Environmental Assessment and Review Framework

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Nepal: Irrigation Modernization Enhancement Project

Prepared by the Department of Water Resource and Irrigation, Government of Nepal for the Asian Development Bank (ADB).

CURRENCY EQUIVALENTS

(as of 22 May 2024)

Currency Unit	–	Nepali Rupee (NR)
NR1.00	–	$0.0075
$1.00	=	NRs 133.30

ABBREVIATIONS

ADB	–	Asian Development Bank
CAMO	–	Central Agricultural Development Office
DWRI	–	Department of Water Resources and Irrigation
EA	–	Executing Agency
EARF	–	Environmental Assessment Review Framework
EC	–	Environmental Clearance
EHS	–	Environmental Health and Safety
EIA	–	Environmental Impact Assessment
EMP	–	Environmental Management Plan
ESS	–	Environmental and Social Safeguards
GoN	–	Government of Nepal
GHG	–	Greenhouse Gases
GRM	–	Grievance Redress Mechanism
IA	–	Implementing Agency
IEE	–	Initial Environmental Examination
IMEP	–	Irrigation Modernization Enhancement Project
MEWRI	–	Ministry of Energy, Water Resource and Irrigation
NOC	–	No Objection Certificate
NPHC	–	Nepal Population and Housing Census
PMU	–	Project Management Unit
PCR	–	Physical Cultural Resources
PIU	–	Project Implementation Unit
REA	–	Rapid Environmental Assessment
SEMP	–	Site Environmental Management Plan
SPS	–	Safeguard Policy Statement
WHO	–	World Health Organization
WUA	–	Water Users' Association
WUC	–	Water User Cooperatives

WEIGHTS AND MEASURES

°C	Degree Celsius
km	kilometre
lpcd	Litres per capita per day
m	metre
Mgd	Million gallons per day
Mld	Million Litres per day
mm	millimetre
Nos	Numbers
sq.km	Square Kilometre
dBA	A-weighted decibels
LAeq	Equivalent Continuous Sound Pressure Level
$\mu g/m^3$	Micrograms Per Cubic Meter
KLD	Kilo Liters per Day
LPCD	Litre Per Capita Per Day

NOTES

In this report, "$" refers to United States dollars.

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I. INTRODUCTION

A. Background

1. Since the 1980s, ADB has provided assistance to Nepal via five farmer-managed irrigation system (FMIS) sector projects, totaling 1,190 subprojects (456 small and 734 medium sizes), which irrigate 140,704 hectares. Although the initiatives were considered successful,[1] there are however key issues that need to be addressed to meeting the needs of productivity and climate resilience including; (i) the devolved irrigation and agriculture agencies lack capacities and resources to support the irrigation and agriculture management, issues include slow progress in passing needed legislation, deploying staff, as well as lack of clarity on mandates and responsibilities and coordination among the three tiers of government; (ii) the management performance of the WUA remains weak, with insufficient capacities and resources to meet present needs and future requirement under climate change; (ii) there is a need for a strong nucleus organization at the field level for integrated management of irrigation and agriculture to meet operational requirements including, improved irrigation efficiencies, agriculture productivity and climate resilience; (iii) there is a lack of communications to the dispersed subprojects, effective communication to the to the different sub-project stakeholders is critical to meet long term long term needs of irrigation and agriculture including advisories on weather, climate change, water and agriculture management, crop technologies; (iv) farmers face many challenges including climate change, acute labor shortages, low productivity and lack of access to inputs, marketing constraints, food and nutrition security and lack of dissemination of technologies. The government must support the sector to prepare a national strategy to address the increasing risks and understand climate change to make the systems resilient and self-sustainable.

2. The Irrigation Modernization Enhancement Project (IMEP) is aligned with (i) Nepal's National Water Plan 2002-2027, which aims at increasing water use efficiency to provide year-round irrigation through the modernization of FMIS; [2] and (ii) the Agricultural Development Strategy 2015-2035, which promotes acceleration of agricultural intensification and diversification into high-value crops to achieve Nepal's overarching goal of economic growth and poverty reduction; [3] (iii) The National Water Resources Policy 2021 promotes round-the-year irrigation, lift water to irrigate uplands, and institutional strengthening of concerned stakeholders. The project will support the implementation of the Second Nationally Determined Contribution, particularly to increase access to climate-smart agriculture technologies for smallholder farmers and marginalized groups.[4] The project also aims at reducing rural poverty by (i) empowering women farmers, (ii) ensuring water security and building climate resilience, and (iii) increasing food

[1] ADB. 2020. Completion Report: Community Irrigation Project in Nepal. Manila. Covered small scale FMIS in Lumbini, Karnali and Sudurpaschim Provinces. Whereas the (i) ADB. Nepal: Irrigation Sector Project (1988), (ii) ADB. Nepal: Second Irrigation Sector Project (16 May 1996), (iii) ADB. Nepal: Community-Managed Irrigated Agriculture Sector Project (17 Nov. 2004), and (iv) Nepal: Community-Managed Irrigated Agriculture Sector Project–Additional Financing (10 April 2014) were the four medium scale FMIS supported by ADB, which covered Koshi, Madhesh, Bagmati, Gandaki, Lumbini, Karnali and Sudurpaschim Provinces.

[2] Government of Nepal, Water and Energy Commission Secretariat. 2002. *National Water Plan, 2002-2027*. Kathmandu.

[3] Government of Nepal, Ministry of Agricultural Development. 2015. Agriculture Development Strategy, 2015-

[4] Government of Nepal, Ministry of Forests and Environment. 2021. Vulnerability and Risk Assessment and Identifying Adaptation Options. Summary for Policy Makers. Kathmandu. Government of Nepal. 2020. Second Nationally Determined Contribution. Kathmandu.

security and reducing rural poverty.[5]

3. The project is closely aligned with (i) ADB's Strategy 2030's operational priorities on gender equality, climate resilience, and rural development and food security; (ii) Sustainable Development Goals on economic growth, social inclusion, and environmental protection;[6] and (iii) ADB's Water Sector Directional Guide that aims for poverty reduction, gender equality, climate resilience, food security, and capacity building.[7] The project also aims to (i) empower women farmers, (ii) ensure water security and build climate resilience, and (iii) increase food security and reduce rural poverty.[8]

B. Description of the Project

4. IMEP will be aligned with the following impact: increased national food security. The project will have the following outcome: climate-resilient irrigated agricultural productivity and sustainability enhanced. The project beneficiaries will be small and marginal farmers who will benefit through access to water, knowledge of managing modern and resilient infrastructure, increased yields, and incomes. The project will mainstream FMIS investments into the national financing system to reduce the country's reliance on external donor support.

5. The IMEP has 3 components, namely: (i) Hill Lift Irrigation Project (HLIP), (ii) Farm Managed Irrigation Systems (FMIS), and Rajapur Irrigation Project (RIP).

6. The objective of the piloting of HLIP is to provide reliable irrigation to the agricultural lands located on old river terraces, called Tar in Nepal, by installing the tube well on a river flood plain. The Tar lands have relatively flat and/or mildly rolling topography located along the major rivers, ranging from a few hectares to several hundred hectares in size, and are potentially arable lands with the potential of multiple cropping, but the availability of year-round irrigation is very limited. A total of 12 hill lift systems have been identified as candidates for project financing.

7. The IMEP aims to strengthen existing FMIS by enhancing agricultural production in the Koshi, Madhesh, and Bagmati Provinces. A total of 100 irrigation subprojects are proposed for the rehabilitation covering a total command area of 17,452 ha. of land area. The main infrastructure irrigation facilities are (i) intake construction, (ii) strengthening water distribution canals and other structures, division boxes, drop structures, outlets, and protection structures. Each subproject has been provisioned to support the development of self-sustained and long-term crop intensification and diversification and market support services that are tailored to the local needs. The screening result shortlisted 100 subprojects for preparing a subproject preparation report (SPPR).

8. The scope of work in the RIP mainly includes rehabilitating the existing canal system structures. The main interventions proposed under the subproject includes (i) restoring and strengthening the approach channel to the Budhi Kulo intake; (ii) provision of gates and a scour sluice at the Budhi Kulo intake; (iii) providing additional river protection; (iv) provision of settling

[5] Nepal has built an enabling legal and regulatory framework to spur climate action and its climate change commitments are embedded in a Green, Resilient, and Inclusive Development (GRID) approach. The government issued the Kathmandu Declaration for the GRID Partnership in 2021.

[6] SDG 1.5- build resilience of poor, 2.4- resilient agricultural practice, 5.1- gender equality, 10.2- inclusive development, 12.2- sustainable use of natural resources, 13- combat climate change

[7] ADB.2019. Strategy 2030. Manila and ADB. 2022. Strategy 2030 Water Sector Directional Guide. Manila

[8] Nepal has built an enabling legal and regulatory framework to spur climate action and its climate change commitments are embedded in a Green, Resilient and Inclusive Development (GRID) approach. The government issued the Kathmandu Declaration for the GRID Partnership in 2021.

basins in a sample of branch canals; (v) restoring and strengthening the gabion weirs at the Maila/Manau and Khairi Chandanpur intakes; (vi) limited improvements to the internal irrigation system; (vii) institutional and capacity development to improve irrigation management of the system; and (viii) agricultural support to increase production and diversify cropping.

C. Project Outputs and Activities

9. The project will have the following outcome: increased productivity, sustainability, and profitability of farms. IMEP has three outputs with corresponding activities that contribute to achieving the project objectives.

Table 1: Project Outputs and Activities

Outputs	Activities
Output 1 Irrigation infrastructure modernized	This output will modernize approximately 100 FMIS infrastructure covering a command area of 17,452 ha to improve performance and increase resilience to climate change. Across those irrigation systems, the project will (i) provide permanent gated intake structures, and protect around 1.5km of riverbanks and hill slopes to reduce flood and sediment ingress in the system; (ii) improve irrigation system efficiency, stability, and equitable management of irrigation water through targeted canal lining, improved control structures and provision of cross drainage; (iii) support on-farm irrigation by upgrading minor canals and expanding use of modern pipe and micro irrigation; and (iv) construct 12 hill lift irrigation schemes in the largely unirrigated Tar.
Output 2 Irrigation and agriculture agencies and farmer organizations strengthened	The output will strengthen the management and institutional framework to ensure the project investments meet their targets of irrigation infrastructure modernization, improved water use efficiency, increased productivity, and sustainability. The program will implement an Integrated Crop Water Management (ICWM) approach incorporating climate change; sustainable operation and maintenance (O&M) of the irrigation infrastructure reaching the farm level, crop planning based on farm size and availability of water, empowered farmer organizations, supports the farmers towards establishing agri-enterprises, support in market chain and access to finance. The output will strengthen the capacity of the farmers and the government agencies at federal, provincial and local levels in integrating irrigation management and agriculture development for FMIS. At the farm level, the project will; (i) strengthen capacity of farmers, water users' association (WUA) to better operate and maintain irrigation systems;[9] and (ii) upgrade WUA to water users cooperatives (WUC) in piloting irrigation systems to improve integrated irrigation management and agribusiness functions designed to maximize the opportunities of irrigation investments. The Project will facilitate WUCs in accessing government subsidies provided time to time, rural finance, support for the market chain, facilitate agro-enterprises, and network with private agri-enterprises.[10] The Project will also facilitate WUA/WUC in operating the hill lift irrigation schemes as water utilities introducing metered charging systems and fee collection to help meet full cost recovery for operating costs. The output will update existing ICWM guidelines including design, management and extension support, climate change risks, and develop a road map for the long-term strategy for investment and management of the FMIS schemes in Nepal. The guidelines and parallel training modules will be used to strengthen the capacity of irrigation and agriculture extension workers across Nepal.
Output 3 Modern agriculture and value chain facilities introduced	The project will address core weaknesses in agriculture development including limited uptake of modern agriculture technologies, lack of mechanization, and agriculture facilities. The project will explore upstream and downstream opportunities to promote value addition including demonstration and training in: (i) adopting climate-smart agricultural practices to improve crop yield, quality and

[9] The WUAs will remain as core organization for irrigation system, operation and management in all subprojects,

[10] About twenty WUCs will initially establish at pilot level in 12 hill lift, 3 terai FMIS, 2 hill FMIS and 3 in RIP. Subject to the results of the pilots and farmer interest, the WUC program could be upscaled to other sub-projects.

Outputs	Activities
	production; (ii) adopting advanced agricultural technologies including modern farm machineries and equipment to enhance efficiency, productivity, and address labor shortages; (iii) value addition through agriculture facilities including collection and processing, storage, and buying and selling of inputs and outputs. The Project will establish digital advisory services which through digital apps and mobile phones will provide information on weather, marketing and agriculture advisory services to improve farmers' operational efficiency and decision-making for climate resilient farming and marketing. The project will facilitate accessing financing to selected WUAs/WUCs. They will be selected based on viable and sustainable business models and demonstrate high interest to invest in modern agriculture machineries and agriculture facilities.[11] The project will help WUA/WUC in obtaining agriculture machinery and WUA facility through partial financing following the working directives of Department of Agriculture (federal DOA).

Hill Lift Irrigation Project (HLIP)

10. The HLIP will be implemented across 12 subprojects in four districts, spanning two provinces, Gandaki and Lumbini. These subprojects are strategically located to cover a variety of terrains and command areas (**Figure 1**). HLIP aims to enhance agricultural productivity by providing reliable irrigation to the Tar lands in Nepal. These lands, characterized by relatively flat or mildly rolling topography, are located along major rivers and range in size from a few hectares to several hundred hectares. The primary works under HLIP involve:

(i) Tubewell Drilling: This involves drilling tube wells into river floodplain areas to access groundwater. The exact locations and number of tubewells will depend on the discharge recorded after investigative drilling.

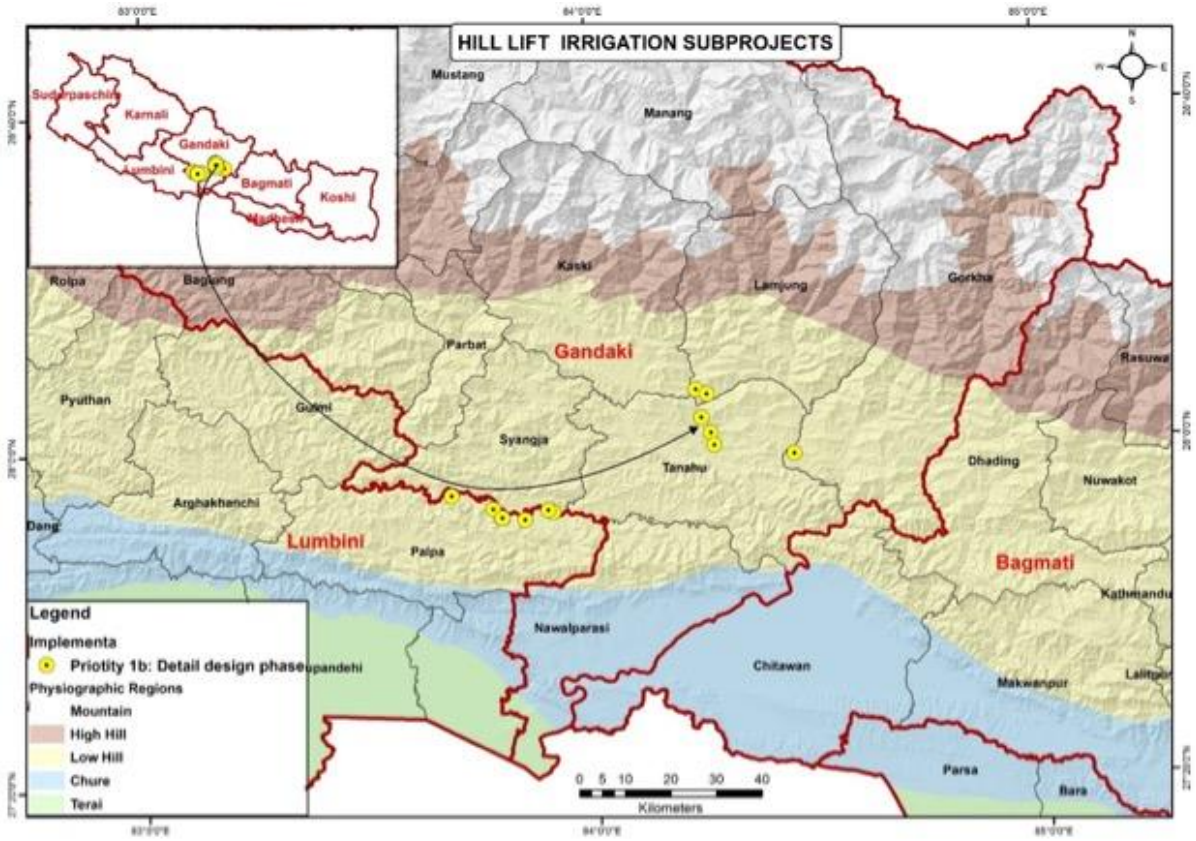
(ii) Pipeline Installation: Pipelines will be laid from the tubewells to storage tanks and from the storage tanks to the farmers' fields. The length of this pipeline network will be reassessed based on each system's service area.

(iii) Storage Tank Construction: Storage tanks will be constructed to hold water pumped from the tubewells. The size of these tanks will be finalized after detailed design and confirmation of the command area.

(iv) Distribution Network: An extensive distribution network will be created to ensure efficient water delivery to the agricultural fields.

[11] The facilitation will be limited to support WUA/WUC in preparing proposal for seeking loan from financial institutions.

