Ministry of Forests and Soil Conservation

REDD-Forestry and Climate Change Cell

Forestry Complex, Babarmahal, Kathmandu

Terms of Reference for

Develop national data base of basic attributes of all forest management regimes and develop national REDD+ information system or registry:
(FCPF/REDD/S/QCBS-24)

1. Background

Global climate change threatens the livelihoods of people worldwide. A significant portion of the greenhouse gas emissions results from land-use and land use changes, particularly deforestation and forest degradation in tropical areas. The international community is developing a mechanism called Reducing Emissions from Deforestation and Forest Degradation (REDD+) to provide positive incentives to help developing countries reduce emissions from deforestation and forest degradation and to support conservation, sustainable forest management, and the enhancement of forest carbon stocks. REDD+ has the potential to contribute to sustainable development in these countries. Preparations for REDD+ include enhanced human and institutional capacity to develop and coordinate relevant land use policies to mitigate future impacts on forest cover and quality.

Nepal has prepared its REDD+ Readiness Preparation Proposal (R-PP). The implementation of the R-PP is being coordinated by the REDD-Forestry and Climate Change Cell under the MoFSC in close collaboration with multiple-stakeholders including other government institutions, NGOs, INGOs and Civil Society Organizations of which constitute a National REDD+ Working Group (RWG).

The Forest Carbon Partnership Facility (FCPF) (with the World Bank as its delivery partner) is supporting Nepal in its national efforts towards "REDD+ Readiness". The objective of the Nepal Readiness Preparation Program is to prepare Nepal to engage in and benefit from the REDD+ program within the context of the international climate negotiations of the UN Framework Convention on Climate Change (UNFCCC).

2. Rationale

The success of a national REDD+ program will depend much on a robust yet transparent information system that can link to relevant databases on carbon and other social and environmental aspects. The existence of information and internet technology can be used for rapid and robust data entry, data management and analysis and output generation. The National Forest Database (NFD) will incorporate comprehensive data on themes related to forest resources, forest management, carbon stocks, forest users and REDD+ activities. Ideally the database should cover all forest types including community forests, collaborative forests, leasehold forests, national forests, government managed forests, forests under protected areas and buffer zones, private forests and religious forest. The National Forest Information System (NFIS) will provide necessary infrastructure, interface, tools and links to the NFD

database as well as other external databases to provide user requested information necessary for exploration, analysis, reporting and visualization on forest resources, carbon stocks and flows, management and users. A web-based information system enables easy access and updating of data and information.

A functional information system is crucial for monitoring and reporting on REDD+ program and activities at both national and international levels. The system will also help in making information decisions at policy and field implementation levels. Although the current effort is focused on REDD+, NFD and NFIS will be valuable for the whole forestry sector with potential link to agriculture and land use planning in future. REDD Cell aims to develop the NFD and NFIS as an integrated system to be housed in one forestry institution. Establishment of computer hardware and software and capacity building of staff are essential to ensure continued operation and updating of NFD and NFIS.

The MoFSC has a Management Information System (MIS) that is currently defunct, perhaps due to lack of access to external users and limited manpower and budget. Many features developed in MIS are likely to be useful for the NFIS. The Department of Forestry already has a database on community forests; and another non-wood forest product database is being developed with FAO support. Some other departments also have their other databases. The NFIS should be able to link to these databases and provide differential access to different categories of users (system administrators, data managers, government officials, senior managers, partner institutions and the general public).

3. Assignment

3.1 Component A: National Forest Database (NFD)

The National Forest Database (NFD) will integrate and incorporate existing data collection mechanism at the management regime level. A standard NFD model will be designed through comprehensive consultations with stakeholders. The database will incorporate data required for various forestry thematic applications related to forest resources, forest carbon accounting, forest management, forest users and beneficiaries, LULUCF/Activities, REDD+ Safeguards, etc. It should incorporate spatial data related to the management regime unit boundaries and the linked with the related information in the database. The database structure should be sufficiently flexible to incorporate additional thematic data in future. An open source database platform along with spatial component should be hosted in a secure centralized system. Customized GUIs should be developed for data entry at the district level.

