

Environmental Monitoring Report

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#4 Semiannual Report (July 2024 to December 2024)

April 2025

Nepal: Nuts and Fruits in Hilly Areas Project

Prepared by Ministry of Agriculture and Livestock Development for the Asian Development Bank (ADB).

Currency Equivalence

(as of April 10 2025)

Currency unit	–	Nepalese Rupees (NRs)
NRs1.00	=	\$ 0.0072
\$1.00	=	NRs 138.71 (Current Rate)

ABBREVIATIONS

ADB	–	Asian Development Bank
CGFMC	–	Credit Guarantee Fund Management Committee
CGMC	–	Competitive Grant Management Committee
CPMU	–	Central Project Management Unit
DCGF	–	Deposit Credit Guarantee Fund
DG	–	Director General
DMF	–	Design and Monitoring Framework
DoA	–	Department of Agriculture
DoAD	–	Directorate of Agriculture Development
EMP	–	Environmental Management Plan
EMoP	–	Environmental Monitoring Plan
EMR	–	Environmental Monitoring Report
GAFSP	–	Global Agriculture and Food Security Program
GESI	–	Gender Equality and Social Inclusion
GESI-AP	–	Gender and Social Inclusion Action Plan
IA	–	Implementing Agency
LLCC	–	Local Level Coordination Committee
MoLMAC	–	Ministry of Land Management, Agriculture and Cooperatives (Provincial)
MoALD	–	Ministry of Agriculture and Livestock Development (Federal)
MoALD	–	Ministry of Agriculture and Livestock Development (Provincial)
MoALM	–	Ministry of Agriculture and Land Management
MoIACS	–	Ministry of Industry, Agriculture and Cooperatives
NAFHA	–	Nuts and Fruit in Hilly Areas Project
NARC	–	Nepal Agricultural Research Council
NCFD	–	National Center for Fruit Development
PFI	–	Partner Financial Institutions
PIU	–	Project Implementation Unit
PoP	–	Package of Practices
PPSC	–	Provincial Project Steering Committee
PSC	–	Project Steering Committee
SMC	–	Subsidy Management Committee
SME	–	Small and Micro Enterprise
SMR	–	Social Monitoring Report
SPS	–	ADB Safeguard Policy Statement (2009)
TA	–	Technical Assistance
TASF	–	Technical Assistance Special Fund
ToR	–	Terms of References

{WEIGHTS AND MEASURES}

ha (Hectare) – 1 hectare is equivalent to 10000 m² area
One hectare = 19.65 ropani

NOTES

- (i) The fiscal year (FY) of the Government of Nepal and its agencies ends on 15 July. FY before a calendar year denotes the year in which the fiscal year ends, e.g., FY 2080/81 ends on 15 July 2024.
- (ii) In this report, "\$" refers to US dollars.

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1. INTRODUCTION

1.1 Project Description

The Nepal Government has been implementing the Nuts and Fruits in Hilly Areas (NAFHA) Project with assistance of a US\$60 million loan and US\$10 million grant from the Asian Development Bank (ADB) where as US\$9 million grant from the Global Agriculture and Food Security Program (GAFSP). The project will increase agricultural income of 40,000 beneficiary farm households approximately in 100 municipalities in hilly areas of five provinces – Koshi, Bagmati, Gandaki, Karnali and Sudurpashchim. This will be achieved through (i) the development of approximately 10,000 hectares (ha) of fruit and nut orchard, value-addition to nuts and fruits produced by 30,000 households, and institutional capacity building for nursery and horticulture sector management; and (ii) vegetable and other nutritious crop production in 1,000 ha and its marketing by 10,000 smallholder households who are not able to invest on fruit and nut orchard development in the project provinces.

The project is aligned with following impacts: (i) livelihoods of rural households improved; and (ii) resilience of farmers to climate change improved. The project will have the following outcome: beneficiary farmer's agricultural income from climate resilient horticulture farming increased. This will be achieved through improved nursery management, enhanced production and productivity in orchards, enhanced value addition and commercialization of fruits and nuts. The project will also support smallholders in the same project areas, who would not have been able to invest in commercial fruit and nut farming, to generate income through vegetable and other crop farming.

The project will have the following outputs:

Output 1: Institutional capacity for nursery and horticulture sector management improved.

This output will ensure a sufficient supply of quality planting materials of fruit and nut crops in Nepal. At the national level, the project will (i) prepare nursery standards, regulations and an inspection system; (ii) upgrade horticulture station and/or center facilities for testing, cleaning and maintenance of planting materials, and nursery quality control; (iii) train horticulture station/center staff, and organize knowledge exchange programs and workshops to meet internationally accepted sanitary and phyto sanitary standards; (iv) upgrade private nurseries to ensure healthy and quality material production, and transfer genetic technologies to private nurseries (scheme 6); (v) commission research on more climate resilient and adaptable varieties of fruits and nuts; (vi) develop a nursery certification scheme and roll it out with volunteer private nurseries; and (vii) train and certify cooperatives and private input suppliers which will serve project clusters. At the provincial level, the project will support: (i) development of interactive crop suitability maps at crop variety level through integration of climate, soil, and landscape information; and (ii) land classification and zoning for orchard development. Output 1 will be implemented by Nepal Agricultural Research Council (NARC), National Center for Fruit Development (NCFD) and provincial Directorate of Agriculture Development (DoAD) under each of five provincial agricultural ministries.

Output 2: Production and productivity of project farmers increased. This output will be gained through planting of new orchards and fruits e.g, almond, apple, avocado, citrus (lime, mandarin and sweet orange), kiwi, macadamia, pecan and walnut production on approximately 10,000 ha of land and productivity of fruits and orchards will enhance through (i) development of

the packages of practice (PoP) incorporating climate analysis, soil management, variety recommendation and crop husbandry, drip irrigation and management, and overall orchard management including Good Agricultural Practices (GAP), integrated pest management, harvest techniques and storage; (ii) trained the beneficiary farmers in the packages of practice through (a) implementing agencies and farmer group facilitators, (b) private technical service and input providers, (c) farmer-to-farmer extension program, identifying lead farmers and training them to demonstrate climate change adaptation and best practices, and (d) digital technology based farm advisory system development and promotion.

The project will also provide financial support through (i) partial grants for the development of approximately 10,000 ha of horticultural orchards development and drip irrigation system (scheme 2); (ii) providing grant incentives to farmers based on plant survival rate; (iii) assessing and verifying carbon sequestration benefits from orchards, and exploring carbon financing options; and (iv) supporting beneficiary farmers' loan access by establishment and operation of a Guarantee Fund Scheme (GFS) (scheme 1) for smallholder horticulture farmers and rural agribusinesses, leveraging: (a) the full up-front investment loans, including working capital, from participating banks and financial institutions to farmers, farmer groups, cooperatives and agro-enterprises up to 1 year; and (b) the remaining loan of farmers, farmer groups and cooperatives up to 5 years.

Smallholders farmers with less than 4 ropani (0.2 ha) who are unable to invest in commercial fruit and nut orchard development under the project will be supported for irrigated off-season vegetables and wet season nutritious food crop production. Approximately 10,000 farm households will be eligible for this category. The GAFSP approved grants to finance the following activities: (i) vegetable grower identification and their capacity building through farmer group formation; (ii) extension of drip irrigation and rural financing support for vegetable and other crop production in 1,000 ha (part of scheme 2); and (iii) partial grants for the establishment of vegetable value-addition equipment and infrastructure at three different levels – cooperative (scheme 3), agribusiness through public-private partnership (scheme 4) and local levels (scheme 5). The World Food Programme (WFP) will provide parallel financing of grants from GAFSP for establishing and operating farmer nutrition schools to access and utilize food for improved dietary diversity. Output 2 will be implemented by NCFD and provincial DOAD under each of five provincial agricultural ministries.

