



Government of Nepal
Ministry of Forests and Environment
Forest Research and Training Centre
Ecosystem and Forest Types Mapping Program



Annual Progress Report

November 2021

1. Introduction

Characterization, classification, and mapping of ecosystems are the key to the sustainable management of biological diversity. In Nepal, several attempts have been made in this regard time and again. However, the vegetation maps prepared by Dobremez and his colleagues in the 1970s and 1980s have been the basis of all those efforts. The existing classifications of the ecosystem are based on limited field studies of vegetation composition and structure, and analysis of bioclimatic and ecological conditions. In this context, the Government of Nepal realized the need for standardizing the classification of Nepal's ecosystems and forest types, and update the related maps based on a comprehensive and systematic study.

In 2019, the Government of Nepal - Ministry of Forests and Environment (MoFE) initiated the Ecosystem and Forest Types Mapping Program (EFTMP) as a priority program and assigned the Forest Research and Training Center (FRTC) to manage it. Accordingly, a Technical Working Group (TWG), led by the Director-General of FRTC, was formed and the program design started in December 2019. The Program Design Document (PDD) was approved by MoFE in April 2020. Then, the preparatory activities for the program implementation were carried out, and the program implementation started in October 2020. The UKAID's Policy and Institutions Facility (PIF), Oxford Policy Management (OPM), USAID's Hariyo Ban Program, and WWF Nepal have provided technical and financial supports to the program.

This report presents the progress of the program from the beginning of its implementation, i.e. October 2020, to October 2021.

2. Objectives of the Program

The general objective of the EFTM Program is to inform decision-making regarding sustainable management of terrestrial and wetland ecosystems of Nepal, and thereby support local as well as national economies. In addition, it is expected to generate the information required to fulfill international obligations, such as reporting on the Aichi target # 14 of the Convention on Biological Diversity (CBD). The specific objectives of the Program are to:

- a) Review the existing knowledge, data, and maps relevant to terrestrial and wetland ecosystems of Nepal;
- b) Reclassify and delineate forest, grassland, agriculture, and wetland types and ecosystems, and produce appropriate maps;
- c) Assess key threats and vulnerabilities to ecosystems and provide management prescriptions; and
- d) Strengthen institutional capacity for monitoring ecosystems and updating ecosystem maps of Nepal.

3. Accomplishments

The Implementation of the Ecosystem and Forest Types Mapping Program (EFTMP) officially started on October 28, 2020. Since then, the following activities have been accomplished.

A. Office establishment

- ✓ An office of the Ecosystem and Forest Types Mapping Program (Ecosystem Mapping Unit) has been established within the premises of Forest Research and Training Centre in Babarmahal, Kathmandu.
- ✓ Field crew members, i.e. five Field Crew Leaders (forestry) and four Botanists/Taxonomists, have been appointed (the Department of Plant Resources has provided a botanist/taxonomist).
- ✓ Office equipment and field accessories, including computers, GPS, clinometers, cameras, diameter tapes, sleeping bags, and field bags, have been purchased.

B. Review of literature and data

- ✓ The Technical Advisor, who also works as a Forest Specialist, Rangeland Specialist, Wetland Specialist, and Agro-ecologist reviewed literature relevant to respective components and prepared their typologies. Thus, based on literature review and expert consultation, 69 vegetation (forest, shrubland and grassland), 18 wetlands, and 33 agriculture typologies have been proposed.
- ✓ Secondary information, such as the Forest Resource Assessment (FRA) data on forest types and several GIS layers, have been collected and processed for using them as input for mapping. Over 1400 signature points for forest types have been generated from the FRA plot-level data.