Piloting will be undertaken in a selected development region in order to compile relevant information and capacity enhancement of relevant institutions.

3.1.1 Objectives

a. To design and develop a comprehensive and integrated National Forest Database (NFD) and the required user interface for data entry, management and access. The NFD shall include spatial information of the boundaries of the management regime units.
b. To develop a Standard Operating Protocol (SOP) for data entry and quality control.

c. To build capacity of district and national level stakeholders to manage the database.
d. To develop and test the spatially integrated NFD for a pilot region.

3.1.2 Approach

The approach for developing and testing a NFD could involve:

- Data needs assessment through comprehensive stakeholder consultations.
- Comprehensive review of existing databases and databases in the making - of particular importance are the database of MIS at MoFSC, the community forestry database and the non-wood forest product database, databases at the departments of wildlife and national park, forestry research.
- Development of NFD design for approval by REDD Cell/MoFSC.
- Development of Standard Operating Procedure for data acquisition, data entry, validation and management.
- Review and compilation of existing relevant data and information, including spatial data, from a selected pilot region and enter into the database.
- For incomplete but essential variables, collect data from sample districts of the region and enter into the database. This includes boundary survey of management units using Differential GPS equipment in the piloted region. Biophysical and social data may be collected through district forest offices with links through the Multi Stakeholder Forestry Program (MSFP).
- Development of a comprehensive integrated NFD for the pilot region using open source PostgreSQL/PostGIS Database.
- Capacity building for district level staff (in the selected region) and central level for data and database management.

3.1.3 Expected Output

Following outputs are required:

a. An integrated NFD infrastructure with necessary interface and tools for data entry and management.
b. Standard operating protocol for data entry and quality control measures.
c. A tested fully functional forest database for one pilot region.
d. Trained personnel at district, regional and national levels to manage the integrated database.

3.2 Component B: National REDD+ Information System [National Forest Information System (NFIS)]

The NFIS is envisioned as an overarching information management system that includes tools and protocols for system managers and interfaces for accessing data, information and maps from the NFD and other relevant databases, links to and between these databases, analysis, synthesis, tabulation and other thematic tools. The system will be accessible for the general public through internet; web-based applications will be available. The NFIS will include tools for decision support modules and user friendly graphical user interfaces for data query and reporting, GIS analysis and mapping. GIS module will include

standard web mapping interfaces and tools. The information system will be developed using open source application platforms with industry standard administration and management interfaces and it will deployed in the web as a "software-as-a service (SAS)" system. Key modules to be included are forest resources, forest carbon, working plan and programs, users and beneficiaries, remote sensing, Land use, Land-use Change, and Forestry (LULUCF), REDD activities and social and environmental safeguards (SES) indicators.

The proposed NFIS will be deployed through hosting in a dedicated web application server to be based in GIDC which has facilities for space, continuous power supply, high speed internet connectivity, security and technical support.

3.2.1 Objectives

a. To develop an integrated NIFS that incorporates analysis, synthesis and decision support tools for uploading and accessing forest resource inventory, forest carbon, management plan and program, users and beneficiaries, REDD+ activities and safeguard indicators. The decision support tools shall include automated reporting, data query and analysis, visualization and web GIS applications.
b. To establish an operational NFIS with required hardware and software support at GIDC.
c. To document the process and products related to NIFS.
d. To train stakeholders at district, regional and national levels to use NIFS.

3.2.2 Approach

- Needs assessment for designing NFIS applications through comprehensive stakeholder consultations.
- Comprehensive assessment of the MIS at MoFSC; many features of the system may be useful for NFIS.
- Development of NFIS framework architecture that uses open source software platform for approval from REDD Cell/MoFSC.
- Development of an operational NFIS linked to the NFD with data for a pilot region and existing databases.
- System testing and User's Acceptance Testing (UAT) for approval of the system.
- Development of guidelines for institutional coordination and standard operating procedures.
- Review of relevant policies, law and regulations.
- Procurement and installation of servers, operating system and necessary software, storage system and power backup system at an appropriate forestry institution (to be decided at a later stage). A backup server will be set up at the National Information and Technology Centre (NITC), Singh Durbar, Kathmandu.
- Operationalizing NFIS including staff training.
- Development of recommendations, through extensive consultations, for institutional management of NFIS including manpower, computer hardware and software to ensure system sustainability and use.