Output 3. Value addition to hilly area horticulture product enhanced. The output will (i) promote agriculture/horticulture cooperatives to aggregate fruits, nuts and other crop produce, better manage quality of horticultural products and improve profits of smallholder farmers; (ii) strengthen those associations and cooperatives that are willing to invest in value addition activities through developing training programs and conducting training of cooperatives in post-harvest management, food safety control system such as Hazard Analysis Critical Control Point, financial management, business, marketing and entrepreneurship, while promoting female leadership; (iii) provide matching grants to support cooperatives' investment in value addition equipment for crop washing, sorting, grading, cooling, processing, packaging, and quality control (scheme 3); (iv) Promote agribusinesses and service providers that collaborate with project beneficiaries by qualify matching grants for improving, *inter alia*, traceability systems, certification systems, internet-based marketing, organic production and cold chain linkage (scheme 4); and (v) develop value-addition infrastructure such as commodity storage, collection center and orchard fencing that provide public good benefits by co-financing investments from provincial governments and

local-level (scheme 5). Output 3 will be implemented by NCFD and provincial DOAD under each five provincial agricultural ministries.

1.2 Project Components

The NAFHA project will finance the upgrading of 12 public horticulture stations/centers under NARC, Provincial governments as well as NCFD as shown in Figure 1. The main objective of this activity is to ensure that verified quality planting materials are provided to project farmers. The project is expected to contribute in long-term capacity building of these horticulture stations/centers that can serve broader areas beyond the project's targeted crops. Targets locations of orchards establishments is shown in Figure 2.

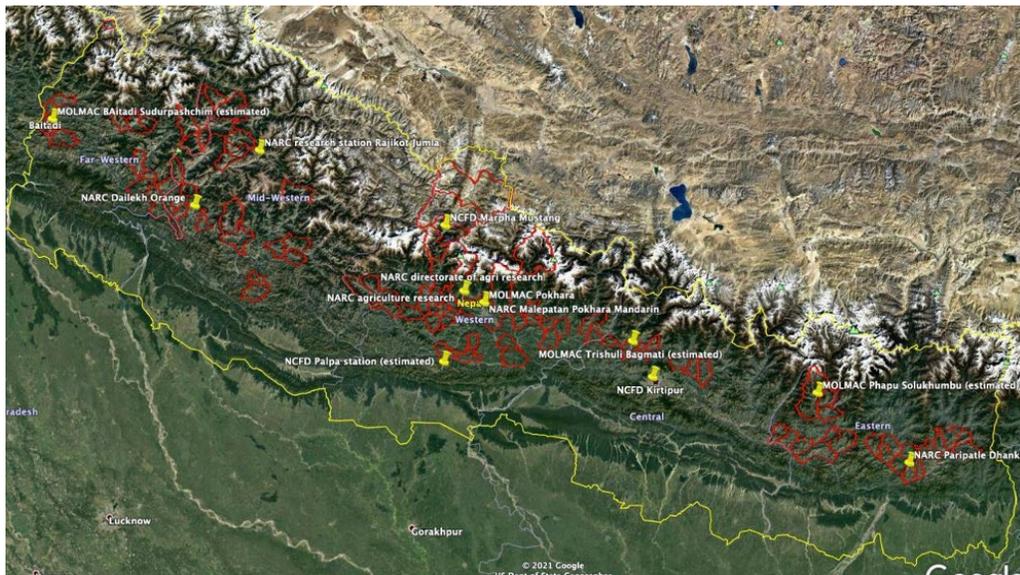


Figure 1: Map shows the horticulture centers/stations planned to be upgraded under NAFHA Project

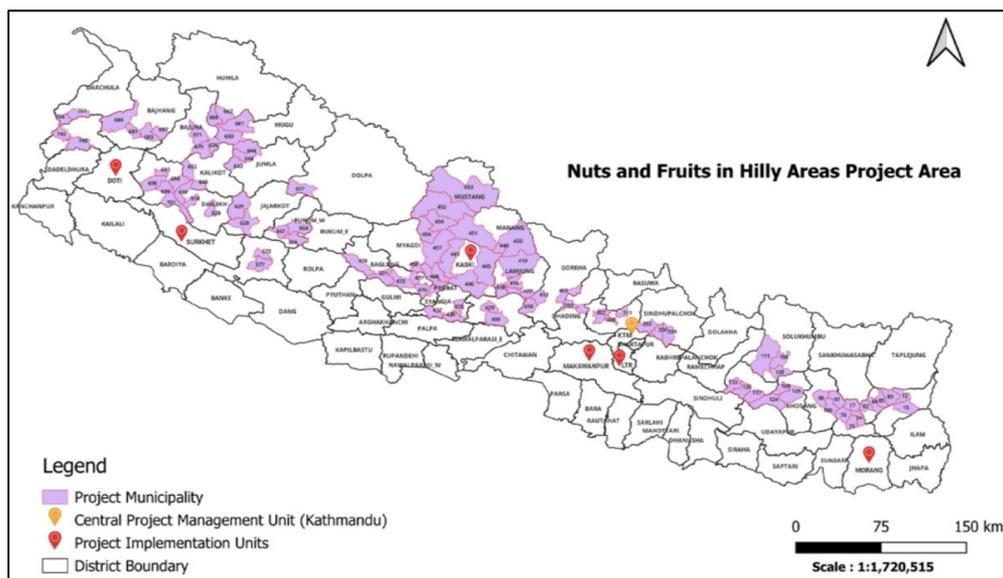


Figure 2: Map showing the target locations of orchards establishment

The project supports production of the following key crops and upgradation of horticulture station/center located in each target province as specified in Table 1:

Table 1: Province wise project targeted fruit crops, its planting area and station/center to be upgraded by the project

Name of Province	Estimated project-supported orchards and its area	Horticulture station/center to be upgraded by the project 1
Koshi	Apple- 50ha, Orange- 900 ha, Lime- 500 ha, Avocado- 300ha, Kiwi- 400ha and Walnut- 50ha	<ul style="list-style-type: none"> • Horticulture Center, Phaplu, Solukhumbu, • National Citrus Research Program, Paripatle, Dhankuta(NARC)
Bagmati	Orange- 300ha, Lime- 300ha, Avocado -150ha, Macadamia- 300ha and Walnut -100ha	<ul style="list-style-type: none"> • Sub-tropical horticulture Development Center, Trishuli, Nuwakot • Warm Temperate Horticulture Center, Kirtipur, Kathmandu
Gandaki	Apple- 100ha, Orange- 800ha, Lime- 750ha, Avocado- 150ha, Kiwi- 150ha, Walnut- 250ha and Macadamia- 250ha	<ul style="list-style-type: none"> • Temperate Horticulture Center, Marpha, Mustang (NCFD) • Citrus Fruit Development Center, Tansen, Palpa • Regional agricultural Research Station, Lumle, Kaski (NARC) • Horticulture Research Station, Malepatan, Kaski (NARC) • Horticulture Development Resource Center, Pokhara
Karnali	Apple- 1,450ha, Orange- 350ha, Walnut- 600ha, Pecan 100-ha and Almond- 100ha	<ul style="list-style-type: none"> • Horticulture Research Station, Rajikot, Jumla (NARC) • Horticulture Research Station, Kimugaun, Dailekh (NARC)
Sudurpashchim	Apple- 400ha, Orange- 250ha, Lime- 100ha, Walnut- 600ha, Pecan- 100ha and Almond- 100ha	<ul style="list-style-type: none"> • Dry Fruit Development Center, Satbanjh, Baitadi

The project will support the development of orchards, across 5 provinces (Koshi, Bagmati, Gandaki, Karnali and Sudurpashchim), on 10,000 ha of land located in 100 municipalities of 5 provinces. Orchard crops that will be eligible for support includes almond, apple, avocado, citrus (lime, mandarin and sweet orange), kiwi, macadamia, pecan and walnut. Farmers of project municipality will be allow to choose the four most suitable crops for their municipality among the other orchard crops. The list of participating municipalities with their eligible crops will be publicly disclosed on the project website and project communication materials.