C. Technical documentation

- ✓ An inception report of the program, including detailed methodologies of cover type and ecosystem mapping in each component, has been prepared (first in Feb 2021, revised in Jul 2021).
- ✓ A Standard Operating Procedure (SOP) for field data collection (that includes data collection procedures in all thematic components) and Field Data Collection Forms (for each component) have been prepared (first in Mar 2021, revised in Jul 2021).
- ✓ A Standard Operating Procedure (SOP) for mapping cover types and ecosystems in all components has been prepared.
- ✓ Species Identification Manual for field data collection is in place. Special thanks to Dr. Bhuvan Keshar Sharma who prepared this for EFTMP free of cost.

C. Meeting and consultation

- ✓ Two meetings of the Program Coordination Committee (PCC) were organized (January 22, and August 27, 2021) which discussed and decided on various managerial and technical issues of the Program.
- ✓ A total of 15 Technical Working Group (TWG) meetings were organized to discuss and decide on various managerial and technical issues. The meeting was chaired by the Director General of FRTC and participated by the Chief of the Planning, Monitoring and Coordination Division of the MoFE, representatives from PIF/OPM and Hariyo Ban Program/WWF Nepal, Deputy Director

General of FRTC, Ecosystem Mapping Coordinator, Technical Advisor of EFTMP, and FRTC officials assigned to EFTMP. Other FRTC officials and EFTMP experts were also invited to the TWG meetings in many instances.

- ✓ Individual consultations with experts and stakeholders to discuss methodologies of ecosystem mapping were organized in all thematic components.
- ✓ An expert consultation workshop in each thematic component (i.e. forest and grassland, wetlands, and agriculture) was organized to discuss the proposed typology of landcover in each component and methodologies of cover type and ecosystem mapping.

D. Training and Piloting

A field data collection training was organized for field crew members, including field crew leaders, botanists/taxonomists, and intern students to be participating as forest technicians in the field crew. It was conducted during 21-23 March 2021 in the FRTC training hall, Babarmahal. The training was coordinated by Mr. Amul Kumar Acharya, Assistant Research Officer, FRTC. Experts from FRTC, EFTMP and outside facilitated the training sessions. A total of 20 participants were trained (Table 1).



Table 1: List of participants in the field data collection training

SN	Name	Designation	Organization
1	Mr. Sunil Raj Dhungana	Field Crew Leader	EFTMP
2	Mr. Santosh Kumar Labh	Field Crew Leader	EFTMP
3	Mr. Pratap Sundar Shrestha	Field Crew Leader	EFTMP
4	Mr. Meghdut Chaulagain	Field Crew Leader	EFTMP
5	Mr. Prakash Adhikari	Field Crew Leader	EFTMP
6	Dr. Mitra Lal Pathak	Botanist/Taxonomist	DPR
7	Ms. Bina Wagle	Botanist/Taxonomist	EFTMP
8	Mr. Santosh Thapa	Botanist/Taxonomist	EFTMP
9	Mr. Sangram Karki	Botanist/Taxonomist	EFTMP
10	Ms. Menuka Paudel	Botanist/Taxonomist	EFTMP
11	Ms. Nistha Bohora	Intern Student	IOF, Pokhara
12	Ms. Bipana Bhusal	Intern Student	IOF, Pokhara
13	Mr. Roshan Kumar Chaudhary	Intern Student	IOF, Pokhara
14	Ms. Durga Kandel	Intern Student	IOF, Pokhara
15	Ms. Samana Regmi	Intern Student	IOF, Pokhara
16	Ms. Indu Joshi	Intern Student	AFU, Hetauda
17	Ms. Susmita Ale	Intern Student	KAFCOL, Kathmandu
18	Mr. Milan Thapa	Intern Student	KAFCOL, Kathmandu
19	Ms. Bibhuti Thapa	Intern Student	IOF, Pokhara
20	Ms. Kamala Pun Magar	Intern Student	AFU, Hetauda

Similarly, four pilot field survey events were organized in order for testing data collection methods and forms. The details of those events are presented in Table 2.



