

TERM OF REFERENCE

Position: National Forest Inventory - Data Analysis Specialist (Individual Consultant - National)

1. Background

The USAID *Vietnam Forest and Deltas Program* is embarking upon a five-year effort that will support four provinces to accelerate their transition to climate resilient, low emissions development through investments in reducing net emissions from forests, and enhancing resiliency of people, places, and livelihoods in the delta regions to short and long-term climate impacts. In collaboration with MARD, the Program will support Payments for Forest Ecosystem Service payments through programs to build capacity, distribute equitable benefits and for monitoring environmental services.

2. Objectives

The objective of the assignment

3.0 Tasks

The assignment is to analyse the raw data of sample plot system of NFIMAP - Cycle 1- 4 in Thanh Hoa / Nghe An province with following tasks:

Methodologies Summary:

Summarize the sampling design method, plot layout and parameters measured for:

- a) The NFIMAP cycle 1- 4;
- b) The National Forest Assessment Project (NFAP);
- c) The General National Forest Inventory Program (GNFIP)
- d) To explain the layout for MARD's proposed revisions to the NFI and NFI-Statistics program, including collation of data forms and methodologies.

Data Collection:

To collate forest inventory data collected by the NFIMAP cycle 1- 4. This must include key parameters for each individual tree (e.g. diameter at breast height (dbh), height etc.); coordinates of each secondary sample unit (SSU); predominant forest type of each SSU falls in (e.g. deciduous, evergreen broadleaf, coniferous etc.)

Processing:

Convert raw database from MS Access to MS Excel format. Database shall include required parameters, including sample plot code number, subplot number, collection date, site

description, coordinates, system of sample plots (VN2000), tree DBH, tree height, bamboo DBH, bamboo height. Data fields present in database shall be consulted and agreed with VFD experts;

Group the sub plots into datasets per forest class (rich, medium, poor) of forests type and plantation forests (following MARD classification system);

Statistical Analysis

The consultant shall conduct statistical analysis using all the data compiled with close supervision from VFD and WI experts. The metrics to be reported are:

- a. Per Subplot and Sample Plot: Range of tree DBH and heights present (min, max, media and mode) and total carbon stocks
- b. Per datasets: Range of carbon stock (minimum, maximum, median and mode), statistical values of carbon stocks (standard deviation, variation of 95% confidence interval
- c. Analyze the National Forest Inventory data and estimate average carbon stocks for each forest type category. This must include uncertainty estimates of the average carbon stocks in the defined strata, including 95% confidence interval as a percentage of the mean;

4. Deliverables

- Report on Data Collected using different National Forest Inventory systems (as mentioned above);
- Report average carbons stock per forest type and associated historical sample plot NFI 1-4 data and historical socio-economic data used for the analysis;
- Excel spreadsheet including all data used to estimate carbon stock with hotlinks demonstrating calculations

5. Qualifications, Experiences of Consultant

- 5.1 Master or Doctorate degree in forestry, natural resource management or related field;
- 5.2 Experience on Vietnam's forest inventory, NFIMAP;
- 5.3 Demonstrated experience in statistical analysis of forest inventory data;
- 5.4 Expertise in database management, specifically in MS Access and MS Excel;
- 5.5 Expert understanding of NFI Map's data, and ability to collaborate with VFD experts;
- 5.6 Good understanding of forest carbon assessment;
- 5.7 Proficient in English.