Environmental Monitoring Report

PUBLIC

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#6 Semiannual Report (July 2025 to December 2025)
March 2026

Nepal: Nuts and Fruits in Hilly Areas Project

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

CURRENCY EXCHANGE

(As of August 4, 2025)

Currency unit	-	Nepalese Rupees (NRs)
NRs1.00	-	$ 0.00685
$1.00	-	NRs 145.95

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
EA	:	Executing Agency
ED	:	Executive Director
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 m^2 area

One hectare = 19.65 ropani

NOTES

1. 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 2081/82 ends on 17 July 2025.
2. In this report, "$" refers to US dollars.

Executive summary

The **Nuts and Fruits in Hilly Areas (NAFHA) Project** are classified as **Category B** for environmental safeguards in accordance with ADB's Safeguard Policy Statement (2009).

During the reporting period (July to December 2025), the project made significant progress in institutionalizing safeguard system. Environmental Safeguard Focal Officers have been designated in the Central Project Management Unit (CPMU) and all five provincial Project Implementation Units (PIUs). The Environmental Specialist under the Project Implementation Support Consultant (PISC – CS06) has been mobilized to support monitoring.

Key Achievements in July to December 2025**:**

- **Civil Works:** Environmental Management Plans (EMPs) have been incorporated into bidding documents and contracts for active civil works (CW01-AA, CW02, CW03, CW04, CW07-A, and CW08-A).
- **Orchard Development:** Environmental Due Diligence Reports (EDDR) were completed for Batch I and Batch II (881 orchard with the total area 1313.02 Ha.) in Koshi, Bagmati, Gandaki, and Sudurpaschim Province.
- **Compliance:** Monitoring indicates full adherence (100%) to physical, biological, and socio-economic safeguard indicators across all provinces.
- Total number of agreements for "Land Availability, Involuntary Resettlement and Indigenous Peoples Impacts" are 889 (Koshi – 240, Bagmati – 62, Gandaki – 146, Karnali – 283 and Sudurpaschim – 158) made.
- Environment Due Diligence Report has been prepared for upgrading of Horticulture centers of Output 1 is 5 (1 in each provinces) for the construction of Civil structure. To inbuilt the process of inclusion of EMP in bidding document will be ensure during implementation of this activity.
- Developing Drip Irrigation Systems: The project has successfully established ten micro-irrigation facilities, nine in Gandaki Province and one in Karnali Province respectively.
- During the reporting period, Horticulture, Nursery, Orchard and relative civil structure construction, due to small scale and no massive construction, air, water and sound pollution were not significantly occurred
- During the reporting period, total 47 GRCs are formed (Koshi-14, Bagmati-9, Gandaki-2, Karnali-5 and Sudurpaschim-17). Forty-two GRCs are of municipality level and 5 PIU level. Out of 42 municipal level GRCs 13 in Koshi, 8 Bagmati, 1 Gandaki, 4 Karnali and 16 in Sudurpaschim. One PIU level GRC in each province. All the grivances are resolved. During implementation phase, activities of sub-projects will comply safeguards activities, for which different awareness program and frequent monitoring visit will be required for effective implementation.

Key Issues:

- **OHS Budgeting:** Procedural gaps in budget allocation for fire and safety measures (Occupational Health and Safety) remain a challenge.
- **IEE Threshold:** The MoALD committee recommended that project-level IEEs are not relevant unless subprojects exceed 10 hectares, leading to discussions on finalizing the government-side IEE approval process.

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1. INTRODUCTION

1. This Semi-Annual Environmental Monitoring Report (SEMR) presents the environmental safeguard compliance status of the NAFHA Project for the period July–December 2025. The report has been prepared in accordance with the Environmental Monitoring Plan (EMP), Environment, Health and Safety (EHS) Management Plan, and relevant loan covenants.
2. The objective of this report is to provide a clear and evidence-based account of field-level compliance with environmental and occupational health and safety (OHS) requirements across project implementation areas.

1.1 Project Components

3. 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. A silent feature of the project is presented in Table 1 below and Targets locations of orchards establishments is shown in Figure 2.

Table 1: Silent features of the project

Key Feature	Details
FULL NAME	Nuts and Fruits in Hilly Areas Project (NAFHA)
DURATION	Approximately 7 years (2022–2029)
BUDGET / FUNDING SOURCES	- Total budget: ≈ USD 58.6 million - Co-financing details (ADB loan & grant, GAFSP grant, GoN): ≈ USD 93.45 million
IMPLEMENTING & EXECUTING AGENCIES	- Executing: Ministry of Agriculture and Livestock Development (MoALD) - Implementation: Central Project Management Unit (CPMU) under NCFD, working through Project Implementation Units (PIUs) in five provinces
GEOGRAPHICAL SCOPE	- Covers 100 municipalities across five provinces: Koshi, Bagmati, Gandaki, Karnali, Sudurpaschim (34 districts total)
TARGET BENEFICIARIES	- ~40,000 smallholder farmers and households
ORCHARD DEVELOPMENT	- Establishment of ~10,000 hectares of orchards for fruit and nut crops (e.g., apple, avocado, citrus, kiwi, macadamia, pecan, walnut, almond)
VEGETABLE PRODUCTION SUPPORT	- Support for sustainable and climate-smart vegetable production including off-season irrigated crops for smallholders
INSTITUTIONAL CAPACITY BUILDING	- Strengthen nursery and horticulture management through: • Partnerships with ≥ 40 nursery managers and ≥ 10 private nurseries • Developing nursery standards, certification systems, inspection, and infrastructure upgrades • Training staff and transferring genetic technologies

Key Feature	Details
TRAINING & OUTREACH	- Training ~30,000 farmer households on best practices: • climate-smart packages, GAP, orchard management, drip irrigation, IPM, harvest & storage, beekeeping
VALUE CHAIN ENHANCEMENT	- Promote value addition and commercialization via: • Capacity building in cooperatives/local bodies • Good agri practices and food safety certification • Pre- and post-harvest infrastructure support, marketing facilitation, and credit access via grants and a credit guarantee fund (~USD 60 million)
FINANCIAL INSTRUMENTS	- Partial subsidies to farmers, clusters, cooperatives, entrepreneurs - Credit Guarantee Fund (~USD 60 million equivalent) to improve financial access (ncfd.gov.np)
ALIGNMENT & GOALS	- Supports Nepal's Agriculture Development Strategy (ADS), SDGs, food & nutrition security, inclusive growth, rural livelihoods, poverty reduction, climate resilience
TECHNICAL SUPPORT & MANAGEMENT	- Services provided by Project Implementation Support Consultant (PISC): • Planning, M&E, financial & procurement management, safeguards compliance, stakeholder engagement, training, technical assistance

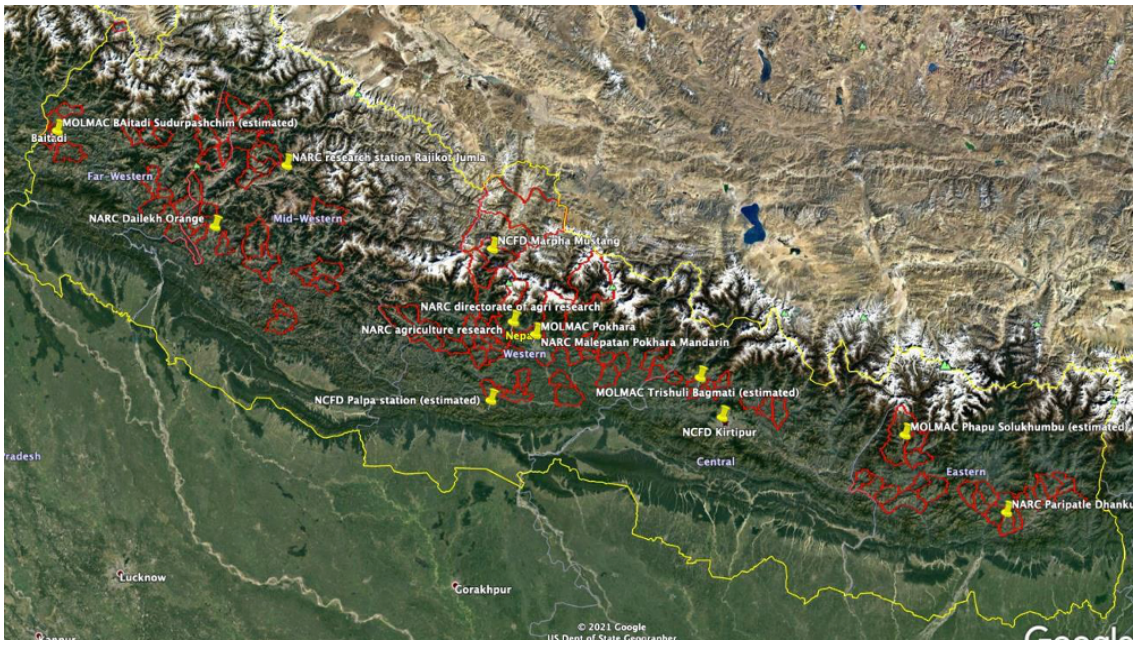

Figure 1: Map showing horticulture centers/stations planned to be upgraded under NAFHA Project