Figure 1: Hill Lift Irrigation Subprojects Location in two Provinces under IMEP



Source: Department of Survey, GoN and Detail Feasibility Report 2022

Table 2: Scope of Work under HLIP

Name	Province	District	Rural/Municipality	Ward	CCA (ha)
Baireini	Gandaki	Tanahun	Vyas Municipality	10	49.35
Dumsi	Gandaki	Tanahun	Vyas Municipality	10	102.2
Duipiple	Gandaki	Lamjung	Madhya Nepal	4	124.96
Sirshaghat	Gandaki	Lamjung	Madhya Nepal	4	50.4
Tilakpur	Lumbini	Palpa	Rampur Municipality	6	105.53
Pyakluk	Lumbini	Palpa	Rampur Municipality	6	109.73
Alketar	Lumbini	Palpa	Rampur Municipality	8	157.97
Ramtar-Kumalgaun	Lumbini	Palpa	Rampur Municipality	10	90.55
Majhigaun	Lumbini	Palpa	Rambha Rural Municipality	1	60.93
Chyanglitar	Gandaki	Gorkha	Palungtar Municipality	7	415.0
Kalesti	Gandaki	Tanahun	Byas Municipality	7	135.0
Siko Danda	Lumbini	Palpa	Rampur Municipality	10	14.0
			Total	**83**	**1,415.62**

Farmer Managed Irrigation System (FMIS)

11. The scope of works under FMIS as part of the IMEP primarily focuses on strengthening and rehabilitating existing irrigation infrastructures to enhance agricultural productivity across various provinces. The project encompasses a total of 100 subprojects aimed at improving a command area of 17,452 hectares. The main components of these subprojects include the construction of intake structures, the strengthening of water distribution canals, and the installation of division boxes, drop structures, outlets, and protection structures. Each subproject is tailored to support long-term crop intensification and diversification, along with customized market support services to meet local needs. This strategic approach ensures that the irrigation systems are restored to their optimal function and are sustainable and equipped to meet the current and future demands of the agricultural sectors in the respective regions.

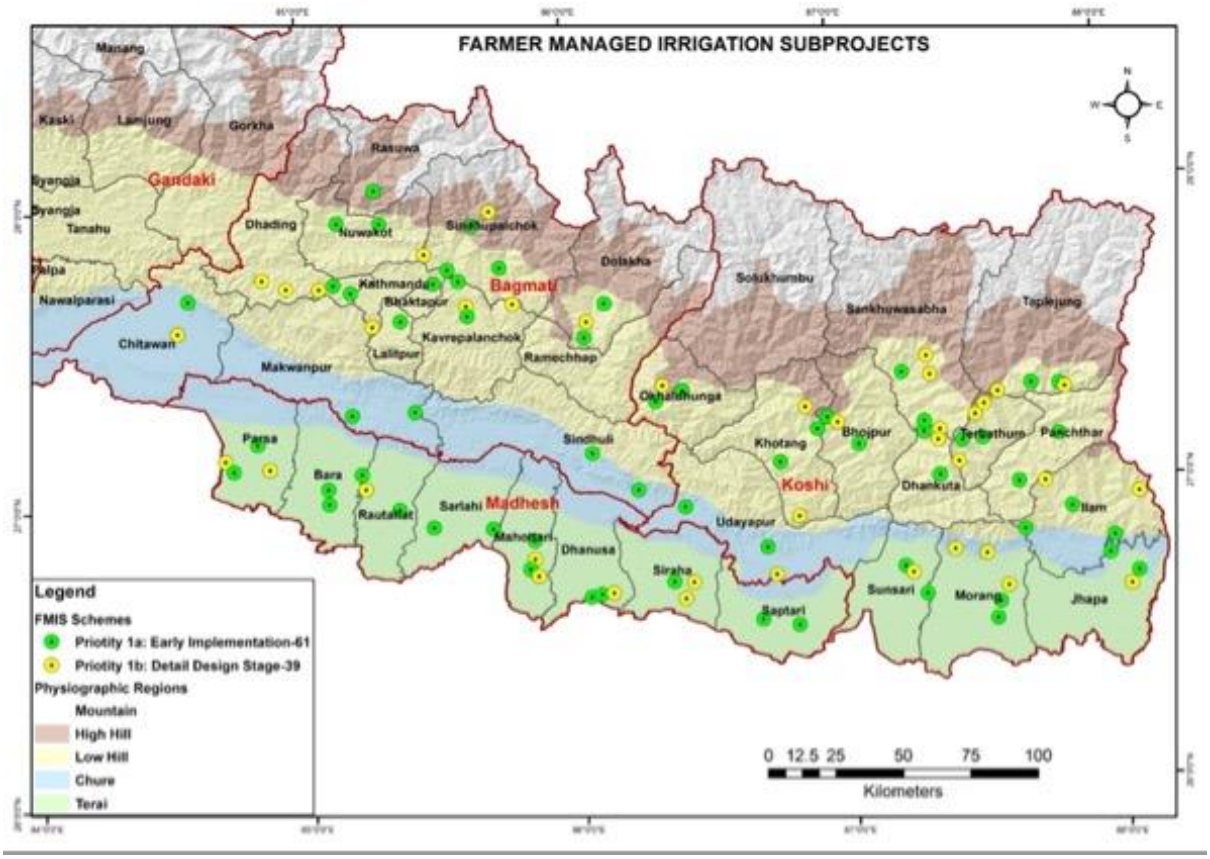
Headworks

12. The construction and management of headwork components in irrigation projects are crucial in ensuring efficient water management, flood control, and erosion protection. The primary objectives include improving intake structures, enhancing flow control, and securing the stability and protection of riverbanks. Specific construction elements involve building headworks with controlled gated head regulators and installing gabion protection for flood management. These headworks are critical for diverting water from sources like rivers into irrigation systems, managing water flow to provide a consistent supply, and preventing overflow. The design and construction of these structures are detailed in project appendices to ensure precise implementation and adherence to safety standards.

Conveyance Facilities and Structures

13. Controlled gated head regulators are essential for managing water flow within the irrigation systems. These regulators, placed at strategic points like the headworks and main canals, allow for the adjustment of water flow according to crop requirements, optimizing water distribution and minimizing waste. Additionally, gabion protection is employed to protect riverbanks and canal sides from erosion by using wire mesh containers filled with rocks or concrete. This method is vital for maintaining the integrity of the irrigation infrastructure, particularly in areas prone to high flow conditions that could otherwise cause significant erosion and damage. Overall, the integrated approach to constructing and managing headwork components ensures the sustainability and efficiency of the irrigation systems, safeguarding agricultural productivity and infrastructure integrity. Table 3 presents a summary of work under the FMIS component.

Figure 2: Farmer Managed Irrigation Subprojects Location in three Provinces under IMEP



Source: Administrative boundary, Survey Department Nepal and Detail Design Report 2023

Table 3. Scope of work under FMIS

S. N	Scope of Work	Quantity	Remark
1	Intake structure (Guide and Afflux Bund, Head / Cross Regulator)	100 nos.	64 side intakes 36 weir structures
2	Lining (running meter)	132,213 m.	Rehabilitation works Canal lining
3	Pipe laying	196,93 m.	
4	Other structures (division box, drop structures)	1772 nos.	Distribution structures
5	Footbridge, VRBs	571 nos.	Community infrastructures
6	Outlets	1143 nos.	Water openings along the canal sections

Source: Compilation from subproject design report 2022-23

Conjunctive Use of Groundwater

14. Under Output 1 during project implementation, the proposed groundwater electrification of pumps in the FMIS and Rajapur involve several key activities to address water shortages, particularly in the Terai region. The program focuses on electrifying existing tubewells by providing grid electricity and replacing diesel pumps with electric ones. This initiative includes expanding

single-phase power lines, electrifying selected farmer wells, demonstrating improved wells with electric submersible pumps, and rehabilitating and electrifying selected deep tube wells, covering a demonstration areas. Additionally, the program will work with farmers and WUCs to demonstrate the potential of conjunctive surface and groundwater management, establishing a strong institutional base for community-based groundwater management. This includes training WUCs in sustainable groundwater abstraction practices, with demonstrations recorded and shared with other irrigation systems in the Terai. Finally, the program provides partial investment subsidies to interested WUAs/WUCs in the Terai FMIS or Rajapur to expand the program, enhancing the overall efficiency and sustainability of groundwater use in agriculture.

Agriculture Facilities

15. Under Output 3 under project implementation, IMEP includes the development of several key agricultural facilities to enhance productivity and value addition. This component will include agriculture collection centers to facilitate efficient aggregation of produce, crop storage chambers to prevent post-harvest losses and maintain quality, and improvement of WUA officer. These facilities aim to streamline agricultural operations, reduce costs, and improve market access for farmers.

D. Purpose of the Environmental Assessment and Review Framework (EARF)

16. The FMIS initiatives are spread across the Koshi, Madhesh, and Bagmati provinces. The prioritization and implementation of these subprojects are based on the readiness and advancement of technical designs, ensuring that interventions are timely and effectively executed. Strategic planning includes the classification of subprojects into different priorities based on their current status and immediate needs, such as those that have completed detailed designs versus those still undergoing design processes. Based on the readiness to complete the subproject preparation report and advanced technical design stage, the shortlisted schemes were further prioritized following stage-wise implementation. Accordingly, out of 100 subprojects in Priority 1a - 61 irrigation sector project (ISP) (i.e., 40 in Hill Area and 21 in Terai Area) and in Priority 1b - 39 ISP (**Figure 2**). Priority 1a subprojects are already done with the detailed designs of the schemes, while the subprojects under Priority 1b are undergoing designs as of project processing.

17. The HLIP comprises several subprojects to enhance irrigation infrastructure and water management in various regions. These sub-projects include Dumsi, Baireni, Duipiple, Sisaghat, Tilakpur, Pyakluk, Ekletar, Ramtar-Kumalgaun, and Majhigaun. Each subproject focuses on utilizing hill lift irrigation systems to improve water accessibility for agricultural purposes, thereby increasing cropping intensity and supporting sustainable agricultural practices. These initiatives are crucial for addressing water scarcity issues and boosting agricultural productivity in the targeted areas. Only Baireini, Duipiple, and Sishagat have finalized their design, while the designs of the other 9 schemes will be further reviewed.

18. This EARF has been prepared for the FMIS and HLIP subprojects to support and provide guidance to the MOEWRI (executing agency) and its implementing agencies (IAs) to screen and categorize the: (i) changes in project design or scope, (ii) the additional of subprojects, or (iii) the replacement of subproject/s, prepare environmental assessments, including environmental management plans, and (iv) monitor their implementation in accordance with the laws of the Government of Nepal and ADB's Safeguard Policy Statement (SPS, 2009).

19. This framework will also serve to provide detailed guidance on the selection of sites for the community conjunctive groundwater program to be developed at selected FMIS in the Terai region and Rajapur. Recognizing the critical need for groundwater in the Terai due to water shortages during the dry season, and in some instances, during the monsoon season, the program will primarily focus on the electrification of tubewells by providing grid electricity and replacing diesel pumps with electric pumps. The scope of the program will include the procurement and installation of electric lines and electric tubewells, covering an area of 1,500 hectares.

20. The EARF will provide guidance on due diligence and environmental assessment to the EA and its implementing agencies for the enhancement of agricultural facilities under Output 3. This component of the project will support value addition through the enhancement of agricultural facilities, including but not limited to crop collection centers, storage facilities or chambers, and office infrastructures.

21. This document is divided into several chapters:

- Chapter 1: Introduction
- Chapter 2: Assessment of Legal Framework and Institutional Capacity
- Chapter 3: Anticipated Environmental Impacts
- Chapter 4: Environmental Assessment for Subprojects
- Chapter 5: Consultation, Information Disclosure, and Grievance Redress Mechanism
- Chapter 6: Institutional Arrangement and Responsibilities
- Chapter 7: Monitoring and Reporting

II. ASSESSMENT OF LEGAL FRAMEWORK AND INSTITUTIONAL CAPACITY

A. National and State Laws of Nepal

22. Most of the national policies and laws of the government of Nepal (GoN) are oriented towards achieving environmentally sound economic development and growth and the conservation of natural resources and cultural heritage of the country. Summaries of the relevant policies, acts, regulations, and guidelines are shown below.

23. **The Constitution of Nepal, 2015.** This is the fundamental law of the country, and the sections pertaining to environmental protections are as follows:

24. **Article 30(1)** of the Constitution guarantees a "clean environment'' as a fundamental right and elaborates that "every citizen shall have the right to live in a clean and healthy environment."

25. **Article 30 (3)** encourages the state to formulate necessary legal frameworks to balance environment and development.

26. Nepal has enacted comprehensive environmental policies and laws that cover a broad range of environmental and sector issues. The Environmental Protection Act (EPA) of 2019 and the Environmental Protection Regulations (EPR) of 2020 are two important legal frameworks for environmental protection. According to the EPA and EPR, all development projects should first be screened using criteria that are based on the scale of the project stipulated in Schedules 1, 2, and 3 of EPR to determine the level of environmental assessment required. Projects that could result in some environmental impacts are required to conduct brief environmental study (BES) BES, projects having moderate environmental impacts are required with initial environmental examination (IEE), and large projects that could result in major and adverse environmental impacts are required to go undergo an environmental impact assessment (EIA) process. The EPA makes necessary arrangements to disclose EIA reports to the general public to render opinions and suggestions.

27. **Environment Protection Act 2019 (2076 BS).** The act emphasizes new aspects like provisions of BES, IEE, and EIA under the jurisdiction of local authority, provincial government, and central government. This act is a pre-requirement for any development project in the country to comply with the environmental safeguards. Article 2 (3) 1 of this act provides environmental assessment. This clearly mentions that the environmental assessment is a prerequisite before the implementation of any project. The detail of the criteria is indicated in Environment Protection Rules 2020.

28. **Environment Protection Rules 2020 (2077 BS).** This rule has defined thresholds and equivalent environmental assessments (i.e., BES, IEE, and EIA). The proposed FMIS rehabilitation works are limited to the existing canal systems. There are no construction of new head works and changes in the main canal systems but limited to strengthening the existing canal structures. Thus, as per EPR 2020, the project component scope does not trigger BES/IEE/EIA. However, the schemes under HLIP may require IEE because these meet the threshold of 100 ha. irrigation area and all the proposed schemes are new.

29. The overall irrigation projects have the following requirements for environmental assessment as per EPR 2020, listed in **Table 4.** For the HLIP, the environmental assessment requirements are presented in **Table 5.**

Table 4. Irrigation Projects Requiring Environment Assessment as per GoN-EPR, 2020

Schedule 1- BES	Schedule 2- IEE	Schedule 3 - EIA
Water Resources Sector:		
Construction of up to 100-hectare irrigation area of lift irrigation project	*Irrigation with the new system* a) Irrigation of 200 to 2000-hectare area in Terai and inner Terai region (b) Construction of more than 100-hectare irrigation area of lift irrigation project *Rehabilitation of the Irrigation system* a) Construction of new headworks or operation of rehabilitation project with the change in the main canal • Water Resource Development Work with the resettlement of 25 to 100 population	*Irrigation with the new system* a) Irrigation of more than 2000-hectare area in Terai and inner Terai region • Water Resource Development Work with the resettlement of more than 100 population • Construction of Multipurpose water dam • Transfer of water from one water source to another (inter-basin water transfer) for the utilization

Source: Environment Protection Rules 2020

Table 5. Indicative Environmental Assessment Requirement for the HLIP per EPR, 2020

S.N.	Name of Subprojects	Command Area (ha.)	River Basin	Applicable Schedules	Likely Environmental Assessment Requirement
1.	Tilakpur	105.53	Kali Gandaki	A per-schedule construction of a new hill irrigation project of more than 100 ha.	IEE for Tilakpur, Pyakluk and Alketar BES for Ramtar-Kumalgaun, Majhigaun and Siko Danda
2.	Pyakluk	109.73			
3.	Alketar	157.97			
4.	Ramtar-Kumalgaun	90.55			
5.	Majhigaun	60.93			
6.	Siko Danda	14			
		538.71			
7.	Baireini	49.35	Madi	Construction of a new hill irrigation project of more than 100 ha.	IEE for Dumsi, Duipiple and Kalesti BES for Bbaireini and Sirshaghat
8.	Dumsi	102.2			
9.	Duipiple	124.96			
10.	Sirshaghat	50.4			
11.	Kalesti	135			
		461.91			
12.	Chyanglitar	415	Marshyangdi	Construction of a new hill irrigation project of more than 100 ha.	IEE

30. Other relevant government laws and regulations. Government environmental acts, rules, policies, and regulations will govern the implementation of project components proposed under the project. The contractors for FMIS will need to comply with all the government laws and regulations stated in **Table 6** below.

Table 6. Relevant Government Laws and Regulations

S.N.	Policies, Acts, Regulations, Guidelines	Relevant Provisions	Remarks
1	**Fifteenth Five Years Plan, 2020−2024, Nepal**	• 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 to minimizing the impacts of climate change and protecting the environment. It aims to minimize the adverse impacts of disasters on people, property, culture, environment, and economy. • The policy aims to integrate disaster risk management in all development activities in order to reduce the loss of people and property.	Applicable to all components
2	**Forest Act 2076 (2019)**	• Pertaining to Chapter 12, Section 42(1), if there is no other alternative to the use of forest area for the operation of a national priority project, a plan of which the Investment Board approves investment, project of national pride and it appears from the environment examination referred to in the prevailing law that the operation of such plan does not result in significant adverse effects on the environment, the Government of Nepal may give approval, as prescribed, to use any part of the national forest for the purpose of operating such plan, • Similarly, in providing the forest area for the operation of a plan pursuant to sub-section (1), to the extent possible, a land that is adjoining to the national forest area near the project site and situated in the same geographical and ecological belt and has such landscape where forest can be developed shall be provided for the purpose of planting trees at least in the area equal to the forest area that has to be used.	Applicable to certain components of the HLIP, mainly the storage tank that is implemented in forest areas.
3	**Forest Regulations, 2079 (2022)**	• Pertaining to Rule 87 (2), in case of a development project related to the use of forest land, coordination with the concerned division forest office during the feasibility study and environmental study must be done. • Rule 88, Application needs to be submitted in case of use of national forest land from the feasibility study, and application needs to be submitted to the Ministry of Forests and Environment through the subjective ministry • Rule 89: Following Rule 88, the Ministry of Forests and Environment directs the Division Forest Office through its respective department for detailed field information, which should also be submitted to the provincial ministry. • Under Rule 90, following Rule 89, the Division Forest Office should submit the information with field monitoring (if necessary) to the Ministry of Forests and Environment. If the applicable information and letters are received,	Applicable to components of the HLIP, mainly the storage tank that is implemented in forest areas.