Table 2: Details of pilot field surveys

SN	Date	Location	Participants
1	26-28 Feb 2021	Kathmandu-Chitwan-Siraha-Sindhuli-Kathmandu transect	<ol style="list-style-type: none"> 1. Mr. Yam Prasad Pokharel, DG, FRTC 2. Ms. Sabitri Aryal, Under Secretary, FRTC 3. Mr. Bimal Kumar Acharya, EMP Coordinator, FRTC 4. Mr. Saroj Kumar Chaudhari, Soil Chemist, FRTC 5. Mr. Rajaram Aryal, ARO, FRTC 6. Mr. Kiran Kumar Pokharel, Scientific Officer (Botanist), FRTC 7. Dr. Keshab Raj Goutam, TA, EFTMP 8. Dr. Him Lal Shrestha, RS/GIS Specialist, EFTMP 9. Dr. Chet Raj Upreti, Rangeland Specialist, EFTMP 10. Mr. Shailendra Kumar Pokharel, Wetland Specialist, EFTMP 11. Dr. Gobinda Basnet, Agro-ecologist, EFTMP 12. Mr. Sunil Dhungana, FCL, EFTMP 13. Mr. Prakash Adhikari, FCL, EFTMP 14. Ms. Bina Wagle, Botanist, EFTMP
2	3 Mar 2021	Southern aspect of Godawari forest, Lalitpur	<ol style="list-style-type: none"> 1. Mr. Yam Prasad Pokharel, DG, FRTC 2. Mr. Sanjeev Kumar Rai, DG, DPR 3. Mr. Dharendra Kumar Pradhan, DDG, FRTC 4. Mr. Bimal Kumar Acharya, EMP Coordinator, FRTC 5. Mr. Dipak Lamichhane, Chief, National Botanical Garden, Godawari 6. Mr. Amul Kumar Acharya, ARO, FRTC 7. Dr. Keshab Raj Goutam, TA, EFTMP 8. Mr. Meghdut Chaulagai, FCL, EFTMP 9. Ms. Menuka Paudel, Botanist, EFTMP
3	13 Mar 2021	Northern aspect of Godawari forest, Lalitpur	<ol style="list-style-type: none"> 1. Mr. Yam Prasad Pokharel, DG, FRTC 2. Mr. Sanjeev Kumar Rai, DG, DPR 3. Mr. Bimal Kumar Acharya, EMP Coordinator, FRTC 4. Dr. Keshab Raj Goutam, TA, EFTMP 5. Mr. Pratap Sundar Shrestha, FCL, EFTMP 6. Mr. Meghdut Chaulagain, FCL, EFTMP 7. Ms. Bina Wagle, Botanist, EFTMP
4	1-5 Apr 2021	High Mountain region in Humla district	<ol style="list-style-type: none"> 1. Dr. Bishwo Nath Oli, Secretary, MoFE 2. Mr. Yam Prasad Pokharel, DG, FRTC 3. Ms. Sabitri Aryal, Under Secretary, FRTC 4. Mr. Bimal Kumar Acharya, Ecosystem Mapping Coordinator 5. Mr. Raj Kumar Giri, Under Secretary, FRTC 6. Mr. Kiran Kumar Pokharel, Scientific Officer (Botanist), FRTC 7. Dr. Keshab Raj Goutam, Technical Advisor, EFTMP

E. Field Survey

The first field survey mission was operated between 2 and 21 April 2021 (Table 3). In this mission, five field crews collected data from over 300 sample points in forest, grassland, wetlands, and agriculture along the north-south transects in the middle mountains (Transect no. 11, 13, 15, 17 and 19). Besides data itself, this survey mission provided inputs for managerial and technical improvements for the upcoming field missions.