- Continued support for system operation for a minimum six months (a separate arrangement for post installment support from the consultancy firm may be required).

3.2.3 Expected output

Following outputs are required:

a. An integrated NFIS infrastructure complete with tools for analysis, synthesis and decision support for system managers and public access through web.
b. Standard operating protocol for accessing data and information through NFIS
c. Fully functional and tested NFIS with public access
d. System design documents and operating manuals
e. Trained government staff to operate, maintain and administer the NFIS.

4. Hardware, software, power backup installation

Necessary computer hardware (servers, systems software), power backup and air-conditioning systems should be procured following standard procedure. The primary server will be housed at a forestry institution (to be decided at a later stage) and a backup server housed at the National Information and Technology Centre (NITC) in Singh Durbar, Kathmandu that is well equipped with necessary security and round the clock power supply.

S. No.	Description	Input	
		Unit	Quantity
1	Server: Quad core processor at least 3.0, 32 GB memory, 1 TB with RAID 5	No	2
2	Windows 2012 server	No	2
3	SQL server: 2012	No	2
4	Server Racks: 6 U	No	2
5	Power backup with highbrid system	No	1
6	AC: 2T	No	1
7	Internet: 5 MBPS	M	12

Detail specification on each of the items will also be provided in the RFP.

5. Assignment team

Although Component A (NFD) and Component B (NFIS) appear separate tasks, it is crucial to maintain harmony and synchronization between the NFD and the NFIS. Any disconnect between the two components may seriously affect the functions and utility of both the NFD and the NFIS. Therefore, REDD Cell decided to pool the two components into a single assignment.

A consultancy firm/consortium with national and international experts is expected to undertake the work. A list of experts assumed to be essential for the assignment is proposed below.

Key Experts

A. Team Leader and REDD+ Expert (International-expected input 4 PM)

The REDD+ expert should have a post-graduate degree (preferably PhD) in relevant subject with minimum 10 years and preferred 15 of work experience on LULUCF, REDD+, Monitoring, Reporting and Verification (MRV), safeguards and international compliance. Experience of designing forest databases and information systems will be beneficial. A proven experience of leading multi-disciplinary and multi-national teams is essential.

B. Information System Expert (national-expected inputs 8 PM)

The Information System Expert should be an expert in information system design and development. The incumbent should have a minimum of bachelor in IT and preferably post-graduate degree in an IT sector (information system/software) and with minimum of 7 and preferably 10 years of relevant work experience, preferably in the forestry sector, and staff training in developing countries.

C. Forest Biometrics expert (national-expected input 8 PM)

The incumbent should have a minimum of bachelor level of education on forestry and preferably a post-graduate in forest management with minimum 7 and preferably 10 years of work experience on forest biometrics/mensuration, developing forest databases, monitoring and evaluation, management.

D. GIS/Remote Sensing Expert (national-expected input 4 PM)

The GIS Expert should have minimum of BSc and preferably MSc degree in geo-information/GIS and work experience of minimum 7 and preferably 10 years in designing and developing database and GIS, GIS based forest information system, web based GIS, integration of GPS data into GIS. Experience in land use land use change and forestry analysis, MRV analysis, development of training curricula and conducting trainings will be preferable.

E. Software Engineer (2 persons, national- expected inputs 8 PM each)

The Software Engineer should have minimum of a graduate degree and preferably a post-graduate degree in software engineering or information technology with minimum 5 and preferably 7 years of proven experience in system design and development.

F. Web Designer (national-expected inputs 6 PM)

The incumbent should have minimum of a graduate degree and preferably a post-graduate degree in software engineering or information technology with minimum 5 and preferably 7 years of proven-experience in web design, web applications and web hosting.