S.N.	Policies, Acts, Regulations, Guidelines	Relevant Provisions	Remarks
		the ministry will ensure the use of forest land and give permission to the respective project by binding the rules stated in the Forest Regulations. • Rule 91, following Rule 90, after the decision made by the government of Nepal for the permission to use the forest land, the development project should make the availability of the applicable land for the forest development as per the Forest Act (2076), Section 42 (2). • Under Rule 92, following Rule 91, if the applicable land is not available, it must be sought through the Land Acquisition Facilitation Committee at the district level. • Rule 93, following Rule 92, states that in case the land acquisition through the Committee fails, the respective department should give permission to the project to Collect amounts in the government fund as per the land purchases for the development project specified in Shedule-51. • Rule 93 (5), the compensation for the loss of 1 tree loss should be made with the plantation of 10 trees with the amount based on the cost of the trees in the ratio of 1:10, and Rule 93 (5), the amount must include bi-annual production or purchase of trees, trees transportation, afforestation of 1600 trees per hectare, fencing, and boundary for the protection of trees and require a number of people for look after.	
4	**Conservation Area Government Management Area Rules 2001**	• Contains a number of regulatory measures to minimize environmental impacts within the forests, national parks, wildlife reserves, and conservation areas. Prior to implementation, the EPA 2076 B.S. (2019 AD) requires a proponent to undertake BES, IEE, or EIA for a proposed project and have the report approved by the concerned ministries. The introduction of the exotic species on the specific location may require an IEE before the implementation of the project as per the EPR, 2020 Appendixes 1, 2, and 3 Rule 3 a, b, and c.	Applicable to the components that are to be implemented within the national or community forest areas.
5	**Water Resource Act, 1992**	• The Water Resource Act, 1992 of clauses 3, 7, 18, 20, 22, and 24 implies state ownership of any surface/stream bodies of Nepal and stresses the utilization of water resources by any individual or organization without causing harm to others. It embodies that the Government of Nepal can fix, monitor, and formulate regulations pertaining to water quality standards, pollution tolerance levels, and the development of water resources. It prohibits any action that may pollute water resources surpassing the threshold value. It has prioritized the use of water resources in successive order: drinking/domestic use,	This applies to the components: construction may lead to pollution of water bodies; an abstraction of water from any water body will require a grant of use of water resources.

S.N.	Policies, Acts, Regulations, Guidelines	Relevant Provisions	Remarks
		irrigation, fishery, electricity, water transport, and recreation. It urges that resources be utilized without causing any considerable damage to the environment, such as soil erosion, floods, and other similar natural hazards. The Act fails to address the mandatory license for water extraction, even from the land owner.	
6	**Water Resource Regulation, 1993**	• The Water Resources Act was published in the Nepal Gazette on (2050/5/1). Persons who are interested in using water resources on an institutionalized basis may form a consumer association consisting of at least Seven persons as officials and members. There shall be a Water Resources Committee in each District for the purpose of issuing licenses pursuant to Sub-section (1) of Section 8 of the Act for the utilization of Water Resources contained within Nepal. Government of Nepal may, giving due consideration for the types, structure, capacity of the project relating to utilization of wat16 of the Act, prohibit from use of the house or land situated within the area of the project specifying the fixed distance for the site for a specified worker resources for the purpose of Sub-section (3)	This is applicable to the components; the abstraction of water from any water body will require a grant of use of water resources.
7	**Irrigation Rules, 2000 (Amendment in 2060)**	• Irrigation Rules, 2000 Chapter 2 provides the formation of the user's association in a format as prescribed in Schedule –1 and the procedure for transferring the project. Under Rule 12, the Users' association may plant trees on the side or right of way of a Canal, Branch or Secondary Canal, Minor or Tertiary Canal, Water course, or Field Channel after the approval of the community forest work - plan according to the prevailing Forest Act and Rules from the concerned Forest Office. In the course of determining the place for the plantation, coordination shall be made with the concerned Irrigation Office. Until the work plan pursuant to Sub-rule (1) is approved, the Users' Association may sell the rotten or fallen trees lying on the side of the Canal, Branch or Secondary Canal, Minor or Tertiary Canal, Water course or Field Channel, and the trees which need pruning may be pruned upon the approval of the committee. • Similarly, under Chapter 6, an irrigation project shall be constituted to implement the large-scale irrigation project as designated by the GoN. It also deals with the function, duties, and power of the designated project committee, staff, and the establishment of the Project Unit Office.	Applicable to all subprojects; water user associations are responsible in the water management and coordination with district irrigation offices. Tree clearances need if the components will be constructed in the forest areas.
8	**Irrigation Policy (2013)**	• The Irrigation Policy document sets out the rationale for subsector development and policy objectives and approaches for project development, water user associations,	Applicable to all components

S.N.	Policies, Acts, Regulations, Guidelines	Relevant Provisions	Remarks
		irrigation service charges, and irrigation system operation and maintenance	
9	**Soil and Watershed Conservation Act, 2039 BS**	• To properly manage the watersheds of Nepal, the Soil and Watershed Conservation Act 1982 was enacted. Section 3 of the Act empowers GoN to declare any area as a protected watershed area. Section 4 of the Act provides that a watershed conservation officer has the authority to implement the following works in protected watershed areas: • Construct and maintain dam, embankment, terrace improvements, diversion channels and retaining walls, • Protect vegetation in landslide-prone areas undertake afforestation programs, and • Regulate agricultural practices pertinent to soil and watershed conservation. • Under Section 10 of the Act, power is extended to the Watershed Conservation Officer to grant permission to construct dams, drainage ditches, and canals, cut privately owned trees, excavate sand, boulders, and soil, discharge solid waste, and establish industry or residential areas within any protected watershed. The Act outlines the essential parameters necessary for proper watershed management (including rivers and lakes). The Act is applicable to protected watersheds.	Applicable to all components
10	**Soil and Watershed Conservation Regulations, 2042 BS**	• Under the powers conferred by Section 25 of the Soil and Watershed Conservation Act 1982, the Government of Nepal has framed Soil and Watershed Conservation Regulations, 2042 BS. Pursuant to sub-rule (1) of rule 10 natural calamity clause (a), (b), (c), (d), (e), (f), (g) of section 10 of the Act and (h) if anyone has to do the work mentioned in the reason to do so. An application has to be submitted to the Watershed Conservation Officer in the format of open schedule 4 (2). After receiving the application as per sub-rule (1), the watershed protection officer, in case of any action contrary to the purpose of the Act, in the format of Schedule 5 as per schedule. will allow.	Applicable to all components. Most of the components are rehabilitation type, and the proposed protection and canal management works will enhance the watershed protection
11	**Water Induced Disaster Management Policy 2015 (2072)**	• The latest policy of the Government of Nepal recognizes climate change as one of the main causes of water-induced disasters in Nepal. • This policy is introduced to achieve the objectives of the National Water Resources Strategy and National Water Plan on water-induced disaster management through the participation and coordination of public, cooperative, and private sector institutions. It encourages people to contribute land to flood protection works on a voluntary basis. • It has the main objective of making the infrastructures sustainable and has a policy involving communities, cooperatives, and the	Applicable to all components

S.N.	Policies, Acts, Regulations, Guidelines	Relevant Provisions	Remarks
		private sector. It stresses the need for medium and long-term disaster prevention and control programs and makes them climate-resilient and environment-friendly.	
12	**Labor Act, 2074 (2017 AD)**	• This labor Act was made under the management of parliament under sub-clause 1 of clause 296 of the Constitution of Nepal. Sub-section 3 of Section 2 states that the employees should not be compelled to do work other than what they are assigned. In addition, Sub-section 5 of Section 2 states the prohibition of child labor in any organization, and Sub-section 6 of Section 2 states that there should not be any discrimination among the employees regarding religion, ethnicity, gender, origin, language or intelligence, or another kind of character.	Applicable to all components
13	**Child Labor (Prohibition and Regulation) Act, 2056 (2000 AD)**	• As per section 3 of this act, no child having not attained the age of 14 years shall be engaged in works as a laborer.	Applicable to all components
14	**Solid Waste Management Act, 2068 (2011 AD)**	• This act has been formulated with the goal of minimizing solid waste production from the target area by setting rules and regulations on solid waste management (SWM) in the country in order to develop a better environment for the systematic and effective management of solid waste and to involve all the concern stakeholders in SWM practice. The main feature of this act is a discussion of the 3R principle (Reduce, Reuse, and Recycle). The 3R principle seems to be very beneficial as it not only increases the life of landfill sites but also saves money, which could be used for other infrastructure development. Section 4 of the act assigns the local body to manage or use the solid waste discharged or dumped in a collection center, transfer station, or treatment plant or collected during cleaning.	Applicable to all components
15	**Local Self Governance Act (1999AD)**	• This Act gives Local Government the functions, duties, and power to, among others; (i) conserve and protect their local environment and natural resources; (ii) plan, implement, and/or operate and maintain local water supply projects; (iii) implement and/or arrange for implementation local sanitation/sewerage and drainage projects; (iv) protect cultural heritage and religious sites and/or (v) monitor project activities within their jurisdictions.	The act empowers municipalities to take up works related to the protection and conservation of cultural heritage and religious sites

B. International Environmental Agreements

31. Table 7 below presents a list of international environmental agreements that Nepal is party to, including its relevance to the IMEP.

Table 7. International Environmental Agreements and Standards ratified by GoN

International Convention	Year*	Relevant Provisions	Remarks
World Heritage Convention	1978	Parties to ensure the protection and conservation of the cultural and natural heritage situated on the territory of, and primarily belonging to the State. World Heritage sites are identified as per this convention.	The project components will not impact physical cultural resources and natural heritage during project implementation and operation.
Convention on Wetlands of International Importance, Especially as Waterfowl Habitat (Ramsar Convention)	1987	Parties should conserve and wisely use wetlands (i.e., maintain their ecological character) as a contribution to achieving sustainable development locally and worldwide. This convention will identify the Ramsar areas.	The project components are not located in wetlands, which are classified as Ramsar sites.
Convention on Biodiversity (CBD)	1992	Parties require the environmental assessment of projects that are likely to have significant adverse effects on biological diversity with a view to avoiding or minimizing such effects. The CBD also identified the biodiversity identified the hot spot areas.	The project will not impact the country's biodiversity hot spot areas. The project component's scope is the rehabilitation of the existing canal structures.
UN Framework Convention on Climate Change	1992	Parties to take precautionary measures to anticipate, prevent, or minimize the causes of climate change and mitigate its adverse effects.	The project will help the Government of Nepal comply with this agreement. The project will ensure the implementation of farmers' resilience to climate change.
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal	1996	Parties to, among others, minimize the amount and 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 will ensure the implementation of its EMP as a measure to avoid or minimize the generation and disposal of any hazardous wastes.

**(Year) - Year last amended.*

C. Applicable Environmental Standards

32. **National Ambient Air Quality Standards for Nepal, 2003**. As shown in the table below, the air quality standards for Nepal have set standards for 7 parameters: total suspended particles (TSP), PM10, Sulphur Dioxide (SO_2), Nitrogen Oxide (NO_2), Carbon Monoxide (CO), Lead (Pb) and Benzene.

33. **The World Health Organization (WHO) Air Quality Guidelines 2021.** The WHO guideline has set quality standards for four parameters: PM10, PM2.5, SO_2, and NO_2. According to ADB SPS 2009, when host country regulations differ from international levels and measures, the project will achieve whichever is more stringent. Both policies provide guidelines and comply with the more stringent standards during the construction period.

Table 8. Standards for Ambient Air Quality for both GoN and WHO

Parameter	Averaging Period	Nepal's Ambient Air Quality Standard (µg.m^3) *	WHO Air Quality Guidelines (µg.m^3)	
			Global Update 2005**	Second Edition^ 2021
TSP	Annual	-	-	-
	24-hour	230	-	-
PM_{10}	Annual	-	20	15
	24-hour	120	50	45
$PM_{2.5}$	1-year	-	10	5
	24-hour	-	25	15
SO_2	Annual	50	-	-
	24-hour	70	20	40
	10-minutes	-	500	-
No_2	1-year	40	40	10
	24-hour	80	-	25
	1-hour	-	200	-
CO	8-hour	10,000	-	4 (24-hr)
	15-minutes	100,000	-	-
Pb	1-year	0.5	-	-
Benzene	1-year	20	-	-

*Source: *National Ambient Air Quality Standard for Nepal, 2003. Obtained from Environment Statistics of Nepal, 2011, National Planning Commission Secretariat, Central Bureau of Statistics, Nepal.*

** WHO Air quality guidelines for particulate matter, ozone, nitrogen dioxide, and sulfur dioxide. *Global update 2005*. WHO. 2006.

^ Global Air Quality Guidelines. WHO 2021.

34. **Emission Standard for diesel generator EPR-14, 2020.** The emissions standards are set for new diesel generators. (DGs) imports is equivalent to Bharat Stage III standards, and for in-use DGs is equivalent to Bharat S Inventories and Black Carbon Emissions in Kathmandu Valley, Nepal. Emissions standards are set for 4 major pollutants: CO, HC, NOx, and PM.

35. **National Noise Standard Guidelines, 2012.** The guidelines set standards for noise levels, measured in dBA, in industrial, commercial, rural, urban, mixed, residential, and quiet areas. They also provide standard values for the noise level generated by water pumps and DG.

36. For international standards, the WHO Noise Level Guidelines have set the noise levels measured in dBA for two areas: residential and commercial. The project will achieve whichever is more stringent. Both policies provide guidelines to follow and comply with the more stringent standards during construction.

Table 9. Standards for noise levels for both GoN and WHO

Receptor/Source	National Noise Standard Guideline 2012 (dBA)		WHO Guidelines Values for Noise Levels Measured Out of Doors*(One Hour LA_q in dBA	
	Day	Night	07:00-22:00	22:00-07:00
Industrial Area	75	70	70	70
Commercial Area	65	55		
Rural Settlement Area	45	40	55	45
Urban Residential Area	55	50		
Mixed Residential Area	63	55		
Quiet Area	50	40	-	-
Water Pump	65		-	
Diesel Generator	90		-	

**Guidelines for Community Noise, WHO, 1999*

37. **Nepal Water Quality Guidelines for Irrigation Water, 2008.** The guidelines have set the standards for irrigation water, with the targeted quality range for the different parameters (**Table 10**). The guideline also shows the acceptable concentration limits for the plant species.

Table 10. Nepal Water Quality Guidelines for Irrigation Water

S.N.	Parameter Name	Target Water Quality Range	Remarks
Microbiological constituents:			
1	Coliforms (fecal)	< 1 count /100 ml	1 – 1000 count / 100 ml could be used for plants for which edible parts are not wetted
Physical Constituents:			
1	pH	6.5 – 8.5	Adverse effects on plants outside this range
2	Suspended Solids	< 50 mg/L	Above the limit problem with sedimentation and irrigation system
3	Electrical Conductivity	< 40 mS/m	Up to 540 mS/m depending upon the sensitivity of crops
Chemical Constituents:			
1	Aluminum	< 5 mg/L	Up to 20 mg/L max. acceptable conc.
2	Arsenic	< 0.1 mg/L	> 2 mg/l creates a severe problem
3	Beryllium	< 0.1 mg/L	0.1 – 0.5 mg/L max. acceptable conc.
4	Boron	< 0.5 mg/L	Up to 15 mg/L depending upon species.
5	Cadmium	< 0.01 mg/L	0.01 – 0.05 mg/L max. acceptable conc.
6	Chloride	< 100 mg/L	Up to 700 mg/L depending upon species
7	Chromium	< 0.1 mg/L	Up to 1.0 mg/L max. acceptable conc.
8	Cobalt	< 0.05 mg/L	Up to 5.0 mg/L max. acceptable conc.
9	Copper	< 0.2 mg/L	Up to 5.0 mg/L max. acceptable conc.
10	Fluoride	< 2.0 mg/L	Up to 15 mg/L max. acceptable conc.
11	Iron	< 5.0 mg/L (non-toxic)	> 1.5 mg/L creates problem in drip irrigation system
12	Lead	< 0.2 mg/L	Up to 2.0 mg/L max. acceptable conc.
13	Lithium	< 2.5 mg/L	For citrus < 0.75 mg/l
14	Manganese	< 0.02 mg/L	Up to 10 mg/L max. acceptable conc.
15	Molybdenum	< 0.01 mg/L	Up to 10 mg/L max. acceptable conc.
16	Nickel	< 0.2 mg/L	Up to 2.0 mg/L max. acceptable conc.
17	Nitrogen (inorganic)	< 5 mg/L	Higher concentrations may affect sensitive plants and may contaminate groundwater
18	Selenium	< 0.02 mg/L	Up to 0.05 mg/L max. acceptable conc.
19	Sodium Adsorption Ratio (SAR)	< 2.0	Up to 10 depending upon the sensitivity of crops.
20	Sodium	< 70 mg/L	Up to 460, depending upon the sensitivity of crops
21	Total Dissolved Solids (as EC)	< 40 mS/m	Up to 540 mS/m depending upon the sensitivity of crops
22	Uranium	< 0.01 mg/L	Up to 0.1 mg/L max. acceptable conc.
23	Vanadium	< 0.1 mg/L	Up to 1.0 mg/L max. acceptable conc.
24	Zinc	< 1.0 mg/L	Up to 5 mg/L max. acceptable conc.