Table 3: Details of field survey mission - I

SN	Transect	Districts	Crew members
1	11	Arghakhanchi, Pyuthan	Mr. Meghdut Chaulagain, FCL, EFTMP Ms. Menuka Paudel, Botanist, EFTMP Ms. Nistha Bohara, Intern, IOF, Pokhara
2	13	Palpa, Syangja, Gulmi, Baglung	Mr. Pratap Sundar Shrestha, FCL, EFTMP Dr. Mitra Pathak, Botanist, DPR Mr. Roshan Chaudhari, Intern, IOF, Pokhara
3	15	Nawalparasi, Palpa, Tanahun, Syangja	Mr. Sunil Raj Dhungana, FCL, EFTMP Ms. Bina Wagle, Botanist, EFTMP Ms. Samana Regmi, Intern, IOF, Pokhara
4	17	Chitwan, Tanahun, Gorkha	Mr. Santosh Kumar Labh, FCL, EFTMP Mr. Santosh Thapa, Botanist, EFTMP Ms. Bibhuti Thapa, Intern, IOF, Pokhara
5	19	Makawanpur, Dhading, Nuwakot	Mr. Prakash Adhikari, FCL, EFTMP Mr. Sangram Karki, Botanist, EFTMP Ms. Ramila Thapa, Intern, IOF, Pokhara

4. Knowledge products/reports

The knowledge products/reports produced so far are presented in Table 4.

Table 4: Knowledge products/reports prepared until Oct 2021

SN	Product	Type	Status
1	EFTM Program Inception Report	Working Document	Completed
2	Standard Operating Procedures (SOP) for EFTMP Field Survey	Working Document	Completed
3	Standard Operating Procedures (SOP) for Mapping	Working Document	Completed
4	A Brochure on EFTMP (in Nepali)	Flyer	Completed
5	EFTMP Update Report (July 2021)	Progress Report	Completed
6	Vegetation Types of Nepal (A report based on review of literature and secondary data and expert consultation)	Review Report	Completed
7	Types of Wetlands in Nepal (A report based on review of literature and secondary data and expert consultation)	Review Report	Draft

8	Agro-ecosystem Types in Nepal (A report based on review of literature and secondary data and expert consultation)	Review Report	Draft
9	GIS and Remote Sensing Application for Mapping of Ecosystem and Forest Types in Nepal	Review Report	Draft
10	Training Report on Field Data Collection Training for Field Crew Members	Event completion report	Completed

5. Team members Engaged with EFTMP

A total of 16 team members (excluding government officials) have worked for EFTMP. Table 5 presents the list of team members and their roles in brief.

Table 5: EFTMP team members and their roles

SN	Name and Position	Roles	Remarks
Technical experts			
1	Dr. Sunil Sharma, Senior Technical Advisor - International	Advisory support to EFTMP through Technical Advisor	Working (with PIF)
2	Dr. Keshab Raj Goutam, Technical Advisor	Lead and manage the ecosystem mapping team, provide technical guidance to thematic experts, and work as a forest specialist, i.e., define forest types, design methodologies, and Standard Operating Procedure (SOP) for field data collection for forest types and ecosystem mapping and forest ecosystems' vulnerability assessment, analyze data (with data analyst), produce maps (with RS/GIS Specialist), and prepare relevant reports.	Working (with PIF)
3	Dr. Him Lal Shrestha, Remote Sensing/GIS Specialist	Collate relevant geo-spatial data, support preparing field data collection design and plans, develop and operate applications for reclassification, integration, and mapping of the forest, grassland, wetland, and agriculture types and ecosystems (with RS/GIS Programmer), prepare SOP for satellite image classification and mapping, produce forest, grassland, wetland, and agriculture type and ecosystem maps (with relevant thematic specialists), and prepare relevant technical reports.	Contract (with WWF) ended in March 2021, further contract is pending
4	Mr. Shailendra Kumar Pokharel, Wetlands Specialist	Define wetland types, collate secondary data, design methodologies and Standard Operating Procedure (SOP) for field data collection for wetland types and ecosystem mapping and wetland ecosystems' vulnerability assessment, analyze data (with data analyst), produce maps (with RS/GIS Specialist), and prepare relevant reports.	Contract (with WWF) ended in March 2021, further contract is pending
5	Dr. Govinda Basnet, Agro-ecologist	Define agriculture typology/agro-ecological zones, collate secondary data on agro-ecosystem classification, design methodologies and Standard Operating Procedure (SOP) for field data collection for agriculture types and ecosystem mapping and agro-ecosystems' vulnerability assessment, analyze data (with data analyst), produce maps (with RS/GIS Specialist), and prepare relevant reports.	Worked (with PIF) until March 2021, further contract is pending