1.3 Purpose of the Environmental Monitoring Report (EMR)

The project is *categorized as B* for environment based on environmental assessment study. The project has prepared an Initial Environmental Examination (IEE) for the project-financed components such as (i) Orchard and vegetable areas development, (ii) Drip irrigation development, (iii) Improvement of horticulture center facilities and (iv) Private nursery upgrading and interventions under the matching grant. Environmental management plan (EMP) for each component are prepared in the IEE.¹ These EMPs outline measures to mitigate all anticipated environmental impacts during pre-construction, construction, and operation stages such as soil disturbance and moderate workers' health and safety risks. The EMP will be included in bidding documents and contract agreements with contractors, and guide beneficiaries for orchard development and nursery improvements. With support from consultants, PIUs at the provincial level will monitor and document the EMP implementation and report to ADB on semi-annual basis. During project implementation, beneficial environmental impacts are expected at the target orchard areas such as improvement of land-cover, creation of carbon sinks and soil-water conservation.

The project aims to support existing horticulture research centers/stations by upgrading or developing facilities to produce quality fruit and nut planting materials to (i) align with the international standards, (ii) commission research on climate resilient fruits and nuts varieties, and (iii) improve genetic technologies. There are potential occupational health and safety risks due to the activities under Output 1. Adequate environment safeguard measures will be included in the tender documents, which the contractor will comply with to mitigate potential environmental health and safety risks and impacts.

The EMRs, covering a 6-month period, have to be prepared and submitted semi-annually to ADB. The purpose of EMR is to:

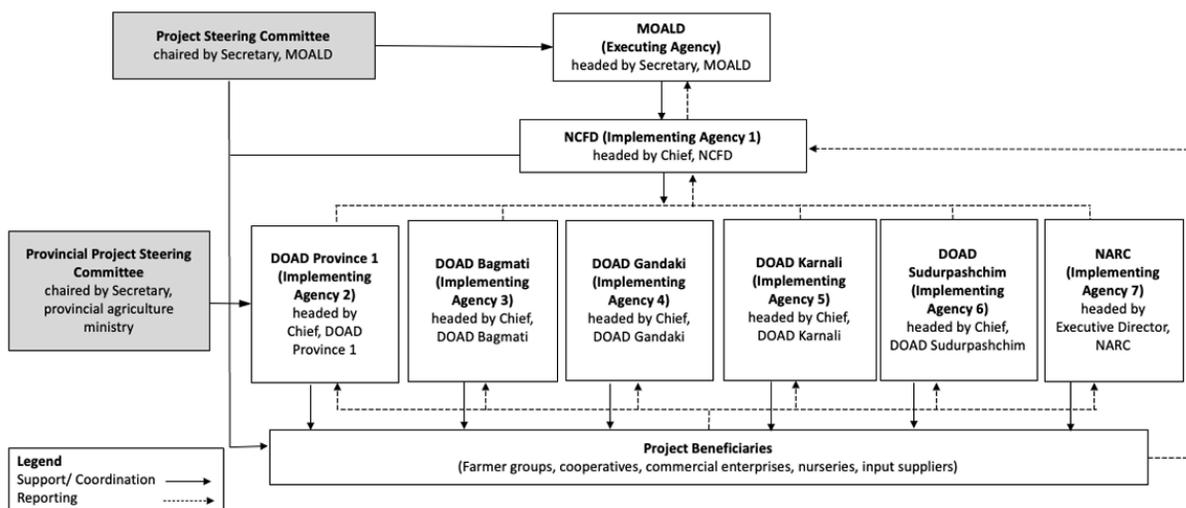
- document the progress on the EMP implementation for each of the project components during both construction and operation stages;
- report environment safeguards activities starting from loan effectiveness until the end of the project;
- ensure that project investments comply with applicable national laws and regulations;
- monitor the recommendations in the IEE and measures in the EMP for environmental safeguard activities;
- document any grievances from affected people and resolutions thereof;
- document any public consultations during reporting period; and
- monitor environmental management activities in project implementation

¹ <https://www.adb.org/projects/documents/nep-48218-006-iee>

2. INSTITUTIONAL ARRANGEMENT

The MoALD is the executing agency of the project. The executing agency is responsible for overall coordination, implementation, and monitoring of the project activity including safeguard compliance. There are seven implementing agencies (CPMU-1, PIUs-6) for the project. The CPMU has overall responsibility for environment safeguards monitoring and ensuring compliance with ADB's SPS 2009, government requirements, and other related requirements as specified in project documents particularly safeguards monitoring reports and tender document, address safeguards issues from affected people following the grievance redress mechanisms established by the project; consolidate project's safeguard monitoring results updated by PIUs, and provide consolidated input to the project progress and safeguard monitoring reports; and submit semi-annual environment monitoring reports to ADB.

The project has applied a systematic monitoring mechanism for environment safeguard as shown in Figure 3. Internal monitoring has been applied through CPMU and PIUs supported by various consulting agencies (FGCF). Safeguard focal officers are designated in CPMU and PIUs.



CPMU = Central Project Management Unit; DOAD = (provincial) Directorate of Agriculture Development; MOALD = Ministry of Agriculture and Livestock Development; MOF = Ministry of Finance; NARC = Nepal Agricultural Research Council; NCFD = National Center for Fruit Development; PIU = Project Implementation Unit
Source: Asian Development Bank.

Figure 3: Institutional Arrangement for Environment Safeguard Monitoring²

Till the reporting period, recruitment under CS06 package is at final stage. Negotiation with first ranked Consultant (CRDN-TMS JV in association with NFAC) completed on 18 October 2024. The negotiation minutes along with CSC evaluation report for replacement of key expert and draft contract agreement has been submitted to ADB for review on 20 Oct 2024 and received no objection on 24 Oct 2024. CPMU has submitted the document to Department of Agriculture (DoA) for final approval to proceed for final contract. In the meantime, complaints on procurement have been received through Commission for the Investigation of Abuse of Authority (CIAA) and it has been resolved on 8 January 2025 as per the letter of CIAA. Therefore, final approval has been

² Page 15, Project Administration Manual: [chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.adb.org/sites/default/files/project-documents/48218/48218-006-pam-en.pdf](https://efaidnbmnnnibpcajpcglclefindmkaj/https://www.adb.org/sites/default/files/project-documents/48218/48218-006-pam-en.pdf)

concluded from Department of Agriculture (DoA) and contract was awarded to the first ranked consultant (CRDN-TMS JV in association with NFAC) by 3 February 2025 where as Project Implementation Support Consultant (PISC) were mobilized since 13 February, 2025. Project is supported by the environment safeguard specialist procured under the Project Implementation Support Consultant (PISC) through CS06 package. Beside that Each PIU also have environment specialists to implement the IEE/EMP at province level, data collection/ reporting, Implementation of impacts mitigation measures, environmental screening of sub project, preparing due diligence report as required.

3. SUB-PROJECT/PACKAGE DESCRIPTIONS

The project is aligned with the following impacts: (i) livelihoods of rural households improved; and (ii) resilience of farmers to climate change improved³. The project will have the following outcome: beneficiary farmers' agricultural income from climate resilience farming of fruits and nuts increased. This will be achieved through improved nursery management, enhanced production and productivity in orchards, and enhanced value addition in fruits and nuts. The NAFHA project implementation areas are stated in Table 2. Now the project implementation started in Batch-1 and Batch 2 of 54 local level of project provinces.

