved by NRA before commencing the IEE study.

35. **Assessment Methods:** An outline of the activities for conducting IEE study is presented below:

(i) Initial Environmental Examination (IEE) study of Subprojects.

36. The IEE study shall follow the following steps:

a. Terms of Reference (TOR) for IEE Study. TOR for IEE study will be prepared, which will be a planning tool to determine the requirements for an IEE study, which shall list the likely environmental impacts, methodology of assessment, extent of the impacts, examine mitigation options, and propose the study schedule for the IEE study. It will also identify if experts in certain special areas are required for the study depending on the nature and location of the subproject. Approval from NRA shall be obtained on TOR for IEE study of each subproject prior to commencing the environmental assessment.

b. IEE Assessment Process. An outline of the activities for conducting IEE study is presented below:

(i) **Desk Study.** Environmental assessment needs to be based on current information, including an accurate project description and appropriate environmental and social baseline data. Secondary information shall be collected from official publications, maps, and reports.

(ii) **Stakeholder Consultations.** Local level stakeholders and government agencies shall be consulted by means of Focus Group Discussions (FGD) or meetings. A 15 days public notice shall be published in a daily national newspaper. A copy of the notice shall be pasted in the school, village municipality, District Coordination Committees (DCCs), Municipalities, schools, hospitals and post offices of the project area. A Deed of Enquiry of pasting of notice shall be collected and annexed to the IEE. ADB requires meaningful consultation that begins early in the subproject preparation stage and shall continue throughout the subproject cycle.

(iii) **Field Assessment and Baseline Data Collection.** Existing environmental status of the subproject area shall be collected covering physical, biological, socio-economic and cultural environment. The baseline data (encompassing landforms, geology, soil, climatic condition, water quality, air quality, acoustic environment, biodiversity, physical and cultural heritage and socio economic characteristics) shall be collected by using various survey tools like consultation, focus group discussion, participatory rural appraisal, household

survey, interview, transect survey, sampling and testing. The collected data shall be tabulated and analyzed to identify potential environmental impacts. Structured checklist shall be prepared for baseline data collection.

(iv) **Consideration of Alternatives.** The environmental implications of different alternatives shall be assessed, particularly focusing on no action alternative, project alternative, construction method, construction materials and their source, and schedule of construction. Selected alternatives shall be supported by sufficient justifications.

(v) **Prediction of Environmental Impacts and Mitigation Measures.** The primary and secondary data collected shall be tabulated and analyzed. Based on the analysis, predict environmental risks and anticipated impacts as a result of construction activities and operation of subprojects. Assess potential direct, indirect, cumulative, and induced impacts and risks. The impacts will be identified in terms of their nature, significance, extent, reversibility, and duration. Table 6 and 7 under section III of this EARF provides a non-exhaustive list of environmental impacts that are likely to be encountered in the subprojects and their possible mitigation measures.

(vi) **Design of Environmental Management Plan.** Prepare Environmental Management Plan (EMP) as a part of the IEE. EMP shall be prepared with monitoring requirements for potential environmental impacts and their suggested mitigation measures. The mitigation measures shall be based on "no harm" principle. EMP shall include method of mitigation measures, indicators, frequency and location of undertaking monitoring and reporting, cost for undertaking mitigation measures, and responsible agencies. Emergency response procedures, related institutional arrangements, capacity development and training measures shall also be included in the EMP. The level of details, complexity of the environmental planning documents, and priority of the identified measures and actions will be commensurate to the subproject's impacts and risks. The mitigation measures shall follow the principle to avoid, minimize, mitigate or compensate the environmental impacts. Appropriate compensatory measures (offset) shall ensure that the subproject does not cause significant net degradation to the environment. The EMP shall define expected outcomes as measurable events to the extent possible. The performance indicators or targets shall be such that they can be tracked over defined periods. EMP shall categorize environmental mitigation measures to be implemented during different stages of the subproject, for example design, construction, and operation and maintenance stages. EMP shall be responsive to changes in project design, such as changes in canal alignment, technology, unforeseen events, and monitoring results. Provision shall be made for uncertainties and unanticipated impacts. EMP shall be updated and made site-specific for each contract cuffing the detailed engineering design. The EMP shall include at least the proposed mitigation measures, environmental monitoring and reporting requirements, institutional or organizational arrangements, implementation schedule, indicative budget and additional capacity development and training measures, and performance indicators.

(vii) **Consultation and Participation, Grievance Redress Mechanism and Information Dissemination.** Carry out meaningful consultation with affected people and facilitate their informed participation. The subproject preparation

team shall disseminate information about the project and subproject to the general public, affected communities, NGOs, civil society and other related stakeholders beginning early in the subproject cycle and continue throughout the subproject. Received suggestions shall be taken in to account in the subproject preparation and IEE and included in the IEE report. Stipulate the continued consultations with stakeholders throughout project implementation, as necessary, in the IEE. Draft IEE shall be kept open for public review and comments in the offices of concerned local bodies, central agencies and field offices of the subprojects. Softcopy of the final IEE will be submitted to ADB for disclosure on ADB's website. A grievance redress mechanism shall also be proposed in the IEE report (also refer section V).

(viii) **IEE Report.** IEE report shall be prepared following the template presented in Table 4.1 (refer Appendix 2 for detail Outline of an IEE report). Template for Due Diligence Report (DDR) is presented in Appendix 3.

Table 4.1: Outline of IEE

1. Executive Summary
2. Policy, Legal, and Administrative Framework
3. Description of the Project (with salient feature)
4. Description of the Environment (Baseline Data)
   a. Physical environment
   b. Biological environment
5. Socio-economic and cultural environment
6. Anticipated Environmental Impacts and Mitigation Measures
7. Beneficial impacts
   a. Adverse impacts
   b. Analysis of Alternatives
8. Information Disclosure, Consultation, and Participation
9. Grievance Redress Mechanism
10. Environmental Management Plan
11. Conclusion and Recommendations

37. Draft of the IEE report shall be distributed to the local agencies and kept open for public review as a measure of disclosure. Recommendation letter from all the related Rural Municipalities and Municipalities shall be collected and annexed to the IEE, as per the requirement of EPR. The IEE will be approved by NRA. The draft IEEs shall be submitted to ADB for review and approval prior to submission to NRA for clearance. The IEE or DDR shall be attached with detailed design of the infrastructure with environmental management cost.

E. Government Clearances Required

Table 4.2: Permissions and Clearance Required

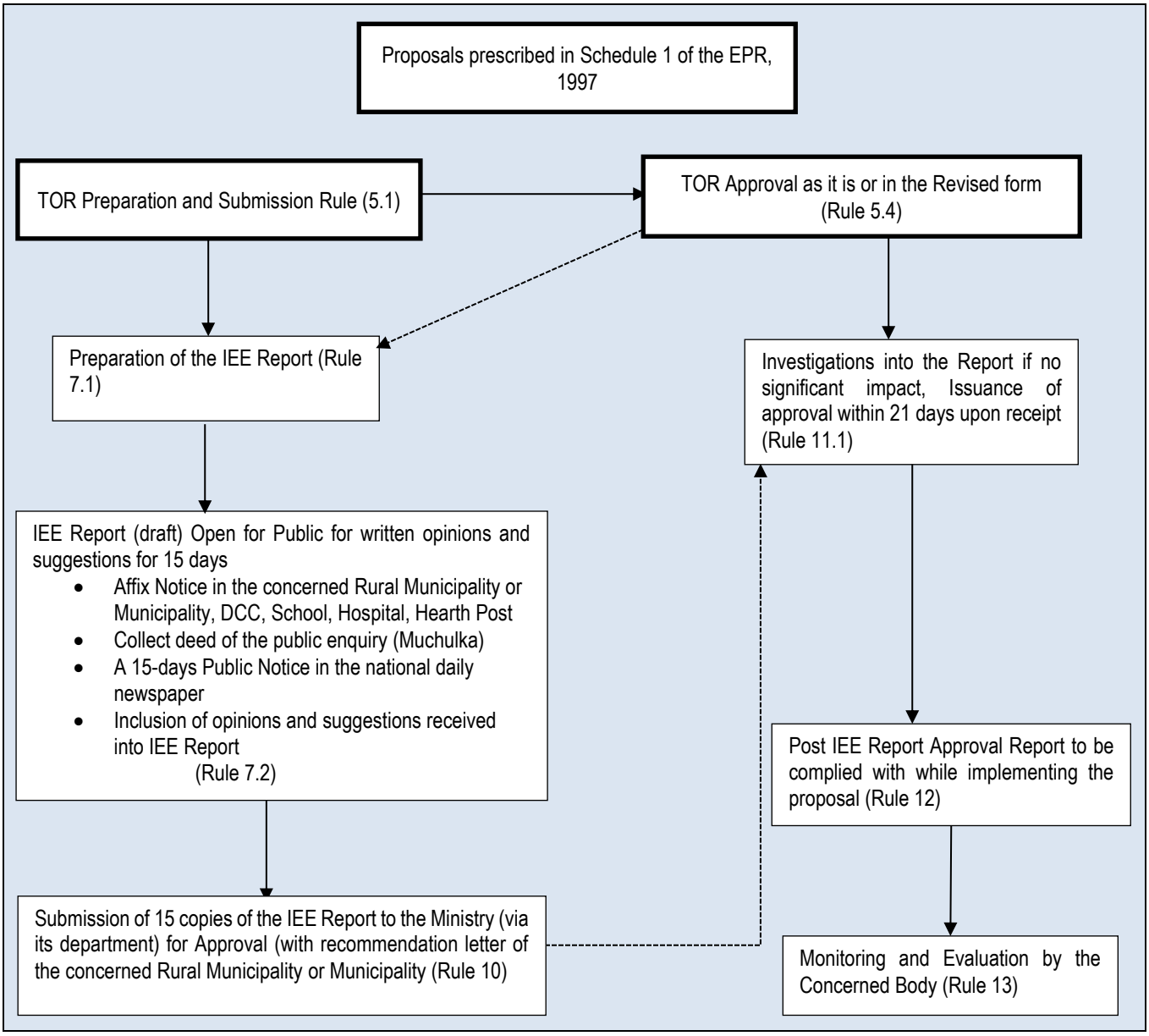
SN	Clearance	Act/Rule/Notification/Guideline	Concerned Agency	Responsibility
	A. Pre-construction Stage			
1	Environmental Clearance (categorized as "B" with IEE requirement)	Environment Protection Act 1996 and Environment Protection Rules, 1997 (with amendments).	National Reconstruction Authority	CLPIU

SN	Clearance	Act/Rule/Notification/Guideline	Concerned Agency	Responsibility
2	Forestry clearance for clearing of Trees	Forest Act, 1993 (with amendment), Forest Rule, 1995, Forest Products Collection and Sales Distribution Guidelines, 2001 and Local Government Operation Act, 2017	Ministry of Forest and Soil Conservation	CLPIU
B. Implementation Stage				
3	Permission for construction material quarrying (stone, cobble, sand, gravel, soil etc.)	Local Government Operation Act, 2017 and Soil and Watershed Conservation Act, 1982 and Watershed Conservation Rule, 1985, EPA, 1996 and EPR, 1997 (with amendments)	Concerned Project and Concerned Rural Municipality, Municipality, DCC	Contractor

F. Review, Approval and Disclosure

38. The environmental specialist of the CLPIU shall review the IEE and submit to the CLPIU. CLPIU shall review and forward the draft IEE to ADB for review. Upon receiving comments from ADB and incorporating in the IEE, CLPIU shall forward the IEE to NRA for review and approval. A scanned copy of the government approved IEE shall be submitted to ADB for disclosure in ADB website. Any updates on the IEE will be subject to ADB's review and disclosure. No works will be conducted until ADB has cleared the (updated/revised) IEE.