6	Dr. Chet Raj Upreti, Rangeland/Grassland Specialist	Define grassland types, collate secondary data, design methodologies and Standard Operating Procedure (SOP) for field data collection for grassland types and ecosystem mapping and grassland ecosystems' vulnerability assessment, analyze data (with data analyst), produce maps (with RS/GIS Specialist), and prepare relevant reports.	Worked (with PIF) until February 2021, further contract is pending
7	Mr. Ashim Pokharel, Data Analyst	Review field data collection forms, prepare database system for data entry and analysis, assist in data analysis.	Working (with PIF)
Field Crew			
8	Mr. Sunil Raj Dhungana, Field Crew Leader (Forestry) [FCL]	Plan for and arrange the fieldwork, coordinate with local stakeholders, lead the field crew and collect/record data in the given data collection forms as per SOPs (for the forest, grassland, wetlands, and agriculture types and ecosystem mapping and ecosystem vulnerability assessment), enter or organize entering field data, and assist mapping of the forest, grassland, wetlands, and agriculture type and ecosystems.	Contract (with WWF) ended in April 2021, further contract is pending
9	Mr. Santosh Kumar Labh, FCL		
10	Mr. Prakash Adhikari, FCL		
11	Mr. Meghdut Chaulagain, FCL		
12	Mr. Pratap Sundar Shrestha, FCL		
13	Ms. Bina Wagle, Botanist/Taxonomist	As a team member of the field crew, assist planning and arranging fieldwork, collect biodiversity-related information as per SOPs, assist FCL to collect field data, including identifying plants, and enter data (with FCL).	Contract (with WWF) ended in April 2021, further contract is pending
14	Ms. Menuka Paudel, Botanist/Taxonomist		
15	Mr. Santosh Thapa, Botanist/Taxonomist		
16	Mr. Sangram Karki, Botanist/Taxonomist		
Office Management			
17	Mr. Madhab Paudel, Office Assistant	Assist Technical Advisor to manage office of Ecosystem Mapping Unit.	Contract (with WWF) ended in March 2021, further contract is pending

In addition to the team members appointed by EFTMP as presented in Table 5, a number of officials from the Government of Nepal have been involved in the Program (Table 6).

Table 6: Government officials regularly involved in the EFTMP Program

SN	Name and Position	Roles	Remarks
Technical experts			
1	Mr. Yam Prasad Pokharel, Director General, FRTC	Provide advisory, managerial, and technical supports.	Chair of Program Coordination Committee (PCC)

2	Mr. Dharendra Kumar Pradhan, Deputy Director General, FRTC	Provide advisory, managerial, and technical supports.	Member of PCC
3	Mr. Bimal Kumar Acharya, Under Secretary, FRTC	Coordinate Ecosystem Mapping Unit that includes Assistant Research/Survey Officers assigned by FRTC, thematic specialists and field crew members for accomplishing field- and office-based activities as per the Program objectives; liaise with development partners and other stakeholders.	Ecosystem Mapping Coordinator
4	Mr. Amul Kumar Acharya, Assistant Research Officer, FRTC	Provide technical support, specifically in the area of remote sensing and GIS application, in detailing methodology for land cover type and ecosystem mapping, support in data acquisition/management, and office management.	
5	Mr. Rajaram Aryal, Assistant Survey Officer, FRTC	Provide technical support, specifically in the area of remote sensing and GIS application, in detailing methodology for land cover type and ecosystem mapping.	
6	Dr. Mitra Pathak, Scientific Officer, DPR	Engage in field survey as a botanist/taxonomist.	
7	Ms. Toona Kumari Giri, Office Assistant	Assist in the management of Ecosystem Mapping Unit.	