Table 2: NAFHA Project implementation areas

Districts	<ol style="list-style-type: none"> 1. Koshi: Panchthar, Terhathum, Dhankuta, Bhojpur, Khotang, Okhaldhunga and Solukhumbu 2. Bagmati : Sindhupalchok, Nuwakot and Dhading 3. Gandaki: Gorkha, Lamjung, Syangja, Tanahu, Kaski, Syangja, Parbat, Mustang, Myagdi and Baglung 4. Karnali: Rukum West, Salyan, Jajarkot, Dailekh, Kalikot, Jumla, Mugu, Humla and Dolpa 5. Sudurpaschim: Accham, Bajura, Baitadi, Bajhang and Darchula 		
Targeted Numbers of Municipalities per Provinces	Koshi	7 districts	22 municipalities
	Bagmati	3 districts	8 municipalities
	Gandaki	10 districts	34 municipalities
	Karnali	9 districts	20 municipalities
	Sudurpaschim	5 districts	16 municipalities
Targeted Area	Total target area (ha)		10,000 (for fruit orchard) and 1,000 (for vegetables and other crops)
	Average area per municipality (ha)		100
	Average area per municipality (ropani)		2,000
	Average households per municipality		300
	Average area per household (ropani)		6.7
Species proposed in (Ha) wise area	Apple		2,050
	Orange		2,600
	Lime		1,650
	Avocado		600

³ Government of Nepal. Ministry of Agricultural Development. 2016. [Agricultural Development Strategy 2015 to 2035](#). Kathmandu.

	Kiwi	550
	Walnut	1,600
	Macadamia	550
	Pecan	200
	Almond	200
	Vegetables and crops	1,000
	Total	11,000
No of Research Centers to be Upgraded	12	
Total Orchard Development Area	10,000 ha	
Total beneficial Households	30,000	

The project will establish four competitive matching grant programs: (i) private nursery upgrading; (ii) improved cooperative value addition grant; (iii) public-private infrastructure grant; and (iv) strengthened local level infrastructure grant.

Summary of the project components that will entail civil works with progress status are stated in Table 3.

Table 3: Summary of the Project components that will entail civil works

Project component	Output	Remarks	With civil works? (yes or no)	Progress status	With EMP and EMoP? (yes or no)
Upgrading of Horticulture Centers	1	Improvement of operation and production of high-quality planting materials.	Yes	Procurement plan was agreed to revised during received on 27 June 2024. For CW01-AA package, CPMU requested ADB's no objection to issuance of the bid documents for civil works on horticulture center upgrade under NCFD Marpha on 6 June, 2024 and NoL received on 11 July, 2024. advertisement will be published on Q3 2024. For other package, CPMU & concerning PIUs are preparing the design and cost estimates and planning to	Yes

Project component	Output	Remarks	With civil works? (yes or no)	Progress status	With EMP and EMoP? (yes or no)
				publish the advertisement on Q4 2024 with prior approval from ADB as specified in procurement plan. The land required for horticulture center/station rehabilitation and upgrade of existing service facilities will be confined within existing boundary of government premises. No additional land acquisition will be required for these activities.	
Developing Drip Irrigation Systems	2	Water will be supplied to orchard and vegetable areas through drip irrigation	Yes	Component of developing drip irrigation systems was inbuilt in approved Scheme 2 operational guidelines for drip irrigation and will be implemented in Q3-Q4 of 2024 and Q1-Q2 of 2025. Besides that, pilot demonstration plot will be established in Lead Farmers' orchard after selection of Lead farmer, once the guideline for Lead Farmers Mobilization will approved. 2	Yes Beneficiaries of Scheme 2 will be implement this activity and executed as per provisioning in Operaional guideline of Scheme 2.
Matching Grant Component	3	Project will support cooperatives, agri-enterprises and private nurseries	Yes	Matching grant component was inbuilt in Scheme 3, 4, 5, and 6 of the project. Concurrence from MoF on draft of Scheme 6 (Private nursery upgrading) guideline has been received and will be	Yes But inclusion of EMP in bidding document will be ensure during implementation of this activity.

Project component	Output	Remarks	With civil works? (yes or no)	Progress status	With EMP and EMoP? (yes or no)
				approved from MoALD by September 2024. For remaining Scheme 3, 4, and 5 project is preparing the draft guidelines.	

4. PROGRESS OF PROJECT ACTIVITIES TILL THE REPORTING PERIOD

Upgrading of Horticulture Centers (Output 1):

As agreed with ADB, the CPMU has submitted the design gaps and requirements specific to high-tech nurseries for temperate fruits (Apple, Walnut) and sub-tropical fruits (Citrus, Avocado, Macadamia Nut, Pecan). Based on these requirements, ADB will hire the expert before finalizing the design for the CW01-B package. For other packages, such as CW05-B, CW06, CW07-B, and CW08-B, the concerned PIU, in coordination with CPMU, will prepare the design and cost estimates based on the design and cost estimates developed by NARC PIU for the CW02 package. The procurement process for these packages will be initiated as per the provisions outlined in the procurement plan.

ADB granted no-objection on July 11, 2024 for CW01-AA package was advertised on September 1, 2024. Two bids were received through e-GP, and the Technical Bid Evaluation Committee found both bids non-responsive. The technical bid document was submitted to ADB for review and concurrence on October 30, 2024. ADB provided a no-objection letter with comments, which were addressed in an updated bid document. The final no-objection letter was received on January 9, 2025, and the re-bidding notice was issued on January 17, 2025, through e-GP.

Bid documents for the NARC Horticulture Research Station in Malepatan and the Directorate of Agriculture Research in Lumle, Gandaki Province (CW02 package) were sent to ADB for review on January 16, 2025. The no-objection letter with comments was received on January 23, 2025, and the bid document was revised accordingly. The bid will be published shortly through e-GP. Similarly, a draft bid document for the Horticulture Center/Station upgrade in Nuwakot, Bagmati (CW07-A package) was submitted to ADB on December 2, 2024. A no-objection letter with comments was received on January 9, 2025, and the bid document was updated accordingly. The bid will also be published shortly through e-GP.

Furthermore, PIU Gandaki Province submitted the bid document for the Horticulture Center/Station upgrade in Malepatan, Pokhara (CW08-A package) to ADB for review on October 2, 2024. The no-objection letter with comments was received on October 16, 2024, and the bid was published through e-GP after incorporating the feedback. A total of nine bids were received, but only one bid was technically responsive, according to the Technical Bid Evaluation Report (TBER). The TBER was submitted to ADB for review on December 24, 2024, and a no-objection letter was received on January 15, 2025. The financial proposal is yet to be opened.

The land required for horticulture center/station rehabilitation and the upgrade of existing service facilities will remain within the existing government premises, meaning that no additional land acquisition will be necessary. The project has incorporated the approved Initial Environmental

Examination (IEE) and Environmental Management Plan (EMP) for the CW01-AA, CW02, CW07-A, and CW08-A packages, as outlined in the IEE study report. Additionally, the project will ensure that IEE/EMP requirements are included in the bidding documents for the remaining CW packages.

Private Nursery Participation in Nursery Quality Initiative (Under Output 1):

During the reporting period, a technical guideline on nursery standards, regulations, and the establishment of an inspection system for project nurseries and other voluntary nurseries was approved by MoALD on September 18, 2024. In accordance with the provisions of the approved guideline, all provincial PIUs issued a notice inviting private nurseries willing to supply saplings that meet the specified standards for fruit orchards under Scheme 2 of the project.

All received applications will be screened, and the shortlisted private nurseries will undergo inspection by assigned technicians. These technicians will conduct a technical audit of each nursery and assess the quality of saplings available. A total of 46 government officials, all with a minimum qualification of B.Sc. in Agriculture, participated in the training. The trainees included representatives from PIUs, project farms/centers, and district agriculture offices across six provinces. Among the 46 participants, 25 (54%) were women and DAG.

Additionally, the Seed Regulations, 2081, which provides a legal framework for the development of nursery standards, was approved on October 8, 2024. These regulations also establish the legal foundation for developing federal nursery standards. A subcommittee was formed to draft the federal nursery standards, which will then be reviewed by the technical committee under the Seed Quality Control Center before receiving final approval from the Seed Board.