Figure 4.1: Environmental Clearance Procedure in Nepal for Category B Project


Proposals prescribed in Schedule 1 of the EPR, 1997
TOR Preparation and Submission Rule (5.1)
TOR Approval as it is or in the Revised form (Rule 5.4)
Preparation of the IEE Report (Rule 7.1)
Investigations into the Report if no significant impact, Issuance of approval within 21 days upon receipt (Rule 11.1)
IEE Report (draft) Open for Public for written opinions and suggestions for 15 days
Affix Notice in the concerned Rural Municipality or Municipality, DCC, School, Hospital, Hearth Post
Collect deed of the public enquiry (Muchulka)
A 15-days Public Notice in the national daily newspaper
Inclusion of opinions and suggestions received into IEE Report
(Rule 7.2)
Post IEE Report Approval Report to be complied with while implementing the proposal (Rule 12)
Submission of 15 copies of the IEE Report to the Ministry (via its department) for Approval (with recommendation letter of the concerned Rural Municipality or Municipality (Rule 10)
Monitoring and Evaluation by the Concerned Body (Rule 13)

V. CONSULTATION, DISCLOSURE AND GRIEVANCE REDRESS MECHANISM

A. Consultation

39. The ADB SPS guides, as one of the principles of its environmental safeguard, to carry out meaningful consultation with affected people and facilitate their informed participation. The Policy clarifies “meaningful consultation” as a process that (i) begins early in the project preparation stag and is carried out on an ongoing basis throughout the project cycle; (ii) provides timely disclosure of relevant and adequate information that is understandable and readily accessible to affected people; (iii) is undertaken in an atmosphere free of intimidation or coercion; (iv) is gender inclusive and responsive and tailored to the needs of disadvantaged and vulnerable groups; and (v) enables the incorporation of all relevant views of affected people and other stakeholders into decision making, such as project design, mitigation measures, the sharing of development benefits and opportunities, and implementation issues.

40. Stakeholders (beneficiaries, local agencies, NGOs, CBOs) shall be consulted starting from environmental screening and categorization, and TOR preparation for the environmental assessments. Nepal’s EPR specifies that the opinion and suggestions on the potential environmental impacts of the proposed subproject shall be sought from the public by the proponent during the conduct of IEE. According to this, the concerned stakeholders are consulted through a 15 day public notice published in national newspaper during preparation of TOR. The stakeholder communities, beneficiaries, and affected people shall be consulted during baseline data survey, and informed about the likely potential impacts of the subproject and proposed mitigation measures. Response and suggestions of the stakeholders shall be documented in the IEE report, and shall be taken into account during subproject design.

41. To comply with the requirements of both the ADB and the Government, public consultation during environmental assessment shall be conducted (i) at least once, following procedure of the GON; (ii) in the early stages of the environmental assessment process to allow the affected communities and other interested parties to share their views on the proposed activity, environmental issues and concerns without and with the proposed activity, ensures to address the issues and concerns, and their willingness to participate in the continuing consultation process throughout activity implementation and in environmental monitoring activities. Additional consultations include key informant interviews and random interviews with affected persons/households.

42. Public consultation shall ensure the participation of a fair representation of stakeholders (i) those who will benefit from, and will be affected by, the proposed works; (ii) the vulnerable groups-the poor (those within the poverty threshold), ethnic minorities, informal settlers, people with disabilities, youth, migrants, women (especially women that are heads of households), and seniors; (iii) other interested groups, e.g. NGOs, religious groups, business associates, civil society, academe, etc. The Consultation process shall be well documented. All relevant views and concerns raised during the consultation shall be: (i) incorporated in the IEE, and (ii) considered in the design of the proposed activity. Attendance sheets and notes of informal and formal consultations shall be included in the IEE as proof that consultations had been held. The CLPIU shall be open to contact for consultation by the public on environmental assessment matters during the conduct of IEE or review of environmental implications.

B. Information Disclosure

43. The CLPIU shall be responsible for ensuring that all environmental assessment, environmental monitoring and grievance redress documents are properly kept as part of the

project and subproject records. These documents shall be made available in the national and English language and at locations where these can be easily accessed by stakeholders including affected people. Information on the subprojects shall be disclosed in a form and at a location easily accessed by local stakeholders. Where possible, information shall be disseminated also in local language.

44. In compliance with SPS requirements, for subprojects identified after Board approval, the following documents should be uploaded: i) final IEE after ADB's review and endorsement by the Borrower; ii) updated IEE and corrective action plans, if any; and iii) semi-annual environmental monitoring reports for category B subprojects.

45. Disclosure shall follow ADB's public consultation policy 2011. The IEE will be made available/accessible to the general public. The IEE and EMP will also be posted on the ADB website. Hard copies of the IEE will be made available for perusal at the ADB Office in Nepal, CLPIU office, at DLPIU offices, schools and at other locations accessible to stakeholders (to be determined by the CLPIU).

C. Grievance Redress Mechanism

46. During the course of the Project, people may have concerns with the project's environmental performance. Issues may occur during construction and again during operation, which will be addressed by the project by establishing a grievance redress mechanism. The project will establish three tiers of grievance redress committees (GRC):

47. **First level of GRC**: A GRC will be formed at school level comprising 5 members. The GRC will be chaired by SMC chair, and DLPIU safeguard focal point, DSC safeguard monitor, representative of parent's teachers committee and one representative from community will be members of the committee. The DSC safeguard monitor will work as member secretary of the committee. The member secretary of the committee will maintain grievance registry and document records of grievances and resolution status. The DSC safeguards monitor will document the following information: (i) name of the person; (ii) date complaint was received; (iii) nature of complaint; (iv) location, (v) means of communication, (vi) status of the complaint (in process, resolved, forwarded to next level). Any person with a grievance related to the project works, safeguards and other issues can register their grievance to this GRC through any means of communication. The committee will meet the second day of grievance registration and send acknowledgement to the complainant regarding registration of the complaint and next action to be taken within 3 working days of registration. The CLPIU and DLPIU phone number and GRC nodal officer's contact address will be posted in public areas within the sub-project areas and construction sites. The committee shall complete its process by 7 days to resolve the grievance, if the grievance is not resolved in this committee and not in jurisdiction of this level forward it to second level GRC within 10 working days and inform complainant accordingly.

48. **Second level of GRC**: The second-level GRC will be formed at DLPIU comprising 3 members to hear the unresolved grievances forwarded by the school level GRC. The GRC will be chaired by DLPIU project manager, and DLPIU safeguard focal point, DSC safeguard expert. The DSC safeguard expert will work as member secretary of the committee. The member secretary of the committee will maintain grievance registry and document records of grievances and resolution status. The committee will meet the third day of grievance registration and take decision within 7 working days of registration. If the committee resolved the grievance, it shall inform the complainant in written about the decision copy to school level GRC to close the case, if the grievance is not resolved in this committee and not in jurisdiction of this level forward it to

third level GRC within 10 working days and notify first level GRC to inform complainant accordingly.

49. Each GRC will maintain a grievance registry containing following information: (i) name of the person; (ii) date complaint was received; (iii) nature of complaint; (iv) location, (v) means of communication, (vi) status of the complaint (in process, resolved, forwarded to next level).

50. **Third level of GRC**: The third-level GRC will be formed at CLPIU comprising 3 members to hear the unresolved grievances forwarded by the DLPIU level GRC. The GRC will be chaired by CLPIU project director, and CLPIU safeguard focal point, DSC safeguard expert. The DSC safeguard expert will work as member secretary of the committee. The member secretary of the committee will maintain grievance registry and document records of grievances and resolution status. The committee will meet the third day of grievance registration and take decision within 7 working days of registration. After resolution of grievances the committee will notify the DLPIU copy to school level GRC to implement the decisions and actions agreed. The school level GRC will be responsible to implement actions and close the case once all actions are completed.

51. The CLPIU's project director will activate the third level of the GRM by referring the issue (with written documentation) forwarded by lower level GRCs, which will, based on review of the grievances, address them in consultation with CLPIU, DLPIU, and complainant. The member secretary of the GRC will be responsible for processing and placing all papers before the GRC, recording decisions, issuing minutes of the meetings and taking follow up action to see that formal orders are issued and the decisions carried out. Decision has to be made within 15 days of receipt of complaint at this level. Complaints can be registered at GRC of CLPIU. However, CLPIU level GRC shall refers the complaints registered at the CLPIU to the concerned school level GRM for initial hearing within 7 days of registration.

52. Despite the project GRM, an aggrieved person shall have access to the country's legal system at any stage, and accessing the country's legal system can run parallel to accessing the GRM and is not dependent on the negative outcome of the GRM.

53. If the established GRM is not able to resolve the issue, the affected person also can use the ADB Accountability Mechanism through directly contacting (in writing) the complaint receiving officer (CRO) at ADB headquarters or the ADB Nepal Resident Mission. The complaint can be submitted in any of the official languages of ADB's DMCs.

VI. INSTITUTIONAL ARRANGEMENT AND RESPONSIBILITIES

A. Institutional Arrangement of the Project

1. Executing Agency and CLPIU

54. The National Reconstruction Authority (NRA) is the Executing Agency (EA), who will implement the project through Central Level Project Implementation Unit (CLPIU) - Education. Safeguard Unit of NRA will coordinate and keep oversight of overall safeguards performance of the project. CLPIU will establish a Safeguard Desk (SD) and appoint a safeguard focal point to lead the desk. All environment and social safeguard staff in the project shall be the member of the Desk. The SD will have sufficient office space, furniture and secretarial resources, a vehicle and support staff. The Desk at CLPIU will keep close communication with the safeguard desk formed at their local office in each district (DLPIU). The SD at DLPIU shall monthly report the safeguard performance to SD at CLPIU in prescribed reporting format. Both the Desks shall meet at their level at least once a month during peak working season and periodically thereafter, review compliance status and agree on taking corrective measures. CLPIU with support of DLPIU shall be guided by the EARF to undertake screening and classification of subprojects and submit for ADB approval. They shall prepare safeguard documents (IEE or DDR), conduct overall safeguard monitoring, collect information and prepare routine and semi-annual environmental compliance monitoring reports. CLPIU will support DLPIU to obtain all clearances and fulfil government requirements.