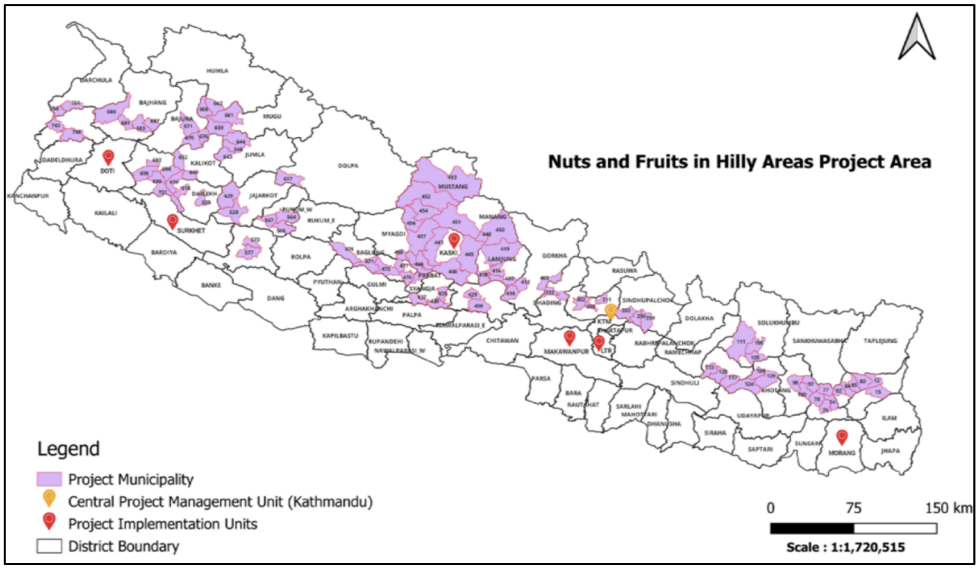

Figure 2: Map showing the target locations of orchards establishment

4. The project supports production of the following key crops and upgradation of horticulture station/center located in each target province as specified in Table 2 below:

Table 2: Province-wise Fruit Crops, Area & Centers

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 , Kiwifruit- 400ha and Walnut- 50ha	• Horticulture Center, Phaplu, Solukhumbu, • National Citrus Research Program, Paripatle, Dhankuta (NARC)
Bagmati	Orange- 300ha, Lime- 300ha, Avocado -150ha, Macadamia- 300ha and Walnut -100ha	• Sub-tropical horticulture Development Center, Trishuli, Nuwakot • Warm Temperate Horticulture Center, Kirtipur, Kathmandu
Gandaki	Apple- 100ha, Orange- 800ha, Lime- 750ha, Avocado- 150ha, Kiwifruit- 150ha, Walnut- 250ha and Macadamia- 250ha	• 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 100ha and Almond- 100ha	• 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	• Dry Fruit Development Center, Satbanjh, Baitadi

2. Project Implementation Status

5. During the reporting period, orchard establishment, vegetable area development, drip irrigation installation, and preparatory works for horticulture center upgrading continued across participating provinces.
6. Overall physical progress (cumulative):

    - Orchard and vegetable area development: 72%
    - Drip irrigation installation: 65%
    - Horticulture center upgrading (design and preparatory phase): 40%

7. A total of 889 voluntary land-use agreements have been signed for orchard development.

3. Safeguard Compliance Overview

8. Environmental category and the comprehensive considerations of this project is to minimize environmental impacts, complying with regulations, and promote sustainable practices. 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 nut varieties, and (iii) improve genetic technologies. There are potential occupational health and safety risks due to the activities under Output 1. The bid document will include clauses to meet ADB and government safeguard requirements, recommendations of the IEE and EMP cleared by ADB. Adequate environmental 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.

9. The semi-annual EMRs documents the environmental compliance, with results consolidated by the CPMU for submission to ADB. Monitoring reports are publicly disclosed, ensuring accountability and stakeholder awareness. The following table summarizes the key environmental considerations and their implementation strategies.

Table 3: Summary Table of Environmental Considerations for the NAFHA Project

CONSIDERATION	*DESCRIPTION*	*IMPLEMENTATION STRATEGY*	*PROJECT STATUS*
MINIMAL IMPACTS	Temporary air quality decline and worker safety risks	Confine activities to small-scale private farmlands	No risk
REGULATORY COMPLIANCE	Adherence to Nepal's environmental laws	Obtain clearances per Environmental Protection Act 2019 and Regulations 2020	The CPMU has initiated on the preparation of the IEE for the Nepal Government requirements
EMP IMPLEMENTATION	Mitigation of environmental impacts	Develop and implement EMP with photographic documentation	DDR preparation of the sub components is ongoing
BIODIVERSITY PROTECTION	No impact on natural habitats	Restrict activities to existing farmlands	Project confined to existing farmland

CONSIDERATION	*DESCRIPTION*	*IMPLEMENTATION STRATEGY*	*PROJECT STATUS*
CLIMATE CHANGE ADAPTATION	Climate-smart agricultural practices	Develop climate-resilient crop varieties and POPs	
WATER MANAGEMENT	Efficient water use through drip irrigation	Install systems and improve water sources	6 drip irrigation facility
CARBON SEQUESTRATION	Explore carbon credit opportunities	Conduct MRV studies for orchard production	Orchard development of land-cover area of 10,000 ha. With climate-resilient planting materials, will increase the carbon sinks.
STAKEHOLDER ENGAGEMENT	Inclusive consultation processes	Conduct periodic and continuous consultations and establish GRM	Conducted consultation and had established GRM mechanism with 24 GRC
HEALTH AND SAFETY	Mitigate health risks, including COVID-19	Follow national and international health protocols	
PROHIBITED ACTIVITIES	Avoid environmentally sensitive projects	Adhere to ADB's Prohibited Investment Activities List	Project is not implemented in environmentally sensitive area

10. The project demonstrates substantial but not full compliance with the Environmental Monitoring Plan (EMP) and EHS provisions.

Compliance Summary during the reporting period (July–December 2025)

- Physical Environment: 90% compliance
- Biological Environment: 95% biosafety compliance; 90% IPM compliance
- Socio-economic Safeguards: 100% compliance (voluntary participation and wage standards verified)
- Occupational Health & Safety (OHS): 80–85% compliance

11. Corrective measures have been identified and incorporated into the Corrective Action Plan (Section 10).

4. Physical Environment

4.1 Orchard & Vegetable Area Development

- Soil conservation measures (terracing, mulching, contour planting) implemented in 90% of monitored sites.
- Topsoil preservation and reuse practiced in 95% of sites.
- Composting and organic manure application promoted.
- Solid waste segregation observed in 85% of sites.

4.2 Drip Irrigation Systems

- Water-use efficiency improved through controlled drip systems.
- No groundwater contamination reported.
- Plastic pipe waste collected and reused/recycled in 80% of monitored locations.

4.3 Horticulture Center Upgrading

12. **Civil Works:** Environmental Management Plans (EMPs) have been incorporated into bidding documents and contracts for active civil works (CW01-AA, CW02, CW03, CW04, CW07-A, and CW08-A).

- EMP provisions incorporated into bidding and contract documents.
- Pre-construction environmental screening completed.

4.4 Province-Specific Highlights

- Gandaki: Full compliance in erosion control and drainage management; compost pits established in majority of orchard sites.
- Koshi: Effective slope stabilization and reuse of excavated soil.
- Bagmati: Improved plastic waste management practices and strengthened monitoring.

4.5 Air, Water and Noise Quality

13. Due to small-scale agricultural activities and limited civil works:

- No significant air pollution observed.
- No wastewater discharge into natural water bodies recorded.
- Noise levels remained within acceptable rural limits.

5. Biological Environment

- 100% use of certified disease-free seedlings.
- IPM practices adopted in 90% of monitored orchards.
- Chemical pesticide usage minimized; organic alternatives promoted.

Improvement Measures in Moderate-Compliance Provinces

14. In Bagmati, Karnali, and Sudurpashchim Provinces, additional measures were implemented:

- Refresher training on Integrated Pest Management (IPM).
- Increased monitoring frequency from quarterly to bi-monthly.
- Strengthened supplier verification for plant materials.

15. Furthermore, the need for consistency and proper implementation will be in the other provinces. These actions are expected to raise compliance above 95% in the next reporting period.

6. Socio-Economic and Cultural Environment

16. Consultations at the community level primarily focused on raising awareness about project objectives, grant procedures, orchard establishment processes, and environmental and social safeguards. Discussions included land preparation and pit works, beneficiary selection criteria, irrigation practices, nursery establishment standards, and the timeline and responsibilities for orchard development. Moreover, stakeholders discussed how project activities could cause adverse environmental impacts, including pollution of air, water, and soil. The consultation highlighted the critical importance of implementing and monitoring the mitigation measures proposed in the Initial Environmental Examination (IEE) and its Environmental Management Plan (EMP) to manage these risks effectively. Special sessions were conducted to inform communities about gender equality and social inclusion (GESI), as well as safeguard measures related to environmental protection, occupational health and safety, and grievance redress mechanisms.