Establishing Improved Orchards (under Output 2):

The province-wise local-level details for fruit orchard establishment are provided in Table 4. Following the approval of Scheme 2's operational guidelines, a first call for orchard establishment was issued. In Batch 1, 128 applications were received from farmer groups, cooperatives, and agri-entrepreneurs, proposing 207.17 hectares across six sub-projects at the local level. After evaluation by the Local Level Coordination Committee (LLCC) and final approval by the Provincial Subsidy Management Committee (PSMC), only 40 applications covering 55.52 hectares were selected for lime and mandarin orchard establishment under Batch 1. As of the reporting period, 21.3 hectares of orchards have been established by 32 beneficiaries, with the remaining areas expected to be completed in Q2 2025 (Table 6).

Similarly, a second call for orchard establishment covering Batch 1 and Batch 2 local levels was issued during the reporting period. A total of 1,138 applications were received, proposing 1,914.0125 hectares across 54 local levels (Table 5). The evaluation of applications by the LLCC and PSMC is currently in progress and is expected to be completed and contracted by Q1 2025. Scheme 2 also supports the development of drip irrigation systems for targeted orchards. However, the availability of quality saplings and varietal registration remains a major challenge for orchard establishment. To address this issue, the varietal registration process has been initiated, and a proposal has been submitted to the Seed Quality Control Center (SQCC) for the registration of varieties including four apple varieties, two walnut varieties, one macadamia variety, two mandarin varieties, four sweet orange varieties, one lime variety, and three avocado varieties.

To ensure environmental safeguard compliance, the project is classified as Category B in accordance with the ADB's SPS 2009. As of the reporting period, no environmental safeguard-

related issues have been identified. The Environmental Screening Checklist for applicants, including farmers, farmer groups, cooperatives, and private nurseries, has been incorporated into the approved guidelines of Scheme 2 and Scheme 6. Proposals are only approved if the beneficiary or participating farmers provide evidence that the proposed land is owned, cultivated, or secured through a lease or user rights agreement, ensuring no land disputes. The Environmental Screening Checklist serves as part of the proposal screening and selection criteria. None of the selected sub-projects have been found to cause negative environmental impacts. If any environmental safeguard issues arise during project implementation, cost-effective and necessary mitigation measures will be implemented as per the Initial Environmental Examination (IEE) and Environmental Management Plan (EMP), in compliance with regulations set by the Government of Nepal (GoN).

Table 4: Batch-wise Project Local Level for Fruit Orchard Establishment

Province	Districts	Municipalities	Batch 1	Batch 2	Batch 3	Total
Koshi	7	22	1	12	9	22
Bagmati	3	8	1	7	0	8
Gandaki	10	34	2	13	19	34
Karnali	9	20	1	9	10	20
Sudurpaschim	5	16	1	7	8	16
Total	34	100	6	48	46	100

Table 5: Details of Batch-1 and Batch 2 (Second Call) Plantation

Province	No of Batch 1 and Batch 2 local level	Number of applicants	Area (Hectare)
Koshi	13	443	771.3805
Bagmati	8	116	149.35
Gandaki	15	167	231.84
Karnali	10	264	620
Sudurpaschim	8	148	141.442
Total	54	1138	1914.0125

Table 6: Details of Batch-1 First Call plantation and Beneficiaries

Project Local Level	Contracted				Participation				Established orchard		
	Crop	Area (Ha)	Applicant	Beneficiary	Women	Male	Janajati	Dalit	Area (Ha)	Applicant	Beneficiary
Dhankuta	Mandarin	0	0		0	0	0		0	0	0
	Acid Lime	0	0		0	0	0		0	0	0
Gajuri	Acid Lime	13.07	8	13	5	8	11	0	10	5	10
Pokhara and Jaljala	Mandarin	22.1	17	106	53	53	13	2	1	1	4
	Acid Lime	12.35	9	165	87	78	20	12	2.3	2	8
Narayan	Mandarin	1	1	5	3	2	1	0	1	1	5
	Acid Lime	2	2	9	4	5	0	0	2	1	5
Dashrathchhand	Mandarin	5	3						5	3	
Total		55.52	40	298	152	146	45	14	21.3	13	32

Assessing and Verifying Carbon Sequestration (under Output 2):

As of the reporting period, the system of assessing and verifying carbon sequestration benefits from orchards is not yet established. It will be started after the fruit orchard establishment during implementation of Scheme 2 but preparatory work will start after Q2 2025.

Developing Drip Irrigation Systems (under Output 2):

After selection of lead farmer's orchard, pilot demonstration for drip irrigation will be done in Q1-Q2 of 2025. Additionally, drip irrigation infrastructure will be built and installed in fruit orchard under Scheme 2, which is under implementation stage. Till the reporting period, micro irrigation facilities established in fruit orchard of 21.3 ha of 30 beneficiaries under Batch 1 plantation as shown in Table 6.

Private nursery upgrading:

During the reporting period, the project received concurrence on the Scheme 6 Operational Guidelines (Private Nursery Upgradation Guideline, 2024) from MoF, and the guidelines were formally approved by MoALD on September 18, 2024. Following this approval, CPMU published a call for applications for private nursery partnerships on November 14, 2024, but due to limited applications, the deadline was extended by 15 days. As of December 29, 2024, 76 applications had been received for private nursery upgrading partnerships. A Competitive Grant Management subcommittee has been formed for pre-screening applications, and the process is currently underway.

Preparation of Guidelines:

During the reporting period, operational guidelines for Scheme 2, Scheme 6, Lead Farmers Mobilization and Technical Guidance on Production and Management of Fruit plants for Project, Lead Farmer's Mobilization Guidelines were approved from MoALD with concurrence from MoF among the above mention guidelines. Consultation meetings were carried out throughout the preparation process of all approved and drafted guidelines at various level and shared the draft documents with local levels, project provinces, DoA, MoALD and other relevant stakeholders.

Research on Phenological Characterization:

Research on phenological characterization of Fuji and Gala varieties of apple used in high density planting in Jumla has been done; Instead of that, research activities on characterization of elite varieties of Walnut (Hartley, Ashley and Payne); Characterization and molecular character of Macadamia nut plants are ongoing under NARC-PIU. NARC submitted phenological characterization reports for selective crops to CPMU on 29 February 2024. Phenological characterization study report for selective crops is under review by CPMU.

Pest Risk Analysis of Project Targeted Crops:

Under the output 1 and output 2 of the project, import of the saplings for project targeted crops as germplasm and planting materials for commercial orchard establishment is necessary. As per the provisions of the Plant Quarantine and Protection Act, 2064 and Plant Quarantine and Protection Regulation, 2066 of Nepal, Pest Risk Analysis (PRA) is mandatory for introduction of any potential carriers of the pests into the country. In this context, consulting package CS08 aims to support the National Plant Protection Organization (NPPO)/Plant Quarantine and Pesticide Management Center (PQPMC) to conduct the PRA for the project targeted fruit crops. Individual consultants will be recruited to prepare the PRA documents for six project targeted crops (Walnut, Kiwi, Macadamia, Pecan, Almond and Avocado) in prescribed formats of NPPO/PQPMC.

5. STATUTORY ENVIRONMENTAL REQUIREMENTS

The project is set to implement six different schemes (Scheme 1, 2, 3, 4, 5 and, 6) which has some uniqueness in its nature which requires import of germ plasm from outside the country, registration of fruit varieties in national seed system, quarantine regulations for distribution of imported saplings to beneficiary farmers. Besides that the project has to approve the operational guidelines to implement the project schemes compliance to the project objectives and requirements. Project has already approved the Scheme 2 and Scheme 6 operational guidelines with concurrence from MoF.

Environmental screening checklist for sub project under scheme 2 and 6 (developed in consultation with the ADB team) prepared for the screening of the applicants (Farmers, Farmers' group, Cooperatives, Private Nurseries) under approved guidelines is stated in Appendix 1 . LLCC, SMC and CGMC will be responsible for the screening of the checklist as per the provision of Operational Guidelines of Scheme 2 and 6. Project is preparing the draft operational guidelines for Scheme 3, 4 and 5.