55. One Environment Specialist (ES) under the design and supervision consultant (DSC) will support CLPIU and DLPIUs on all environment related matters on intermittent basis with 12 months input for the first year and 4 months in each subsequent years.

56. Key tasks and responsibilities of the CLPIU relating to safeguard (environment) are as follows:

(i) ensure that environmental screening of each school subproject is conducted by using the rapid environmental assessment (REA) checklist;
(ii) confirm environment category and assure DLPIUs prepare environmental assessment document in prescribed format (mostly expected to be due diligence report) ;
(iii) update EMP during implementation of the project, as required;
(iv) confirm whether EMP requirements are included in bidding documents and civil works contract;
(v) establish a system to monitor environmental safeguards of the project, including monitoring the indicators set out in the monitoring plan of the EMP;
(vi) prepare standard environmental monitoring checklist;
(vii) organize training on safeguards for the staff of CLPIU and DLPIU, environment monitors at DLPIU, and staff of contractors on EMP implementation, environmental monitoring mechanism; and taking immediate corrective actions to remedy adverse impacts or ineffective mitigation measure;
(viii) provide oversight on environmental management aspects of subprojects and ensure EMPs are implemented by DLPIUs and contractors;
(ix) facilitate and confirm overall compliance with the government rules and regulations regarding environmental clearances;
(x) supervise and provide guidance to the DLPIUs to properly carry out the environmental monitoring and assessments following the provisions of EARF;

(xi) review, monitor, and evaluate the effectiveness with which the EMPs are implemented, and recommend necessary corrective actions to be taken as necessary;
(xii) consolidate monthly environmental monitoring reports from DLPIUs and submit semi-annual monitoring reports to ADB;
(xiii) ensure timely disclosure of final IEEs/EMPs in locations and form accessible to the public; and
(xiv) address any grievances brought about through the grievance redress mechanism in a timely manner.

2. District Level Project Implementation Unit (DLPIU)

57. The design and implementation of each school subproject in each district will be overseen by the district level office of CLPIU, named as district level project implementation unit (DLPIU). Each DLPIU shall appoint a safeguard focal point, who will be supported by safeguard monitors of DSC. Each DLPIU shall establish a Safeguard Desk with focal point as chair. All staff and consultant related with environment and social safeguards shall be the member of the Desk. The Desk shall routinely meet to discuss safeguards compliance performance of project, agree on corrective actions, share them and agree with the technical team to implement them, and ensure they are complied. All the decisions of the Desk shall be recorded as meeting minutes. The DLPIUs will be responsible for the following:

(i) conduct environmental screening by using REA checklist, categorize environment category and conduct environmental assessment (most of them expected to be category C requiring due diligence report) for each school subproject by following the provisions of the EARF;
(ii) conduct environmental compliance audit of existing facilities as per Item F, Appendix 6 of ADB SPS, 2009;
(iii) include IEEs/EMPs in bidding documents and civil works contracts;
(iv) comply with all government rules and regulations and ADB's safeguards policy;
(v) oversee implementation of EMPs, including environmental monitoring by contractors by using the standard environmental monitoring checklist;
(vi) take necessary corrective actions when necessary and follow-up to ensure they are implemented;
(vii) submit monthly environmental monitoring reports to CLPIU;
(viii) organize routine public consultation and awareness programs;
(ix) address any grievances through the Grievance Redress Mechanism in a timely manner.

3. Environment Specialist in the Design and Supervision Consultant (DSC)

58. DSC will work closely with and support CLPIU and DLPIUs in project design, supervision of work implementation including monitoring and reporting during the construction phase. DSC will appoint one Environment Specialist (ES) to support CLPIU and DLPIUs on all environment related matters on intermittent basis with 12 months input for the first year and 4 months in each subsequent years. The ES shall provide 30% of inputs to support CLPIU and 70% to support DLPIUs. The ES shall support CLPIU and DLPIU in their effort to ensure mainstreaming environmental safeguards in all stages of the project, conduct periodic environmental compliance monitoring, and facilitate in capacity building of central and district level stakeholders. DSC shall appoint one fulltime safeguard monitor (SM) in each DLPIUs, who shall work and directly report

to the SD of DLPIU and the ES. Each contractor shall assign a safeguards and safety staff (cv to be approved by DLPIU prior to their mobilization), who shall work under the guidance of the safeguard focal point and in coordination with the safeguard monitor in the DLPIU. The school management committee (SMC) shall be closely involved in all safeguard activities in order to become aware on safeguarding environment during school operation. Generally, the environment specialist shall support in implementing the following, in addition to others, by also mobilizing safeguard monitors at the DLPIUs:

(i) organize orientation on environmental safeguards mechanism to the staff of CLPIU and DLPIU, safeguard monitors at DLPIU, and staff of contractors. The orientation shall cover environmental categorization, EMP preparation and implementation, environmental monitoring with standard checklist; corrective actions, and reporting;
(ii) assist safeguard focal points to establish a Safeguard Desk at CLPIU and DLPIU;
(iii) support the safeguard desk of CLPIU and DLPIU in conducting meetings with agenda, recording agreed actions, share them with technical team with an understanding to implement them, and follow-up to ensure compliance;
(iv) support DLPIUs on environmental screening of each school subproject by using the rapid environmental assessment (REA) checklist;
(v) confirm environment category and prepare environmental assessment document in prescribed format (mostly expected to be due diligence report);
(vi) support DLPIUs to included EMP in bidding documents and civil works contract;
(vii) establish environmental safeguards mechanism in the project to monitor environmental safeguards of the subproject project works as guided by EMP;
(viii) prepare standard environmental monitoring checklist;
(ix) ensure EMPs are implemented by contractors by routinely monitoring EMP compliance through the safeguard monitors;
(x) ensure overall compliance with the government rules and regulations regarding environmental clearances;
(xi) review, monitor, and evaluate the effectiveness with which the EMPs are implemented, and recommend necessary corrective actions to be taken as necessary;
(xii) consolidate monthly environmental monitoring reports received from DLPIUs and submit semi-annual monitoring report to CLPIU and ADB;
(xiii) organize routine public consultation and awareness programs;
(xiv) address any grievances through the Grievance Redress Mechanism in a timely manner;
ensure timely disclosure of final IEEs/DDRs/EMPs/reports.

4. Safeguard Monitors at DLPIUs

59. The DSC shall mobilize a safeguard monitor in each DLPIU to support them in the environmental safeguards compliance assurance activities. They shall be graduate in environment related science with at least 2 year experience and shall be responsible for undertaking the following activities under the supervision and guidance of the environment and social specialists:

(i) conduct environmental screening of subproject by using REA checklist;
(ii) suggest environment category and prepare environmental assessment document with EMP and seek comments from environment specialist;
(iii) participate in the safeguards orientation program organized by CLPIU;

(iv) support DLPIU Safeguard Desk as suggested by the safeguard focal point of CLPIU;
(v) support focal point of DLPIU safeguard desk to closely communicate with the safeguard desk of CLPIU;
(vi) use standard environmental monitoring checklist and liaise with safeguard officer of contractor to ensure works are in full compliance with the EMP requirements;
(vii) support environment specialist in compliance monitoring when the specialist intermittently joins DLPIU;
(viii) document the compliance performance and suggest corrective measures;
(ix) support DLPIU in organizing stakeholder consultation program;
(x) support DLPIU in registering grievances, and follow-up for their timely resolution;
(xi) update DLPIU chief and environment specialist on subproject safeguards performance;
(xii) submit monthly environmental compliance monitoring checklist with a brief report to the environment specialist and copy all communications to DLPIU;
(xiii) comply the guidance given by CLPIU and CLPIU through the DSC environment specialist.

5. Civil Works Contracts and Contractors

60. The contractor shall designate a fulltime environment & safety officer with graduation in environment related science and minimum 2 years of experience. The curriculum vitae of the proposed officer shall be submitted to DLPIU for approval prior to appointing the staff. The responsibility of the officer shall be to (i) update EMP based on detailed design and site-specific situation, if required, and (ii) ensure all EMP and safety requirements are implemented during the work. Contractors shall carry out all environmental mitigation and monitoring measures outlined in their contract. Copy of EMP shall be included in the bidding and contract documents.

Figure 6.1: Project Orgnizational Structure

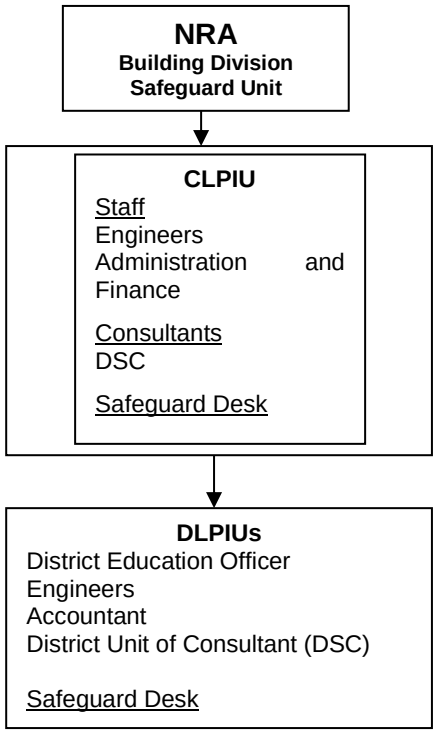
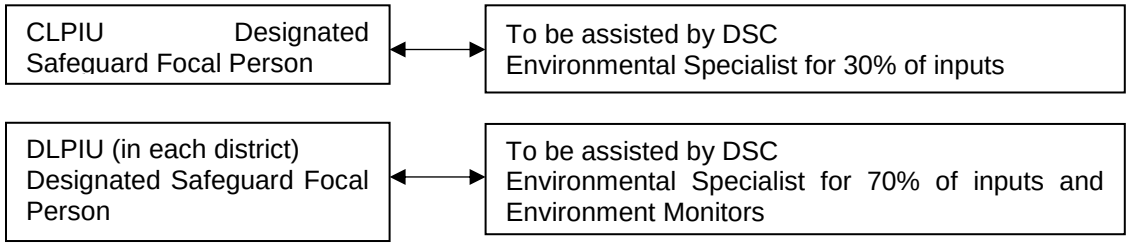


Figure 6.2: Safeguards Implementation Arrangement



B. Institutional Capacity Development Program

61. The environmental specialist under DSC will be responsible for trainings on environmental awareness and management in accordance with both ADB and government requirements. Specific modules customized for the available skill set will be devised after assessing the capabilities of the target participants and the requirements of the project (also refer table 2.4). Typical modules would be as follows: (i) sensitization; (ii) introduction to environment and environmental considerations in school buildings and other associated project activities; (iii) review of IEEs and integration into the project detailed design; (iv) improved coordination within nodal departments; and (v) monitoring and reporting system. The contractors will be required to conduct environmental awareness and orientation of workers prior to deployment to work sites. The proposed training project along with the frequency of sessions is presented in Table 6.1.