Note:

1. Five BSc Forestry intern students assigned by FRTC, namely Nistha Bohara, Ramila Thapa, Bibhuti Thapa, Samana Regmi, and Roshan Chaudhari, were involved as Forest Technicians in the five field crews in their first field survey mission during 2-21 March, 2021.
2. Many FRTC officials other than those listed in Table 6 have also supported the Program through technical advices during TWG meetings and technical discussions.

6. Budget and expenditure

The estimated cost of the Program according to the Program Design Document is NRs. 105,230,000 (equivalent to USD 857,480, as of 22/04/2020). Since the cost associated with the field survey is assumed to increase by NRs. 4,410,000, the revised estimated amount is NRs. 109,640,000 (equivalent to USD 920,880, as of June 30, 2021) (Annex 1).

USAID's Hariyo Ban Program allocated NRs. 8,640,000 through two agreements with FRTC (Agreement # G174 and NP10849), of which NRs. 8,235,453 has been spent for the technical and commodity supports. No fund is further available from the Hariyo Ban Program. However, WWF Nepal has further allocated USD 25,000 (equivalent to NRs. 2,976,500) for the Fiscal Year 2021/22.

Policy and Institutions Facility (PIF) has allocated a total of GBP 300,000 (equivalent to NRs. 49,497,000, as of June 30, 2021) to this program, of which about GBP 115,000 (equivalent to NRs. 18,974,000) has already been spent, particularly for technical support. Thus, NRs. 30,523,000 is expected to be available from PIF for the program implementation.

The Government of Nepal (GoN) had allocated NRs. 500,000 in the Fiscal Year 2019/20, which was spent for office set up. In FY 2020/21, the GoN had allocated NRs. 5,000,000 for the implementation of this program, of which NRs. 2,756,843 was been spent for field survey (specifically vehicle arrangements), purchase of office accessories, and field data collection training. The remaining amount could not be spent because of the pause of the field survey and issues with equipment purchases due to the COVID-19 pandemic. The GoN has allocated NRs. 2,075,000 for the implementation of this program in the FY 2021/22.

The expenditure in the program implementation until October 2021 and the committed amounts for further use are given in Table 7.

Table 7: Expenditure in the EFTMP implementation until October 2021 and remaining commitments

SN	Institution	Expenditure (NRs)	Remaining commitment (NRs)
1	The Government of Nepal		
	FY 2020/21	2,756,843	-
	FY 2021/22	157,500	1,917,000
2	USAID/Hariyo Ban Program	8,235,453	-
3	UKAID/Policy and Institutions Facility	18,974,000	30,523,000
4	WWF Nepal	-	2,976,500
	Total	30,123,796	35,417,000

As presented in Table 5, a total of NRs. 30,123,796 has been spent for the program implementation until October 2021, whereas a total of NRs. 35,417,000 (including PIF's and WWF Nepal's commitments and the GON budget for FY 2021/22) is available for further use. Thus, while considering the total estimated cost (revised) for the program implementation (NRs. 109,640,000), the program is short of NRs. 44,099,204 (equivalent to USD 370,395, as of June 30, 2021).

6. Issues and challenges

During its implementation in the first year, the Program has faced two major challenges. First, the second wave of the COVID-19 pandemic hindered the fieldwork. The field survey had to be paused after the first field mission in April 2021. The office-based activities, including meetings and consultations, have also been affected; however, they have been managed through online means.

Second, the lack of sufficient funds has been another issue for the smooth implementation of the Program. The Program activities, including field survey, have been postponed partially due to the lack of funds this year. Moreover, about 40 % of the total estimated budget (NRs. 44,099,204) is yet to be arranged.