    - 889 voluntary land-use agreements signed; no involuntary resettlement cases.
    - 100% local labor utilization for orchard development activities.
    - Equal wage compliance verified during monitoring visits.
    - Community consultations conducted prior to drip irrigation installation.
    - Stakeholder consultations completed prior to horticulture center upgrading design.

17. No impacts on physical cultural resources were recorded during the reporting period.

7. Occupational Health & Safety (OHS)

18. Biosafety and phytosanitary risks to local plant varieties and biodiversity, chemical hazards associated with agrochemical use, improper irrigation and water use management, soil erosion, occupational health and safety (OHS) concerns, fire hazards, and the requirement for clear information disclosure are among the expected environmental impacts associated with project implementation. Some preventive measures are being taken to address these hazards. Currently, screening procedures for nurseries are in place to lower the hazards associated with biosafety. To lessen reliance on agrochemicals and promote safer farming alternatives, skill development training in environmentally friendly farm management methods has been incorporated into the corresponding Project Implementation Units' (PIUs') annual activity plans.
19. OHS compliance is estimated at 80–85%.

Field-level findings:

- PPE availability: 90% of monitored sites
- Consistent PPE usage: 75%
- First aid kits available: 70%
- Labor insurance coverage: Approximately 65%
- Fire safety equipment provision: Limited in orchard packages (budget clarification required)

20. No major accidents or fatal incidents were reported during the reporting period.
21. Key gaps include inconsistent PPE usage and incomplete labor insurance coverage, which are addressed in the Corrective Action Plan.

8. Grievance Redress Mechanism (GRM)

22. If any aspect of the project has an impact on any other aspect, if it is perceived to have an impact, then it is necessary to quantify that aspect. During the reporting period the status of grievances are below:

    - Total GRCs formed: 47 (42 municipal-level; 5 PIU-level)
    - Grievances received during reporting period: 0
    - Grievances resolved: 0

23. Although no formal complaints were received, awareness gaps regarding grievance reporting mechanisms were identified. Additional awareness sessions will be conducted in the next reporting period.

9. Compliance with Environmental Covenants

24. The project remains compliant with environmental safeguard and labor standard covenants under the loan agreement. Monitoring confirms continued adherence to EMP implementation requirements, subject to identified corrective measures.

10. Key Issues and Corrective Action Plan (CAP)

Issue	Corrective Action	Timeline	Responsibility
Inconsistent PPE usage	Awareness campaigns and stricter supervision	March 2026	PIUs
Partial labor insurance coverage	Ensure mandatory insurance enrollment	March 2026	CPMU/PIUs
Fire safety budgeting gap	Revise operational guidelines and allocate budget	March 2026	CPMU
GPS mapping inconsistencies	Training for SM/FGF and field verification	February 2026	PIUs
Waste segregation gaps	Introduce monitoring checklist	Ongoing	PIUs

11. Best Practices

25. All provinces achieved alomost full compliance except few safeguards indicators. Local labor usage is universally complied. Formation of GRCs at provincial and local level shows strong stakeholder engagement with significant female training participation demonstrate thorough monitoring and inclusion.

12. Recommendations for Safeguard Improvement

26. Clarify OHS Budgeting: Update the working procedures to explicitly include budget and activities for OHS and fire-hazard mitigation in all orchard/civil works contracts.

27. Standardize Monitoring Tools: Provide all field staff (FGFs/SMs) with GPS-enabled devices and training to ensure consistent location tracking (as recommended from Bagmati province) and develop unified checklists and require quarterly updating of all tables (e.g., training, compliance) to allow cross-province synthesis.

28. Enhance waste safety measures: Implementation of the waste management protocols (Clean-up of soil pits, planting debris) and biosafety screening, sourcing certified and disease-free seedlings from accredited nurseries, enforcing quarantine checks and isolating new planting materials before distribution, and maintaining strict sanitation of tools, vehicles, and equipment should be mandatory. Regular monitoring should be done to prevent the sites from pests and infectious diseases. Strengthening coordination between farmer groups, cooperatives and government institutions, along with proper record-keeping will be done. Furthermore, inspections and implementation of corrective measures, will help reduce the gaps.

29. Strengthen GRM: Expedite formation and capacity-building of local GRCs and continue awareness campaigns so that farmers know how to report issues. Monitor grievance logs regularly (even if zero cases) to preempt potential disputes.

30. Expand Capacity Building: Continue environment-focused training, with an emphasis on inclusive participation. Track gender-disaggregated attendance in trainings to ensure gender balance. Consider joint inter-provincial workshops to share best practices in safeguards.

11. Focus for Next Reporting Period

- Achieve >95% compliance across all safeguard indicators.
- Strengthen OHS monitoring and insurance compliance.
- Enhance IPM adoption in moderate-compliance provinces.
- Improve documentation and photographic evidence of safeguard compliance.

12. Appendices

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APPENDIX C : GANDAKI PROVINCE		

Appendix A : KOSHI PROVINCE

Appendix A1:	Environmental Screening Checklist for Identification of Impact on Environment (for sub project under Scheme 2 and Scheme 6)
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Appendix A3:	Environment, Health and Safety Management Plan (EHSMP) (For CW01-AA, CW02, CW07-A, and CW08-A Packages)

Appendix A1: Environmental Screening Checklist for Identification of Impact on Environment (for sub project under Scheme 2 and Scheme 6)

SN	Environmental aspect	Environmental impact	
		Yes/ No/ Don't Know	Remarks
1	Is there any soil erosion due to the program?	No	
2	Is there will be a situation of decline in arable land due to the program?	No	
3	Is the site selected for the proposed program on very steep terrain or does it requires heavy soil excavation work?	No	
4	Is there any risk that the implementation of the proposed program will directly affect nearby forest and wildlife areas?	No	
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.?	No	
6	Is there any possibility to impact the quality of the surface/ground water due to the program?	No	
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?	No	
8	Does the proposed program activities are detrimental to human health?	No	
9	Does the proposed program activities supports adaptation to climate-related risks?	Yes	
10	Does the proposed program activities creates any biological hazards?	No	
11	Does the proposed program endangered the ecologically important local plant species?	No	
12	Exotic species will be brought during establishment of the proposed fruit orchard?	Yes	
13	Pesticides will be used in the establishment of the proposed fruit orchard?	Yes	In moderate quantity
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.	No	

Appendix A2: 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 A3: 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	Vehicles delivering loose and fine materials like sand and aggregates shall be covered. *Dust suppression measures like water sprinkling, will be applied in all dust prone locations such as unpaved haulage roads, earthworks and stockpiles. Material storage areas shall also be located downwind of the habitation area. *Construction vehicles and machinery will be periodically maintained. Require construction equipment and vehicles to meet national emissions standards. *Regular checks, and maintenance of construction equipment and vehicles to keep them in good working order to meet emission standards. *Cover stockpiles with tarpaulin. 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. Position any stationary emission sources (e.g. diesel generators, compressors, etc.) as far as practical from sensitive receptors (houses, schools, clinics, temples, etc.). Impose speed limits on construction vehicles to minimize exhaust and dust emissions along areas where sensitive receptors are located (houses, schools, clinics, temples, etc.). Trucks importing fill material must be covered.	Contractor (through environment, health and safety officer)	CPMU

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		Strictly prohibit the burning of wastes generated by project-related activities. 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. *Construction air quality monitoring will be carried out per the EMoP		
Ambient noise and vibration	Increase of ambient noise and vibration levels	Limit the duration of noisy construction activities to daylight hours, whenever possible, in the vicinity of sensitive receptors. Workers exposed to high noise levels will be provided with ear plugs. The contractors will provide prior notification to the community on the schedule of construction activities. Whenever possible, noisy equipment will be completely enclosed which can significantly reduce noise levels. 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. Construction traffic routes will be defined in cooperation with local communities and traffic police to minimize noise and nuisance. Vehicle speeds will be reduced around sensitive receptors. Temporary noise barriers will be installed along the edge of the road, as necessary, in front of sensitive receptors facing heavy construction activities.	Contractor (through environment, health and safety officer)	CPMU
Water resources: quantity of surface and groundwater	Decline on the available local water resources	Acquire or ensure validity of permit for the use of water for their operations and comply with the conditions of the government. Display information on water management highlighting the practices in use at the facility at places in a highly visible area.	Contractor	CPMU

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
Water resources: quality of surface and groundwater	Decline in quality of water or proximate waterbodies	As far as practical, earthworks during the dry season to minimize exposed areas subject to erosion by surface water runoff. *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. Establish dedicated fuel, oil, and chemicals stores on impermeable bunded area to avoid spills and leaks contaminating soil and affecting water quality. 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 off, if this is not possible minimum distance is to be 100m. 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. Undertake construction during the dry season as much as possible to minimize exposed areas subject to erosion by surface water runoff. Works over or near watercourses will adopt protection measures to guard against loss of soil that would result in the turbidity of water. Minimize soil erosion and surface water runoff by reducing the extent of earthworks, and covering storages of sand and spoil with tarpaulin. 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. Cement will be stored in rented private storage facilities; enclosed and not exposed to the elements.	Contractor	CPMU