C. EARF Implementation Cost

64. The cost required for implementing the EARF will cover the following activities:

- Updating IEE, preparing and submitting reports and public consultation and disclosure;
- Application for environmental clearances; and
- Implementation of EMP, environmental monitoring program and long-term surveys.

65. For budgetary purpose, it is assumed that all new subprojects will be classified by ADB as category B (requiring IEE), and that the report will be deemed satisfactory by NRA. Some subprojects may require a simpler environmental review, but this is discounted for budgeting purposes.

66. Preparation of IEEs may require approximately 4 weeks of work by an experienced environmental specialist conducting the following activities: (i) site visit to assess environmental conditions and potential impacts of the scheme; (ii) liaison with DLPIU, school and others to obtain any environmental/social data that might be available locally (e.g. population figures, designated sites, etc.); (iii) consultation with the local community to inform them about the scheme and identify their views and concerns; (iv) assessment of impacts and development of mitigation; and (v) desk study and report preparation.

67. The infrastructure involved in DRSP is generally straightforward. Environmental monitoring during construction will also be straightforward and will involve periodic site observations and interviews with workers and others, plus checks of reports and other documents. This will be conducted by DSC environment specialist under supervision of CLPIU.

68. The cost of mitigation measures and surveys during construction stage will be incorporated into the contractor's costs, which will be binding on him for implementation. The surveys will be conducted by the contractors.

69. The operation phase mitigation measures are again of good operating practices, which will be the responsibility of the DLPIUs. All monitoring during the operation and maintenance (O&M) phase will be conducted by CLPIU and SMCs; therefore, there are no additional costs.

70. The indicative costs for EARF implementation is shown in Table 6.1.

Table 6.1: Indicative Cost of EARF Implementation

Particulars	Stages	Unit	Total No.	Rate (NRs)	Cost (NRs)	Source
1. Construction phase						
Land and property acquisition	pre-construction			Rate agreed by compensation determination committee (CDC)	As per resettlement plan	
Tree plantation, landscaping and improvement in greenery of surrounding environment	Construction	LS per school	In detailed design and BOQ	100,000		Civil works contract
Sign board on safety awareness		LS Per school		20,000	20,000	
Bioengineering for slope protection						Contractor's BOQ

Particulars	Stages	Unit	Total No.	Rate (NRs)	Cost (NRs)	Source
Insurance of workers						Contractor's BOQ
Occupational Health and Safety measures						Contractor's BOQ
Emergency safety measures		LS Per school		100,000		
Relocation of religious/physical/community structure						Project cost as per design
Skill development training				100,000		
Orientation for awareness raising training to teachers, students, SMC and local stakeholders on environmental safeguards and disaster management				100,000		
Miscellaneous environment protection measure (sanitation and cleanliness, provision of dust bin, waste disposal pit etc.)	Construction	LS Per school	1	200,000		Civil works contract
Water quality monitoring	Construction	LS per year	1	50,000	50,000	Civil works contract
Air quality monitoring	Construction	Per school	1	100,000	100,000	Civil works contract
C. Capacity Building						
1. Orientation workshop for officials involved in the project implementation on ADB Safeguards Policy Statement, Government of Nepal environmental laws and regulations, and environmental assessment process; 2. Induction course contractors, preparing them on EMP implementation and environmental monitoring requirements related to mitigation measures; and taking immediate action to remedy unexpected adverse impacts or ineffective mitigation measures found during	Module 1 – immediately upon engagement of the DSC environmental specialist Module 2 – prior to award of civil works contracts Module 3 –	lump sum 1 times 3 times 1 times		Module 1 Module 2 Module 3	250,000 300,000 250,000	Covered under DSC contract

Particulars	Stages	Unit	Total No.	Rate (NRs)	Cost (NRs)	Source
the course of implementation; and 3. Lessons learned information sharing						
D. Administrative Costs						
1. Legislation, permits, and agreements	Permit for excavation, tree-cutting permits etc.	Lump sum per school			100,000	Contractor at his own expense
E. Other Costs						
1. Public consultations and information disclosure	Information disclosure and consultations during preconstruction and construction phase, including public awareness campaign through media	As per requirement	Lump sum	500,000	500,000	Covered under DSC contract
2. GRM implementation	Costs involved in resolving complaints (meetings, consultations, communication, and reporting/information dissemination)		Lump sum	500,000	500,000	DLPIU cost

VII. MONITORING AND REPORTING

71. CLPIU, with the DLPIU, will monitor and measure the progress of EMP implementation. The monitoring activities will be corresponding with the project's risks and impacts and will be identified in the IEEs. Appendix 4 provides a content outline for monitoring report. In addition to recording information of the work, deviation of work components from original scope, the CLPIU with the DLPIU will undertake site inspections and document review to verify compliance with the EMP and progress toward the final outcome.

72. Three types of monitoring as proposed in National EIA Guideline, 1993 will also be carried out, which are given as follows:

a. Baseline Monitoring

73. This monitoring is also sometime referred as pre-audit study. It is conducted to know the pre-project baseline condition of the environmental parameters. This is carried out just before the construction of the project. Baseline information is also collected for the future comparison.

b. Compliance Monitoring

74. This monitoring is carried out to know the implementation status of environmental requirements as documented in IEE report and they should be compiled with during pre-construction, construction and operational stages of the project as appropriate. It employs periodic sampling or continuous recording of certain parameters and ensures implementation of any conditions set-forth during IEE report approval.

c. Impact Monitoring

75. Impact monitoring is performed to know the effectiveness of the IEE report. These monitoring accesses the effectiveness of the mitigation measures or enhancement measures proposed in the IEE report. This monitoring detects environmental changes and estimated inherent variation within the environment, establishes long-term trends in the natural system, and derives conclusions by making comparison against a standard or target.

76. DSC will submit monthly monitoring and implementation reports to the DLPIU, who will take follow-up actions, if necessary. DLPIU will submit the quarterly monitoring and implementation reports to the CLPIU. The CLPIU will submit semi-annual monitoring reports to ADB. Project budgets will reflect the costs of monitoring and reporting requirements. Monitoring reports will be posted in a location accessible to the public.

77. CLPIU will document monitoring results, identify the necessary corrective actions, and reflect them in a corrective action plan. CLPIU, in each quarter, will study the compliance with the action plan developed in the previous quarter. Compliance with loan covenants will be screened by the executing agency.

78. ADB will review project performance against the NRA commitments as agreed in the legal documents. The extent of ADB's monitoring and supervision activities will be commensurate with the project's risks and impacts. Monitoring and supervising of social and environmental safeguards will be integrated into the project performance management system. ADB will monitor

projects on an ongoing basis until a project completion report is issued. ADB will carry out the following monitoring actions to supervise project implementation:

- conduct periodic site visits for projects with adverse environmental or social impacts;
- conduct supervision missions with detailed review by ADB's safeguard specialists/officers or consultants for projects with significant adverse social or environmental impacts;
- review the periodic monitoring reports submitted by EAs to ensure that adverse impacts and risks are mitigated, as planned and as agreed with ADB;
- work with EAs to rectify to the extent possible any failures to comply with their safeguard commitments, as covenanted in the legal agreements, and exercise remedies to re-establish compliance as appropriate; and
- prepare a project completion report that assesses whether the objective and desired outcomes of the safeguard plans have been achieved, taking into account the baseline conditions and the results of monitoring.

APPENDICES

Appendix 1

Rapid Environmental Assessment (REA) Checklist for Subprojects

DRSPP

Instructions:
Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. Use the "remarks" section to discuss any anticipated mitigation measures.

Subproject Title: _____

Name of the School	
Address	
Telephone/ Fax	
Email	
Proposed Infrastructure	

Screening Questions	**Yes**	**No**	**Remarks**
A. Project Siting Is the project area adjacent to or within any of the following environmentally sensitive areas?			
▪ Cultural heritage site			
▪ Protected Area			
▪ Wetland			
▪ Mangrove			
▪ Estuarine			
▪ Buffer zone of protected area			
▪ Special area for protecting biodiversity			
B. Potential Environmental Impacts Will the Project cause…			
▪ encroachment on historical/cultural areas; disfiguration of landscape by cuts, fills, and quarries?			
▪ encroachment on precious ecology (e.g. sensitive or protected areas)?			
▪ alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams affected by increased soil erosion at construction site?			
▪ deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction?			

Screening Questions	Yes	No	Remarks
▪ increased local air pollution due to rock crushing, cutting and filling works, and chemicals from asphalt processing?			
▪ risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation during project construction and operation?			
▪ noise and vibration due to civil works?			
▪ dislocation or involuntary resettlement of people?			
▪ disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?			
▪ other social concerns relating to inconveniences in living conditions in the project areas that may trigger cases of upper respiratory problems and stress?			
▪ hazardous driving conditions where construction interferes with pre-existing roads?			
▪ poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases (such as STI's and HIV/AIDS) from workers to local populations?			
▪ creation of temporary breeding habitats for diseases such as those transmitted by mosquitoes and rodents?			
▪ accident risks associated with increased vehicular traffic, leading to accidental spills of toxic materials?			
▪ increased noise and air pollution resulting from traffic volume?			
▪ social conflicts if workers from other regions or countries are hired?			
▪ large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?			
▪ risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as fuel and other chemicals during construction and operation?			
▪ community safety risks due to both accidental and natural causes, especially where the structural elements or components of the project are accessible			

Screening Questions	Yes	No	Remarks
to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning.			

A Checklist for Preliminary Climate Risk Screening
Country/Project

Screening Questions		Score	Remarks[1]
Location and Design of project	Is siting of the project (or its components) likely to be affected by climate conditions including extreme weather related events such as floods, droughts, storms, landslides?		
	Would the project design need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc.)?		
Materials and Maintenance	Would weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters likely affect the selection of project inputs over the life of project outputs (e.g. construction material)?		
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s)?		
Performance of project outputs	Would weather/climate conditions, and related extreme events likely affect the performance of project output(s) throughout their design life time?		

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

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

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

Other Comments: _____
Prepared by: _____
Designation: _____
Date: _____

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

Appendix 2

OUTLINE OF IEE

This outline is part of the safeguard requirements. An IEE report is required for all environment category B projects. Its level of detail and comprehensiveness is commensurate to the significance of potential environmental impacts and risks. The substantive aspects of this outline will guide the preparation of IEE reports, although not necessarily in the order shown.