The pause of the field survey from May to October, 2021 has already delayed the Program by six months. Although the Program was initially designed to be implemented in two years, i.e. up to October 2022, now it is assumed that it goes up to March 2023.

7. Conclusion

Updating the Ecosystem and Forest Types Map is a long-standing issue in Nepal for which the EFTMP was designed. The Program implementation was delayed for about a year initially due to a long transition from its inception to the implementation phase, whereas the second delay has occurred due to the COVID-19 pandemic and the lack of sufficient funds. However, a significant achievement has been made so far in terms of managerial activities, reviewing relevant literature, collection and analysis of secondary data, consultation with experts and stakeholders, and defining methodologies for land cover type and ecosystem mapping in each of the forest, grassland, wetlands, and agriculture components.

The preparatory activities have been accomplished, and the first field survey mission has been accomplished. In the context of lowering cases of COVID-19 and release of lockdown, it is hoped that the field survey will go smoothly in future.

7. Way forward

The cases of COVID-19 has gradually gone down. Similarly, the funds are now available for a couple of field survey missions. All the preparations for the field survey have been completed. Therefore, field surveys in the Tarai and Chure regions have been planned for November 2021, followed by that in the specified transects through the Middle Mountains. Using the FRA data and additional data from these field surveys in November, the Ecosystem Mapping Unit is expecting to generate initial cover type and ecosystem maps for the Tarai and Chure regions by January 2022.

Regarding fund management, the Forest Research and Training Centre and/or the Ministry of Forests and Environment may need to hold dialogues with donors/development partners to explore their interests to contribute to the Program. The government commitment on the additional budget is also expected.



Annex 1: Detailed cost estimates for the program implementation

Position/Roles	No	Duration	Unit	Rates (NRs)	Total Cost (NRs)	Cost in %
Technical Team Renumeration					32,920,000	31.28%
1. Technical Advisor	1	24	Months	300000	7,200,000	
2. RS/GIS Specialist	1	24	Months	200000	4,800,000	
3. GIS/RS Programmer	1	4	Months	200000	800,000	
4. Data Analyst	1	4	Months	150000	600,000	
5. Wetland Specialist	1	10	Months	150000	1,500,000	
6. Agri-ecologist	1	10	Months	150000	1,500,000	
7. Rangeland Specialist	1	4	Months	150000	600,000	
8. International Expert (Review, Mentoring & Capacity building)	1	60	days	60000	3,600,000	
Field Team Renumeration						
1. Crew Leader - Forestry	5	15	Months	80000	6,000,000	
2. Botanist/Taxonomist for forestry team	5	15	Months	80000	6,000,000	
3. Botanist/Taxonomist for wetland team	1	4	Months	80000	320,000	
Local Support Crew Renumeration					0	0.00%
1. Local Staff for forestry team	5	15	Months		0	
2. Local Res. Person for forestry team	5	15	Months		0	
3. Local Assistant for forestry team	5	15	Months		0	
4. Local Staff for Agri and wetland field team	2	4	Months		0	
5. Local Res. Person Agri and wetland field team	2	4	Months		0	
6. Local Assistant Agri and wetland field team	2	4	Months		0	
Expert Reviewer Renumeration					660,000	0.63%
1. Expert-Forest types and Ecosystem	1	1	Months	200000	200,000	
2. Expert-Agro-Ecosystem	1	0.5	Months	200000	100,000	
3. Expert-Wetland Ecosystem	1	0.5	Months	200000	100,000	
4. Expert-Rangeland Ecosystem	1	0.5	Months	200000	100,000	
5. Expert Panel Engagement	20	20	Days	8000	160,000	
Field Work (DSA Accomodation and hardship allowance)					35,255,000	33.50%
1. Technical Advisor	1	40	Days	5000	200,000	
2. RS/GIS Specialist	1	36	Days	5000	180,000	
3. Wetland Specialist	1	84	Days	5000	420,000	
4. Agro-ecologist	1	84	Days	5000	420,000	
5. Rangeland specialist	1	30	Days	5000	150,000	
6. Crew Leader - Forestry	5	1575	Days	5000	7,875,000	
7. Botanist/Taxonomist for forestry team	5	1575	Days	5000	7,875,000	
8. Botanist/Taxonomist for wetland team	1	84	Days	5000	420,000	
9. Local Staff for forestry team	5	1575	Days	2000	3,150,000	
10. Local Res. Person for forestry team	5	1575	Days	1500	2,362,500	
11. Local Assistant for forestry team (Labor/Porter)	5	1575	Days	1500	2,362,500	
12. Local Staff for Agri and wetland field team	2	168	Days	2000	336,000	
13. Local Res. Person Agri and wetland field team	2	168	Days	1500	252,000	
14. Local Assistant Agri and wetland field team (Labor/Porter)	2	168	Days	1500	252,000	
15. E&FT Mapping Coordinator	1	360	Days	5000	1,800,000	
16. Asst Survey Officer	2	360	Days	5000	3,600,000	
17. Asst Remote Sensing Officer	2	360	Days	5000	3,600,000	
Travel					20,375,000	19.36%
1. Air travel (national)		1	LS	400000	400,000	
2. Vehicle hire + fuel		2350	Days	8500	19,975,000	