Source: Nepal Water Quality Guidelines for Irrigation, DWRI (Nepal Gazette (Number 10.16 June 2008)

D. ADB's Safeguard Policy Statement 2009

38. **Objectives.** The ADB Safeguard Policy Statement (SPS, 2009) is the key ADB policy that guides environmental standards. Its main objective is to "ensure the environmental soundness and sustainability of projects and to support the integration of environmental considerations into the project decision-making process." The ADB SPS 2009 defines the requirements to be followed with regard to project screening and classification, information disclosure, consultation and participation, monitoring and reporting, and grievance redress mechanisms.

39. ADB requires the consideration of environmental issues in all aspects of ADB's operations, and the requirements for environmental assessment are described in ADB SPS, 2009. This states that ADB requires an environmental assessment of all ADB investments. The requirements for ADB SPS 2009 are discussed below.

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

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

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

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

(iv) **Category FI.** A proposed project is classified as category 'FI' if it involves an investment of ADB funds to or through a Financial Intermediary (FI). An Environmental and Social Management System (ESMS) is required

41. **Environmental Management Plan (EMP):** An EMP addressing the potential impacts and risks identified by the environmental assessment shall be prepared. The level of detail and complexity of the EMP and the priority of the identified measures and actions will be commensurate with the project's impact and risks.

42. **Grievance Redress Mechanism (GRM).** Establish a grievance redress mechanism (GRM) to receive and facilitate the resolution of the affected person's concerns and grievances regarding the project's environmental performance.

43. **Information Disclosure:** Information about environmental safeguard issues and concerns is to be made available in a culturally appropriate and timely manner, in a form and language(s) understandable to project-affected people and other stakeholders. This is to provide the public with opportunities to give meaningful input into the project design and implementation. Suitable communication methods are to be used for illiterate people.

44. **Consultation and Participation**. Carry out meaningful consultation with affected people and facilitate their informed participation. Ensure women's participation in consultation. Involve stakeholders, including affected people and concerned nongovernment organizations, early in the project preparation process and ensure that decision-makers make their views and concerns known to and understood and considered. Continue consultations with stakeholders throughout project implementation as necessary to address issues related to environmental assessment.

Establish a grievance redress mechanism to receive and facilitate resolution of the affected people's concerns and grievances regarding the project's environmental performance. Meaningful consultation is a process that:

(i) begins early in the project preparation stage and is carried out on an ongoing basis throughout the project cycle;

(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 incorporating all relevant views of affected people and other stakeholders into decision-making, such as project design, mitigation measures, sharing development benefits and opportunities, and implementation issues.

45. **Monitoring and Reporting**. Procedures are to be established and followed to monitor the implementation of environmental management plans, verify compliance with safeguard measures and progress toward intended safeguard outcomes, and prepare and disclose periodic environmental monitoring reports.

46. **Grievance Redress Mechanisms (GRM)**. Projects are to develop and maintain a GRM to resolve and facilitate the resolution of affected peoples' concerns and grievances on environmental and social performance. The GRM is to address concerns and complaints promptly, using understandable and transparent processes that are gender-responsive, culturally appropriate, readily accessible to all segments of the affected people, and that do not impede access to the national judicial or administrative remedies.

47. **Unanticipated Environmental Impacts**. Where unanticipated environmental impacts become apparent during project implementation, the environmental assessment and EMP will be updated by the Central Project Management Office (CPMO) as one of the Project Management Unit (PMU) will prepare a new environmental assessment and EMP to assess the potential impacts, evaluate the alternatives, and outline mitigation measures and resources to address those impacts.

48. **Biodiversity Protection and Natural Resources Management.** The CPMO and implementing agencies will assess the significance of project impacts and risks on biodiversity and natural resources as an integral part of the environmental assessment process. The assessment will focus on the major threats to biodiversity, which include the destruction of habitat and the introduction of invasive alien species, and the use of natural resources in an unsustainable manner. The CPMO and implementing agencies will identify measures to avoid, minimize, or mitigate potential adverse impacts and risks and, as a last resort, propose compensatory measures, such as biodiversity offsets, to achieve no net loss or a net gain for the affected biodiversity.

49. **Occupational Health and Safety.** The project will take steps to prevent accidents, injury, and disease arising from, associated with, or occurring during the course of work, including (i) identifying and minimizing the causes of potential hazards to workers, (ii) providing preventive

and protective measures; (iii) providing appropriate equipment to minimize risks and requiring and enforcing its use; (iv) training workers and providing them with appropriate incentives; (v) documenting and reporting occupational accidents, diseases, and incidents; and (vi) having emergency prevention, preparedness, and response arrangements in place.

50. **Community Health and Safety**. ADB SPS 2009 requires identification and assessment of risks to, and potential impacts on, the safety of affected communities during the design, construction, operation, and decommissioning and shall establish preventive measures and plans to address them in a manner commensurate with the identified risks and impacts. Ensure to apply (i) preventive and protective measures for both occupational and community health and safety consistent with international good practice, as reflected in internationally recognized standards such as the World Bank Group's Environmental, Health, and Safety Guidelines, and (ii) necessary protocols in response to infectious diseases such as the coronavirus disease (COVID-19) consistent with the guidelines of relevant government healthcare agencies and the World Health Organization.

51. **Pollution prevention and abatement**. ADB SPS requires the CPMO and its implementing agencies to apply pollution prevention and control techniques and practices consistent with international good practice as reflected in internationally recognized standards such as the World Bank Group's (i) General Environmental, Health, and Safety (EHS) Guidelines[12]; (ii) Waste Management, and others as may be applicable. These standards contain performance levels and measures that are normally acceptable and applicable to projects. When the Government of India's regulations differ from these levels and measures, the PMY will achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the CPMO will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS and EHS Guidelines.

52. **Occupational Health and Safety.** The CPMO and implementing agencies will provide workers with a safe and healthy working environment, considering risks inherent to the particular sector and specific classes of hazards in the work areas, including physical, chemical, biological, and radiological hazards. The CPMO and implementing agencies will take steps to prevent accidents, injury, and disease arising from, associated with, or occurring during the course of work and apply preventive and protective measures consistent with international good practices such as the International Finance Corporation (IFC) EHS guidelines on Occupational Health and Safety [13].

53. **Community Health and Safety.** The CPMO and implementing agencies will identify and assess the risks to, and potential impacts on, the safety of affected communities during the design, construction, operation, and decommissioning of the project and will establish preventive measures and plans to address them in a manner commensurate with the identified risks and impacts. These measures will favor the prevention or avoidance of risks and impacts over their minimization and reduction. Consideration will be given to potential exposure to both accidental and natural hazards, especially where the structural elements of the project are accessible to members of the affected community or where failure could result in injury to the community.

54. **Physical Cultural Resources (PCR)**. The CPMO and implementing agencies are

[12] World Bank Group. 2007. Environmental, Health, and Safety General Guidelines. Washington, D.C.; https://www.ifc.org-ehs-guidelines

[13] https://www.ifc.org/en/insights-reports/2000/general-environmental-health-and-safety-guidelines

responsible for the siting and designing of the project to avoid significant damage to PCR.[14] Such resources likely to be affected by the project will be identified and qualified. Experienced experts will assess the projects' potential impacts on these resources using field-based surveys as an integral part of the environmental assessment process.

E. Institutional Capacity

55. As an executing agency, the capacity of the MOEWRI to implement the IMEP includes a combination of technical expertise, institutional frameworks, and resource availability. MOEWRI has established a robust institutional set up to oversee the planning, execution, and monitoring of irrigation projects. This includes deploying experienced hydrology, civil engineering, and environmental management personnel. The Ministry also leverages advanced technologies and practices, such as GIS for site selection and monitoring systems, to enhance project implementation efficiency. Furthermore, MOEWRI collaborates with various stakeholders, including local governments, community-based organizations, and international development partners, to mobilize financial and technical resources. This collaborative approach ensures that the projects are well-supported and sustainable. MOEWRI's capacity is also strengthened by its commitment to capacity-building programs, which train local farmers and technicians on modern irrigation techniques and maintenance practices, ensuring the long-term operational success of the IMEP subprojects.

56. The Department of Water Resources and Irrigation (DWRI) has the capacity to implement the HLIP and FMIS through its comprehensive institutional and technical capacity. DWRI has extensive expertise in water resource management, hydrology, and civil engineering, allowing it to effectively design and oversee complex irrigation projects. DWRI also emphasizes capacity-building programs, which are essential for training local farmers, technicians, and project managers in modern irrigation techniques and sustainable water management practices. As one of the 2 PMUs, the central project management office (CPMO) under the DWRI will ensure that the HLIP and FMIS subprojects comply with the GoN statutory and legal environmental requirements, ADB SPS 2009, the EARF, and loan covenants. The PMU will also be responsible for reviewing and approving new or updated IEE reports and EMPs and ensuring that updated subproject IEEs and EMPs reflect the final detailed design of the subproject and are submitted to ADB for approval. Additionally, the PMU will ensure that all relevant permits/environmental clearances/approvals are obtained in a timely manner.

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

III. ANTICIPATED ENVIRONMENTAL IMPACTS

57. This chapter outlines possible negative impacts from project outputs and activities that may give rise to unintended impacts that can affect people and the environment if not properly managed.

58. A thorough assessment of the environmental impacts of the 2 components of IMEP – HLIP and FMIS, is conducted throughout various stages, including pre-construction, construction, and operation. At first, the study team visited the proposed project locations and the areas around them. These visits were crucial for directly observing and identifying potential environmental impacts from project activities. During these site visits, the team interacted with local stakeholders through meetings aimed at collecting a wide range of perspectives and insights. This stakeholder engagement was crucial, enabling the team to integrate local knowledge and concerns into the environmental assessment. In addition, thorough field examinations were conducted, along with meticulous data collection, to ensure a comprehensive analysis of the environmental baseline and possible disruptions.

59. Potential environmental impacts due to the construction and operations of proposed infrastructures are shown below.

A. Pre-construction impacts

60. **Consents, permits, clearances, no objection certificate (NOC), etc.** Necessary consents/NOC will be required during the pre-construction phase and before any civil works commence. A copy of Consent/Permission/Clearance/ NoC should be included in the monitoring reports and submitted to the implementing agencies. Failure to obtain the same will delay work and may lead to the stoppage of work.

61. **Sources of construction materials**. Moderate amounts of gravel, sand, and cement will be required for FMIS and HLIP. Material extraction can disrupt natural land contours and vegetation, resulting in accelerated erosion, disturbance in natural drainage patterns, ponding, water logging, and water pollution.

62. **Erosion control**. Most of the impacts will occur due to excavation and earth movements during the construction phase.

63. **Access**. Hauling construction materials and operating equipment on-site can cause traffic problems. Construction traffic will access most work areas from the existing roads, so potential impacts will be short duration, localized, and can be mitigated.

B. Anticipated Construction impacts

64. The impacts during the proposed construction works are generic to the construction activities and are not expected to be significant. Key impacts during construction are envisaged in the following aspects:

Land-use. The proposed project will affect the land use pattern of the area. The land areas are mostly barren, and few crops are grown in the rainy season. Due to the implementation of the lift irrigation project in HLIP and the surface water irrigation in FMIS, water availability all year round in the command area will enhance the production of crops and green vegetables. This will enhance the greenery in the command and provide economic benefits to the people.

65. **Soil Erosion/Siltation.** Soil impact will primarily affect areas close to project activities. The digging of trenches and other excavation processes required for the project's infrastructure can lead to soil erosion and increased sediment in runoff. Improperly managed excavation material might disrupt the local terrain. Additionally, certain zones may be vulnerable to erosion due to changes in land utilization and drainage patterns. Moreover, the rainy season risks erosion around the distribution lines due to potential flooding. Managing these risks with careful construction planning and site management is essential. Removing vegetation and soil movement during road construction can increase erosion, affecting soil stability and health.

66. **Soil Quality.** For the HLIP, laying the distribution pipeline will involve removing the soil, which, if poorly managed, can lead to runoff and erosion, causing a loss in productive farmland, water pollution, and sedimentation. In all 12 subprojects, the trench opening along the proposed distribution pipe laying the topsoil needs to be protected and placed back into the trench in order to lay the pipes.

67. **Ambient Air Quality**. Air quality will be slightly affected by the proposed activities. The construction activities will involve causes to increase the level of some of the air pollutants present in the air. Emissions from concrete mixers, earth excavation, and loading and unloading operations during construction activities pose potential impacts on air quality as an increase in PM level in the ambient on a temporary basis. Construction machinery, diesel generators, and project vehicles will release exhaust emissions containing carbon monoxide (CO), sulfur dioxide (SO_2), oxides of nitrogen (NOx), and particulate matter (PM). These emissions can deteriorate the ambient air quality in the project site and along the road leading to it. Furthermore, fuel combustion will release smoke emissions.

68. **Ambient Noise Levels**. The static sources include construction equipment such as concrete mixture and machinery. Construction activities are expected to generate noise above 80 dB (A). Due to wave divergence, the sound pressure level generated by a noise source decreases with increasing distance from the source. This level of noise generation is considerable and, without appropriate control measures, can have detrimental effects on both construction workers and nearby residents.

69. **Water Quality**. Construction activities in the FMIS areas have had a few notable impacts on water quality, primarily due to sedimentation and contamination. Activities such as earth moving, excavation, and site clearance significantly increase the sediment load in nearby water bodies, which can obscure water clarity. Additionally, the use of construction materials and chemicals like lubricants and fuels poses a risk of chemical contamination of the water. Without proper management, spills and leakages can seep into surface water systems, introducing harmful pollutants that may temporarily impact water quality.

70. **Groundwater and Water Quality**. For the HLIP, the establishment of the tube wells and water diverts the direction of groundwater towards the proposed reservoirs for pumping. This may cause a minor decrease in the groundwater table in the short term, whereas the continuous pumping of water from the number of wells might cause a decrease in the groundwater table in the long term.

71. **Solid Waste Generation.** The impacts of construction due to solid waste generation are considerable and include environmental pollution, land degradation, health risks, and visual impacts. Improper construction waste management can lead to soil and water contamination, altering land profiles and reducing the land's value for agricultural purposes. Additionally, unmanaged waste can pose direct health risks to construction workers and nearby communities

and degrade the area's aesthetic value, potentially affecting local property values. Furthermore, inefficient material usage reflected by solid waste generation contributes to the unnecessary depletion of resources.

72. **Handling of Construction Materials at Site**. For the civil works activities, there would be (i) construction wastes (such as solid wastes: plastics, pipes, stones, woods, etc., and liquid waste: paint, oil, etc.) and (ii) general wastes (solid wastes: papers, containers, residues of food, fruits, etc., and liquid waste: wastewater from the kitchen) from the workers' camp. The generation of wastes may pose risks to the environment, health, and safety if these are not collected and/or inappropriately stored and disposed of. Waste generation can lead to risks to community health and safety when the level exceeds the ability of Contractors and beneficiaries to handle waste properly.

73. **Vegetations and Terrestrial habitat**. Within the HLIP's scope, the vegetation will be largely preserved due to careful planning within the subproject areas. The construction of tube wells and buried pipe distribution networks is strategically designed to avoid forested areas, opting for alternative routes and the storage tank area to prevent the need for vegetation clearance. While there may be peripheral pressure on forest resources, no substantial impact on the area's vegetation and biodiversity is expected. Terrestrial habitats are expected to remain largely undisturbed by the HLIP. Construction sites and operational areas have been deliberately located outside of protected natural zones, ensuring that the project's footprint does not affect significant wildlife habitats. This strategic siting reflects a commitment to preserving the existing terrestrial ecosystem throughout the project lifecycle.

74. **Occupational and Community Health and Safety Risks – Communicable Diseases**. During the construction phase, the work personnel will be exposed to various health risks and hazards due to injuries to workers while working without adequate safety measures and equipment. These risks could occur in nearby local communities as well. Typical health hazards will be encountered during the handling of machinery movement. Health risks are commonly associated with poor labor camp conditions and the existing health conditions of the local people who interact with workers. Unsafe water sources and unhygienic conditions (lack of latrines and washing facilities) bear the risk of additional and often endemic diseases, such as dysentery, diarrhea, and cholera. Uncontrolled water logging and badly managed borrow pits bear the risks of spreading waterborne diseases like malaria fever to workers and the community.

75. **Occupational Health and Safety Risks - Construction Related Work Hazards**. Occupational health and safety risks are associated with civil works due to potential injuries from construction. All types of occupational health and safety risks can be minimized through adequate interventions, which protect workers from accidents and disease and limit environmental damage related to civil works.

76. **Impacts on Socio-Economic Activities.** Manpower will be required during the 24-month construction phase. This can help generate contractual employment and increase local revenue. Thus, potential impact is positive and long-term. As per proposed designs, land acquisition and closure of roads are not required. However, construction activities may impede access to residents and commercial activities. The potential impacts are negative and moderate but short-term and temporary.