A. Introduction

B. Policy, Legal, and Administrative Framework. Discusses the national, local legal, and institutional frameworks within which the environmental assessment is carried out. It also identifies project-relevant international environmental agreements to which the country is a party.

C. Description of the Project. Describes (i) the proposed project, (ii) its major components, and (iii) its geographic, ecological, social, and temporal context, including any associated facility required by and for the project (for example, access roads, power plants, water supply, quarries and borrow pits, and spoil disposal). It normally includes drawings and maps showing the project's layout and components, the project site, and the projects area of influence.

D. Description of the Environment (Baseline Data). Describes relevant physical, biological, and socio-economic conditions within the study area. It also looks at current and proposed development activities within the project's area of influence, including those not directly connected to the project. It indicates the accuracy, reliability, and sources of the data.

E. Anticipated Environmental Impacts and Mitigation Measures: (i) predicts and assesses the project's likely positive and negative direct and indirect impacts to physical, biological, socioeconomic (including occupational health and safety, community health and safety, vulnerable groups and gender issues, and impacts on livelihoods through environmental media), and physical cultural resources in the project's area of influence, in quantitative terms and to extent possible; (ii) identifies mitigation measures and any residual negative impacts that cannot be mitigated; (iii) explores opportunities for enhancement; (iv) identifies and estimates the extent and quality of available data, key data gaps, and uncertainties associated with predictions and specifies topics that do not require further attention; and (v) examines global, trans-boundary, and cumulative impacts as appropriate.

F. Information Disclosure, Consultation, and Participation: (i) describes the process undertaken during project design and preparation for engaging stakeholders, including information disclosure and consultation with affected people and other stakeholders; (i) summarizes comments and concerns received from affected people and other stakeholders, and how these comments have been addressed in project design and mitigation measures, with special attention paid to the needs and concerns of vulnerable groups, including women, the poor, and indigenous peoples; and (iii) describes the planned information disclosure measures (including the type of information to be disseminated and the method of dissemination), and the process for carrying out consultation with affected people and facilitating their participation during project implementation.

G. Grievance Redress Mechanism. Describes the grievance redress framework (both informal and formal channels), setting out the time frame and mechanisms for resolving complaints about environmental performance.

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

(i) Mitigation

(a) identifies and summarizes anticipated significant adverse environmental impacts and risks;
(b) describes each mitigation measure with technical details, including the type of impact to which it relates and the conditions under which it is required (for instance, continuously or in the event of contingencies), together with designs, equipment descriptions, and operation procedures, as appropriate; and
(c) provides links to any other mitigation plans (for example, for involuntary resettlement, indigenous people, or emergency response) required for the project.

(ii) Monitoring

(a) describes monitoring measures with technical detail, including parameters to be measured, methods to be used, sampling location, frequency of measurements, detection limits, and definition of threshold that will signal the need for corrective actions; and
(b) describes monitoring and reporting procedures to ensure early detection of conditions that necessitate mitigation measures, and documents the progress and results of mitigation.

(iii) Implementation arrangements

(a) specifies the implementation schedule, showing phasing and coordination with overall project implementation;
(b) describes institutional or organizational arrangements, namely, who is responsible for carrying out the mitigation and monitoring measures, which may include one or more of the following additional topics to strengthen environmental management capability: technical assistance programs, training programs, procurement of equipment and supplies related to environmental management and monitoring, and organizational changes; and
(c) estimates capita and recurrent costs and describes sources of funds for implementing the environmental management plan.

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

I. Conclusion and Recommendation – provides the conclusions drawn from the assessment and provides recommendations.

Appendix 3

Outline of Environmental Due Diligence Report (DDR)

- Sub Project title:
- General Information

Name of the School	
Address	
Telephone/ Fax	
Email	
Project Investment	

- Sub Project Description:
  - Introduction
  - Existing Environmental Setting:

Table of Salient Environmental and Socio-economic features of the Project area

Indicator	Description
Climate	
Rainfall	
Relative Humidity	
Wind Speed	
Ambient Air Temperature	
Air Quality	
Ambient Noise Level	
Soils and elevations	
Flora	
Fauna	
Birds	
Land use	
Demography	
Living and Cultural Standard	

  - A sketch showing environmental features of the schools and its surrounding
- Environmental Sensitivity and Due Diligence: (REA Checklist)
- Budget
- Emergency preparedness and Response Plan
- Conclusion and Recommendation
- Project related evidence should be added

Format for Preparing Environmental Management Plan

SN	Work Activity	Impacts	Proposed Mitigation Measures	Cost Estimate (and the item number in BOQ in which the cost is provisioned)	Schedule of Implementation	Implementing and supervising responsibility

Appendix 4

ENVIRONMENTAL MONITORING REPORT FORMAT

Environmental Monitoring will include:

- Implementation Status of mitigation measures as listed in the Environmental Management Plan (EMP). Please report if the EMP measures are complied / being complied / not complied. If not complied, give reasons and recommend corrective measures with implementing agency.
- Impact Monitoring: Impact monitoring will focus on key indicators of the impacts predicted in the EMP. Report on impacts occurred due to implementation of the project and mitigation measures adopted. Assess whether the identified impacts were accurate and the mitigation measure designed and implemented were sufficient / adequate / effective. Suggest corrective measures. The corrective measures will be monitored for its compliance and re-evaluated next time again.

Environmental Monitoring Format

Detail of Infrastructure:
District:
Date:
Reported by:

SN	Activity (List activity form EMP of IEE report or DDR)	Potential Impact	Mitigation Work (as in EMP) Current Status (with supporting data*) and Follow-up Required	Remarks

Note: The monitoring format shall be attached to the monthly progress report.
* Data could be nos. and % of female in work group; Nos. of training with nos. of participants (M/F); nos. of trees removed and replanted etc.

A safeguard monitoring report may include the following elements:

- Background/context of the monitoring report (adequate information on the project, including physical progress of project activities, scope of monitoring report, reporting period);
- Changes in project scope and adjusted safeguard measures, if applicable;
- Qualitative and quantitative monitoring data;
- Monitoring parameters/indicators and methods based on the monitoring plan/program previously agreed upon with concerned DPs;
- Monitoring results compared against previously established benchmarks and compliance status (e.g., national environmental emission and ambient standards and/or standards set out in the WB‟s EHS guidelines; timeliness and adequacy of environmental mitigation measures; IR compensation rates and timeliness of payments, adequacy and timeliness of IR rehabilitation measures including serviced housing sites, house reconstruction, livelihood

support measures, and training; budget for implementing EMP, RP, or IPP, timeliness and adequacy of capacity building, etc.);

- Monitoring results compared against the objectives of safeguards or desired outcomes documented (e.g. IR impacts avoided or minimized; livelihood restored or enhanced; IP"s identity, human right, livelihood systems and cultural uniqueness fully respected; IP not suffer adverse impacts, environmental impacts avoided or minimized, etc.);
- If noncompliance or any major gaps identified, include a corrective action plan;
- Records on disclosure of monitoring information to affected communities;
- Identification of key issues, or complaints from affected people, or recommendations for improvement;
- Monitoring adjustment measures recommended based on monitoring experience/trends and stakeholders response;
- Information about actual institutional arrangement for implementing the monitoring program/plan provided or adjusted, as may be required;
- Proposed items of focus for the next report and due date.

Appendix 5

SCHOOL SELECTION CRITERIA

1st Phase: Evaluate all the district level school

The Schools destroyed by wind, fire, landslides, earthquakes & other natural calamities which require new construction.

The school whose classroom is borrowed by resource centre
Community managed schools
Schools running special programs
Based on different educational indicators like enrollment of dalit students (X), enrollment of girl students (Y), ratio of grade 5 to grade 1 students (Z)
Index = 0.4x + 0.3y + 0.3z The school with highest index will get the highest priority and low index as lowest priority.

2nd Phase:

$$\text{Adequacy of classroom} = \frac{\text{No of classroom in primary level}}{\text{Total no of classes running in primary level (including sections)}}$$

If, ACR < 1, then construction of new classroom & furniture could be provided

$$\text{Classroom Pressure} = \frac{\text{Area of all the classrooms in primary level } (m^2)}{\text{Total no of students in primary level}}$$

If, CP<0.75 m^2classroom & furniture could be provided.

$$\text{Student Density} = \frac{\text{Total no of students in primary level}}{\text{Total no of classroom in primary level}}$$

If SD>50: In Kathmandu and Terai new classroom and furniture could be provided
If SD>45: New classroom and furniture could be provided in hilly region
If SD>40: New classroom and furniture could be provided in mountain region

Appendix 6

POLICY OF DEPARTMENT OF EDUCATION

A. DOE Policy for Improvement of School Physical Facilities (Classrooms, Toilet & WS)

- **Decentralization (Construction through Community)**
  - Need Identification through community
  - Program implementation through Community
  - Ensuring ownership & thereby ensuring sustainability of the created facilities
- **Collaboration with I/NGOs**
  - Harmonization
  - Quality Supervision
  - Involvement of Social Mobilization
  - Better Transparency (Public Audit)
  - Effective in awareness Raising

B. DOE Policy on design & construction of school building

- **Structural safety of buildings**
  - Design and construction as per National Building Code
  - Safe against Earthquake and strong storms
  - Construction supervision by qualified Engineers/Sub-Engineers.
- **Child-friendly design & construction**
  - Classrooms (0.75sqm per children,T:50,H:45,M:35students per classroom)
  - Furniture (Floor seating for grade 1 and 2)
  - Water supply facilities
  - Separate toilets for girls & boys
- **Environment-friendly design & construction**
  - Enforcement of *National Environmental Guidelines for School Improvement and Facility Management in Nepal*
- **Inclusive design & construction for disables**
  - Ramp construction for wheelchair movement
  - One bigger door in every classroom & toilet for wheel chair movement
- **Community contribution in facility development**
  - Creates ownership feeling
  - Ensure sustainability of the created facilities
  - Ensure regular repair & maintenance

Appendix 7

DESIGN GUIDELINE FOR SCHOOL BUILDING CONSTRUCTION FROM ENVIRONMENTAL PERSPECTIVE

1. Background

The technical options for achieving a healthy environmental solution depends on different variables. This section proposes the practically achievable options through the understanding of different combinations of those variables.

A host of interrelated considerations- from site design to transportation issues factor into the creation of a "high-performance" environmentally friendly school. To effectively integrate environmentally friendly strategies, these options must be evaluated together from a whole school building perspective early in the design process. To do this, school will required to form a team of players from the community and school to work in collaboration with design team. The school design team must have expertise in integrating safety, energy, and environmental considerations into school design. Inputs from all stakeholders factor into good functional design to ensure the environmentally friendly construction of school.