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		Do not undertake any concrete mixing ideally within 500m of surface water, if this is not possible minimum distance is to be 100m. *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. Strict prohibition on open defecation and urination by construction workers; use of pit latrines or toilets for worker camps. *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. 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.		
Water resources: quality of surface and groundwater	Pollution due to use of chemicals for fertilizer and insecticides	Effluents containing chemicals are not directly discharged into lands and water bodies. Use only registered fertilizers and chemicals from government approved sources. Laboratory generated hazardous wastes shall be properly treated before its disposal.	Contractor	CPMU
Waste management	Generation and inappropriate disposal of inert spoil, solid and hazardous wastes from construction sites and domestic sources	Reuse spoil and other materials for construction purposes. Maintain proper material storage system and ensure to control littering of construction materials outside the designated places. Stockpiling site of construction materials will be designated at demarcated place. *Provide solid waste container inside the construction site.	Contractor	CPMU

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		Ensure that the labour camps have proper facilities for waste segregation and even for composting of the biodegradable waste. Give health, hygiene and sanitation training to workers. Provide temporary prefabricated mobile toilets in the construction sites. *Separate provision for collection and disposal of hazardous waste, if any, as prescribed by government rule and regulations.		
Social Environment				
Workers	Health and safety risks	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. 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. 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. Provide worker training on health and safety and daily/weekly briefings led by site-appointed Health and Safety Officer. PPE to be provided for all workers. Ensure all workers have received appropriate occupational health and safety trainings. Ensure good housekeeping in the premises at all times, including on construction site, workers camps, storage areas, etc. 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.	Contractor	CPMU

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		*Provide clear and visible warning and danger signs at and around the construction and/or planting site. *Information board displaying the activities proposed, duration of construction, name and contact number of environmental safety officer of contractor. *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.		
	COVID-19 and other Health and Safety Risks	Prepare and implement a comprehensive COVID-19 and Disease Health and Safety Guidance Plan following i) following national regulations and health advice, and (ii) international good practice recommendations (see Annex 4 of the NEP:NAFHA Project's IEE). The protocols should include requirements on wearing masks and PPE, physical distancing, hand washing, disinfection, checking body temperature, ventilation, and management of waste, awareness, and morning briefings. Ensure all equipment and vehicles used are routinely disinfected. Provide thermometer, soap, sanitizer, disinfectant, PPE at worksite/camp. Place adequate washbasins, disinfectant tub, dispenser for sanitizer. Provide regular briefing/training on preventive requirements to the workers and post enough COVID-19 awareness posters throughout the worksites. Maintain COVID-19 weekly monitoring and reporting mechanism at the worksite, including any necessary actions to be taken.	Contractor	CPMU

APPENDIX B : BAGMATI PROVINCE

Appendix B1:	Environmental Screening Checklist for Identification of Impact on Environment (for sub project under Scheme 2 and Scheme 6)
Appendix B2:	Environmental Monitoring Plan (EMoP) for the horticulture center upgrading (For CW01-AA, CW02, CW07-A, and CW08-A Packages)
Appendix B3:	Environment, Health and Safety Management Plan (EHSMP) (For CW01-AA, CW02, CW07-A, and CW08-A Packages)

Appendix B1: Environmental Screening Checklist for Identification of Impact on Environment (for sub project under Scheme 2 and Scheme 6)

SN	Environmental aspect	Environmental impact	
		Yes/ No/ Don't Know	Remarks
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.		

Based on the above screening checklist, site assessments of sampled orchards, and validation by the safeguard team and final recommendations from the LLCC the following potential environmental risks have been identified. Corresponding impact mitigation measures and safeguard actions have been recommended for integration.

SN	Activities and related potential E&S Impacts	Mitigation measures and way forward
1	**Planting Material (Selection and Planting)**: Planting materials Biosafety, exotic species may cause risk to native & local varieties; biodiversity and human health.	The Phytosanitary protocols, biosafety, and quarantine measures, Phytosanitary/Plant Health Certification and other measures as per Plant Quarantine & Protection Act (2008), Plant Quarantine & Protection Rule (2010) will be adapted to safe handling and transport of planting materials to reduce risks like gene flow, pest introduction/infestation, and others risk to local varieties. Certified & recommended crop varieties and native or naturalized seed varieties, especially endemic species varieties; indigenous farming practices will be promoted with promotion of ecosystem-based management.

SN	Activities and related potential E&S Impacts	Mitigation measures and way forward
2	**Site Selection (Slope, Aspect, climate)**: Risk to site stability, erosion and other hazard	Orchard activities, if not properly managed with soil conservation practices, could exacerbate land degradation and affect long-term productivity. High-irrigation-demanding crops varieties will be avoided in fragile, landslide-prone, and steep areas. The principle of minimum tillage practices, i.e. digging of pit in planting area only and mulching reduces the soil erosion and help to moisture and soil conservations. Cultivation of native or naturalized species that can more readily adapt to variations in production cycles, water quality/quantity, and temperatures. Suitable crops varieties will recommend considering local climate.
3	**Earthwork Excavation, Site preparation and Drainage:** Erosion, Risks to top soil, runoff of nutrients and sediments, plant productivity	No heavy equipment will be used, if necessary, it will be used only recommended by engineer for farm construction work. Instead, manual labor and small machinery will be utilized for site preparation. The conservation of topsoil during site preparation through various safeguard measures, including efficient irrigation, and the promotion of low-tillage or no-till practices. Soil conservation, watershed management and nature-based solution i.e. vegetative cover/turfing, use of vegetative buffers strips, agricultural strips, soil cover management via intercropping, sod mulches, swales, and other techniques to avoid runoff of nutrients and sediments. Promote climate resilient varieties, crop mixing, intercropping, and cover crops or leguminous plants or *Dhaicha* (for nitrogen fixation and much) etc. for climate resilience and soil health.
4	**Irrigation Facility**: Conflict with source and scarcity to community used drinking water and irrigation water-source	Most of the agricultural area will dry & water stress in April season. If the irrigation source water is same with local water supply or sharing the same source among, the equitable water-sharing mechanisms and community-led water management committees can ensure fair distribution. Additionally, adopting rainwater harvesting, groundwater recharge techniques and efficient irrigation methods like ring, drip irrigation can optimize water use and reduce pressure on shared sources. Indigenous and social concern
5	**Weed and pest management, Growth Hormone/Growth Regulating Hormone, Fertilizer**: Use of weedicide and pesticides may cause water & Soil Pollution, Risk to human health, Community health, environment health	Pesticides will not be included as fixed inputs in projects, credits, or assistance. The bio-pesticides, IPM, and safer alternatives will be promoted by local technician. Ensure responsible pesticide and weedicide use, considering community health, safety, and timing. Treated seed packaging must not be reused, and empty pesticide containers must be triple-rinsed, punctured, or disposed of in an environmentally sound manner. Adopt watershed and nature-based solutions to prevent agrochemical runoff and enhance recharge.
6	**Tree and Vegetation**: No forest-tree and vegetation losses is expected	There is no forest-tree and vegetation loss in most of the orchard farms. The orchards establishment are proposed on the private land areas of the beneficiaries. In few proposed orchard farms bushes and small vegetations are to be cleared. The concerned forest office needs to be informed before clearing the vegetations. Greenery and increments in vegetation/bush cover is expected after the intervention and operation of the orchards.
7	**Water Body and Wetland:** Surface Water pollution, Chance of eutrophication, sedimentation	Use drip or sprinkler irrigation to minimize water flow and nutrient leaching. Regulate agro-chemical and apply organic fertilizers. Maintain buffer stripes (vegetative), sedimentation-ponds, and vegetative barriers with native