There is no national/local environmental statutory environmental requirements for the project implementation.⁴

6. ENVIRONMENTAL MANAGEMENT PLAN

The Project has adopted approved Initial environmental examination(IEE)/ environmental management plan (EMP) of NAFHA Project. So far till the reporting period (July 2024 to December 2024), CPMU have issued bidding document on CW packages which included the EMP and EMoP where as EMP and EMoP were included in draft bid document of CW01-AA package as given in Appendix 2 and Appendix 3. CPMU will ensure to use applicable EMP and EMoP based on the packages as categorized in the IEE document of the project.

7. CONSULTATION, PARTICIPATION AND DISCLOSURE

During the reporting period, operational guidelines on Scheme 6 and Lead Farmers Mobilization were approved from MoALD with concurrence from MoF. Similarly, Technical Guidance on Production and Management of Fruit plants for Project Nurseries and Other Nurseries (voluntary basis) was approved by MoALD. Till reporting period Scheme 2 operational guideline has been approved and under execution. For Scheme 3, 4 and 5 and integrated operational guideline has been drafted and is under consultation. Series of consultation meeting were carried throughout the guideline preparation process at various level and shared the draft documents with local levels, project provinces, DoA, MoALD and other relevant stakeholders.

During reporting period, project related awareness raising orientation and information dissemination was completed in 15 project local level. Out of total 490 participants 112 (23%) were female and 196 (40%) were DAGs. Till the reporting period, altogether, six project related orientation and inception in 5 provinces and central level was completed in 2023 by sharing the project related information. Government organizations from three tier, private sectors (AEC, FNCCI), farmers' representatives and other relevant stakeholder were the participants of inception and orientation workshop. Besides that, project awareness and orientation at 31 project local levels were completed. Till the reporting period, total 2631 participants were involved in

⁴ Specify statutory requirements: environmental clearance, Permit/consent to establish, Forest clearance, Workers/Labor permit, etc.

project awareness and orientation program, where 644 (20.22%) were female and 316 (42.56%) were DAGs.

Discussions had been made during awareness raising orientation on the consequences of environmental pollution on ambient air, surface and ground water, noise and soil pollution caused from the various project activities at project site due to introduction of potentially harmful elements in to the environmental media (Air, water, soil). Environmental impact on media may be adverse or reversible or irreversible. During awareness raising orientation, discussion also made on implementation and monitoring of initial environmental examination and its EMPs for the various project financed components at provincial/local level to mitigate/avoid the impacts through application of various measures proposed in IEE/EMP. For examples, project activities such as stockpiling of construction materials, Construction activities, Fresh cut and fill earthwork excavation are the causes of environmental impacts that can be mitigated through the implementation of various measures proposed in IEE/EMP.

Project information was disclosed on NCFD website under “NAFHA Project” subheading. Project information was also disseminated through brochures, leaflets, and a diary and through NCFD website (ncfd.gov.np). After establishment of project website and MIS, all the information will be disclosed on project website and through other applicable media to the affected community. Project MIS is not established yet but database is maintained. Preparation of Project MIS is not completed yet. Revision of specification, ToR and RFQ documents is under progress for execution of NCS01 package.

8. GRIEVANCE REDRESS MECHANISM (GRM)

Project implementation started with execution of Scheme 2 at field level from Q2 2024 and Scheme 6 from Q4 2024. Project is giving due consideration to follow the provisions made in project documents. GRM guideline has been approved on 6 March 2024. A project specific GRM has been established to receive, evaluate, and facilitate resolution of affected person's/communities concerns, complaints, and grievances related to environmental impacts, and other concerns related with the project. GRCs has been established in CPMU, PIUs and in 54 project local level of batch 1 and batch 2 as provisioned in approved GRM guideline to support the social and environmental safeguards of the project. For remaining 48 project local level of batch 3, project will continue to establish GRC. GRM framework is given in Figure 4.

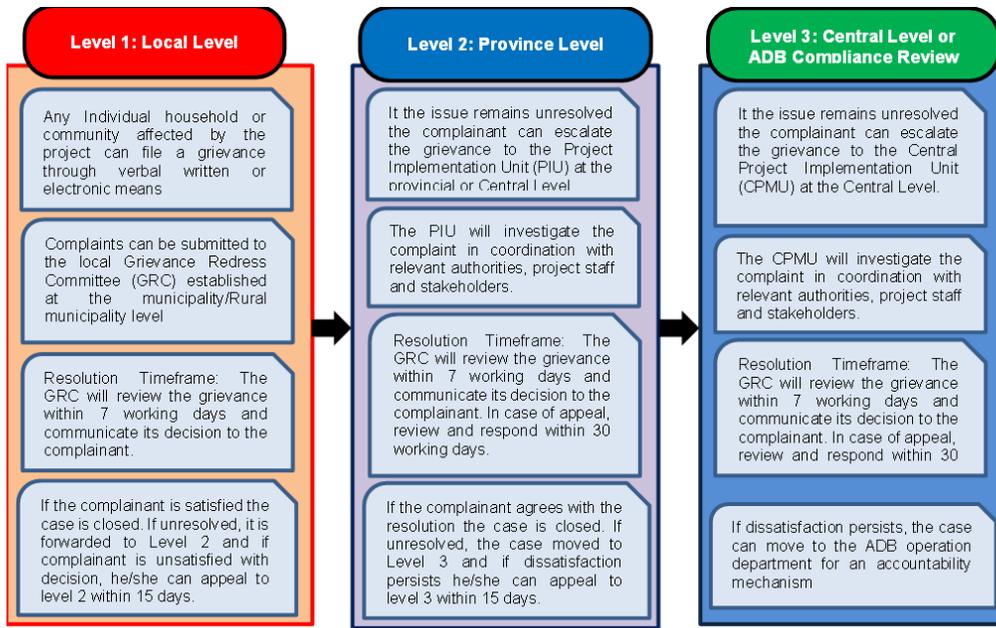


Figure 4: Framework for GRM

During the reporting period, any grievances have not been recorded in the project area. Project will ensure the representation of women and disadvantaged groups along with representative from the affected community (if applicable) in GRC.

9. COMPLIANCE WITH COVENANTS

The project has been making concerted efforts to comply with and fulfill all environmental covenants stipulated in the Project Documents. Table 7 provides a summary of the project's compliance status with the loan and grant covenants.

Table 7: Status of compliance with loan and grant covenants.

S.N.	Covenant	Key Requirements	Status of Compliance	Remarks
1	Conditions of Award of Contract	<p>The Borrower shall not award any Works or Non-Consulting Services contract which involves environmental impacts until:</p> <p>(a) MoALD has granted the final approval of the IEE, and the Borrower has obtained ADB's clearance of the relevant IEE based on the final design; and</p> <p>(b) The Borrower has incorporated the relevant provisions from the approved IEE/EMP into the respective Works or Non consulting Service contract.</p>	Being Complied	Project will ensure the requirements set forth in the covenants as required.
2	Environment	<p>The Borrower shall ensure that the preparation, design, construction, implementation, operation of the Project and all Project Facilities shall comply with (a) all applicable laws and regulations of the Borrower relating to environment, health and safety; (b) the Environmental Safeguards; and (c) all measures and requirements set forth in each IEE and EMP, and any corrective or preventative actions set forth in a Safeguards Monitoring Report.</p>	Being Complied	Provisions are included in Bid document of CW 01AA, CW07-A, CW08-A and CW02
3	Human and Financial Resources to Implement Safeguards Requirements	<p>The Borrower shall make available necessary budgetary and human resources to implement the approved IEE/ EMP</p>	Being Complied	The borrower had already assigned project personnel and additional consultant for impact assessment and field monitoring through CS 06 and CS 05 package.
4	Safeguards — Related Provisions in Bidding Documents and Works Contracts	<p>The Borrower shall ensure that all bidding documents and contracts for Works</p>	Being Complied	Provisions are included in Bid documents and contract of CW01-AA, CW07A, CW08-A and