77. Residents in the area may have safety concerns due to the presence of construction vehicles and machines and changes in traffic patterns. The increase in the number of vehicles on the road often leads to traffic congestion, which in turn raises the risk of accidents. These

accidents can greatly affect vulnerable populations, such as schoolchildren and the elderly. These individuals frequently encounter increased risks as they navigate through areas that become more intricate and hazardous due to construction activities.

C. Post-construction impacts/Operational Phase

78. **Land Environment.** During the operations of FMIS or right after work, the accumulation of construction waste can create minor disturbance to both the landscape and local communities. Construction waste is not properly managed and disposed of, creating a visual nuisance that reduces the aesthetic appeal. These wastes can also disturb local communities through increased dust and safety risks. Furthermore, accumulated wastes may block areas previously used by the community, disrupting daily routines and limiting social interactions.

79. **Water Quality**. Introducing reliable irrigation systems through the HLIP and FMIS can significantly enhance agricultural productivity. However, this can also lead to increased use of fertilizers and pesticides as farmers aim to maximize their yields. When these chemicals are applied to fields, they do not always remain where they are intended. Rainfall or excessive irrigation can cause these substances to wash off the fields and enter nearby water bodies, a phenomenon known as agricultural runoff.

80. **Water Abstraction and Uses**. The proposed rehabilitation works in the FMIS will possess long-term water within the command area, making efficient water use from the spring sources streams. For HLIP, the extraction of the groundwater sources from the tube wells needs to be assessed properly so that the number of tube wells, the size of the proposed storage tank, and the water demands of the agriculture command area are met with good results of production. During the operation, the tube wells' water table of the HLIP needs to be monitored in a timely manner so that the abstraction of water and its long-term use are well maintained in the project areas.

IV. ENVIRONMENTAL ASSESSMENT FOR SUBPROJECTS

A. Environmental Assessment Procedures

81. The processes of screening and classification, conducting environmental assessment studies, formulating environmental management plans, and preparing environmental assessment reports for the subprojects—whether newly designed, additional, or replacing those originally proposed after Board approval—shall strictly comply with the requirements stipulated in the ADB SPS 2009, as well as with the national and state-level regulations as detailed in Section II of this Environmental Assessment and Review Framework (EARF).

82. Environmental Protection Act (EPA) of 2019 and Environmental Protection Regulations (EPR) of 2020

83. The Environmental Protection Act of 2019 and the Environmental Protection Rules of 2020 constitute critical legal frameworks for environmental protection in Nepal. Pursuant to these legislations, all development projects must undergo an initial screening based on criteria outlined in Schedules 1, 2, and 3 of the EPR. Specifically, Schedule 1 mandates a Brief Environmental Study (BES), Schedule 2 requires an Initial Environmental Examination (IEE), and Schedule 3 necessitates an Environmental Impact Assessment (EIA). The detailed environmental assessment process and requisite procedures, as prescribed by the EPR 2020, are illustrated in Appendix 5.

84. In accordance with Schedule 2 of the EPR 2020, the HLIP, encompassing multiple subprojects, mandates the conduct of an environmental assessment. The proposed twelve hill lift irrigation subprojects are distributed across three river basins. Given the scope of these new subprojects and the command area exceeding 100 hectares across all three basins, the initial environmental examinations (IEE) as outlined in Table 5 are required.

85. The EPR 2020 stipulates the necessity for public hearings and disclosure. While the requirements for public hearings are consistent across all categories, the requirements for disclosure differ. Specifically, the disclosure of an IEE is not mandated; however, the project proponent must publish a notice in a national daily newspaper, allowing a seven-day period for the collection of public opinions and suggestions. During the public hearing, the project proponent is obligated to ensure the participation of the affected local community, user groups, and representatives from the local government. The proceedings of the public hearing must be documented. Furthermore, the EPR necessitates the implementation of an Environmental Management Plan (EMP), alongside continuous monitoring and reporting.

ADB Safeguard Policy Statement (SPS) 2009

86. As per SPS 2009, ADB employs a classification system to denote the significance of a project's potential environmental impacts. The categorization of a project is determined by its most environmentally sensitive component, encompassing direct, indirect, cumulative, and induced impacts within the project’s area of influence. Section II mandates that each proposed project undergoes a thorough examination considering its type, location, scale, sensitivity, and the magnitude of potential environmental impacts.

87. The process of updating the IEE necessitates a systematic approach to ensure a thorough evaluation of potential environmental impacts and the incorporation of suitable mitigation measures. The initial step in this procedure involves determining the necessity for an update,

which, for the FMIS and HLIP, may be prompted by (i) modifications and/or updates in subproject's design or scope, (ii) inclusion of subprojects beyond the original IMEP's scope, and/or (iii) the replacement of subprojects outlined in the initial proposal. Upon the occurrence of any of these triggers, the implementing agencies of FMIS and HLIP, in conjunction with the Central Project Management Office (CPMO) and Project Implementation and Monitoring Services (PIMS), shall undertake the following steps.

B. Exclusion Criteria and Screening and Categorization as per ADB SPS 2009

88. *Exclusion Criteria for Output 1*: DWRI field offices, located in Butwal and Gorkha, serving as project implementing units (PIUs) for the HLIP, along with the provincial offices of the Water Resources and Irrigation Development Division (WRIDD) acting as PIUs for the FMIS and conjunctive use of groundwater, and Rajapur Irrigation Management Office (RIMO), will ensure that no Category A projects, as delineated by the ADB SPS 2009, will be considered for implementation. Furthermore, these PIUs shall ensure that subprojects adversely impacting environmentally protected areas and culturally significant sites will not receive funding under the project. The HLIP and FMIS subprojects, and conjunctive use of groundwater will strictly avoid engaging in any activities enumerated in the ADB's Prohibited Investment Activities List. The following criteria will be rigorously applied to exclude sites with potential adverse environmental impacts on sensitive areas.

(i) Subproject components should not be situated in core area of national parks, wildlife reserves, conservation areas, and Ramsar Sites.

(ii) Subprojects within buffer zones should be avoided or only supported if site specific biodiversity assessment in the IEE demonstrates no significant impacts pre-mitigation and that ADB's SPS 2009 and government requirements can be met.

(iii) No subproject components will be proposed within world, national, regional, and protected heritage sites and monument sites.

(iv) Subprojects will not involve the construction of barriers or weirs across rivers.[15]

(v) Projects requiring EIA in accordance with the Environmental Protection Act, 2019, and Environmental Protection Rules, 2020.

(vi) Activities explicitly listed in the ADB's Prohibited Investment Activities List (refer to Appendix 5 of the ADB SPS 2009).[16]

(vii) Groundwater quality must be within the acceptable standards of the government or international guideline whichever is more stringent.

89. *Enhancement of Agriculture facilities for Output 3*: The components will include (i) agriculture collection centers to facilitate marketing of produce, (ii) crop storage facilities or chambers to prevent post-harvest losses and maintain quality, and (iii) WUA office improvements. These facilities aim to streamline agricultural operations, reduce costs, and improve market

[15] Excluding check dams constructed for watershed management, which may typically include small structures of 1-3 m high.

[16] Appendix 5 of ABD SPS 2009, p. 76. https://www.adb.org/sites/default/files/institutional-document/32056/safeguard-policy-statement-june2009.pdf

access for farmers.

90. Inclusion of selection criteria enforced through use of a screening checklist with due diligence by AKCs before approval by the CAMO to ensure:

(i) only be eligible to receive support for category C activities as per ADB SPS 2009.

(ii) facilities comply with national laws and regulations, obtaining environmental clearance (EC) from government before approval when required.

(iii) no facilities requiring national EIA or IEE will be eligible for support.

(iv) activities involving invasive species will not be eligible for support.

(v) activities involving herbicides or pesticides of international concern regarding their ecological impacts (e.g. neonicotinoids) will not be eligible.

(vi) activities requiring vegetation clearance or cutting of tress will be limited to modified habitat (e.g., built up or agricultural lands).

(vii) structures or buildings will be located at a minimum distance of 30m from rivers and 15m from streams and other waterbodies.

91. Further, criteria for selecting schemes and locations under the HLIP and FMIS, conjunctive use of groundwater and agriculture facilities will ensure that these are environmentally sustainable, socially inclusive, and compliant with regulatory standards are shown below:

(i) **Community and Stakeholder Engagement:** Subprojects should involve active participation from local communities and stakeholders in planning and decision-making processes. This ensures that the schemes meet local needs and garner community support. Furthermore, subprojects should have the support of relevant stakeholders, including local authorities, community leaders, and environmental groups.

(ii) **Sustainable Practices:** The efficient use of natural resources, including water, soil, and vegetation, should be promoted.

(iii) **Risk Management:** Subproject areas are free from natural hazards such as floods, landslides, and earthquakes to reduce the risk of environmental damage and ensure the safety of subproject structures.

(iv) **Positive Environmental Contributions:** The subprojects should contribute to building climate resilience in the community by improving water management and reducing vulnerability to climate change impacts.

92. *Screening and categorization.* After meeting the exclusion criteria, the PIUs of HLIP and FMIS, with the guidance from safeguards desk of CPMO and support from PIMS, will proceed with environmental screening and categorization. Below are the steps of this process:

(i) Initiation of Screening: When sufficient information about a subproject[17] is available, the

[17] Subproject is defined as per schemes of the HLIP and FMIS.

PIUs of HLIP and FMIS, and PIUs under the conjunctive use of groundwater and agriculture facilities, with support from the environmental safeguards specialist of the PIMS, initiate the screening process. This stage will utilize the Rapid Environmental Assessment (REA) checklist (see Appendix 3).

(ii) Completion of REA Checklist: The PIUs and the environment specialist under PIMS are responsible for the completion of the REA checklists. These checklists are utilized to systematically evaluate various aspects of the subproject's potential environmental impact. The primary purpose of the checklist is to identify any environmental concerns associated with the proposed works.

(iii) Endorsement by CPMO and CAMO: Once the screening is completed, the PIUs submit the REA checklists to the CPMO and/or CAMO for review and approval.

(iv) Categorization of Projects: Eligible projects are categorized as either Category B or Category C based on the screening results by PIUs. Projects classified as Category A, which indicate significant potential environmental impacts, are not eligible for funding under the project due to their higher level of environmental risk. For the agricultural facilities, only category C projects will be accepted.

C. Environmental Assessment Process as per ADB SPS 2009

93. The IEEs for FMIS (100 subprojects) and HLIP (12 subprojects) are prepared in accordance with ADB SPS 2009 requirements for environment category B projects. These IEEs are based on the detailed project report (DPR), and field reconnaissance surveys, and primary and/or secondary sources of information. With support from environment specialist of PIMS, field level staff and community organizers, the PIUs of HLIP and FMIS will gather data through site inspections, stakeholder consultations, and a review of existing documentation to update the IEEs based on the needs mentioned earlier.[18] These sources of information will provide a foundation for understanding the scope of the impacts and corresponding mitigation measures required to update the IEEs for HLIP and FMIS, and other sections of the IEEs.

94. Engaging stakeholders constitutes a critical component of the assessment process. This engagement involves consulting with affected communities, stakeholders, and regulatory bodies to discuss the necessity for updates and to solicit their insights as part of due diligence. With the support of the CPMO safeguards desk, the PIUs of the HLIP and the FMIS, along with community organizers and the environmental specialist of the PIMS, will undertake public consultations. The documentation of feedback and concerns raised during these consultations will ensure that the update process is transparent and inclusive, thereby allowing for the consideration of all relevant viewpoints from the people.

95. Subsequent to stakeholder engagement, a detailed impact analysis is imperative. This analysis focuses on evaluating environmental impacts on the physical environment (e.g., air, water, soil), biological environment (e.g., flora, fauna), and socio-economic and cultural aspects (e.g., community health, livelihoods, festivals, religion, etc.). Both field surveys and secondary data sources shall be utilized to conduct a comprehensive assessment of these impacts. The environmental specialist of the PIMS, in conjunction with the PIUs of the HLIP and FMIS, will conduct the impact analysis and prepare environmental management plans (EMP) to be

[18] The need for an update IEEs for FMIS and HLIP may be triggered by: (i) modifications and/or updates in subproject's design or scope, (ii) inclusion of subprojects beyond the original IMEP's scope, and/or (iii) the replacement of subprojects outlined in the initial proposal.

incorporated into updating of IEEs. Appendix 4 outlines the Initial Environmental Examination (IEE), which will be a reference for updating the IEEs for HLIP and FMIS.

96. For the conjunctive use of groundwater through electrification of pumps, the PIUs (i.e., WRIDD), with the support of the CPMO, PIMS, and community organizers, will prepare IEE and EMP to encompass the proposed works under this component. The IEE will be based on the detailed design and operational plan of the electrification pumps intended to abstract groundwater in the Terai region, and will cover all proposed locations that are being designed at the same stage. Any additional locations shall undergo screening and categorization by the WRIDD (see REA checklist, Appendix 3), and will be included in the IEE and EMP as updates or necessitate the creation of new IEE and EMP documents, as deemed appropriate by CPMO.

D. Environmental Management Plan (EMP)

97. In accordance with the SPS 2009, the EMP is a crucial component of IEE. The objective of the EMP is to develop mitigation and monitoring measures for the impacts identified during the IEE procedures. These measures are intended to be practical for use by the project implementing agency, ensuring that activities comply with national environmental and social legislations.

98. The EMP is essential as it manages the environmental aspects by balancing negative impacts with potential mitigation measures and enhancing positive impacts, supported by funds allocated from the project. The main objectives of the EMP are to:

(i) Display a range of measures to mitigate potential impacts to minimal or insignificant levels.
(ii) Identify measures that could optimize beneficial impacts.
(iii) Establish methods for monitoring environmental management practices throughout all project phases.
(iv) Ensure that project implementation and operational phases comply with the ADB's SPS 2009 principles and national environmental policies.
(v) Ensure compliance with health and safety recommendations.
(vi) Propose mechanisms for monitoring adherence to the EMP and for reporting on this compliance.
(vii) Specify the timeframes within which the measures outlined in the final environmental management plan must be implemented, as appropriate.

E. IEE and EMP Endorsement

99. Once the internal review of CPMO is complete, the updated IEE and EMP are submitted to ADB for approval. Addressing any feedback or conditions specified by ADB is necessary to finalize the update. Implementation of the updated EMP follows, ensuring all project stakeholders are aware of and comply with the new measures. Regular monitoring as per the revised protocols is essential, with ongoing documentation of progress and compliance.

100. The IEE and EMP will be included in the bid and contract documents to ensure compliance to the conditions set out in this document. All bid documents will include a requirement to incorporate necessary resources into the contractor's bid to implement mitigation measures specified in the EMP.

V. CONSULTATION, INFORMATION DISCLOSURE, AND GRIEVANCE REDRESS MECHANISM

A. Public Consultation

101. Meaningful consultation is a fundamental component of the environmental due diligence, facilitating the integration of all relevant views from affected individuals and other stakeholders into decision-making processes, including project design, mitigation measures, the sharing of development benefits and opportunities, and implementation issues. This process also serves to prevent potential conflicts with stakeholders, thereby ensuring smooth project implementation. The findings from public consultations shall be meticulously documented in updating the IEEs, and considered in the formulation of the EMP, particularly in identifying significant impacts of the proposed project components and developing appropriate mitigation measures.

102. The ADB SPS 2009 acknowledges the critical importance of providing project-affected individuals and groups with opportunities to express their issues and concerns regarding the project. It is recommended that public consultations be conducted during the initial stages of the environmental assessment process and continue throughout the project implementation to address any environmental issues that may affect local communities, governments, and other interested parties.

103. Key stakeholders to be consulted under the HLIP, FMIS, conjunctive use of groundwater and agriculture facilities:

(i) Project beneficiaries, farmers, and water users' association members;
(ii) Elected representatives, community leaders, and representatives of community-based organizations;
(iii) Local government, relevant government agency representatives, and other government departments.

B. Information Disclosure

104. Information should be disclosed through public consultation and making available relevant documents in public locations. The following documents will be submitted to ADB for disclosure on its website:

(i) EARF, IEEs including EMP for the project, and updated IEEs and EMPs;
(ii) Environmental monitoring reports submitted by CPMO during project implementation upon receipt;
(iii) corrective action plan prepared during project implementation, if any;

105. As per EPR, 2020, the CPMO will prepare the IEEs for the HLIP, and the documents will be approved by the MEWRI and will be disclosed on the DWRI website.

106. The CPMO will ensure the provision of relevant safeguard information in a timely manner, accessible location, and in a form and language comprehensible to affected individuals and other stakeholders. The executive summary of the IEE will be translated into the local language, made available at the PIU offices. Hard copies of the IEE shall be accessible to citizens to disclose the document and concurrently create wider public awareness. Stakeholders shall also be informed about the grievance register and redress mechanism.

107. Public information campaigns will be conducted to disseminate project details to a broader population. Public consultation events meetings will be held semi-annually to apprise the public of the progress and future plans. Subproject information brochures/pamphlets shall be distributed to local communities to enhance their understanding about IMEP. A board displaying project details shall be erected at construction sites for public information. Local communities shall be continuously consulted regarding the location of construction camps, access and hauling routes, and other potential disturbances during construction.

C. Grievance Redress Mechanism (GRM)

108. A common GRM will be in place to redress environmental and social safeguards concerns about the project. Grievance is defined as any issues/concerns that resulted to non-performance of obligations of any of the parties involved in project processes, particularly in safeguards implementation. The GRM described below has been developed in consultation with the stakeholders and will be applicable to all subprojects implemented by DWRI, CPMO and CAMO under the IMEP. The GRM is anchored on the five principles, underpinning the grievance redress processes and the arrangements envisaged to implement these:

(i) **Transparency.** The GRM encourages comments and feedback (negative and positive) to improve the Project. The community must be aware of all complaints, grievances and problems reported; must be involved in their redress; and must be kept informed on progress made in resolving grievances. Public awareness campaign will be conducted to ensure that awareness on the project and its grievance redress procedures is generated. The campaign will ensure that the poor, women, IPs, the vulnerable and the disadvantaged groups are made aware of grievance redress procedures and CPMO (the central office of the DWRI) and the CAMO (the central agriculture management office of DOA) will ensure that their grievances are addressed according to the time schedule, and feedback will be provided to the affected person or the complainant.