SN	Activities and related potential E&S Impacts	Mitigation measures and way forward
		species to filter runoff, and implement terracing, mulching, and cover crops to prevent soil erosion.
8	**Wildlife:** Fencing may disturb on wildlife foraging, breeding, roaming etc.	Ensure no disturbance to the free movement of wildlife by construction-movement corridor.
9	**Occupational Health and Safety**: Workers Welfare and accommodation	Site safety provision including risk reduction measures, provision of appropriate Personal Protective Equipment (PPEs) i.e. gloves, masks, and full-body clothing. Equal wages for male and female labor, along with worker welfare and accommodation, will be ensured.
10	**Community Health and Safety; Hazards and Risks**	Worker sanitation and communicable disease management shall be ensured through awareness and other consultation as needed. Similarly, fire safety measures and risk reduction programs benefiting farm, communities and ecosystems.
11	**Waste Management:** Solid waste management	The fallen leaves, and pruned branches use as mulch or green manure to enhance soil health and reduce landfill disposal. Plastics and packaging waste and other construction waste shall be managed by the beneficiaries.
12	**Emission & Pollution Control:** Burning of Plant Residues cause air pollution, GHG emission	Avoid burning plant residues to reduce air pollution; instead, will be adopted the mulching and green manuring.
13	**Climate Related Risks and Extreme Climatic Events** (Drought/Hailstorm)	The hailstorm net shall be included or managed against the hailstorm and its losses and rain-water harvesting and drip irrigation system, use of farm and/or kitchen generated grey-water for irrigation and improve land management and soil conservation methods shall be promoted to preserve water and fight against drought.
14	**Climate Change consideration**	Planting trees shall rehabilitating, and enriching land cover contribute to the mitigation of atmospheric GHG and increase carbon sequestration in trees' biomass. The proposed activity will promote low GHGs emission practices in orchards farm activities.
15	**Physical and Cultural Resource, Community Services and Utility**	No such impact observed. There will be no disturbance to access any cultural practices, cultural heritage and community or scared area or land.
16	**Information Disclosure:** possibility inadequate sharing of information to all stakeholders	Consultation meeting & joint site visit and monitoring with beneficiaries and other stakeholders will be integrated in each activity. The information board will be installed in intervention site. The DDR will be made available in the CPMU and PIU office for easy access to all stakeholders.
17	**Grievance Handling and Redressed Mechanism**	Local Level Grievance Management Commute will handle any grievance in municipality level as per **Grievance Management Procedure, 2080 (BS)**
18	Handling of any unanticipated environment issues (cost and resource management)	Unanticipated environmental impacts in activities level will be managed through contingency planning; adaptive mitigation measures, and allocated emergency funds to address risks efficiently.
19	**Maintenances and Sustainability**	The beneficiaries/beneficiaries committee shall maintain takes care & utilize the resource and structures

Appendix B2: 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 B3: 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	Vehicles delivering loose and fine materials like sand and aggregates shall be covered. *Dust suppression measures like water sprinkling, will be applied in all dust prone locations such as unpaved haulage roads, earthworks and stockpiles. Material storage areas shall also be located downwind of the habitation area. *Construction vehicles and machinery will be periodically maintained. Require construction equipment and vehicles to meet national emissions standards. *Regular checks, and maintenance of construction equipment and vehicles to keep them in good working order to meet emission standards. *Cover stockpiles with tarpaulin. 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. Position any stationary emission sources (e.g. diesel generators, compressors, etc.) as far as practical from sensitive receptors (houses, schools, clinics, temples, etc.). Impose speed limits on construction vehicles to minimize exhaust and dust emissions along areas where sensitive receptors are located (houses, schools, clinics, temples, etc.). Trucks importing fill material must be covered.	Contractor (through environment, health and safety officer)	CPMU

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		Strictly prohibit the burning of wastes generated by project-related activities. 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. *Construction air quality monitoring will be carried out per the EMoP		
Ambient noise and vibration	Increase of ambient noise and vibration levels	Limit the duration of noisy construction activities to daylight hours, whenever possible, in the vicinity of sensitive receptors. Workers exposed to high noise levels will be provided with ear plugs. The contractors will provide prior notification to the community on the schedule of construction activities. Whenever possible, noisy equipment will be completely enclosed which can significantly reduce noise levels. 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. Construction traffic routes will be defined in cooperation with local communities and traffic police to minimize noise and nuisance. Vehicle speeds will be reduced around sensitive receptors. Temporary noise barriers will be installed along the edge of the road, as necessary, in front of sensitive receptors facing heavy construction activities.	Contractor (through environment, health and safety officer)	CPMU
Water resources: quantity of surface and groundwater	Decline on the available local water resources	Acquire or ensure validity of permit for the use of water for their operations and comply with the conditions of the government. Display information on water management highlighting the practices in use at the facility at places in a highly visible area.	Contractor	CPMU

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
Water resources: quality of surface and groundwater	Decline in quality of water or proximate waterbodies	As far as practical, earthworks during the dry season to minimize exposed areas subject to erosion by surface water runoff. *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. Establish dedicated fuel, oil, and chemicals stores on impermeable bunded area to avoid spills and leaks contaminating soil and affecting water quality. 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 off, if this is not possible minimum distance is to be 100m. 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. Undertake construction during the dry season as much as possible to minimize exposed areas subject to erosion by surface water runoff. Works over or near watercourses will adopt protection measures to guard against loss of soil that would result in the turbidity of water. Minimize soil erosion and surface water runoff by reducing the extent of earthworks, and covering storages of sand and spoil with tarpaulin. 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. Cement will be stored in rented private storage facilities; enclosed and not exposed to the elements.	Contractor	CPMU

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		Do not undertake any concrete mixing ideally within 500m of surface water, if this is not possible minimum distance is to be 100m. *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. Strict prohibition on open defecation and urination by construction workers; use of pit latrines or toilets for worker camps. *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. 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.		
Water resources: quality of surface and groundwater	Pollution due to use of chemicals for fertilizer and insecticides	Effluents containing chemicals are not directly discharged into lands and water bodies. Use only registered fertilizers and chemicals from government approved sources. Laboratory generated hazardous wastes shall be properly treated before its disposal.	Contractor	CPMU
Waste management	Generation and inappropriate disposal of inert spoil, solid and hazardous wastes from construction sites and domestic sources	Reuse spoil and other materials for construction purposes. Maintain proper material storage system and ensure to control littering of construction materials outside the designated places. Stockpiling site of construction materials will be designated at demarcated place. *Provide solid waste container inside the construction site.	Contractor	CPMU

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		Ensure that the labour camps have proper facilities for waste segregation and even for composting of the biodegradable waste. Give health, hygiene and sanitation training to workers. Provide temporary prefabricated mobile toilets in the construction sites. *Separate provision for collection and disposal of hazardous waste, if any, as prescribed by government rule and regulations.		
Social Environment				
Workers	Health and safety risks	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. 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. 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. Provide worker training on health and safety and daily/weekly briefings led by site-appointed Health and Safety Officer. PPE to be provided for all workers. Ensure all workers have received appropriate occupational health and safety trainings. Ensure good housekeeping in the premises at all times, including on construction site, workers camps, storage areas, etc. 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.	Contractor	CPMU

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		*Provide clear and visible warning and danger signs at and around the construction and/or planting site. *Information board displaying the activities proposed, duration of construction, name and contact number of environmental safety officer of contractor. *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.		
	COVID-19 and other Health and Safety Risks	Prepare and implement a comprehensive COVID-19 and Disease Health and Safety Guidance Plan following i) following national regulations and health advice, and (ii) international good practice recommendations (see Annex 4 of the NEP:NAFHA Project's IEE). The protocols should include requirements on wearing masks and PPE, physical distancing, hand washing, disinfection, checking body temperature, ventilation, and management of waste, awareness, and morning briefings. Ensure all equipment and vehicles used are routinely disinfected. Provide thermometer, soap, sanitizer, disinfectant, PPE at worksite/camp. Place adequate washbasins, disinfectant tub, dispenser for sanitizer. Provide regular briefing/training on preventive requirements to the workers and post enough COVID-19 awareness posters throughout the worksites. Maintain COVID-19 weekly monitoring and reporting mechanism at the worksite, including any necessary actions to be taken.	Contractor	CPMU

APPENDIX C : GANDAKI PROVINCE

Appendix C1:	Environmental Screening Checklist for Identification of Impact on Environment (for sub project under Scheme 2 and Scheme 6)
Appendix C2:	Environmental Monitoring Plan (EMoP) for the horticulture center upgrading (For CW01-AA, CW02, CW07-A, and CW08-A Packages)
Appendix C3:	Environment, Health and Safety Management Plan (EHSMP) (For CW01-AA, CW02, CW07-A, and CW08-A Packages)

Appendix C1: Environmental Screening Checklist for Identification of Impact on Environment (for sub project under Scheme 2 and Scheme 6)

Based on the screening checklist, site assessments of sampled orchards, and validation by the safeguard team and final recommendations from the LLCC the following potential environmental risks have been identified. Corresponding impact mitigation measures and safeguard actions have been recommended for integration.

SN	Activities and related potential E&S Impacts	Mitigation measures and way forward
1.	**Planting Material (Selection and Planting)**: Planting materials Biosafety, exotic species may cause risk to native & local varieties; biodiversity and human health.	The Phytosanitary protocols, biosafety, and quarantine measures, Phytosanitary/Plant Health Certification and other measures as per Plant Quarantine & Protection Act (2008), Plant Quarantine & Protection Rule (2010) will be adapted to safe handling and transport of planting materials to reduce risks like gene flow, pest introduction/infestation, and others risk to local varieties. Certified & recommended crop varieties and native or naturalized seed varieties, especially endemic species varieties; indigenous farming practices will be promoted with promotion of ecosystem-based management.
2.	**Site Selection (Slope, Aspect, climate)**: Risk to site stability, erosion and other hazard	Orchard activities, if not properly managed with soil conservation practices, could exacerbate land degradation and affect long-term productivity. High-irrigation-demanding crops varieties will be avoided in fragile, landslide-prone, and steep areas. The principle of minimum tillage practices, i.e. digging of pit in planting area only and mulching reduces the soil erosion and help to moisture and soil conservations. Cultivation of native or naturalized species that can more readily adapt to variations in production cycles, water quality/quantity, and temperatures. Suitable crops varieties will recommend considering local climate.
3.	**Earthwork Excavation, Site preparation and Drainage:** Erosion, Risks to top soil, runoff of nutrients and sediments, plant productivity	No heavy equipment will be used, if necessary, it will be used only recommended by engineer for farm construction work. Instead, manual labor and small machinery will be utilized for site preparation. The conservation of topsoil during site preparation through various safeguard measures, including efficient irrigation, and the promotion of low-tillage or no-till practices. Soil conservation, watershed management and nature-based solution i.e. vegetative cover/turfing, use of vegetative buffers strips, agricultural strips, soil cover management via intercropping, sod mulches, swales, and other techniques to avoid runoff of nutrients and sediments. Promote climate resilient varieties, crop mixing, intercropping, and cover crops or leguminous plants or *Dhaicha* (for nitrogen fixation and much) etc. for climate resilience and soil health.