The following list provides basic information about some key elements to consider when designing a high performance environmentally friendly school building. District education office and Department of Education include these elements in their Request for Qualifications (RFQ) or Request for Proposals (RFP) for design professionals. Once a design team is selected, comprehensive design guidelines available through Department of Education can provide the team with detailed information on the following strategies.

2. Commitment and Motivation

The single most important factor in achieving environmentally friendly school is the presence of committed and informed people.
The success of efforts in promoting environmentally friendly school relies on the awareness and commitment of the community to want such a program and to ensure that it is maintained within the community. The collective recognition and understanding of the problem by families and community members can help to bring about support and action for efforts to influence behaviors and conditions that will improve the environmental situation in school.

Community commitment is strengthened/marked by

- Acknowledgement of the importance of the problem from education, environment and other groups
- Allocating local resources, e.g. public money for incorporating environmentally friendly products in schools
- Combining the program with other programs in the community, such as primary health care and sanitary environment
- Ongoing efforts to attract media attention
- Involving existing councils, school committee, organizations such as women's group, NGO, Eco clubs etc
- Use of both problem solving as well as environment promoting approaches to improve school environment

Supportive school policies/practices: Development of supportive school policies and practices related to environmental improvement is to make a program sustainable. For example; regulations for improving and maintaining adequate sanitary facilities and a safe water supply at the school are essential. Also, collaboration and coordination between the education and environment sectors and between the school and the community are important requirements for success.

Examples of supportive policies and regulations

- Required periodic coordination between environment and education authorities at local, district, and national levels
- Rules about cleanliness for students and personnel, and about the proper use of latrines and water supply facilities

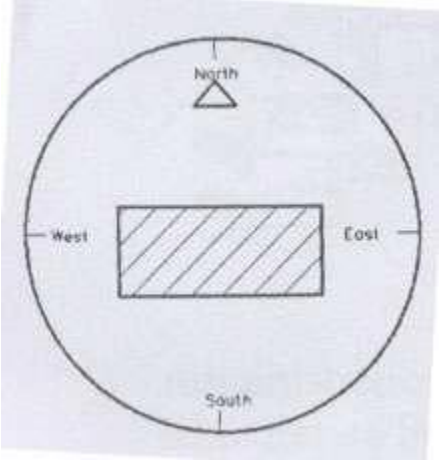
Examples of supportive practices in schools

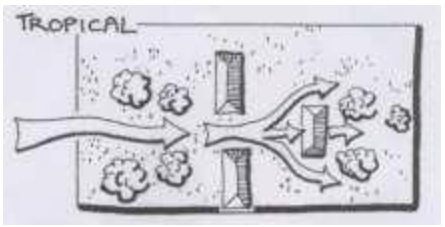
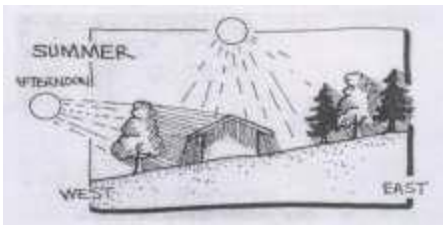
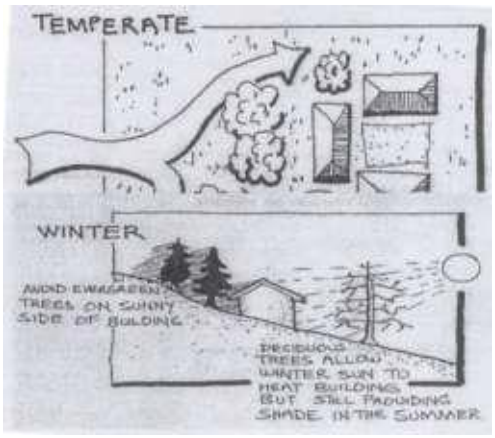
- School curriculum includes environment/environment preservation
- Proper use of hygienic toilets/latrines
- Regular cleaning of toilets/latrines
- Existence and use of proper hand washing facilities
- Safe food and water
- Formation of eco clubs, environmental awareness campaigns in schools
- Teacher's training on environment related subjects
- School/community projects and outreach

3. School Building Location

3.1 Orientation

School building orientation is very important as it determines magnitude, natural heating, and lighting available inside the building. Orientations are based on the climate type of the place where school facilities are planned. In Nepal three geo-zones are available viz: Terai, Mountain, and Hill. The orientation of school building in each of the above type is described below.

Terai Region Arrange the school buildings in such a way that the prevailing winds can be used in cooling rooms. The school buildings should be oriented facing between West to North. In case, the building can"t be avoided facing East, West or South, evergreen trees have to be planted to prevent direct sunlight entering the building	

Orientation criteria sometimes are influenced by the change in the school timing. For instance, during the summer in some parts of the Terai, there is a practice of conducting the classes early in the morning (6.30 hrs to 10.30 hrs with no break); in such cases, facing North or North-East causes direct glare in the class rooms; other side of the coin is that in such a case and when the site does not permit the ideal orientation, orientating the classrooms towards West- West-South supported by other measures may be permitted.	 
Mountain Region In the mountain region, making use of sun to heat the rooms is a good design concept. Therefore, building orientation should be between East and West. One-way to block the seeping winter wind is to plant trees in the direction of the prevailing wind. **Hill Area** It is advisable to provide deciduous trees and at the same time allow winter sun to heat up the buildings.	

Understanding the location and the surroundings including the contour is very important for developing the Master Plan. A building that looks good and fits well at one site may not necessarily look good at another site. Poor site selection for school buildings can lead to high costs on account of earth retaining structures. A careful study of the terrain can easily help to reduce this as shown in the illustration and table. For any given location, a site that results in the minimum cut height “h” should be selected.

3.2 Site Selection and Planning

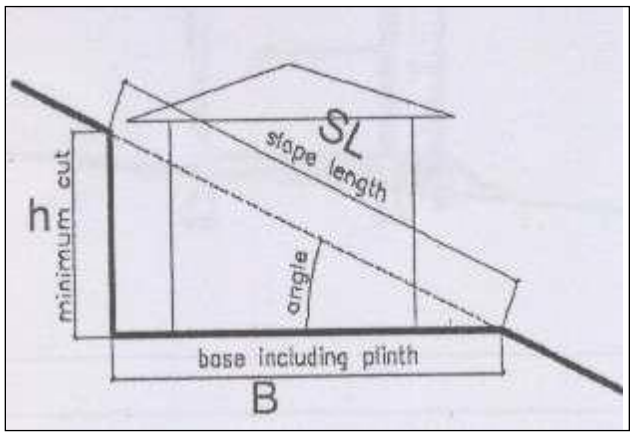
Both, site selection and site planning have a major input on the relative "greening" of any school facility being planned. Site selection for school includes such issues as transportation and travel distances for students, impacts on wildlife corridors, and impact on the hydrology. Decisions that school make during the site planning will impact the immediate natural community as well as the school building, energy consumption and student comfort. Good site planning minimizes site clearing; preservation of existing vegetation may\ provides a low maintenance. Mature stands of native vegetation in school compound often provide the desired energy conserving shade and wind control that would otherwise require years to develop for expensive new plantings.

Thoughtful placement of a school building on a site promotes energy conservation by taking advantage of natural site features such as topography, sunlight, shade and breezes.
While selecting the site or laying the school building, it is very important to note of features like religious objects, protected forests, river, stream, landslides etc. within and around the site.
These are additional factors that need attention apart from other factors.

School building should protect its occupants from rain, wind, sun and snow, and seismic risks.
Schools should be designed to prevent extremes of temperatures inside classrooms. Standard design for schools in mountain, hill and Terai will be different due to different climatic conditions.

3.3 Approximation for Earth Cutting and Retaining Wall

Schools in mountain and hill region of Nepal fall on slopes. Poor site selection for school buildings can lead high cost on account of earth retaining structures. A careful study of terrain can easily help to reduce this as illustrated in the table. For any given location, a site that results in the minimum cut height "h" should be selected.



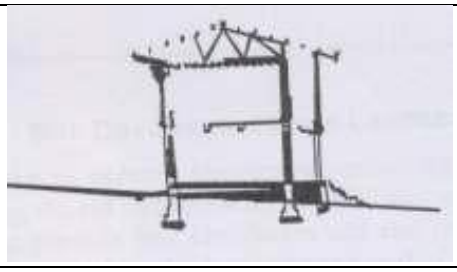
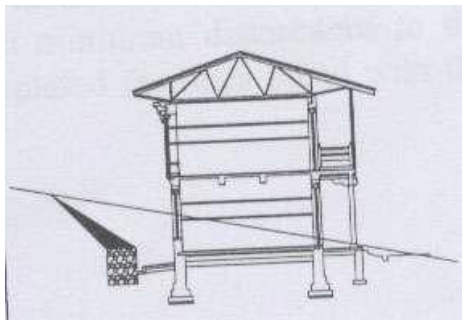
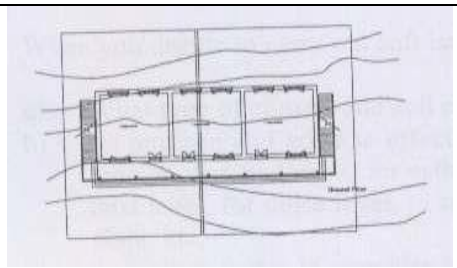
	Small Multipurpose hall			Large Multipurpose hall		
Angle	B	H	SL	B	H	SL
5	19.7	1.72	19.78	24.3	2.13	24.39
10	19.7	3.47	19.97	24.3	4.28	24.63
15	19.7	5.26	20.32	24.3	6.49	25.07
20	19.7	7.17	20.97	24.3	8.85	25.86
25	19.7	9.18	21.72	24.3	11.32	26.79
30	19.7	11.37	22.73	24.3	14.02	28.04

B	H	SL
24.3	2.13	24.39
24.3	4.28	24.63
24.3	6.49	25.07
24.3	8.85	25.86
24.3	11.32	26.79
24.3	14.02	28.04

	Academic buildings		
Angle	B	H	SL
5	11.7	1.02	11.74
10	11.7	2.06	11.86
15	11.7	3.12	12.45
20	11.7	4.26	12.45
25	11.7	5.45	12.90
30	11.7	6.75	13.50

This table will help to guide during the site selection and site development.
The following illustrations show some of the real site situations. The site engineers can refer to these illustrations to find optimal solutions, which the master plan may not show.