(ii) **Socially Inclusive**. The whole community, and even those outside, are given the opportunity to raise concerns and the right to receive a response. The GRM provides an accessible, inclusive, gender-sensitive, and culturally appropriate platform for receiving and facilitating resolution of affected persons' grievances related to the project.

(iii) **Simple and Accessible.** Procedures to file complaints and seek redress are kept simple and easy to understand by the affected people, most especially the non-literate, and their communities. Affected persons will have the flexibility of conveying grievances/suggestions through verbal narration from walk-in affected person, by dropping grievance redress/suggestion forms in complaints/suggestion boxes put up at accessible locations, through telephone hotlines, by e-mail, by post, or by writing in a complaint register at project site, SMC (Subproject Management Committee), and CPMO offices.

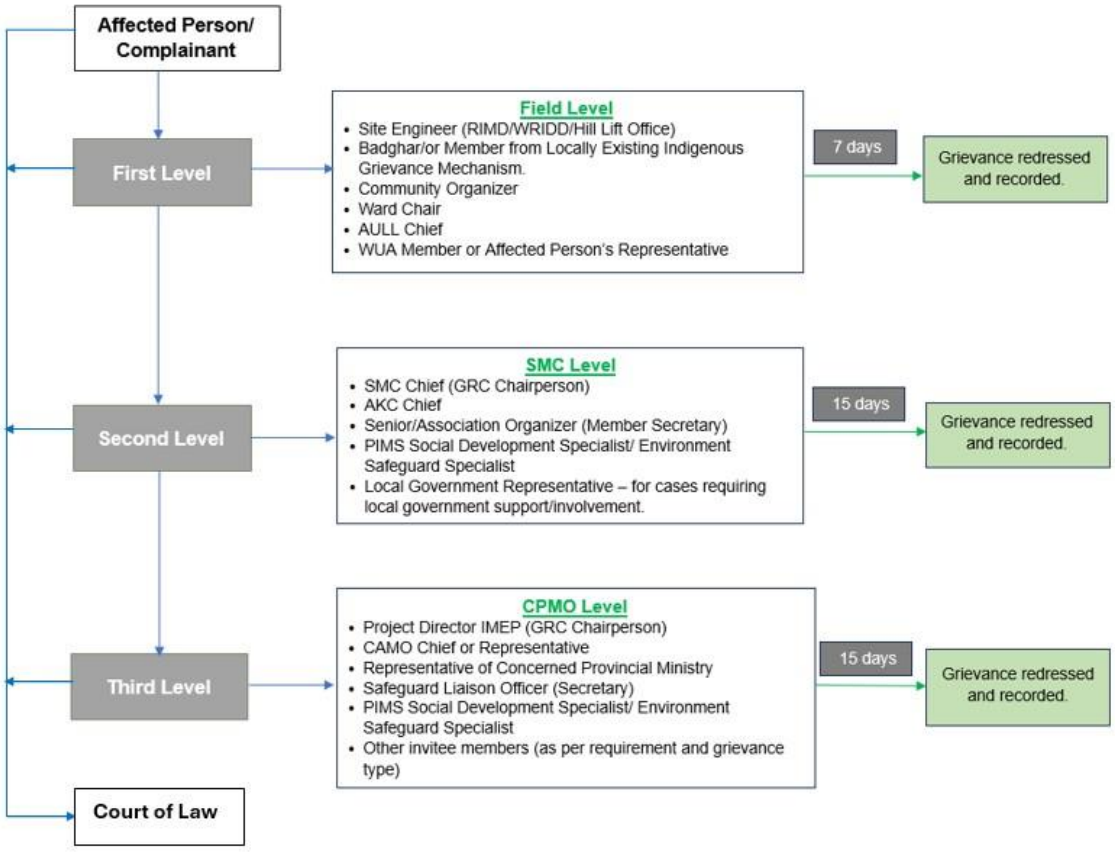
(iv) **Anonymity and Security**. To remain accessible, open, and trusted, the GRM ensures that the identities of those complaining are kept confidential. This encourages people to openly participate and file grievances. Careful documentation of the name of the complainant, date of receipt of the complaint, address/contact details of the person, location of the problem area and the grievance detail will be maintained by the project. The project will ensure a system for grievance tracking and monitoring, response accorded, its resolution status and closure. SMC together with CPMO's Social Development Specialists will have the joint responsibility for timely grievance redressal

on safeguards and gender issues and for registration of grievances, related disclosure, and communication with the aggrieved party.

(v) **Institutional Capacity Building.** Through the GRM, the SMC and CPMO will strengthen channels of communication and mechanisms for grievance redress at the community/project area level.

109. The GRM is a three-tier arrangement that facilitates time -bound grievance resolution at each level. Responsible persons and agencies/offices are identified to address grievances and seek appropriate advice at each stage, as required. Institutional arrangements, including constitution of grievance redress committees (GRC) at various levels, will be ensured to function throughout the project duration. The CPMO shall ensure the constitution of these committees and oversee the implementation of grievance redress processes, including adherence to time limits, record keeping, and documentation at each level.

Figure 3: Schematic of Grievance Redress Mechanism under IMEP



110. **Field Level:** The first level of the GRM will function at the project location/site. The field-level arrangement will consist of ground implementation staff led by the project's Site Engineer, a Community Organizer, a Badghar or a member from a locally existing indigenous grievance settlement mechanism, and a representative of the affected persons. All minor issues and those perceived as immediate and urgent by the complainant will be resolved at the field level itself (within 7 days). For cases requiring input and involvement of local bodies, the field-level grievance cell will be strengthened by including a Ward Chair (at least one female member and one

representative from the local indigenous community. In cases of larger issues that cannot be resolved at the field level, the matter will be escalated to the district/subproject level GRC, the second level arrangement. The Community Organizer will be responsible for documentation and record-keeping. A summary of grievance records will be submitted to the CPMO monthly. The province-based PIMS Social Development Specialist will both monitor and provide guidance and support to the field staff in grievance redress and its record-keeping.

111. **SMC Level:** A GRC will be established at the SMC level, headed by the SMC chief. The Senior/Association Organizer of the Institutional Development section of WRIDD/SD/RIMD will function as the member secretary of the GRC, supported by the PIMS Social Development Specialist/Environmental Safeguard Specialist. The committee will include a representative from the local body, AKC Chief, as per the nature of the grievance. All grievances that cannot be resolved at the field level and those directly registered at this level will be addressed by this body within 15 days of complaint receipt. Proper documentation of grievances (including records of grievances redressed at the field level) will be maintained by the Institutional Development unit of WRIDD/RIMO and offices responsible for hill lift schemes. In cases where the GRC at this level is unable to resolve a grievance within the stipulated period, the case will be escalated to a higher level for resolution. The SMC level will also maintain follow-up for each grievance, periodically disseminate information to complainants on the status of their grievance and record their feedback (satisfaction/dissatisfaction and suggestions).

112. **CPMO Level**: The arrangement at the highest level will involve the constitution of a project-level committee headed by the CPMO PD as the chairperson. The committee will receive support from the Social Development Specialist/Environmental Safeguard Specialist or technical experts relevant to grievances, CAMO Chief or representative, representative, or senior officer from the concerned provincial ministry, and other members as required based on the type of grievance. All grievances that cannot be resolved by the SMC level GRC will be brought to the attention of this body, seeking its advice or referral for resolution at this level. Grievances received or referred to this committee will be resolved within 15 days. Periodic information will be provided to complainants on the resolution status of their grievance. The Safeguard Liaison Officer will act as the secretary for the CPMO level committee and will also be responsible for compiling grievance redress records, including project-level documentation and reporting.

113. The affected person/complainant shall have access to the country's legal system at any stage. Furthermore, accessing the country's legal system can run parallel to accessing the GRM and is not dependent on the negative outcome of the GRM.

114. **ADB Accountability Mechanism.** If the established GRM is not able to resolve a grievance, the affected person can also use the ADB Accountability Mechanism through directly contacting (in writing) the Complaint Receiving Officer at ADB headquarters or the ADB Nepal Resident Mission (NRM). Before submitting a complaint to the Accountability Mechanism, affected/aggrieved person/s should make a good faith effort to solve the problem by working with the concerned ADB operations department and/or NRM. Only after doing so, and if they are still dissatisfied, will the Accountability Mechanism consider the compliant eligible for review.[19] The complaint can be submitted in any of the official languages of ADB's developing member countries. The ADB Accountability Mechanism information will be included in the project-relevant information to be distributed to the affected communities, as part of the project GRM.

[19] Accountability Mechanism. http://www.adb.org/Accountability-Mechanism/default.asp.

115. **Consultation arrangements and information dissemination**. The GRM will adopt a consultative and participatory approach to grievance resolution, which may, in some cases, require one-to-one consultation with individual complainants or the aggrieved community. Furthermore, the CPMO and the PIMS Social Development Specialist/Environmental Safeguard Specialist will be responsible for disseminating information to affected persons on the grievance redressal procedure, ensuring that the host community understands the grievance redress process, and encouraging them to register complaints. Adequate consultations, meetings, and public awareness campaigns will be conducted to achieve this objective. Information on grievances received and responses provided will be documented and reported back to the affected persons. All grievances will be treated with utmost confidentiality, and the identity of the complainant will not be disclosed. A sample grievance registration form is provided in **Appendix ??.**

116. **Record Keeping.** Records of all grievances received, including contact details of complainant, date the complaint was received, nature of grievance, agreed corrective actions and the date these were taken, and outcome will be maintained by the CPMO (with the support of PIMS Social Development Specialist/Environmental Safeguard Specialist). As part of record-keeping and reporting practices, information on grievance tracking will also be maintained. Grievance reporting by SMC and CPMO at their respective levels will include information for the reporting period and the cumulative data on select parameters such as total grievances received, redressed, pending, etc., since the project's inception. Summarized information will be included as part of periodic reporting by the CPMO, with support from PIMS, to ADB.

117. **Periodic review and documentation of lessons learned**. The CPMO will periodically review the functioning of the GRM and record information on the mechanism’s effectiveness, particularly in preventing and addressing grievances within the project.

118. **Costs**. All costs involved in resolving the complaints (meetings, consultations, communication, and reporting/information dissemination) will be borne by the project.

VI. INSTITUTIONAL ARRANGEMENT AND RESPONSIBILITIES

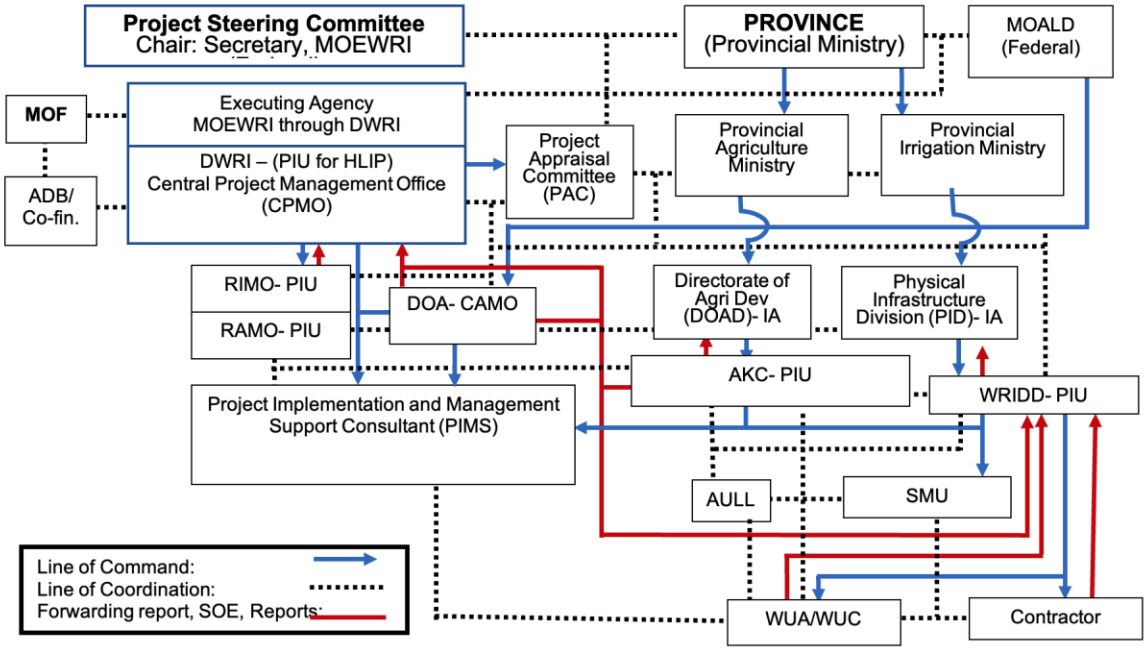
119. The executing agency at the federal level will be the Ministry of Energy, Water Resources, and Irrigation (MOEWRI). The implementing agencies at the federal level will be the Department of Water Resources and Irrigation (DWRI) and the Ministry of Agriculture and Livestock Development (MOALD), acting through the Department of Agriculture (DOA). Two project management units will be established at the central level: (i) the central project management office (CPMO) in DWRI and (ii) the central agriculture management office (CAMO) in the DOA.

120. A total of 76 project implementation units (PIUs) will be established: four at the federal level; (i) the irrigation and river management office in Gorkha; (ii) the people's embankment office in Butwal for the implementation of HLIPs; (iii) the Rajapur Irrigation Management Office (RIMO); and (iv) the Rajapur Agriculture Management Office (RAMO); and 72 in provincial-level offices (respective WRIDDs and AKCs). A project implementation and management support (PIMS) consultant will support the PMUs and PIUs.

121. CPMO in DWRI will be responsible for the overall project management, including technical support to (a) RIMO, which will be responsible for implementing the RIP, and (b) the PIUs in Gorkha and Butwal for HLIP. Civil works for the FMIS schemes will be implemented through the provincial governments of Koshi, Madhesh, and Bagmati. The project management responsibilities will be assigned to their WRIDDs. The CPMO will oversee the project's overall implementation and compliance with ADB's environmental safeguards requirements. The CPMO will establish a “Central Safeguard Desk” (CSD) and comprise a Safeguard Liaison Officer (SLO) supported by an Environmental Safeguard Specialist (ESS) of PIMS. The SLO will ensure full compliance with the overall environmental and social safeguards requirements of the project. The SLO will work closely with the environment focal points (or engineers) of Project Implementation Units (PIUs) of RIMO, WRIDDs, and HLIP implementing units. Other engineers (see list of engineers in Table 11) of the PIMS will provide support in monitoring the EMP implementation and provide guidance to contractors on environment, health and safety. The provincial office shall work under the guidance of CSD and report to their safeguard and safety details. The PIU offices will be supported by community mobilizers for safeguard activities in FMIS, RIP and HLIP.

122. The implementation arrangements are illustrated in the figure below.

Figure 4: Overall Organizational Structure



Note: WRIDD directly submits EOT, BER, SOE, VO to CPMO with a copy to their reporting Division in the Province; and Agriculture Knowledge Center to CAMO/DOA with a copy to DOAD of the province.
AULL = Agriculture Unit at Local Level; AKC = Agriculture Knowledge Center; CAMO= Central Agriculture Management Office; CO = Community Organizer; DOA = Department of Agriculture; DOAD= Directorate of Agriculture Development; DWRI = Department of Water Resources and Irrigation, HLIP = Hill Lift Irrigation Project; MOEWRI= Ministry of Energy, Water Resources and Irrigation; MOALD= Ministry of Agriculture and Livestock Development; PAC = Project Appraisal Committee; PIMS = Project Implementation Management and Support Consultant; PIU = Project Implementation Unit; RAMO = Rajapur Agriculture Management Office; RIMO = Rajapur Irrigation Management Office; SMU = Subproject Management Unit; WRIDD = Water Resources and Irrigation Development Division; WUA = Water Users Association; WUC = Water Users Cooperative.