SN	Activities and related potential E&S Impacts	Mitigation measures and way forward
4.	**Irrigation Facility**: Conflict with source and scarcity to community used drinking water and irrigation water-source	Most of the agricultural area will dry & water stress in April season. If the irrigation source water is same with local water supply or sharing the same source among, the equitable water-sharing mechanisms and community-led water management committees can ensure fair distribution. Additionally, adopting rainwater harvesting, groundwater recharge techniques and efficient irrigation methods like ring, drip irrigation can optimize water use and reduce pressure on shared sources. Indigenous and social concern
5.	**Weed and pest management, Growth Hormone/Growth Regulating Hormone, Fertilizer**: Use of weedicide and pesticides may cause water & Soil Pollution, Risk to human health, Community health, environment health	Pesticides will not be included as fixed inputs in projects, credits, or assistance. The bio-pesticides, IPM, and safer alternatives will be promoted by local technician. Ensure responsible pesticide and weedicide use, considering community health, safety, and timing. Treated seed packaging must not be reused, and empty pesticide containers must be triple-rinsed, punctured, or disposed of in an environmentally sound manner. Adopt watershed and nature-based solutions to prevent agrochemical runoff and enhance recharge.
6.	**Tree and Vegetation**: No forest-tree and vegetation losses is expected	There is no forest-tree and vegetation loss in most of the orchard farms. The orchards establishment are proposed on the private land areas of the beneficiaries. In few proposed orchard farms bushes and small vegetations are to be cleared. The concerned forest office needs to be informed before clearing the vegetations. Greenery and increments in vegetation/bush cover is expected after the intervention and operation of the orchards.
7.	**Water Body and Wetland:** Surface Water pollution, Chance of eutrophication, sedimentation	Use drip or sprinkler irrigation to minimize water flow and nutrient leaching. Regulate agro-chemical and apply organic fertilizers. Maintain buffer stripes (vegetative), sedimentation-ponds, and vegetative barriers with native species to filter runoff, and implement terracing, mulching, and cover crops to prevent soil erosion.
8.	**Wildlife:** Fencing may disturb on wildlife foraging, breeding, roaming etc.	Ensure no disturbance to the free movement of wildlife by construction-movement corridor.
9.	**Occupational Health and Safety**: Workers Welfare and accommodation	Site safety provision including risk reduction measures, provision of appropriate Personal Protective Equipment (PPEs) i.e. gloves, masks, and full-body clothing. Equal wages for male and female labor, along with worker welfare and accommodation, will be ensured.
10.	**Community Health and Safety; Hazards and Risks**	Worker sanitation and communicable disease management shall be ensured through awareness and other consultation as needed. Similarly, fire safety measures and risk reduction

SN	Activities and related potential E&S Impacts	Mitigation measures and way forward
		programs benefiting farm, communities and ecosystems.
11.	**Waste Management:** Solid waste management	The fallen leaves, and pruned branches use as mulch or green manure to enhance soil health and reduce landfill disposal. Plastics and packaging waste and other construction waste shall be managed by the beneficiaries.
12.	**Emission & Pollution Control:** Burning of Plant Residues cause air pollution, GHG emission	Avoid burning plant residues to reduce air pollution; instead, will be adopted the mulching and green manuring.
13.	**Climate Related Risks and Extreme Climatic Events** (Drought/Hailstorm)	The hailstorm net shall be included or managed against the hailstorm and its losses and rain-water harvesting and drip irrigation system, use of farm and/or kitchen generated grey-water for irrigation and improve land management and soil conservation methods shall be promoted to preserve water and fight against drought.
14.	**Climate Change consideration**	Planting trees shall rehabilitating, and enriching land cover contribute to the mitigation of atmospheric GHG and increase carbon sequestration in trees' biomass. The proposed activity will promote low GHGs emission practices in orchards farm activities.
15.	**Physical and Cultural Resource, Community Services and Utility**	No such impact observed. There will be no disturbance to access any cultural practices, cultural heritage and community or scared area or land.
16.	**Information Disclosure:** possibility inadequate sharing of information to all stakeholders	Consultation meeting & joint site visit and monitoring with beneficiaries and other stakeholders will be integrated in each activity. The information board will be installed in intervention site. The DDR will be made available in the CPMU and PIU office for easy access to all stakeholders.
17.	**Grievance Handling and Redressed Mechanism**	Local Level Grievance Management Commute will handle any grievance in municipality level as per **Grievance Management Procedure, 2080 (BS)**
18.	Handling of any unanticipated environment issues (cost and resource management)	Unanticipated environmental impacts in activities level will be managed through contingency planning; adaptive mitigation measures, and allocated emergency funds to address risks efficiently.
19.	**Maintenances and Sustainability**	The beneficiaries/beneficiaries committee shall maintain takes care & utilize the resource and structures

Appendix C2: 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, hydrocarbon s, 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 C3: 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	Vehicles delivering loose and fine materials like sand and aggregates shall be covered. *Dust suppression measures like water sprinkling, will be applied in all dust prone locations such as unpaved haulage roads, earthworks and stockpiles. Material storage areas shall also be located downwind of the habitation area. *Construction vehicles and machinery will be periodically maintained. Require construction equipment and vehicles to meet national emissions standards. *Regular checks, and maintenance of construction equipment and vehicles to keep them in good working order to meet emission standards. *Cover stockpiles with tarpaulin. 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. Position any stationary emission sources (e.g. diesel generators, compressors, etc.) as far as practical from sensitive receptors (houses, schools, clinics, temples, etc.). Impose speed limits on construction vehicles to minimize exhaust and dust emissions along areas where sensitive receptors are located (houses, schools, clinics, temples, etc.). Trucks importing fill material must be covered. Strictly prohibit the burning of wastes generated by project-related activities.	Contractor (through environment, health and safety officer)	CPMU

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		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. *Construction air quality monitoring will be carried out per the EMoP		
Ambient noise and vibration	Increase of ambient noise and vibration levels	Limit the duration of noisy construction activities to daylight hours, whenever possible, in the vicinity of sensitive receptors. Workers exposed to high noise levels will be provided with ear plugs. The contractors will provide prior notification to the community on the schedule of construction activities. Whenever possible, noisy equipment will be completely enclosed which can significantly reduce noise levels. 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. Construction traffic routes will be defined in cooperation with local communities and traffic police to minimize noise and nuisance. Vehicle speeds will be reduced around sensitive receptors. Temporary noise barriers will be installed along the edge of the road, as necessary, in front of sensitive receptors facing heavy construction activities.	Contractor (through environment, health and safety officer)	CPMU
Water resources: quantity of surface and groundwater	Decline on the available local water resources	Acquire or ensure validity of permit for the use of water for their operations and comply with the conditions of the government. Display information on water management highlighting the practices in use at the facility at places in a highly visible area.	Contractor	CPMU
Water resources: quality of surface and groundwater	Decline in quality of water or	As far as practical, earthworks during the dry season to minimize exposed areas subject to erosion by surface water runoff.	Contractor	CPMU

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
	proximate waterbodies	*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. Establish dedicated fuel, oil, and chemicals stores on impermeable bunded area to avoid spills and leaks contaminating soil and affecting water quality. 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 off, if this is not possible minimum distance is to be 100m. 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. Undertake construction during the dry season as much as possible to minimize exposed areas subject to erosion by surface water runoff. Works over or near watercourses will adopt protection measures to guard against loss of soil that would result in the turbidity of water. Minimize soil erosion and surface water runoff by reducing the extent of earthworks, and covering storages of sand and spoil with tarpaulin. 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. Cement will be stored in rented private storage facilities; enclosed and not exposed to the elements. Do not undertake any concrete mixing ideally within 500m of surface water, if this is not possible minimum distance is to be 100m.		

