

Government of Nepal
Ministry of Forests and Soil Conservation
REDD-Forestry and Climate Change Cell
Babarmahal, Kathmandu, Nepal

**Terms of Reference for
Development of an Economic Model to Forecast
Future Rates of Deforestation and Degradation
in Nepal
(FCPF/REDD/S/QCBS-6)**

1 Background and rationale

Reducing Emissions from Deforestation and Forest Degradation (REDD) is evolving as a means to reduce forest sector carbon emissions through forest management and enhanced forest governance in forestry and related sectors. The World Bank's Forest Carbon Partnership Facility (FCPF) is assisting Nepal to develop and apply strategies to address the drivers of deforestation and forest degradation.

REDD (also referred to as REDD plus) is a new element that is currently being discussed for inclusion in a post 2012 climate change agreement under the United Nations Framework Convention on Climate Change (UNFCCC). REDD calls for policy approaches and positive incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries. Nepal is currently undertaking a number of readiness preparation activities to prepare the country to be able to participate in a future REDD mechanism. One of such activities is to develop a model to forecast future rates of deforestation and forest degradation.

In Nepal, models have been used since the 1980s for macroeconomic analyses with the aim of using it in the national planning exercise. Input-output tables were prepared, a social accounting matrix (SAM) was developed, and a Computable General Equilibrium (CGE) model was constructed in 1985/86 followed by its update in 1987/88.

Based on these combined experiences, Nepal is planning to develop a country wide spatial regression model that is imbedded in a CGE model. Disaggregated data on the forest-related variables can be used to construct a CGE model based on input-output table and SAM. The spatial regression model would enable linking GIS based information from the LRMP and FRA projects to economic variables and parameters and use this to make projections of carbon stock changes under different scenarios. The drivers affecting deforestation and forest degradation in Nepal can vary across devel-

opment and eco- regions. The selected modeling approach will allow for further refinement at the regional level.

For the CGE related modeling work, some of the required data is already available through the Central Bureau of Statistics or it can be obtained from the more recent household survey of Nepal Rastra Bank. Similarly, some information from labor survey can be useful for the modeling exercise. Recent manufacturing census data will enable to compute use and make matrix by industries and hence will enable to give detailed information on the uses of forestry products by different industries. The data sets available from NLSS (Nepal Living Standard Survey) of 2003/04 can be extremely useful for compiling or generating further information.

2 Objectives

The REDD Cell therefore seeks consulting firm/consortium of consulting firms to advise the Government of Nepal in order to achieve the following objectives:

- To determine the medium and long run future relationships between economic changes and forest degradation and deforestation using a Computable General Equilibrium economic simulation model.
- To strengthen the capacity of the REDD Cell and other key stakeholders so as to be able to design and apply CGE analysis themselves.

As part of their mission the advisors will build the capacity of the REDD Cell and other key stakeholders so that they would be able to design and apply CGE analysis as a means to forecast future rates of deforestation and forest degradation in Nepal

3 Methodology

Some steps to be followed to carry out this study are outlined below. However, the consulting firm or consortium are encouraged to propose innovative ideas and updated methodologies that have been applied, tested, and proven to work elsewhere.

1. Generate a database on related areas of forestry sector based on secondary sources
2. Carry out survey for updating data to be useful for deeper analysis and also update input-output coefficients and alternative uses of forestry products.
3. Assess the existing situation on carbon emissions through deforestation and degradation and identify underlying causes of increased deforestation and degradation. A consultancy firm based in Kenya is supporting REDD Cell in determining reference level. So this consultancy can build on the work already done for setting up reference level for Nepal.
4. Update the existing input-output table constructed for Nepal with adequate disaggregation of the forestry sector to identify the changed cost structure and uses of the forestry products; give due consideration to non-marketed forest products used by rural households in addition to the essential forestry sector disaggregation.

5. Select an appropriate existing model and suggest required extensions for the purpose of this study. Develop separately a land use sub-model as a feedback to the economy-wide model for assessing likely ramification of changes in the land use pattern on deforestation etc.
6. Construct a CGE Model and a Social Accounting Matrix (SAM) with focus on the specification of medium to long-term framework based on an updated input/output table and calibrate SAM distinguishing quantity and prices and thereafter calibrate shocks on carbon emissions as a result of deforestation and degradation etc.
7. Carry out an extensive policy simulation exercise for assessing the economy-wide effect of various alternative policy shocks in general and medium to long-term effect on forestry sector in particular. The policy shocks should examine the ramifications of the following issues more distinctly:
 - Alternative uses or changes in land use pattern;
 - Alternative investment decisions of government, private sector, community and households;
 - Policy on alternatives or substitution of energy uses/sources;
 - Impact of reforestation, regeneration and deforestation.
8. Provide recommendations (policy and implementation) focusing on the following areas:
 - Means of protecting carbon stocks;
 - Ensuring sustainable forest management; and
 - Economy-wide role and impact of forestry sector management on the economy in general and people's livelihoods in particular.

4 Expected outputs and deliverables

The REDD Cell will receive a well-referenced and comprehensive report that has been validated through a stakeholder consultation process. The information will include methodologies and a description of data sets, approaches, methods, models and assumptions used.

5 Work plan

The consulting firm / consortium of consulting firms will prepare an inception report with a detailed work plan to guide the process, including a work schedule, methodology for data collection related to each key question, framework, information collection and analysis, and reporting. Based on the work plan, a detailed plan of study will be discussed and finalized jointly by the study team and the REDD Cell.

6 Time frame

The consultants' services are scheduled for up to six months, beginning from November, 2013

7 Composition of the study team

Highly qualified and experienced institution or consortium with experience in similar modeling exercise, preferably in Nepal or a country with comparable circumstances.

The consulting firm to be involved in this assignment must demonstrate the ability to carry out this study and that it has sufficient experience in leading multi-disciplinary teams. The firm must have a proven capability to conduct the study and produce consistently high quality reports. The consultants shall demonstrate their expertise in all areas pertaining to this assignment.

REDD Cell envisions following four key members in the team: 1) international team leader specialized in CGE modelling, 2) International experts on economic modelling, 3) National experts on macroeconomics, and 4) national experts on natural resource/forest economics. All the members need to have at least master's degree with specialization on related field and adequate working experience.

Apart from the international Team Leader, at least one of the subject matter specialists is expected to be an expert with a strong international track record.