REVISION OF ECOSYSTEMS AND FOREST TYPES OF NEPAL

Terms of Reference for Wetland Specialist

1.   Background

In 2019, the Government of Nepal- Ministry of Forests and Environment (MoFE) initiated Ecosystem and Forest Type Mapping as a priority program and assigned the Forest Research and Training Centre (FRTC) to manage this. The program's overarching goal is to enhance the sustainable management and conservation of Nepal's ecosystems and thus support local as well as national economies. The program also supports a timely response to the Aichi Targets # 14 of the Convention on Biological Diversity's (CBD) ensures international commitments of ground action and reporting. This target primarily focuses on the restoration and protection of ecosystems by 2020 that provide essential services that contribute to the health, livelihood and well-being of women, and indigenous and vulnerable people.

To date, the vegetation maps drawn by Dobremez and his colleagues in the 1980s have been used as the basis of knowledge and classification of Nepal's ecosystems and vegetation types. They identified 198 vegetation communities in seven ecological maps covering the entire area of Nepal. In 1995, the Biodiversity Profile Project (BPP 1995) digitized these maps and synthesized 118 unique ecosystem types by merging the vegetation types into one class despite their difference in the structures or conditions. Since the Nepalese Government commissioned the BPP and accepted the report, 118 ecosystem types were officially recognized for Nepal.

A comprehensive and systematic study of ecosystem and forest types of Nepal is long overdue, as the existing classifications made before the 1980s were based on limited expeditions, field studies and ground verification. Hence, the MoFE's present initiative is a significant milestone, which aims to deliver a national-level ecosystem mapping effort using the standardized methodology developed by the Global Earth Observation System of Systems (GEOSS) under the

global ecosystem mapping initiative.

The standardized methodology for ecosystem mapping entails the integration of vegetation types and the creation of a composite map of environmental parameters. The macroclimate, lithology and landforms are the commonly used spatial parameters for the vegetation type. The vegetation type is considered to be a proxy for a specific biological community. The homogeneity of the environmental parameters with relatively stable condition delineates the iso-potential zone with a unique habitat and represents an ecological facet. Each ecological facet is considered as a distinct ecosystem type.

A national-level classification of forest, rangeland, agriculture and wetland ecosystem types will apply medium resolution satellite images in combination with extensive field data to validate the resulting map. Assessment threats and vulnerabilities to individual ecosystems and forest types will also be assessed using standard methods. Hence, the Ecosystem Mapping Program will contribute to devising national-level policies and strategies to protect and manage these life-supporting systems.

This ToR is developed and shared to seek a Wetland Specialist to carry out wetland ecosystem mapping in Nepal.

2. Objectives

The objectives of the Ecosystem Mapping Program are as follows:

- To review the existing knowledge and database relevant to the terrestrial and aquatic ecosystems of Nepal.
- To reclassify and delineate forest, rangeland, agriculture and wetland ecosystem types by applying a standardized methodology and generate appropriate maps.
- To assess critical threats and vulnerabilities to the ecosystems and provide management prescription.
- To improve institutional capacity for future monitoring and updating ecosystems of Nepal.

3. Roles and Responsibilities

The Wetland Specialist will work under the supervision and direction of the Technical Advisor (TA), Ecosystem Mapping Coordinator and the FRTC management. He/she will work together

with the Ecosystem Mapping Team to produce Wetland Types and Ecosystems of Nepal.

Specific tasks

A. Desktop

- Collect and compile the past studies and mapping of Wetland Types and Ecosystem in Nepal.
- Review the policy, literature and published documents of the international organizations such as IUCN, Wetland International, on the definition and classification approach to Wetland Types and Ecosystems.
- Together with TA, revisit the definition of the Wetland in Nepal and neighboring countries, and decide the term in the Nepalese context by specifying the wetland types included in this mapping exercise.
- Review and finalize the field data and information collection form.
- Review and identify the relevant environmental parameters for mapping of Wetland Types and Ecosystems in Nepal.

B. Other tasks

- Work with TA and RS/GIS Specialist to digitize the location data or geographic coordinates of the known Wetland to use as training data points for reclassifying the imagery.
- Work with TA and RS/GIS Specialist to reclassify the relevant satellite imagery at the physiographic or eco-regions (Eastern, Central and Western eco-regions) using pixel-based classification and assist in the interpretation of the reclassified image.
- Together with TA and RS/GIS Specialist review the distribution of the Wetland across Nepal and determine the minimum mapping unit for mapping Wetland in Nepal.
- Work with TA and RS/GIS Specialist to identify the new training points and validation points, ensuring the sufficient sample points representing each physiographic and eco-regions.
- Review and finalize the field data and information collection form.
- Together with TA and RS/GIS Specialist prepare an efficient field visit plan for field data and information collected at the point of interests and print out the relevant LRMP maps, Google Earth Maps or Rapid Eye Maps and travel itinerary.
- Undertake the fieldwork at the identified new training points and validation points.

- Compile the field data and information and classify the Wetland Types across Nepal and prepare a draft of Wetland Types together with TA and submit to the Expert Panel.
- Update the classification of Wetland Types and assist RS/GIS Specialist to reclassify the Wetland Types Map.
- Work with TA and RS/GIS Specialist to derive independent significant physical environmental parameters for Wetland, and assist in generating the maps with ecological facets representing unique Wetland Ecosystems of Nepal.
- Together with TA, share the ecological facets for Wetland Ecosystems with the Expert Panel and facilitate the evaluation and consensus decision on the classification of the Wetland Ecosystems of Nepal.
- Assist RS/GIS Specialist and apply the recommendations of the Expert Panel and generate Wetland Ecosystems Map of Nepal.
- Together with TA and RS/GIS Specialist undertake a threat and vulnerability assessment and classify into three classes: endangered, critical and stable Wetland Ecosystems.
- Together with TA and RS/GIS Specialist prepare a report on Wetland Types and Wetland Ecosystems Maps of Nepal and submit the report to an Expert for a review.

4.   Duration:

The duration of this contract is 7 months. The duty station is Kathmandu with frequent travel to the field.

5.   Required Skills and Experience:
- A Master's degree in Environmental Science, Forestry, or Natural Resource Management.
- A minimum of three years of professional experience in Wetland ecology, assessment or impact studies or experience on Wetland management and implementation program.
- Experience on planning, collecting, compiling and analysis field data and relevant information.
- A good understanding of the environmental, biotic and abiotic factors to determine the ecosystems types in Nepal.
- Good interpersonal skill with the ability to effectively interact with the team members and stakeholders.
- A demonstrated experience in working with a multidisciplinary team and ability to deliver outputs within the timeframe.

WWF Nepal, Hariyo Ban Program
PO Box: 7660, Pavitra Pyara Marg,
Baluwatar, Kathmandu, Nepal
https://www.wwfnepal.org/hariyobanprogram/