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		*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. Strict prohibition on open defecation and urination by construction workers; use of pit latrines or toilets for worker camps. *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. 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.		
Water resources: quality of surface and groundwater	Pollution due to use of chemicals for fertilizer and insecticides	Effluents containing chemicals are not directly discharged into lands and water bodies. Use only registered fertilizers and chemicals from government approved sources. Laboratory generated hazardous wastes shall be properly treated before its disposal.	Contractor	CPMU
Waste management	Generation and inappropriate disposal of inert spoil, solid and hazardous wastes from construction sites and domestic sources	Reuse spoil and other materials for construction purposes. Maintain proper material storage system and ensure to control littering of construction materials outside the designated places. Stockpiling site of construction materials will be designated at demarcated place. *Provide solid waste container inside the construction site. Ensure that the labour camps have proper facilities for waste segregation and even for composting of the biodegradable waste. Give health, hygiene and sanitation training to workers.	Contractor	CPMU

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		Provide temporary prefabricated mobile toilets in the construction sites. *Separate provision for collection and disposal of hazardous waste, if any, as prescribed by government rule and regulations.		
Social Environment				
Workers	Health and safety risks	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. 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. 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. Provide worker training on health and safety and daily/weekly briefings led by site-appointed Health and Safety Officer. PPE to be provided for all workers. Ensure all workers have received appropriate occupational health and safety trainings. Ensure good housekeeping in the premises at all times, including on construction site, workers camps, storage areas, etc. 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. *Provide clear and visible warning and danger signs at and around the construction and/or planting site. *Information board displaying the activities proposed, duration of construction, name and contact number of environmental safety officer of contractor.	Contractor	CPMU

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		*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.		
	COVID-19 and other Health and Safety Risks	Prepare and implement a comprehensive COVID-19 and Disease Health and Safety Guidance Plan following i) following national regulations and health advice, and (ii) international good practice recommendations (see Annex 4 of the NEP:NAFHA Project's IEE). The protocols should include requirements on wearing masks and PPE, physical distancing, hand washing, disinfection, checking body temperature, ventilation, and management of waste, awareness, and morning briefings. Ensure all equipment and vehicles used are routinely disinfected. Provide thermometer, soap, sanitizer, disinfectant, PPE at worksite/camp. Place adequate washbasins, disinfectant tub, dispenser for sanitizer. Provide regular briefing/training on preventive requirements to the workers and post enough COVID-19 awareness posters throughout the worksites. Maintain COVID-19 weekly monitoring and reporting mechanism at the worksite, including any necessary actions to be taken.	Contractor	CPMU

APPENDIX D : KARNALI PROVINCE

Appendix D1:	Environmental Screening Checklist for Identification of Impact on Environment (for sub project under Scheme 2 and Scheme 6)
Appendix D2:	Environmental Monitoring Plan (EMoP) for the horticulture center upgrading (For CW01-AA, CW02, CW07-A, and CW08-A Packages)
Appendix D3:	Environment, Health and Safety Management Plan (EHSMP) (For CW01-AA, CW02, CW07-A, and CW08-A Packages)

Appendix D1: Environmental Screening Checklist for Identification of Impact on Environment (for sub project under Scheme 2 and Scheme 6)

SN	Environmental aspect	Environmental impact	
		Yes/ No/ Don't Know	Remarks
1	Is there any soil erosion due to the program?	No	
2	Is there will be a situation of decline in arable land due to the program?	No	
3	Is the site selected for the proposed program on very steep terrain or does it require heavy soil excavation work?	No	
4	Is there any risk that the implementation of the proposed program will directly affects nearby forest and wildlife areas?	No	
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.?	No	
6	Is there any possibility to impact the quality of the surface/ground water due to the program?	No	
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?	No	
8	Does the proposed program activities are detrimental to human health?	No	
9	Does the proposed program activities support adaptation to climate-related risks?	No	
10	Does the proposed program activities create any biological hazards?	No	
11	Does the proposed program endanger the ecologically important local plant species?	No	
12	Exotic species will be brought during establishment of the proposed fruit orchard?	No	
13	Pesticides will be used in the establishment of the proposed fruit orchard?	No	
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.	No	

Appendix D2: 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 D3: 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	Vehicles delivering loose and fine materials like sand and aggregates shall be covered. *Dust suppression measures like water sprinkling, will be applied in all dust prone locations such as unpaved haulage roads, earthworks and stockpiles. Material storage areas shall also be located downwind of the habitation area. *Construction vehicles and machinery will be periodically maintained. Require construction equipment and vehicles to meet national emissions standards. *Regular checks, and maintenance of construction equipment and vehicles to keep them in good working order to meet emission standards. *Cover stockpiles with tarpaulin. 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. Position any stationary emission sources (e.g. diesel generators, compressors, etc.) as far as practical from sensitive receptors (houses, schools, clinics, temples, etc.). Impose speed limits on construction vehicles to minimize exhaust and dust emissions along areas where sensitive receptors are located (houses, schools, clinics, temples, etc.). Trucks importing fill material must be covered.	Contractor (through environment, health and safety officer)	PIU/PISC

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		Strictly prohibit the burning of wastes generated by project-related activities. 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. *Construction air quality monitoring will be carried out per the EMoP		
Ambient noise and vibration	Increase of ambient noise and vibration levels	Limit the duration of noisy construction activities to daylight hours, whenever possible, in the vicinity of sensitive receptors. Workers exposed to high noise levels will be provided with ear plugs. The contractors will provide prior notification to the community on the schedule of construction activities. Whenever possible, noisy equipment will be completely enclosed which can significantly reduce noise levels. 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. Construction traffic routes will be defined in cooperation with local communities and traffic police to minimize noise and nuisance. Vehicle speeds will be reduced around sensitive receptors. Temporary noise barriers will be installed along the edge of the road, as necessary, in front of sensitive receptors facing heavy construction activities.	Contractor (through environment, health and safety officer)	PIU/PISC
Water resources: quantity of surface and groundwater	Decline on the available local water resources	Acquire or ensure validity of permit for the use of water for their operations and comply with the conditions of the government.	Contractor	PIU/PISC

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		Display information on water management highlighting the practices in use at the facility at places in a highly visible area.		
Water resources: quality of surface and groundwater	Decline in quality of water or proximate waterbodies	As far as practical, earthworks during the dry season to minimize exposed areas subject to erosion by surface water runoff. *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. Establish dedicated fuel, oil, and chemicals stores on impermeable bunded area to avoid spills and leaks contaminating soil and affecting water quality. 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 off, if this is not possible minimum distance is to be 100m. 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. Undertake construction during the dry season as much as possible to minimize exposed areas subject to erosion by surface water runoff. Works over or near watercourses will adopt protection measures to guard against loss of soil that would result in the turbidity of water.	Contractor	PIU/PISC

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		Minimize soil erosion and surface water runoff by reducing the extent of earthworks, and covering storages of sand and spoil with tarpaulin. 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. Cement will be stored in rented private storage facilities; enclosed and not exposed to the elements. Do not undertake any concrete mixing ideally within 500m of surface water, if this is not possible minimum distance is to be 100m. *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. Strict prohibition on open defecation and urination by construction workers; use of pit latrines or toilets for worker camps. *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. 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.		
Water resources: quality of surface and groundwater	Pollution due to use of chemicals for fertilizer and insecticides	Effluents containing chemicals are not directly discharged into lands and water bodies.	Contractor	PIU/PISC

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		Use only registered fertilizers and chemicals from government approved sources. Laboratory generated hazardous wastes shall be properly treated before its disposal.		
Waste management	Generation and inappropriate disposal of inert spoil, solid and hazardous wastes from construction sites and domestic sources	Reuse spoil and other materials for construction purposes. Maintain proper material storage system and ensure to control littering of construction materials outside the designated places. Stockpiling site of construction materials will be designated at demarcated place. *Provide solid waste container inside the construction site. Ensure that the labour camps have proper facilities for waste segregation and even for composting of the biodegradable waste. Give health, hygiene and sanitation training to workers. Provide temporary prefabricated mobile toilets in the construction sites. *Separate provision for collection and disposal of hazardous waste, if any, as prescribed by government rule and regulations.	Contractor	PIU/PISC
Social Environment				
Workers	Health and safety risks	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. 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.	Contractor	PIU/PISC

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		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. Provide worker training on health and safety and daily/weekly briefings led by site-appointed Health and Safety Officer. PPE to be provided for all workers. Ensure all workers have received appropriate occupational health and safety trainings. Ensure good housekeeping in the premises at all times, including on construction site, workers camps, storage areas, etc. 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. *Provide clear and visible warning and danger signs at and around the construction and/or planting site. *Information board displaying the activities proposed, duration of construction, name and contact number of environmental safety officer of contractor. *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.		
	COVID-19 and other Health and Safety Risks	Prepare and implement a comprehensive COVID-19 and Disease Health and Safety Guidance Plan following i) following national regulations and health advice, and (ii) international good practice recommendations (see Annex 4 of the NEP:NAFHA Project's IEE).	Contractor	PIU/PISC

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		The protocols should include requirements on wearing masks and PPE, physical distancing, hand washing, disinfection, checking body temperature, ventilation, and management of waste, awareness, and morning briefings. Ensure all equipment and vehicles used are routinely disinfected. Provide thermometer, soap, sanitizer, disinfectant, PPE at worksite/camp. Place adequate washbasins, disinfectant tub, dispenser for sanitizer. Provide regular briefing/training on preventive requirements to the workers and post enough COVID-19 awareness posters throughout the worksites. Maintain COVID-19 weekly monitoring and reporting mechanism at the worksite, including any necessary actions to be taken.		