G. Database Programmer (national-expected inputs 8 PM)

The Database Programmer should have minimum of a graduate degree and preferably a post-graduate degree on database programming with minimum 7 and preferably 10 years of proven relevant-experience in database programming, large scale database maintenance and management.

Non-Key experts:

H. Field Coordinator (2 persons, national-expected inputs 8 PM each)

The Field Coordinator should have a minimum BSc degree in forestry, agriculture or natural resources with at least 5 years of experience in questionnaire design, field surveys, data collection, data compilation, data analysis and database development.

6. Qualification and competency of consulting firm/consortium

The consulting firm/consortium for this assignment should have a demonstrated ability and relevant experience in (i) leading multi-disciplinary teams, (ii) successfully completing similar assignments, and (iii) producing comprehensive and quality documents and reports.

Failure to meet the eligibility criteria- minimum three years of experience, intact tax payment status, adherence to the conflict of interest criteria stated in 1.9 paragraph of the World Bank's procurement guideline and legally binding joint venture agreement for consortium or sub-contracting- means automatic disqualification.

Experience Criteria:

- Development and management of databases and information systems-familiarity with forest management in Nepal, forest inventory, biometrics or forest mensuration-at least 2 and preferably more than 3 projects completed;
- Design and development of national database and information system for natural resource sector- at least 2 and preferably more than 3 projects completed
- Development of information system and GIS based applications in forestry sector- at least 2 and preferably more than 3 projects completed;
- Design and development of database for climate change adaptation and REDD- at least 2 and preferably more than 3 projects completed.

7. Work plan

The team is required to prepare and submit an inception report with a detailed work plan before the assignment formally starts. The work plan should describe how the assignment will be conducted; it should include a work schedule, methodology for each task. The work plan will be reviewed by the REDD cell and later finalized jointly by the team and the REDD cell.

8. Duration of work

This assignment should be completed within eight months after signing the contract. This assignment is expected to start in November 2014 and complete in June 2015.

9. Reporting requirement

The following reports are mandatory. The delivery time of these reports will be clearly specified in the full proposal.

Component A

- Inception report
- Data needs assessment report
- Report with database infrastructure and interfaces for approval
- Report with NFD for a pilot region
- Report with database manual, operating guidelines, SOP document, training manual)
- Final report

Component B

- Inception report
- User requirement analysis report
- System design report for approval
- System testing report, user/administration guide, training manual
- Final report

A comprehensive and fully referenced final report including detailed recommendations must be submitted at the end of the assignment. Recommendations on institutional management of NFD and NFIS including manpower, computer hardware and software must be included. The report should include proposals that are clear, implementable recommendations in PSIR (pressure, state, impact and response) framework.

Both hard copy and soft copies of all reports should be submitted to REDD-Forestry and MoFSC. All reports should be in English. An executive summary should be included in English and Nepali in the final report.

10. Deliverables

The following deliverable must be provided. The proposed deadline for each deliverable should specified in the full proposal and finalized in the inception report.

Component A

1. Design of NDF, interfaces and tools for approval
2. Standard operating protocol for data entry and management
3. Tested forest database for a pilot region
4. Database design documents and operating manuals
5. Staff training on data entry and database management

Component B

1. Design of NFIS interfaces and tools for approval
2. Standard operating protocols for NFIS access
3. Tested and functional NFIS with public access (including computer hardware and software)
4. System design documents and operating manuals
5. Staff training on NFIS management and operation

11. Selection procedure

A consulting firm will be selected using the World Bank's Quality and Cost Based Selection (QCBS) method. For further details refer to the World Bank's Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits &Grants by World Bank Borrowers , January 2011 (Consultant Guidelines).

12. Payment schedule

REDD Cell plans to provide lump sum payments in agreed numbers of installment, each linked to a particular deliverable. Three time payments could be made - first installment of 20% of the contract amount against an acceptable inception report, second 40% against a draft final report and third and final 40% against an acceptable final report after the completion of all the activities listed in the ToR. There will be a provision of 10% mobilization advance against the bank guarantee.

13. Contact person

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