Training, Workshops and Meetings					3,560,000	3.38%
1.Field data and information collection Training (2 days 20 people field based)	1	Times	400000	400,000		
2.Team building and field Experience sharing workshop (30 people, 1 day)	3	Times	300000	900,000		
3.Expert Panel Meetings (10 people, 1 day)	4	Times	35000	140,000		
4.Program Coordination Committee	6	Times	50000	300,000		
5.Program Advisory Meeting	4	Times	75000	300,000		
6.Threat, Risk and Vulnurability Assessment, Consultation & Workshop	LS		500000	500,000		
7.TWG Meeting	24	Times	30000	720,000		
8.Dissimination Workshop	1	Times	300000	300,000		
Equipment					2,180,000	2.07%
1.Camera with GPS	7	unit	50000	350,000		
2.D-Tape	14	unit	5000	70,000		
3.Sunnnto-clinometer	7	unit	35000	245,000		
4.Measuring Tape	14	unit	2500	35,000		
5.Basic laptop	7	unit	140000	980,000		
6.Inventory Forms Printing	1	unit	150000	150,000		
7.A set of Vegetation Identification book and field manual	7	unit	50000	350,000		
Field Gear					1,390,000	1.32%
1.Field Gear to each crew member	23	set	30000	690,000		
2. Tents,Torch, cooking utensils	LS	LS	7000000	700000		
Publication					500,000	0.48%
Report publication		LS	500000	500,000		
Infrastructure					8,390,000	7.97%
1.Cloud server set and maintenance		LS	200000	200,000		
2.Mapping unit management cost (Communication, Internet,Toner,Paper etc.)	1	unit	1190000	1,190,000		
3.Developing cloud based database system and maintenance			5000000	5,000,000		
4. Software,hardware and it's accessories		LS	2000000	2000000		
Total					105,230,000	NRs
Exchange Rate 22 April 2020			122.72	857,480	US\$	

Note: The above details is from the Program Design Document. During the development of detailed methodology, it was realized that a 'Forest Technician' is to be included in each forest and grassland field crew (total 5 persons) and thus included in the SOP for field survey. It was not considered by the Program Design Document. Therefore, the total estimate is increased by the estimated cost associated with this (5 persons*14 months*21 days/month*NRs.3000 per day = NRs. 4,410,000), making the revised total estimate to be NRs. 109,640,000 (equivalent to USD 920,880, as of June 30, 2021).