S.N.	Covenant	Key Requirements	Status of Compliance	Remarks
		<p>contain provisions that require contractors to:</p> <p>(a) comply with the measures relevant to the contractor set forth in the IEE, the EMP, (to the extent they concern impacts on affected people during construction), and any corrective or preventative actions set forth in a Safeguards Monitoring Report;</p> <p>(b) make available a budget for all such environmental and social measures as described in subparagraph (a) above;</p> <p>(c) provide the Borrower with a written notice of any unanticipated environmental impacts that arise during construction, or operation of the Project that were not considered in the IEE/EMP</p> <p>(d) adequately record the condition of roads, agricultural land and other infrastructure prior to starting to transport materials and construction; and</p> <p>(e) reinstate pathways, other local infrastructure, and agricultural land to at least their pre-project condition upon the completion of construction.</p>		<p>CW02 package</p> <p>Project will ensures the inclusion of provisions in others bid documents and work contracts too.</p> <p>Provisions will contains key requirements for bid documents and contracts stated in loan and grant covenants</p>

S.N.	Covenant	Key Requirements	Status of Compliance	Remarks
5	Safeguards Monitoring and Reporting	<p>The Borrower shall do the following:</p> <p>(a) submit semi-annual Safeguards Monitoring Reports to ADB and disclose relevant information from such reports to affected persons promptly upon submission;</p> <p>(b) if any unanticipated environmental and/or social risks and impacts arise during construction, or operation of the Project that were not considered in the IEE/EMP, promptly inform ADB of the occurrence of such risks or impacts, with detailed description of the event and proposed corrective action plan;</p>	Being Complied	<p>Submitted 1st, 2nd and 3rd EMR</p> <p>There was a delay in submission of 4th EMR and will submit very shortly.</p>
6	Labor Standards, Health and Safety	<p>1. The Borrower shall ensure that the core labor standards and the Borrower's applicable laws and regulations are complied during Project implementation. The Borrower shall include specific provisions in the bidding documents and contracts financed by ADB under the Project requiring that the contractors, among other things: (a) comply with the Borrower's applicable labor law and regulations and incorporate applicable workplace occupational safety norms; (b) do not use child labor; (c) do not discriminate workers in respect of employment and occupation; (d) do not use forced labor; (e) allow freedom of association and effectively recognize the</p>	Being Complied	<p>Provisions are included in Bid document of CW01-AA, CW07A, CW08-A , CW02 , CS06, and CS05 A-E packages.</p>

S.N.	Covenant	Key Requirements	Status of Compliance	Remarks
		right to collective bargaining; and (f) disseminate, or engage appropriate service providers to disseminate, information on the risks of sexually transmitted diseases, including HIV/AIDS, to the employees of contractors engaged under the Project and to members of the local communities surrounding the Project area, particularly women.		
7	Grievance Redress Mechanism (GRM)	Borrower shall prepare a grievance redress mechanism, acceptable to ADB, and establish a grievance redress mechanism committee to receive and resolve complaints/grievances or act upon reports from stakeholders on misuse of funds and other irregularities, including environmental impact due to project construction (if any). The grievance redress mechanism committee shall (a) make public the existence of the grievance redress mechanism; (b) review and address grievances of stakeholders of the Project, any of the service providers, or any person responsible for carrying out any aspect of the Project; and (c) proactively and constructively respond to such grievances.	Being Complied	GRM guideline approved by MoALD on 6 March, 2024. Grievance handling focal point were appointed in CPMU and PIUs. GRC formed in CPMU, PIUs and Batch 1 project local level as provisioned in approved GRM guideline.

10. KEY ISSUES AND RECOMMENDED ACTIONS

Following are the key issues related to environmental safeguard monitoring and implementation as stated in Table 8. Capacity building/training programs will be develop, organize and deliver to environmental specialist of each province, contractor, relevant staffs and other staffs involved in project implementation. Training program covers the area of project's safeguard requirements and compliance such as legal framework for environment protection of GoN , Project's applicant selection criteria as per ADB SPS-2009, environmental screening checklist for identification of environmental impact for project's applicants under Scheme-2, environmental due diligence of Project's applicants, Environmental Monitoring Plan (EMoP) and Environment,Health and Safety Management Plan (EHSM), safeguard monitoring and reporting.

Table 8: Key Issues Related to Environment Monitoring and Implementation of the Project

S.N.	Key Issues	Recommended action	Responsibility	Remarks
1	Capacity building in IEE/EMP implementation and monitoring for safeguard personnel	Orientation and training to safeguard personnel related to environment safeguard on EMP, health and safety monitoring and reporting	CPMU	Capacity building/training program will be conducted on 20 to 22 April, 2025

11. FOCUS ON NEXT REPORTING PERIOD

- Grant contracting and orchard establishment under Scheme 2 in five province
- Grant contracting and upgradation of 12 public horticulture station/center
- Coordinate and facilitate project's environmental monitoring and reporting activities with the PIUs, Provincial PISC and supervise implementation of environmental safeguard measures during project implementation.

12. APPENDIXES

Appendix 1. It has feature blank information in this reporting period. In next reporting period, checklists with detail information will be provided.

S.N.	Environmental aspect	Environmental impact	Remarks
		Yes/No/Don't Know	
1	Is there any soil erosion due to the program?		
2	Is there will be a situation of decline in arable land due to the program?		
3	Is the site selected for the proposed program on very steep terrain or does it requires heavy soil excavation work?		
4	Is there any risk that the implementation of the proposed program will directly affect nearby forest and wildlife areas?		
5	From the implementation of the proposed program, are there any risks for the areas where wild animals enter other than the mentioned areas, such as national parks, wildlife reserves, etc.?		
6	Is there any possibility to impact the quality of the surface/ground water due to the program?		
7	Is there a possibility that water sources used by the community will dry up or downstream areas will be affected or endangered due to the proposed programs?		
8	Does the proposed program activities are detrimental to human health?		
9	Does the proposed program activities supports adaptation to climate-related risks?		
10	Does the proposed program activities creates any biological hazards?		
11	Does the proposed program endangered the ecologically important local plant species?		
12	Exotic species will be brought during establishment of the proposed fruit orchard?		
13	Pesticides will be used in the establishment of the proposed fruit orchard?		
14	If there is a possibility of any negative impact on the environment other than the above-mentioned objects/topics from the activities of the proposed program, mention it clearly.		

Appendix 2. Environmental Monitoring Plan (EMoP) for the horticulture center upgrading (For CW01-AA, CW02, CW07-A, and CW08-A Packages)

S.N	Field	Stage	Parameters	Location	Frequency	Standards	Responsibility
1	Air quality	Prior to construction to establish baseline Construction phase	PM _{2.5} PM ₁₀ SO ₂ NO _x	Work sites	Once in pre-construction Once in a season (except monsoons) for the construction period	National Ambient Air Quality Standards, 2003 and WHO standards	Contractor
2	Noise levels	Prior to construction to establish baseline Construction phase	Equivalent day and night time noise levels	Work sites	Once in pre-construction Once in a season (except monsoons) for the construction period	National Noise Standard Guidelines, 2012 and WHO standards	Contractor
3	Water quality	Prior to construction to establish baseline Construction phase	TDS, TSS, pH, Hardness, BOD, total coliform, E-coli, total nitrogen, total phosphorus, heavy metals, temperature, DO, hydrocarbons, mineral oils, phenols cyanide, temperature,	Only applicable for construction sites that are nearby water body	Twice a year pre monsoon and post-monsoon) for the entire construction period	National Drinking Water Quality Standards, 2005	Contractor
4	Community and occupational health and safety	Construction phase	Incidence and types of health and safety issues	Work sites	Monthly	Injuries, loss time incidence and fatalities	Contractor

Appendix 3. Environment, Health and Safety Management Plan (EHSMP) (For CW01-AA, CW02, CW07-A, and CW08-A Packages)