123. The CPMO will be responsible for ensuring that the project fully conforms with the loan agreement, the ADB's SPS 2009, the EARF, and all applicable legal and regulatory requirements of the government. Compliance with safeguards will be mandatory for the project to remain on track; the timely identification of any safeguard issues and the implementation of corrective actions will serve as a performance indicator monitored by the ADB. To ensure adherence to the environmental safeguards stipulated in this PAM, the EARF, and IEE, the CPMO will engage the support of an environment specialist under the PIMS and Safeguards Desk. The CPMO will:

(i) Comply with the government EPA 20219, EPR 2020, and other environment-related statutory requirements of the project.
(ii) Ensure compliance with ADB SPS 2009, the project EARF, and loan covenants;
(iii) Ensure compliance with international good practices per the following the requirements of the International Finance Corporation's General EHS Guidelines, their guidelines on agribusiness/food production/forestry/water and sanitation, and the International Labour Organization's Code of Practice on Safety and Health in Construction;
(iv) With the support of PIMS and Safeguards Desk, review and approve environment categorizations and IEE/s and EMP(s), before submitting to ADB for concurrence and review and disclosure respectively;
(v) With the support of PIMS review and approve environmental safeguard related clauses and sections to be included in tender documents and civil works contracts of contractor(s);

(vi) with the support of PIMS evaluate and approve the construction environmental management plan (CEMP) that the contractor(s) have prepared;
(vii) Ensure that the project and all contractors obtain permits, licenses, etc. for activities before the implementation of the respective construction activity;
(viii) be in charge of applying for important documents and sending them to government offices for the processing of permits and clearances, such as environmental clearance certificates, tree-cutting permits, and other pertinent licenses and permits;
(ix) ensure environmental clearances obtained for subprojects before issuing bidding documents and awarding any work contracts to any contractors;
(x) with support from Safeguards Desk and PIMS, conduct training and workshops on environmental management and site induction for all staff and workers involved in the project implementation;
(xi) carry out regular (at least quarterly) field verification and review environmental compliances by the PIUs and contractor during project implementation, in coordination with the PIMS, PIUs and the contractor's environmental focal person;
(xii) carry out regular (at least quarterly) field verification and review environmental compliances by the contractors.
(xiii) close supervision and monitoring of all components during the implementation with a zero-tolerance approach to health and safety risk management, ensuring adequate health and safety supervision.
(xiv) make sure that environmental monitoring reports (EMRs) are prepared, and submitted for publication locally and on the ADB website as specified in the loan agreement;
(xv) implement effective environmental monitoring during the pre-construction, construction, and operation phases, guided by the IEEs submitted to ADB. This includes, but is not limited to, inspections, reviews of monitoring forms prepared by the PIUs, contractors, and documentation of the issues received through GRM;
(xvi) with PIMS support, provide and record environmental observations during any site visits that may include, but are not limited to, excessive dust, loud noises, improper disposal of waste, chemical or oil spills, camp hygiene, health and safety, and improper borrow area management;
(xvii) in case of potential risks and hazards to health, environmental quality, and properties that may result from poor EMP implementation, immediately guide PIUs to cease the construction or operational activities that pose risk and conduct immediate containment and mitigation activities;
(xviii) take proactive and timely measures to address any environmental safeguards-related challenges at the national, state, or district levels, such as (a) delays in the processing of clearances during the pre-construction stage and (b) significant grievances during the construction and operation stages;
(xix) review and approve corrective action plans (CAPs) for environmental safeguard noncompliance;
(xx) inform ADB of any unanticipated environmental impact(s) that occurred during the project implementation phase;
(xxi) ensure GRM, as envisaged in the IEE and EARF, is in place and fully operational from the onset of project implementation; and
(xxii) perform other tasks relevant with environmental safeguards of ADB and government of Nepal.

124. Comprising international and national experts, the PIMS will support the capacity and operational effectiveness including for environment safeguard matters. The Environment Specialist under the PIMS will support the project on supervision, compliance, and monitoring of environmental safeguards. Particularly, the PIMS will:

(i) Support CPMO, CAMO, PIUs, and government provinces in ensuring subprojects' compliance with national policies and ADB's requirements for environmental safeguards.
(ii) provide technical expertise to CPMO to implement environmental safeguard requirements as per the EARF and ADB SPS 2009.
(iii) Assist with updating IEEs and EMPs for subprojects.
(iv) Support the project in implementing EMPs, the recommendations of the IEEs, and guidance in the EARF.
(v) assist the project to comply with the procedures and requirements indicated in the EARF.
(vi) support the project on monitoring of environmental safeguards at subproject sites
(vii) conduct environmental site inductions to contractors and project staff to ensure understanding of EMPs, government's environmental laws and requirements, and ADB SPS requirements
(viii) assist the CPMO in preparing the environmental monitoring reports for timely submission to ADB.
(ix) support any environmental management and safeguard project matters.

125. As PIUs under the CPMO, the RIMO, the DWRIs in Gorkha and Butwal, and WRIDDs in Koshi, Madhesh, and Bagmati will support and be responsible for the following environmental safeguard activities. The engineers in the PIUs will serve as focal staff on environment safeguards:

(i) Implement environmental safeguard requirements as per the EARF and ADB SPS 2009.
(ii) Identify and acquire the necessary statutory environmental licenses, permissions, and approvals for subprojects.
(iii) Include any standards and conditions that are specified in regulatory clearances and consents in the comprehensive subproject design.
(iv) With support from PIMS, PIUs (i.e., RIMO, WRIDDs and DWRIs in Gorkha and Butwal) will conduct environmental screening of subprojects by using the REA checklist(s) and submit to CPMO for review and approval, awaiting ADB concurrence before confirming subproject categorizations;
(v) With support from PIMS, PIUs will update IEEs and EMPs of subprojects or prepare new assessments through, but not limited to, reconnaissance survey, collecting data from the proposed subproject sites, government requirements and public consultations;
(vi) Ensure that the project, and all contractors obtain permits, licenses, etc. before the implementation of the respective construction activity;
(vii) Carry out regular field verification and review of environmental compliances by contractors, in coordination with the PIMS and the contractors' environmental focal person, and report to CPMO on the results and findings;
(viii) Perform regular field verification and review of environmental compliances by contractors;
(ix) with support from PIMS, PIUs will conduct training and workshops on environmental management and site induction for all staff and workers involved in the project implementation;

(x) Implement effective environmental monitoring during the pre-construction, construction, and operation phases;
(xi) With support from community organizers and PIMS, PIUs will gather information from the implementation of the EMP and EARF to be included in the EMR preparation by the CPMO;
(xii) with PIMS' support, PIUs will provide and record environmental impact observations during any site visits;
(xiii) In case of potential risks and hazards to health, environmental quality, and properties that may result from poor EMP implementation, PIUs will immediately contractors resolve construction activities that pose risk and conduct immediate containment and mitigation activities;
(xiv) PIUs will take proactive and timely measures to address any environmental safeguards-related challenges at the national, state, or district levels, such as (a) delays in the processing of clearances during the pre-construction stage and (b) significant grievances during the construction and operation stages;
(xv) PIUs will participate and/or lead public consultations and GRM processes;
(xvi) be part of the process and operations of GRM as envisaged in the IEE and EARF;
(xvii) Perform other tasks relevant with environmental safeguards of ADB and government of Nepal.

126. Contractors will appoint environment, health, and safety (EHS) staff. All the contractors will be required to prepare a CEMP and sub-plans. The contractors will bear the costs of preparing these site-specific plans included in the CEMP. The construction will not start until relevant permits and clearances have been obtained from competent authorities, and no objection clearance has been obtained. The following are the key safeguard tasks for contractors

(i) Appoint the contractor's environment, health, and safety focal person and attend training to be organized under the project.
(ii) Obtain necessary environmental license(s), permits, etc., from relevant agencies for any ancillary facilities prior to commencement of works.
(iii) Implement and document all mitigation measures in the EMP and environmental quality monitoring plan.
(iv) Ensure that workers and site supervisors participate in environmental safeguard-related training events.
(v) Ensure compliance with environmental statutory requirements and contractual obligations.
(vi) Participate in resolving safeguards issues.
(vii) Respond promptly to grievances from the local community or any stakeholder, implement environmental corrective actions or additional environmental mitigation measures as necessary, and inform the relevant employers.
(viii) Based on the results of EMP monitoring, cooperate with the employers to implement environmental corrective actions and corrective action plans, as necessary.
(ix) Ensure that appropriate worker facilities (workers' accommodation/camps) are provided at the work sites.
(x) Register and maintain records of all work-related accidents and undertake remedial actions to mitigate/minimize recurrence.
(xi) Implement EMP measures and report to the employer if any new impacts have surfaced; seek guidance from PIU as required in EMP implementation.
(xii) Conduct environmental monitoring (air, noise, etc.) as per the monitoring plan
(xiii) Prepare monthly EMP monitoring reports and submit them to the employer.
(xiv) Address any grievances effectively and in a timely manner

127. Community organizers play a crucial role in the implementation and success of the project by acting as a bridge between the project management and the local communities. They are responsible for engaging with community members to ensure their participation and cooperation in various subproject activities. This includes organizing meetings, disseminating information, and facilitating discussions to gather community input and address concerns. Additionally, community organizers assist in the implementation of the EMP by monitoring compliance at the local level. They work closely with the PIUs to ensure that environmental safeguards are upheld and that any issues are promptly addressed. They also support the preparation and execution of IEE and public consultations, ensuring that community perspectives are included in project planning and decision-making processes. Community organizers are instrumental in capacity building and training initiatives. They help to empower local community members by providing training on various aspects of the project, including environmental management, sustainable practices, and the use of new technologies. This empowerment is key to ensuring the long-term sustainability of the project, as it builds local capacity to manage and maintain project outcomes.

128. ADB is responsible for the following:

(i) review IEEs including EMPs and disclosing draft and final reports on ADB's website;
(ii) review EMRs, and disclose the final reports on ADB's website;
(iii) explain policy requirements and safeguard covenants in the loan and project agreements to executing agency, CPMO and PIUs;
(iv) monitor implementation of the EARF and EMP through due diligence missions;
(v) advise CPMO on carrying out its responsibilities and in building capacity for safeguard compliance;
(vi) monitor overall compliance of the subprojects to this PAM, the EARF and EMPs; and if necessary, provide further guidance on the format, content, and scope of the periodic monitoring reports for submission to ADB.

129. **Capacity Building:** To strengthen the institutional capacity of the CPMO, PIUs, community organizers, and other project staff, it becomes crucial for the project to assist in strengthening robust environmental capacity. With the help of PIMS and external experts from the project, here are useful trainings, but not limited to, that can help CPMO, PIU, community organizers, and other staff effectively implement environmental safeguards and promote sustainable development practices.

- Environmental Awareness Workshops: Basic awareness workshops about environmental issues, such as pollution, resource depletion, and habitat destruction.
- Impact Assessment Training: Providing training on basic impact assessment to assess the potential environmental impacts of subprojects. This includes identifying potential risks, evaluating mitigation measures, and understanding regulatory requirements.
- Environmental Monitoring and Reporting Training: Providing training on environmental monitoring and reporting helps PIUs understand how to track project impacts and ensure compliance with environmental regulations. This includes data collection methods, monitoring protocols, and reporting requirements.
- Legal and Regulatory Compliance Training: Training programs on legal and regulatory compliance can help CPMOs, PIUs, and contractors understand their responsibilities under Nepal's environmental laws. This includes education on relevant regulations, permits, and enforcement mechanisms.

130. **Budget for implementation**. The CPMO will prepare a tentative budget for implementing the EARF, which will cover the costs related to implementing the EMP, subprojects, staffing, including remuneration for the environmental officer, capacity building on environmental safeguards for staff, environmental screening activities, preparation of relevant environmental assessment reports and EMPs, and other related costs.

Table 11. List of personnel and items related to the implementation environment safeguards of IMEP

Items/Personnel	US$ million (indicative)	Remarks
Environmental Safeguard Specialist	0.0288	The expert will be part of the PIMS team and will lead the environmental safeguards support for the MOEWRI, CPMO, CAMO, and PIUs. The amount referred to here is the estimated salary.
Hill Lift Irrigation/Quality Control Engineer (HLIP)	0.084	These experts, who are part of the PIMS team, will support the project in monitoring the implementation of the Environmental Management Plan (EMP) during construction. The amount referred to here is the estimated salaries.
Irrigation Planning and Quality Control Engineer (RIP)	0.084	
Irrigation/ Quality Control Engineer (FMIS, Koshi)	0.096	
Irrigation/ Quality Control Engineer (FMIS, Madesh)	0.096	
Irrigation/ Quality Control Engineer (FMIS, Bagmati)	0.096	
Environment and social mitigation	5.22	This budget is allocated for the implementation of the EMP during construction and operations.
Training and capacity building	4.41	Empowering project staff, contractors, and communities is key to sustainability. The amount specified here is the total budget for training and capacity building of the project, which may include funding for safeguard-related training events.
Project management	3.86	Safeguard-related activities, such as monitoring activities, preparation of IEE and EMPs, and public consultations, will be referenced within this budget.

VII. MONITORING AND REPORTING

131. Monitoring activities by PIUs will record and document environmental impacts resulting from subproject interventions. It will ensure that mitigation measures as per EMP are fully implemented to reduce adverse impacts and enhance benefits. Monitoring will be vital in identifying new and/or unforeseen impacts arising from project implementation and establishing mechanisms to address these.

132. The designated environment officer in the PIUs (or engineers) monitor and measure the progress of the project's EMP implementation, including compliance issues and corrective actions, if any, in accordance with ADB SPS 2009. The PIUs will conduct internal environmental monitoring and provide environmental input based on on-site inspections and compliance checks. They will also prepare the subproject quarterly progress report (QPR) for submission to the CPMO until the project completion report is issued.

133. The CPMO will verify and use the information from the project QPR and submit it to ADB; it will later use the information from the subproject QPR and prepare an environmental monitoring report[20] for submission to ADB semi-annually. The outline of the semi-annual environmental monitoring report is shown in Appendix 5. The environmental monitoring reports will be publicly disclosed on the ADB public website. Reporting to ADB will continue until the project completion report is issued.

134. Types of subproject monitoring that may be conducted under subproject-specific EMP will include:

- **Environmental monitoring**. To be conducted by PIU and contractor across all stages of project implementation as described in the subproject-specific EMP and assessing compliance with applicable national environmental quality standards and/or International standards and best practices
- **Compliance monitoring**. To be conducted by the CPMO and/or PIUs to verify EMP compliance across all stages of subproject implementation.

135. ADB will oversee subproject compliance based on the quarterly and semi-annual environmental monitoring reports provided by the CPMO and site visits. For any non-compliance, ADB will make suitable recommendations for undertaking remedial measures for mid-term correction and improvement, if required. ADB’s monitoring and supervision activities are carried out on an ongoing basis until a Project Completion Report is completed.

136. The contractor will submit a monthly progress report to the PIUs on the EMP implementation, which will form part of the project QPR, and quarterly and semi-annual safeguard monitoring reports. The contractor's monthly progress reports will include a compilation of daily monitoring sheets that the EHS officer duly signs.

[20] The environmental reporting will cover EMP implementation, focusing on compliance and any needed corrective actions.

Appendix 1. HLIP and FMIS Subprojects are to be designed during project implementation.

FMIS Subprojects

S.N.	Name of ISP	Province	Ecological Belt	District	Rural/Municipality	Wards
1	Parbang ISP	Bagmati	Hill	Dhading	Gajuri Rural Municipality	8
2	Liti ISP	Bagmati	Hill	Dhading	Thakre RM	4&5
3	Dharmasala ISP	Bagmati	Hill	Dhading	Gajuri Rural Municipality	3
4	Ghyang Khola ISP	Bagmati	Hill	Dolkha	Melung Rural Municipality	1
5	Salleni Khola Pahari Basti ISP	Bagmati	Hill	Kavre	Bhumlu RM	2
6	Kumaitaar ISP	Bagmati	Hill	Kavre	Panchkhal Municipality	3,5
7	Bimreni Dhunge ISP	Bagmati	Hill	Sindhupalchowk	Melamchi	3
8	Chimti ISP	Bagmati	Hill	Sindhupalchowk	Paanchpokhari Thaangpal	4
9	Phaku Khola ISP	Bagmati	Hill	Kathmandu	Dakshinkali	8
10	Hinkuwa Khola ISP	Koshi	Hill	Bhojpur	Temkemaiyung	2
11	Chayalu Laktang ISP	Koshi	Hill	Dhankuta	Mahalaxmi Municipality	2
12	Leguwa Khola ISP	Koshi	Hill	Dhankuta	Mahalaxmi Municipality	3
13	Satake ISP	Koshi	Hill	Ilam	Phakphokthum RM	1
14	Runsung ISP	Koshi	Hill	Ilam	Suryodaya Municipality	3
15	Thotneri ISP	Koshi	Hill	Okhaldhunga	Champadevi RM	9
16	Thado Khola ISP	Koshi	Hill	Sankhuwasabha	Panchakhapan Municipality	2
17	Sang Khola ISP	Koshi	Hill	Sankhuwasabha	Savapokhari RM	6
18	Major Singh ISP	Koshi	Hill	Taplejung	Sirijangha RM	1
19	Chuwa ISP	Koshi	Hill	Taplejung	Aathrai Tribeni RM	3
20	Maynkhuwa Khola ISP	Koshi	Hill	Terhathum	Menchhayayem RM	5&6
21	Teliya Khola ISP	Koshi	Hill	Terhathum	Chhathar RM	1
22	Guranse ISP	Koshi	Hill	Terhathum	Menchhayayem RM	3&4
23	ChimChima Khola ISP	Koshi	Hill	Khotang	Diktel Rupakot Majhuwagadi	10
24	Lapuwa Khola ISP	Koshi	Hill	Khotang	BarahaPokhari Rural Municipality	4
25	Bablya Khola ISP	Koshi	Hill	Udaypur	Triyuga N.P	2
26	Rato Bhagwatipur ISP	Madhesh	Terai	Mahottari	Balawa Municipality	11
27	Rato Kokila ISP	Madhesh	Terai	Mahottari	Loharpattei and Jaleshwor NP	9
28	Baburam ISP	Madhesh	Terai	Sirha	Laxmipur patari	4

S.N.	Name of ISP	Province	Ecological Belt	District	Rural/Municipality	Wards
29	Saraswati ISP	Madhesh	Terai	Sirha	Laxmipur patari	2
30	Aruwa Aknowa ISP	Madhesh	Terai	Rauthat	Fatuwa Bijaypur	11
31	Let ISP	Madhesh	Terai	Dhanusha	Kamla	2
32	Oriya ISP	Madhesh	Terai	Parsa	Jagarnathpur	1
33	Megha ISP	Madhesh	Terai	Parsa	Parsagadhi	6
34	Tarauli ISP	Bagmati	Terai	Chitwan	Ratnanagar	5
35	Sira Jimdari ISP	Koshi	Terai	Morang	Kerabari RM	6&7
36	Bhuwa ISP	Koshi	Terai	Morang	Letang Municipality	5,6
37	Indreni ISP	Koshi	Terai	Morang	Pathari Sanischare Municipality	2,3 & 7
38	Shankar Beli I|SP	Koshi	Terai	Sunsari	Ramdhuni	7 & 7
39	Pathivara Krishi Kulo ISP	Koshi	Terai	Jhapa	Mech Nagarpalika	13 & 14