APPENDIX E : SUDURPASCHIM PROVINCE

Appendix E1:	Environmental Screening Checklist for Identification of Impact on Environment (for sub project under Scheme 2 and Scheme 6)
Appendix E2:	Environmental Monitoring Plan (EMoP) for the horticulture center upgrading (For CW05-A, Packages)
Appendix E3:	Environment, Health and Safety Management Plan (EHSMP) (For CW05-A Packages)

Appendix E1: Environmental Screening Checklist for Identification of Impact on Environment (for sub project under Scheme 2 and Scheme 6)

SN	Environmental aspect	Environmental impact	
		Yes/ No/ Don't Know	Remarks
1	Is there any soil erosion due to the program?	No	
2	Is there will be a situation of decline in arable land due to the program?	No	
3	Is the site selected for the proposed program on very steep terrain or does it requires heavy soil excavation work?	No	
4	Is there any risk that the implementation of the proposed program will directly affect nearby forest and wildlife areas?	No	
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.?	No	
6	Is there any possibility to impact the quality of the surface/ground water due to the program?	No	
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?	No	
8	Does the proposed program activities are detrimental to human health?	No	
9	Does the proposed program activities supports adaptation to climate-related risks?	No	
10	Does the proposed program activities creates any biological hazards?	No	
11	Does the proposed program endangered the ecologically important local plant species?	No	
12	Exotic species will be brought during establishment of the proposed fruit orchard?	No	
13	Pesticides will be used in the establishment of the proposed fruit orchard?	No	
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.	No	

Appendix E2: Environmental Monitoring Plan (EMoP) for the horticulture center upgrading (For CW05-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 E3: Environment, Health and Safety Management Plan (EHSMP) (For CW05-A Packages)

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
Physical Environment				
Decline of Ambient Air Quality	Decline of Ambient Air Quality	Vehicles delivering loose and fine materials like sand and aggregates shall be covered. *Dust suppression measures like water sprinkling, will be applied in all dust prone locations such as unpaved haulage roads, earthworks and stockpiles. Material storage areas shall also be located downwind of the habitation area. *Construction vehicles and machinery will be periodically maintained. Require construction equipment and vehicles to meet national emissions standards. *Regular checks, and maintenance of construction equipment and vehicles to keep them in good working order to meet emission standards. *Cover stockpiles with tarpaulin. 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. Position any stationary emission sources (e.g. diesel generators,	Contractor (through environment, health and safety officer)	CPMU

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		compressors, etc.) as far as practical from sensitive receptors (houses, schools, clinics, temples, etc.). Impose speed limits on construction vehicles to minimize exhaust and dust emissions along areas where sensitive receptors are located (houses, schools, clinics, temples, etc.). Trucks importing fill material must be covered. Strictly prohibit the burning of wastes generated by project-related activities. 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. *Construction air quality monitoring will be carried out per the EMoP		
Ambient noise and vibration	Increase of ambient noise and vibration levels	Limit the duration of noisy construction activities to daylight hours, whenever possible, in the vicinity of sensitive receptors. Workers exposed to high noise levels will be provided with ear plugs. The contractors will provide prior notification to the community on the schedule of construction activities. Whenever possible, noisy equipment will be	Contractor (through environment, health and safety officer)	CPMU

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		completely enclosed which can significantly reduce noise levels. 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. Construction traffic routes will be defined in cooperation with local communities and traffic police to minimize noise and nuisance. Vehicle speeds will be reduced around sensitive receptors. Temporary noise barriers will be installed along the edge of the road, as necessary, in front of sensitive receptors facing heavy construction activities.		
Water resources: quantity of surface and groundwater	Decline on the available local water resources	Acquire or ensure validity of permit for the use of water for their operations and comply with the conditions of the government. Display information on water management highlighting the practices in use at the facility at places in a highly visible area.	Contractor	CPMU
Water resources: quality of surface and groundwater	Decline in quality of water or proximate waterbodies	As far as practical, earthworks during the dry season to minimize exposed areas subject to erosion by surface water runoff. *If any surface waterbodies or groundwater sources within 100m, undertake a baseline water quality	Contractor	CPMU

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		to confirm the current water quality status at least one week prior to the commencement of any actively on-site. Establish dedicated fuel, oil, and chemicals stores on impermeable bunded area to avoid spills and leaks contaminating soil and affecting water quality. 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 off, if this is not possible minimum distance is to be 100m. 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. Undertake construction during the dry season as much as possible to minimize exposed areas subject to erosion by surface water runoff. Works over or near watercourses will adopt protection measures to guard against loss of soil that would result in the turbidity of water. Minimize soil erosion and surface water runoff by reducing the extent of		

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		earthworks, and covering storages of sand and spoil with tarpaulin. 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. Cement will be stored in rented private storage facilities; enclosed and not exposed to the elements. Do not undertake any concrete mixing ideally within 500m of surface water, if this is not possible minimum distance is to be 100m. *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. Strict prohibition on open defecation and urination by construction workers; use of pit latrines or toilets for worker camps. *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		

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		off site to sewage treatment works. 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.		
Water resources: quality of surface and groundwater	Pollution due to use of chemicals for fertilizer and insecticides	Effluents containing chemicals are not directly discharged into lands and water bodies. Use only registered fertilizers and chemicals from government approved sources. Laboratory generated hazardous wastes shall be properly treated before its disposal.	Contractor	CPMU
Waste management	Generation and inappropriate disposal of inert spoil, solid and hazardous wastes from construction sites and domestic sources	Reuse spoil and other materials for construction purposes. Maintain proper material storage system and ensure to control littering of construction materials outside the designated places. Stockpiling site of construction materials will be designated at demarcated place. *Provide solid waste container inside the construction site. Ensure that the labour camps have proper facilities for waste segregation and even for composting of the biodegradable waste. Give health, hygiene and sanitation training to workers.	Contractor	CPMU

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		Provide temporary prefabricated mobile toilets in the construction sites. *Separate provision for collection and disposal of hazardous waste, if any, as prescribed by government rule and regulations.		
Social Environment				
Workers	Health and safety risks	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. 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. 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. Provide worker training on health and safety and daily/weekly briefings led by site-appointed Health and Safety Officer. PPE to be provided for all workers.	Contractor	CPMU

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		Ensure all workers have received appropriate occupational health and safety trainings. Ensure good housekeeping in the premises at all times, including on construction site, workers camps, storage areas, etc. 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. *Provide clear and visible warning and danger signs at and around the construction and/or planting site. *Information board displaying the activities proposed, duration of construction, name and contact number of environmental safety officer of contractor. *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.		
	COVID-19 and other Health and Safety Risks	Prepare and implement a comprehensive COVID-19 and Disease Health and Safety Guidance Plan following i) following national regulations and health advice, and (ii) international good practice recommendations (see Annex 4 of the	Contractor	CPMU

Environmental Components	Potential Impacts	Mitigation measures	Implementation Responsibility	Monitoring Responsibility
		NEP:NAFHA Project's IEE). The protocols should include requirements on wearing masks and PPE, physical distancing, hand washing, disinfection, checking body temperature, ventilation, and management of waste, awareness, and morning briefings. Ensure all equipment and vehicles used are routinely disinfected. Provide thermometer, soap, sanitizer, disinfectant, PPE at worksite/camp. Place adequate washbasins, disinfectant tub, dispenser for sanitizer. Provide regular briefing/training on preventive requirements to the workers and post enough COVID-19 awareness posters throughout the worksites. Maintain COVID-19 weekly monitoring and reporting mechanism at the worksite, including any necessary actions to be taken.		

Appendix F : Photographs

Irrigation Tank at Chabbispathivara RM

Inspection of Pit preparation for sapling at Chabbispathivara RM

Pit preparation by Farmer in Chabbispathivara RM

Nursery inspection at Dasrathchand Municipality

Under construction irrigation rank at Jayaprithvi Municipality

Planted Sapling at Jayaprithvi Municipality

	
Visibility board of orchard establishment at Patan Municpality	Inspection of sapling by agriculturist at the orchard situated in Patan Municpality
	
Inspection of Agricultural tools in Patan Municipality	FNS Training at Patan Municpality
	
Project related Procedural Training	Project related Procedural Training
	
Proposed loaction of Kedar Krishi Nursery with existing green house	Sapling with the owner of Kedar Krishi Nursery in existing greenhouse

	
Existing irrigation water pond at the Kedar Krishi Nursery site	Proposed additional water source of Kedar Krishi Nursery at 1740 msl
	
Consultation with owner of Kedar Krishi Nursery site	Propsed site of Kedar Krishi Nursery and the government forest at its vicinity
	
Proposed loaction of Nabaraj Suntala tatha Falful Nursery with existing green house along with Ghatal Ashigram Community Forest at its vicinity	Mother Tree of different varities of Mandarin inside the green house at Nabaraj Suntala tatha Falful Nursery
	
Existing plantic irrigation pond which is also used in fish farming at Nabaraj Suntala tatha Falful Nursery	Existing irrigation water tank at Nabaraj Suntala tatha Falful Nursery