Site situations and earth cutting

Here the ground is at 50 slopes and it is cut to fit the building. As such, no retaining wall is required if the cut surface is riveted with vegetation.	
In this case, the building is placed with minimum disturbance to the ground. This is possible if the slope of the ground is less than 50. However, some filling may be required to bring the rooms in one level.	
Between 100 and 150 slopes, massive retaining wall is not necessary. Study the topography of the site and go for low height retaining or gabion wall. If the ground is not loose or marshy, the heights of these walls can be of half the cut height. The upper half height can be manipulated as per the table given depending on the angle of repose. If a gabion wall is built, cover the top of the walls with good soil and plant greenery for beautification.	
For a grade between15^0-20^0, the height of the retaining wall can be approximately 2/3 rd of the cut. However, as the ground becomes steeper to 200, this rule-of-thumb may not be applicable. In this case, follow the illustration given below.	
Here, the left half of the building falls on a steep slope as compared to right hand side half. In such a situation, one option can be the use of combined single and split retention wall or adopt the cut and fill method on the left portion, and only cut method on the right. However, before making the decisions, economic advantages have to be considered.	

Both site selection and site planning have a major input on the relative "greening" of any school facility being planned. Site selection for school includes such issues as transportation and travel distances for students, impacts on wildlife corridors, and impact on the hydrology. Decisions that school make during the site planning will impact the immediate natural community as well as the school building, energy consumption and student comfort. Good site planning minimizes site clearing; preservation of existing vegetation may provide a low maintenance landscape and

avoids supplemental irrigation. Mature stands of native vegetation in school compound often provide the desired energy conserving shade and wind control that would otherwise require years to develop for expensive new plantings. Thoughtful placement of a school building on a site promotes energy conservation by taking advantage of natural site features such as topography, sunlight, shade and breezes.

While selecting the site or laying the school building, it is very important to note of features like religious objects, protected forests, river, stream, landslides etc. within and around the site. These are additional factors that need attention apart from other factors.

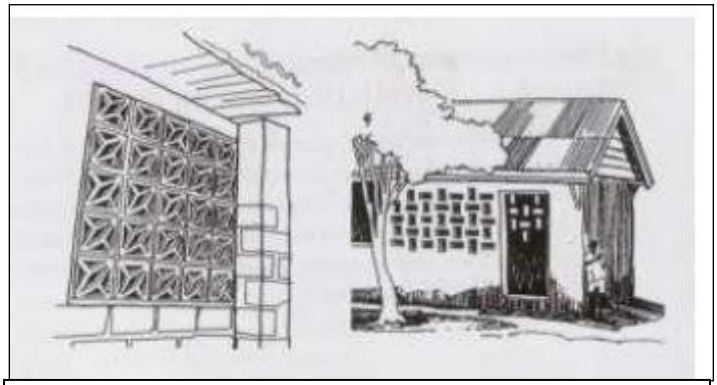
4. Day Lighting and Windows for Ventilation

Poor indoor lighting in classroom can have many harmful effects on health and well being of teachers and students. A poorly lit classroom can lead to eyesight problems. Poor lighting within the classroom can also make students feel more depressed. Generally, these problems can be remediated by adding windows to the classroom to increase the amount of natural light,however because of different climatic condition of Nepal, window selection should be based where facility is planned. Increasing natural light is also important for classroom cleanliness; if a classroom is dark, it is more difficult to see dust and dirt and thus more difficult to clean properly.

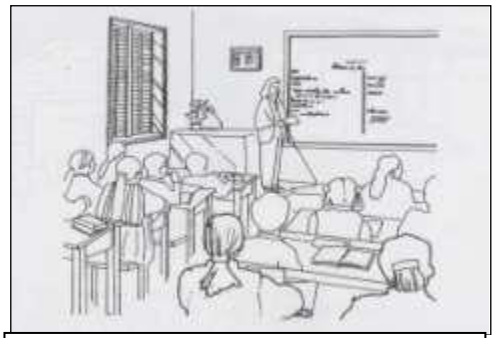
Increased use of daylight helps to reduce electric lighting usage, and avoiding the heat generated by lighting fixtures. High performance windows with low e-glazing also help to minimize heat gain in warmer months and heat loss in colder.

It was noted that in Terai of Nepal, people try to increase ventilation, which may result in a teacher standing against the glare from an open window. In mountain, because of cold, the tendency is to build small window resulting in dark classrooms.

An alternative to large windows is the perforated screen wall. This is a solid masonry wall punctured by numerous closely spaced holes through which light can filter. If the wall is built of bricks the perforation effect can be achieved by simply leaving spaces between the bricks at regular intervals. If it is made of concrete (or earth-cement) blocks, special moulds can be used to produce blocks with decorative holes. Where masonry is not used for construction, or where there do exist large window openings, other kinds of screens can be created, for example using horizontal bamboos.



A perforated window is an alternative to a window opening in warm climates. It provides security and relatively even distribution of light.



A louvered window could provide glare-free light at the front of classroom

The advantages of perforated screen wall are that it provides security and a relatively even distribution of light. The disadvantages are that it does not protect against wind, cold and dust, and classroom (particularly if large) can remain rather dark unless the internal walls are also light colored. Care must be taken to orient the building so that direct sunlight does not penetrate the screen wall, since this will almost certainly lead to glare.

In mountains, where small windows are necessary to reduce heat loss, it makes sense to maximize the light which light that can enter through a small opening. A roof light lets in considerably more light than a window of equal size in a wall. A provision of sky light in CGI roof is found in schools in mountain. This arrangement helps to bring more light into the center of the classroom, which is often poorly served by wall windows. However, care has to be taken to avoid direct sunlight falling onto desks.

It is also important to make the best use of any light once it has entered the room. Untreated mud- and dung plaster on the walls, for instance will make a room relatively dark. The underside of a thatched roof will absorb lot of light. The level of light can be dramatically increased with a light colored ceiling and lime wash on the walls. These can also reduce glare by ensuring that light is reflected from all directions. In addition, adoption of matt-finished blackboard and regular repainting it can be relatively cheap way of mitigating the impact of poor lighting.

5. Renewable Energy Systems

Use of solar and wind technologies with battery storage can provide emergency power supply, or a source of steady power. Renewable energy system in school can increase maintenance requirements, but they also reduce utility costs. Some schools located in hills of Nepal have no electricity. So for the lighting and other purposes like operation of basic science equipment, computer, it is necessary to find alternative means of electricity. Renewable energy could become an important element for meeting school energy demand.

In mountains of Nepal, majority of children don‟t take shower because of unavailability of hot water. Even school with necessary infrastructure and other facilities lacks this facility. Introducing solar technologies for water heating purposes could solve this problem.

6. Ventilation Systems

Adequate school ventilation is important. The poor ventilation in schools can lead to respiratory problems, and easily transmit tuberculosis and other infectious diseases. Constructing schools with a sufficient number of windows may improve ventilation. Alternatively, schools can be constructed using bricks with holes drilled through them ("air-bricks"), which allow fresh air to circulate within the classroom.

Using the whole-building approach, school designers can factor in energy saving choices that reduce heating and cooling loads.

7. School Sanitation

The high incidence of disease, particularly among children is largely attributed to unsafe drinking water, poor personal hygiene practices and unsanitary environment. Each and every school should have adequate safe water supply system and sanitation facility. But majority of rural schools in Nepal neither have proper water supply nor sanitation system, particularly toilets.

General Criteria for Hygienic Facilities and Safe Water Supply in School:

There are many methods that can be used to provide hygienic sanitation facilities and a safe water supply at school. The principles and criteria involved in the selection of appropriate methods stipulate that those chosen should be:

- Technically and environmentally sound
- Financially affordable
- Socially and culturally acceptable
- Reliant on labor and resources available in the community
- Simple to install, operate and maintain
- Easily accessible by the students
- Related to reducing public health problems that are perceived as priorities within the community

	Small Multipurpose hall			Large Multipurpose hall		
Angle	B	H	SL	B	H	SL
5	19.7	1.72	19.78	24.3	2.13	24.39
10	19.7	3.47	19.97	24.3	4.28	24.63
15	19.7	5.26	20.32	24.3	6.49	25.07
20	19.7	7.17	20.97	24.3	8.85	25.86
25	19.7	9.18	21.72	24.3	11.32	26.79
30	19.7	11.37	22.73	24.3	14.02	28.04

8. Drinking Water

A "safe water supply" is a source of water that is not contaminated by dirt, bacteria, parasites, or anything else that could cause contamination.

To promote school health an easily accessible water supply should be available that provides sufficient safe water to meet school needs. School water needs, can be estimated by questioning stakeholders of school about their daily water use. If this is not possible, minimum water need should be calculated. To ensure that the water is potable, either the water supply should be protected or the water should be treated before use. Often, unprotected water sources such as springs, traditional wells and ponds, can be improved and this may be preferable to constructing new supplies. However, unprotected sources are open to contamination and pose a potential health risk. School environmental health program should therefore promote the use of protected drinking water source.

Some countries have set minimum standards for the supply of safe drinking water to pupils. For instance, in Viet Nam, every school is supposed to provide 0.33 liters of boiled water per pupil per day in summer and 0.1 liters in winter.

Characteristics of low-risk water sources

- The water source is fully enclosed or protected (capped) and no surface water can run directly into it.
- People do not step into the water while collecting it.
- Latrines are located as far away as possible (minimum 15 meters away) from the water source and preferably not on higher ground. If there are community concerns about this, expert advice should be sought.

- Solid waste pits, animal excreta and other pollution sources are located as far as possible from the water source.
- There is no stagnant water within 5 meters of the water source.
- If wells are used, the collection buckets are kept clean and off the ground or a hand pump is used.

Among the many types of water sources schools in Nepal are found using the sources like protected springs, dug wells, boreholes, and piped water supply.

8.1 The Available Types of Water Sources in Nepalese Schools

8.1.1 Protected Springs

A spring is where underground water flows to the surface. Springs may occur when the water table meets the ground surface, these are called gravity springs. In some cases, ground water is held under pressure and a spring comes to the surface because of a natural break in the rock, or because a shallow excavation is made. Springs can make very good water supplies provided they are properly protected against contamination. If springs are found above the school, they can feed a pipe system for providing water close to school. When a spring is at the same or lower level than the school, it can still be protected, but greater care is needed and it is unlikely that water will flow through the pipe system by gravity. The first step in deciding whether a spring should be protected is to determine whether it provides enough water for expected number of students. It can easily be done by measuring the time it takes for the spring to fill a bucket of known volume.

8.1.2 Dug Well

Dug wells are usually shallow wells dug by hand, although some may be quite deep, and they are often lined with bricks. However, unless artesian water is tapped, many dug wells go dry or have very little water in dry periods because it is difficult to sink wells below the water table without using more sophisticated techniques.

8.1.3 Boreholes

Boreholes are narrow holes drilled into the ground that tap into groundwater. Generally as the borehole is drilled, a lining of plastic, steel or iron is sunk to protect the hole from collapsing. The lining has slots in the bottom section to allow entry into the borehole and gravel is placed around the bottom of the lining to improve flow and provide filtration. The top few meters around the borehole should be sealed using concrete, and a concrete apron is cast around the top of the borehole to prevent surface water from flowing into the lined shaft. A stand is usually cast into the apron to provide a stable base for the pump. Once the borehole is completed it should be cleaned with chlorine and the pump installed. Majority of the schools in the hill and Terai of Nepal use boreholes with hand-pumps. Boreholes usually provide good quality water, but the water sometimes contains harmful chemicals, such as fluoride and arsenic, or nuisance chemicals such as iron, etc. The school should carry out chemical analysis of water in a regular interval as discussed under the monitoring protocol of this guideline.