HLIP

S.N.	Name of ISP	Province	District	Rural/Municipality	Ward	Designed Report Status
1	Dumsi Hill lift	Gandaki	Tanahun	Vyas Municipality	10	Need to be reviewed
2	Chyanglitar Hill lift	Gandaki	Gorkha	Palungtar Municipality	7	Need to be reviewed
3	Kalesti Hill lift	Gandaki	Tanahun	Byas Municipality	7	Need to be reviewed
4	Tilakpur Hill lift	Lumbini	Palpa	Rampur Municipality	6	Need to be reviewed
5	Pyakluk Hill lift	Lumbini	Palpa	Rampur Municipality	6	Need to be reviewed
6	Alketar Hill lift	Lumbini	Palpa	Rampur Municipality	8	Need to be reviewed
7	Ramtar- Kumalgaun Hill lift	Lumbini	Palpa	Rampur Municipality	10	Need to be reviewed
8	Majhigaun Hill lift	Lumbini	Palpa	Rambha Rural Municipality	1	Need to be reviewed
9	Siko Danda Hill lift	Lumbini	Palpa	Rampur Municipality	10	Need to be reviewed

Appendix 1:Thresholds of projects based on the Schedule Environmental Protection Regulation (EPR)- 2020

Project	BES (Schedule-I)	IEE (Schedule-II)	EIA (Schedule-III)
Water Resources and Irrigation Sector	Construction of lift irrigation projects to 100 hectares.	Under the new system of irrigation: (a) To irrigate an area ranging from 200 to 2,000 hectares in Terai and Inner Madhesh; (b) Irrigating an area of 25 to 500 hectares in hilly valleys and tar; (c) To irrigate an area of 25 to 200 hectares in hill slopes or mountainous areas, (d) Constructing lift irrigation projects of more than 100 hectares, Under the Revival System of Irrigation: Undertake any revival project involving the construction of new headworks or alteration of the original canal in irrigation projects within the existing system; Carry out any water resource development work that displaces a permanent resident population of 25 to 100 persons; Carrying out control of rivers of more than 10 kilometers in length,	Under the new system of irrigation: (a) Irrigating an area exceeding 2,000 hectares in Terai or interior Madhesh; (b) Irrigating an area exceeding 500 hectares in hilly valleys and tar; (c) To irrigate more than 200 hectares in hilly slopes or mountainous areas. Carrying out any water resource development work which displaces a permanent resident population of more than 100 persons, Construction of multi-purpose reservoirs Using water from one watershed area to another watershed (inter-basin water transfer)

Appendix 3. Rapid Environmental Assessment Checklist

REA Checklist for irrigation related subprojects

Screening Questions	Yes	No	Remarks
A. Project Siting Is the Project area adjacent to or within any of the following environmentally sensitive areas?			
▪ Protected Area			
▪ Wetland			
▪ Mangrove			
▪ Estuarine			
▪ Buffer zone of protected area			
▪ Special area for protecting biodiversity			
B. Potential Environmental Impacts Will the Project cause…			
▪ loss of precious ecological values (e.g., result of encroachment into forests/swamplands or historical/cultural buildings/areas, disruption of the hydrology of natural waterways, regional flooding, and drainage hazards)?			
▪ conflicts in water supply rights and related social conflicts?			
▪ impediments to the movements of people and animals?			
▪ potential ecological problems due to increased soil erosion and siltation, leading to decreased stream capacity?			
▪ Insufficient drainage leading to salinity intrusion?			
▪ over-pumping of groundwater, leading to salinization and ground subsidence?			
▪ impairment of downstream water quality and, therefore, impairment of downstream beneficial uses of water?			
▪ dislocation or involuntary resettlement of people?			
▪ disproportionate impacts on the poor, women and children, Indigenous Peoples, or other vulnerable groups?			
▪ potential social conflicts arising from land tenure and land use issues?			
▪ soil erosion before compaction and lining of canals?			
▪ noise from construction equipment?			

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

A Checklist for Preliminary Climate Risk Screening

Screening Questions		Score	Remarks[21]
Location and Design of project	Is the siting and/or routing of the project (or its components) likely affected by climate conditions, including extreme weather-related events such as floods, droughts, storms, and landslides?		
	Would the project design (e.g., the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea level, peak river flow, reliable water level, peak wind speed, etc)?		
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 (e.g., annual power production) of project output(s) (e.g., hydro-power generation facilities) throughout their design lifetime?		

Options for answers and corresponding scores are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

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

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

Other Comments:_____
_____

Prepared by: _____

[21] 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.

REA Checklist for agriculture facilities

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			
▪ Legally protected Area (core zone or buffer zone)			
▪ Wetland			
▪ Mangrove			
▪ Estuarine			
▪ Special area for protecting biodiversity			
B. Potential Environmental Impacts Will the Project cause…			
▪ impairment of historical/cultural areas; disfiguration of landscape or potential loss/damage to physical cultural resources?			
▪ disturbance to precious ecology (e.g. sensitive or protected areas)?			
▪ alteration of surface water hydrology of waterways resulting in increased sediment in streams affected by increased soil erosion at construction site?			
▪ deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction?			
▪ increased air pollution due to project construction and operation?			
▪ noise and vibration due to project construction or operation?			
▪ involuntary resettlement of people? (physical displacement and/or economic displacement)			
▪ disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?			
▪ 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?			

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

A Checklist for Preliminary Climate Risk Screening

Country/Project Title:

Sector :

Subsector:

Division/Department:

Screening Questions		Score	Remarks
Location and Design of project	Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather related events such as floods, droughts, storms, landslides?		
	Would the project design (e.g. the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc)?		
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 (e.g. annual power production) of project output(s) (e.g. hydro-power generation facilities) 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: _____

Appendix 4. Outline Of ADB Initial Environmental Examination

Executive Summary
I. Introduction
A. Background
B. Purpose of the Initial Environment Examination
C. Methodology
D. Structure of IEE Report
II. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK
A. ADB Safeguard Policy Statement 2009
B. National Environmental Impact Assessment Law
C. Application for Environmental Clearance
D. Applicable Environmental Standards
E. Other Relevant National Laws
F. International Environmental Agreements
III. Description of the Subproject
A. Subproject Location and Area
B. Subproject Scope and Components
C. Construction schedule
IV. Analysis of alternatives
V. Description of baseline environment
A. Subproject Location
B. Physical Environment
C. Biodiversity
D. Socio-economic environment
VI. Anticipated Impacts and mitigation measures
A. Impacts During Design Phase
B. Impacts and mitigation measures during Construction Phase
C. Impacts and mitigation measures during Operation Phase
VII. Public consultation and information disclosure
A. Public consultation
B. Key target stakeholders
C. Public Consultations Conducted
D. Findings of the Public Consultation
E. Information Disclosure
VIII. Grievance Redress Mechanism
IX. Environmental Management Plan
A. Institutional Arrangement
B. Environmental Management Plan (EMP)
C. Environmental Monitoring Program
D. Capacity Development Training
E. Environmental Management and Monitoring Plan Implementation Cost (Indicative)
X. Monitoring and Reporting
XI. Conclusion and recommendation

Sample EMP Template

Project Component/ Activity	Environmental Components or Issues	Description of the Environmental Impacts	Mitigation Measures	Responsibility	Supervision	Cost (INR)
PRE-CONSTRUCTION PHASE						
Clearing of Vegetation/ Trees	Biodiversity (both flora and fauna	Loss of floral and faunal species such as birds (avifauna) as their habitat may get disturbed along with the felling of trees.	Compensatory plantation at project site for development of green-belt.	contractor to implement		
	Soil erosion	Loss of top soil, disturbance to landscape, land degradation and visual impacts.	Grass turfing to avoid soil erosion once construction work is over			
	GHG emission	Emission from vegetation burning (if any)	Tree transplantation should be carried out as far as possible. In case such option is non-feasible, then dead plants should be bio-degraded at site. Burning by all means should be avoided			
.....						
CONSTRUCTION PHASE						
...						
OPERATION PHASE						

Appendix 5. Semi-Annual Environmental Monitoring Report Template

1. **Introduction**
   - Overall project description and objectives
   - Environmental category as per ADB Safeguard Policy Statement, 2009

2. **Project Safeguards Team**
   - Identify the role/s of Safeguards Team including schedule of on-site verification of reports submitted by consultants and contractors.

Name	Designation/Office	Email Address	Contact Number
1. PMU			
2. PIUs			
3. Consultants			

3. **Overall project and subproject/package progress and status**
   - Indicate (i) status of design – preliminary design or final design, (ii) status of implementation - under bidding, contract awarded but no works yet, contract awarded with works, civil works completed, or O&M

Package Number	Components/List of Works	Type of Contract *(specify if DBO, DB or civil works)*	Status of Implementation *(specify if Preliminary Design, Detailed Design, On-going Construction, Completed Works, or O&M phase)*[1]	Contract Status *(specify if under bidding or contract awarded)*	If On-going Construction	
					%Physical Progress	Expected Completion Date

   - For package with awarded contract, provide name/s and contact details of contractor/s' nodal person/s for environmental safeguards.

Package-wise Contractor/s' Nodal Persons for Environmental Safeguards

Package Name	IEE Cleared by ADB *(provide date)*	Contractor	HSE Nodal Person	Email Address	Contact Number

4. Status of IEE per Subproject/Package

- Provide status of updated/final IEE[2] per package.

Package-wise Implementation Status

Package Number	Final IEE based on Detailed Design				Site-specific EMP (or Construction EMP) approved by Project Director?[3] *(Yes/No)*	Remarks
	Not yet due *(detailed design not yet completed)*	Submitted to ADB *(provide date of submission)*	Disclosed on project website *(provide link)*	Final IEE provided to Contractor/s *(Yes/No)*		

5. Compliance status with National/State/Local statutory environmental requirements[4]

Package No.	Statutory Environmental Requirements[5]	Status of Compliance *(Specify if obtained, submitted and awaiting approval, application not yet submitted)*	Validity Date(s) *(if already obtained)*	Action Required	Specific Conditions that will require environmental monitoring[6]

6. Compliance status with environmental loan covenants

Schedule No. and Item *(see Project Loan Agreement and list provisions relevant to environmental safeguards, core labor standards and occupational health and safety)*	Covenant	Status of Compliance	Action Required

7. Compliance status with the environmental management plan (refer to EMP tables in approved IEE/s)

- Confirm in IEE/s if contractors are required to submit site-specific EMP (SEMP)/construction EMPs (CEMP). If not, describe the methodology of monitoring each package under implementation.
- Provide over-all compliance of the contractors with SEMP/CEMP. This should be supported by contractors' monthly monitoring reports to PIU(s) and/or verification reports of PIU(s) or project consultants. Include as appendix supporting documents such as **signed** monthly environmental site inspection reports prepared by consultants and/or contractors.

Overall Compliance with SEMP/CEMP

Package No.	Status of SEMP/CEMP Implementation *(Excellent/ Satisfactory/ Partially Satisfactory/ Below Satisfactory)*	Action Proposed and Additional Measures Required

- Provide description based on site observations and records:
  - Confirm if any dust was noted to escape the site boundaries and identify dust suppression techniques followed for site/s.
  - Identify muddy water was escaping site boundaries or muddy tracks were seen on adjacent roads.
  - Identify type of erosion and sediment control measures installed on site/s, condition of erosion and sediment control measures including if these were intact following heavy rain;
  - Identify designated areas for concrete works, chemical storage, construction materials, and refueling. Attach photographs of each area.
  - Confirm spill kits on site and site procedure for handling emergencies.
  - Identify any chemical stored on site and provide information on storage condition. Attach photograph.
  - Describe management of stockpiles in each work site (construction materials, excavated soils, spoils, etc.). Provide photographs.
  - Describe management of solid and liquid wastes on-site (quantity generated, transport, storage and disposal). Provide photographs.
  - Provide information on barricades, signages, and on-site boards. Provide photographs.
  - Provide information on workers labor camp(s). Provide photographs.
  - Provide information on work-related accidents and incidents. Describe actions implemented.
  - Provide information on if there are any activities being undertaken out of working hours and how that is being managed.

- Provide list of trainings on environmental safeguards, core labor standards, and OSH conducted during the reporting period. Include ADB-organized workshop, trainings, seminars, etc.)

Trainings, Workshops and Seminars Conducted

Date	Topic	Conducted by	No. of Participants (Total)	No. of Participants (Female)	Remarks

Provide the monitoring results as per the parameters outlined in the approved EMP (or site-specific EMP/construction EMP when applicable).

Summary of Environmental Monitoring Activities (for the Reporting Period)[7]

Impacts *(List from SEMP/CEMP)*	**Mitigation Measures** *(List from SEMP/CEMP)*	**Parameters Monitored** *(As identified in the SEMP/CEMP)*	**Method of Monitoring** *(Visual, Actual Sampling, etc)*	**Location of Monitoring** *(Provide GPS Coordinates)*[8]	**Date of Monitoring Conducted**	**Person Who Conducted the Monitoring**
Design Phase						
Pre-Construction Phase						
Construction Phase						
Operational Phase						

8. Monitoring of environmental IMPACTS on PROJECT SURROUNDINGS

- Confirm records of pre-work condition of roads, agricultural land or other infrastructure prior to starting to transport materials and construction.

Package No.	Status of Pre-Work Conditions *(Recorded / Not Recorded)*	Baseline Environmental Conditions (air, water, noise) Documented *(Yes / No)*	Action Proposed and Additional Measures Required

- Provide information on monitoring activities conducted during reporting period. If not conducted, provide justification. Compare results with baseline and internationally recognized standards.[9]

Air Quality Monitoring Results

Site No.	Date of Testing	Site Location *(Provide GPS Coordinates)*[10]	Parameters *(as required by statutory clearances or as mentioned in the IEE)*			Remarks
			PM10 µg/m3	SO2 µg/m3	NO2 µg/m3	

Water Quality Monitoring Results

Site No.	Date of Sampling	Site Location	Parameters *(as required by statutory clearances or as mentioned in the IEE)*						Remarks
			pH	Conductivity µS/cm	BOD mg/L	TSS mg/L	TN mg/L	TP mg/L	

Noise Quality Monitoring Results

Site No.	Date of Testing	Site Location	LA_{eq} (dBA) *(as required by statutory clearances or as mentioned in the IEE)*		Remarks
			Day Time	Night Time	

9. Information Disclosure and Consultations

- Confirm PMU/PIU/contractors provide project-related information to stakeholders, communities and/or affected people before and during construction works.[11] Provide information on consultations conducted during reporting period such dates, topics discussed, type of consultation, issues/concerns raised, safeguards team member present. Attach minutes of meetings (ensure English translation is provided), attendance sheet, and photos.

Date of Consultation	Location	Number of Participants *(specify total, male and female)*	Issues/Concerns Raised	Response to issues/concerns

10. Grievance Redress Mechanism

- **Grievance Redress Mechanism.** Provide information on establishment of grievance redress mechanism and capacity of grievance redress committee to address project-

related issues/complaints. Include as appendix Notification of the GRM (package-wise if applicable).

- **Complaints Received during the Reporting Period.** Provide information on number, nature, and resolution of complaints received during reporting period. Attach records as per GRM in the approved IEE. Identify safeguards team member/s involved in the GRM process. Attach minutes of meetings (ensure English translation is provided).

11. Summary of Key Issues/Concerns Identified During the Reporting Period and Remedial Actions

- Provide corrective action plan which should include all issues/concerns, actions required to be implemented, responsible entities, and target dates.

12. Status of Corrective Actions from Previous SEMR(S)

- Provide information on corrective actions to be implemented as reported in the previous SEMR(s). Include status of implementation of feedbacks/comments/suggestions as provided by ADB, if any.

Corrective Action Plan Status

Issues/Concerns	Corrective Action	Status	Remarks

13. Appendixes

- Photos
- Records of consultations
- Copies of environmental clearances and permits (if not provided in the previous SEMR)
- Environmental site inspection report (if not provided in the previous SEMR)
- Other

[1] If on-going construction, include %physical progress and expected date of completion.
[2] IEE prepared based on preliminary design and cleared by ADB with condition that updated/Final IEE based on detailed design will be submitted.
[3] Works will not be allowed until SEMP/CEMP is approved by project implementation unit or project management unit.
[4] All statutory clearance/s, no-objection certificates, permit/s, etc. should be obtained prior to award of contract/s. Attach as appendix all clearance obtained during the reporting period. If already reported, specify in the "remarks" column.
[5] Specify statutory requirements: environmental clearance? Permit/consent to establish? Forest clearance? Workers/Labor permit, etc.
[6] *Example: Environmental Clearance requires ambient air quality monitoring, Forest Clearance/Tree-cutting Permit requires 2 trees for every tree, etc.*
[7] Attach Laboratory Results and Sampling Map/Locations
[8] If GPS coordinate is not available, provide landmark(s) and/or chainage.
[9] ADB Safeguard Policy Statement (SPS) Appendix 1, para 33: During the design, construction, and operation of the project the borrower/client will apply pollution prevention and control technologies and practices consistent with international good practice, as reflected in internationally recognized standards such as the World Bank Group's Environment, Health and Safety Guidelines. These standards contain performance levels and measures that are normally acceptable and applicable to projects. When host country regulations differ from these levels and measures,

Appendix 6. Environmental assessment process and requirements of per EPR, 2020