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
Physical Environment				
Decline of Ambient Air Quality	Decline of Ambient Air Quality	<p>Vehicles delivering loose and fine materials like sand and aggregates shall be covered.</p> <p>*Dust suppression measures like water sprinkling, will be applied in all dust prone locations such as unpaved haulage roads, earthworks and stockpiles.</p> <p>Material storage areas shall also be located downwind of the habitation area.</p> <p>*Construction vehicles and machinery will be periodically maintained.</p> <p>Require construction equipment and vehicles to meet national emissions standards.</p> <p>*Regular checks, and maintenance of construction equipment and vehicles to keep them in good working order to meet emission standards.</p> <p>*Cover stockpiles with tarpaulin.</p> <p>Locate stockpiles at least 500m from residential property to avoid inconvenience from fugitive dust and ensure they are enclosed by a fence or similar to minimize windblown dust.</p> <p>Position any stationary emission sources (e.g. diesel generators, compressors, etc.) as far as practical from sensitive receptors (houses, schools, clinics, temples, etc.).</p> <p>Impose speed limits on construction vehicles to minimize exhaust and dust</p>	Contractor (through environment, health and safety officer)	CPMU

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		<p>emissions along areas where sensitive receptors are located (houses, schools, clinics, temples, etc.).</p> <p>Trucks importing fill material must be covered.</p> <p>Strictly prohibit the burning of wastes generated by project-related activities.</p> <p>Ensure workers working in close proximity to or having long exposure to vehicle exhausts and earthworks are provided with clean N95 dust masks to minimize inhalation of particulate matter and other pollutants.</p> <p>*Construction air quality monitoring will be carried out per the EMoP</p>		
Ambient noise and vibration	Increase of ambient noise and vibration levels	<p>Limit the duration of noisy construction activities to daylight hours, whenever possible, in the vicinity of sensitive receptors.</p> <p>Workers exposed to high noise levels will be provided with ear plugs.</p> <p>The contractors will provide prior notification to the community on the schedule of construction activities.</p> <p>Whenever possible, noisy equipment will be completely enclosed which can significantly reduce noise levels.</p> <p>Any stationary equipment that produce high noise levels (e.g., portable diesel generators, compressors, etc.) will be positioned as far as is practical from sensitive receptors.</p> <p>Construction traffic routes will be defined in cooperation with local communities and traffic</p>	Contractor (through environment, health and safety officer)	CPMU

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		<p>police to minimize noise and nuisance.</p> <p>Vehicle speeds will be reduced around sensitive receptors.</p> <p>Temporary noise barriers will be installed along the edge of the road, as necessary, in front of sensitive receptors facing heavy construction activities.</p>		
<p>Water resources: quantity of surface and groundwater</p>	<p>Decline on the available local water resources</p>	<p>Acquire or ensure validity of permit for the use of water for their operations and comply with the conditions of the government.</p> <p>Display information on water management highlighting the practices in use at the facility at places in a highly visible area.</p>	<p>Contractor</p>	<p>CPMU</p>
<p>Water resources: quality of surface and groundwater</p>	<p>Decline in quality of water or proximate waterbodies</p>	<p>As far as practical, earthworks during the dry season to minimize exposed areas subject to erosion by surface water runoff.</p> <p>*If any surface waterbodies or groundwater sources within 100m, undertake a baseline water quality to confirm the current water quality status at least one week prior to the commencement of any actively on-site.</p> <p>Establish dedicated fuel, oil, and chemicals stores on impermeable bunded area to avoid spills and leaks contaminating soil and affecting water quality.</p> <p>Avoid storage of fuel, oil, and chemicals in areas ideally within 500m to water sources (surface water and groundwater wells, springs etc.) to avoid direct contamination or contamination through run</p>	<p>Contractor</p>	<p>CPMU</p>

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		<p>off, if this is not possible minimum distance is to be 100m.</p> <p>Undertake refueling only on areas of hard protected soil, preferably bunded, ideally 500m from water sources (surface water and groundwater wells, springs etc.) but if this is not possible minimum distance to be 100m, with all drainage directed through oil interceptors.</p> <p>Undertake construction during the dry season as much as possible to minimize exposed areas subject to erosion by surface water runoff.</p> <p>Works over or near watercourses will adopt protection measures to guard against loss of soil that would result in the turbidity of water.</p> <p>Minimize soil erosion and surface water runoff by reducing the extent of earthworks, and covering storages of sand and spoil with tarpaulin.</p> <p>Do not allow washing of equipment or vehicles near surface water and ensure all washing water is discharged to sedimentation basin and oil interceptor instead of directly to surface water.</p> <p>Cement will be stored in rented private storage facilities; enclosed and not exposed to the elements.</p> <p>Do not undertake any concrete mixing ideally within 500m of surface water, if this is not possible minimum distance is to be 100m.</p>		

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		<p>*Provide portable sanitary facilities/toilets and washing facilities for construction workers, so as to avoid surface and ground water pollution. Locate these at least 500m away from surface waterbodies including rivers/ponds and groundwater sources including springs/wells/pumps, away from waterlogged land and shallow groundwater.</p> <p>Strict prohibition on open defecation and urination by construction workers; use of pit latrines or toilets for worker camps.</p> <p>*Toilets and washing facilities to be connected to existing sewerage system, septic tank (with soak pit) or as portable self-contained units for disposal of wastewater off site to sewage treatment works.</p> <p>No untreated wastewater is to be discharged direct to surface water or onto the ground. Water will be treated through available facility such as soak pits or municipal sewage system.</p>		
Water resources: of quality of surface and groundwater	Pollution due to use of chemicals for fertilizer and insecticides	<p>Effluents containing chemicals are not directly discharged into lands and water bodies.</p> <p>Use only registered fertilizers and chemicals from government approved sources.</p> <p>Laboratory generated hazardous wastes shall be properly treated before its disposal.</p>	Contractor	CPMU
Waste management	Generation and inappropriate disposal of inert spoil, solid and hazardous	<p>Reuse spoil and other materials for construction purposes.</p> <p>Maintain proper material storage system and ensure to control littering of</p>	Contractor	CPMU

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
	wastes from construction sites and domestic sources	<p>construction materials outside the designated places.</p> <p>Stockpiling site of construction materials will be designated at demarcated place.</p> <p>*Provide solid waste container inside the construction site.</p> <p>Ensure that the labour camps have proper facilities for waste segregation and even for composting of the biodegradable waste.</p> <p>Give health, hygiene and sanitation training to workers.</p> <p>Provide temporary prefabricated mobile toilets in the construction sites.</p> <p>*Separate provision for collection and disposal of hazardous waste, if any, as prescribed by government rule and regulations.</p>		
Social Environment				
Workers	Health and safety risks	<p>Undertake a health and safety risk assessment through a facilitated workshop during the pre-construction survey. The health and safety risk assessment to consider both occupational and community health safety.</p> <p>Through the health and safety risk assessment, prepare a Construction Health and Safety Management Plan (CHSMP) including site-specific measures as needed for each construction site addressing both occupational and community health and safety.</p>	Contractor	CPMU

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		<p>Keep CHSMP as a living document, to be updated as required and re-approved by PIU if any changes in construction methods, site conditions, in response to accident, near miss etc.</p> <p>Provide worker training on health and safety and daily/weekly briefings led by site-appointed Health and Safety Officer.</p> <p>PPE to be provided for all workers. Ensure all workers have received appropriate occupational health and safety trainings.</p> <p>Ensure good housekeeping in the premises at all times, including on construction site, workers camps, storage areas, etc.</p> <p>Project area is to be kept neat and tidy, with no trip hazards on the ground e.g. open channels, materials, equipment, trash laying around.</p> <p>*Provide clear and visible warning and danger signs at and around the construction and/or planting site.</p> <p>*Information board displaying the activities proposed, duration of construction, name and contact number of environmental safety officer of contractor.</p> <p>*On completion of works restore all temporarily used sites to at least their pre-project condition following works. This will involve cleaning site of any debris or wastes, left over material and soil/rocks/sand.</p>		