8.1.4 Piped Water Supply

Many schools in Nepal have piped water systems. These piped water systems are often small and rely on community management. Most piped water supplies include storage tanks so that water is always available, even when demand is heaviest. Such tanks are usually necessary

because the rate of water use at peak times of the day in school is greater than the average rate of use throughout the day. The tanks also provide emergency storage in the event of a breakdown. Piped system in a school requires regular maintenance.

Pipe leaks likely to be used heavily by student. As a result, the taps are more likely to break and will need frequent replacement. One-way of dealing with these issues is to give someone in the school responsibility for school taps and making repairs. To prevent the accumulation of stagnant water around school taps, school could build a concrete “apron” at the base of taps and include a drain and soakage pit.

Another problem with piped systems is that students do not consider the impact of how much water they use, and may not think it is important to turn off the tap after use. When there is a lot of water, this may not have negative consequences. However, where the amount of water available is limited, there will be shortage of water. Schools with piped water systems should thus be aware of these impacts of their water use and good water use should be promoted.

8.2 Rainwater Harvesting Scheme in Schools

Although rainwater can be a good source of water for drinking and other purposes in school, it may be seasonal, and it is often difficult for a school to rely on rainwater alone. This technology could be used in conjunction with other available sources of water. Schools for their own use could collect rainwater. If the rainwater is to be used for drinking purpose it is better to collect it from a roof, rather than from ground catchments where it may become contaminated. Ground catchments are more appropriate for use in garden and watering of grounds.

Using roofs to collect rainwater is relatively easy and a lot of water can be collected. For example; 50 mm of rainfall on a 4-m^2 roof yields 200 liters of water. All that is required are gutters around the roof that discharge into a collection tank. The roofing material is important and hard surfaces, such as iron sheets or tiles. Hard surfaces are also easier to keep clean and are less likely to have insects and animals living in them.

Any roof used to collect rainwater for human consumption must be thoroughly cleaned at thestart of the rainy period. Birds and animals may leave faeces on the roof and these can be a source of pathogens. There should be a system for diverting the flow of water in gutters away from the tank, so that the first rain (which are more likely to pick up contamination from the roof) are not collected. A small filter may be added to the top of the collection tank as an added protection. The tank should also be cleaned every year and any silt or algal matter removed. After cleaning and before use, the tank should be scrubbed using a chlorine solution (bleach).

Water should be drawn from a tap at the base of the tank, rather than with a bucket, which may contaminate the water. It is better not to bury the collection tank, even partially, since contaminated water from the soil can enter the tank. Covering the tank is also essential for preventing contamination of the water and for reducing opportunities for disease vectors to breed.

8.3 School Water Treatment and Safe Handling of Water

The best option for improving the school water quality is to treat water in the school by filtering, chlorinating, boiling or leaving the water to settle. Individual school could select the options as appropriate. These options are discussed in more detail in following sections.

8.3.1 Boiling

Bringing water to a rolling boil (20 minutes) will destroy pathogens in the water and make it safe to drink.

8.3.2 Candle Filters

Candle filters are hollow, porous ceramic cartridges, commonly found used in schools of Nepal. Although they do not filter out all pathogens, they remove the larger ones such as protozoa, worms, and bacteria (but not viruses). Ceramic candles need careful maintenance and should be cleaned and boiled at least once a week, even if they are not clogged. If a candle filter becomes clogged, it should be scrubbed under running water with a stiff brush free of soap. To reduce the risk that water will pass through a candle without being filtered, such as through small crack, candle filters should be regularly inspected and replaced if necessary.

8.3.3 Chlorination

This will kill most bacteria and some viruses. Since that taste of chlorine disappears when water is left in open containers, very small lump of bleaching powder can be added to a 20-liter water container and the mix left to stand for at least 30 minutes. After this time, if a faint smell of chlorine can be detected in the water, it should be low –risk and palatable to drink. Chlorine should only be added to clear water otherwise the dirt in the water would absorb it. Other disinfections systems have been developed for treating water, particularly through the use of solar radiation. This technology is commonly known as “SODIS” in Nepal.

This is effective in treating water, although this may take longer than chlorine disinfections.
Frequently water collected from a communal point and transported back to school for use becomes contaminated because of poor handling. Stakeholders of school should therefore be aware of the risks of contaminating the water and how it can be prevented.

8.4 Water Conservation

Although it is important that students use enough water for good hygiene, in areas where water is scarce it is also important not to waste water. As mentioned above, piped water supplies are particularly vulnerable to wastage, if they are not properly managed, the surrounding community of school may suffer water shortages. Most piped water systems leak and need to be checked regularly and repaired as soon as faults are discovered. Taps should be turned off immediately after use and students discouraged from playing with taps.

8.5 Sanitation Facilities

Safe disposal of excreta, so that it doesn't contaminate the environment, water, food, or hands is essential for ensuring a healthy school environment and for protecting personal health. This can be accomplished in many ways, some requiring water, others requiring little or none.

Regardless of method, the safe disposal of human faeces in school is one of the principal ways of breaking the faecal-oral disease transmission cycle. Sanitation is therefore a critical barrier to disease transmission.

One reason why latrines are often out of order in Nepalese schools is that they are frequently inappropriately designed for use by children to use. Latrines in Nepalese schools vary in design from communal three to six hole latrines served in schools in Sindhupalchowk, to simple pit latrines. The number of latrines available/observed in schools during the field visit was without

exception insufficient to meet the needs of students, particularly at time of peak usage such as break. The situation contrasts with the standards generally accepted within the health, environment and education sectors, which are shown in box discussed below. The provision of one latrine for approximately thirty pupils is generally recommended, if urinals are also available. This represents one latrine for every twenty girls and one for every forty boys.

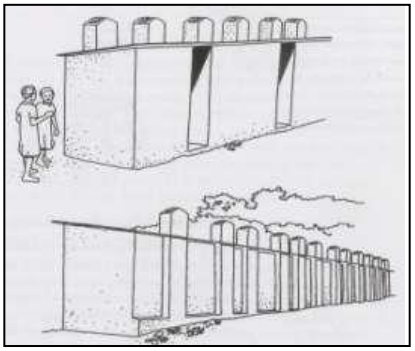
8.6 Drainage

The planning and implementation of proper drainage system is very important. The following guidelines must be considered for drainage designing and in its construction.

- The design should be as simple s possible considering for future development
- Generally, if the drains are not wider than 150X 150 mm, it can be left open but any drain bigger than 150 mm should be covered.
- Drains carrying off surface water can be open or covered
- In both the cases, silt traps at appropriate distances should be provided. However, if there is sudden level difference created by walls or land profiles, two silt traps may be required
- General rule of thumb is to provide silt traps at every 20 meters intervals for easy cleaning.
- All drainage should be self-cleaning and should function at minimum running maintenance costs.
- The main collection drain should always be covered or laid underground.
- Normal roof drains are 150X100 mm at 5% slope. The slope and depth will increase as the roof drain reaches the outlet of the collecting drain.
- Minimum size recommended for the collecting drain is 300 X250 mm and should be covered with concrete slab with perforation to take in surface runoff waters
- The depth of the collecting drain will depend on the locality and distance from the subdrains, such as roof drain, retaining wall drains, etc.
- While collecting and discharging surface waters, it should not cause public nuisance or pose danger to health and property.
- Beside the roof drains, it is an advantage and desirous to construct surface water drains around the school buildings, playgrounds, open spaces etc to prevent flooding during the monsoon.
- It is not advisable to seal off the manhole and inspection chamber with concrete completely if intermediate ventilation is not provided. This will cause cracks of pipes, disintegration of joints etc
- Any drain provided around or within the courtyard must be concealed.

8.7 Technologies for Excreta Disposal in School

The off-set latrine system is economic, easy in design, could be constructed with local available materials and easy to build and maintain for schools.
The choice of technology to be adopted for toilet purely depends on the water availability, budget, soil type etc. This particular type is found very useful to recommend as standard design in Nepal.



This latrine do not require periodic emptying, once a pit is full it is sealed and a new pit is dug. The fecal matter is left to decompose in dry conditions for at least two years, the contents can be safely and the pit reused. These latrines could also be designed to allow fecal matter to compost and be reused in agriculture. Other designs that could be incorporated are two alternating pits, reducing the need for new pits. As shown in design, ventilation is installed to remove odor and flies, basic and locally available materials could be used. Mostly the toilets constructed in Nepal were problem of chocking; students throw carelessly all the solid waste (paper, plastics etc) in toilet resulting in blocking the trap. As per the standard, the number of toilet required for each school will be calculated, and the toilet is proposed in series as shown above. The urinals could be built to reduce the number of toilets required emptied manually.

One main reason for poor maintenance of the school toilets was due to separate toilets for staff and student usages. These arrangements create less emphasis and inadequate monitoring of student's toilet. This was observed even in one of those schools where there was plenty of water available for maintaining the toilet. It is suggested that in order to improve the sanitary condition of toilet and to gain students confidence towards cleanliness, all the stakeholders of school should share toilets.

For a school latrine to function properly it must be maintained and cleaned on a daily basis. Somebody must have specific responsibility for this and compliance must be checked. Groups of school children might do the cleaning in rotation.

Appendix 8

ADB Prohibited Investment Activities List

The following do not qualify for Asian Development Bank financing:

- production or activities involving harmful or exploitative forms of forced labor1 or child labor;2
- production of or trade in any product or activity deemed illegal under host country laws or regulations or international conventions and agreements or subject to international phase outs or bans, such as (a) pharmaceuticals,3 pesticides, and herbicides,4 (b) ozone-depleting substances,5 (c) polychlorinated biphenyls6 and other hazardous chemicals,7 (d) wildlife or wildlife products regulated under the Convention on International Trade in Endangered Species of Wild Fauna and Flora,8 and (e) transboundary trade in waste or waste products;9
- production of or trade in weapons and munitions, including paramilitary materials;
- production of or trade in alcoholic beverages, excluding beer and wine;10
- production of or trade in tobacco;10
- gambling, casinos, and equivalent enterprises;10
- production of or trade in radioactive materials,11 including nuclear reactors and components thereof;
- production of, trade in, or use of unbonded asbestos fibers;12
- commercial logging operations or the purchase of logging equipment for use in primary tropical moist forests or old-growth forests; and
- marine and coastal fishing practices, such as large-scale pelagic drift net fishing and fine mesh net fishing, harmful to vulnerable and protected species in large numbers and damaging to marine biodiversity and habitats.