MELCA-Ethiopia
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Movement for Ecological Learning and Community Action
(MELCA-Ethiopia)



Terms of Reference for Assessing
"Land use Land cover Change and Carbon Stock assessment of Majang Forest Biosphere Reserve"

Building Resilient Community and Ecosystem

April, 2022
Addis Ababa

1. Introduction and Background

1.1 Introduction:

Movement for Ecological Learning and Community Action (MELCA-Ethiopia) is a non-governmental, non-profit making indigenous organization founded in 2004. The organization recently re-registered with the Agency for Civil Society Organizations on the 14th of November 2019 in accordance with Civil Society Organizations Proclamation No. 1113/2019 having a registration number of 0048. MELCA-Ethiopia operates in 4 project offices in 3 regional states (Oromia, SNNPR, and Gembella Peoples National Regional States).

The organization has a vision to see healthy and prosperous people, who preserve their bio-cultural diversity, and the mission is focused on working for healthy ecosystems, resilient communities, and critical young generation through developing and institutionalizing innovative approaches and experiences. Its core values include integration of culture and environment, traditional and scientific knowledge system, intergenerational learning and celebrating diversity. To realize its vision, MELCA-Ethiopia focuses on implementing four core programs Environmental Governance, Agro-ecology, Children and Youth Empowerment, and Eco-friendly Livelihoods Improvement Schemes all of which are employing gender as a cross cutting subject.

1.2 Background:

The Majang Forest Biosphere Reserve is located in the west of the country, this biosphere reserve includes Afromontane forests in one of the most fragmented and threatened regions in the world. The landscape also includes several wetlands and marshes. On higher ground, above altitudes of 1000 metres, the vegetation is dominated by ferns and bamboo, while lower areas are covered with palm trees. This region, rich in biodiversity, includes 550 higher plant species, 33 species of mammal and 130 bird species. The population is around 52,000 inhabitants.

The area is characterized by a rolling topography and steep slopes at higher altitude. The area is generally highly dissected by several small streams, which drain into the Gilo, Akobo and Alwero Rivers. Areas below 1000 m.a.s.l are relatively flat. The landscape in the area is also dotted by numerous small wetlands and marshes. Wetlands on the highlands are dominated by ferns, grasses and bamboo, while the lowland wetlands are dominated by palm trees. The lowland woodlands are often characterized by clusters of lowland bamboo thickets.

The biosphere reserve area is endowed with diverse species of plants and animals. The area is important for the conservation of the genetic diversity of many useful plants, and most notably ensete (Ensete ventricosum) and yam (Dioscoria bulbifera). Over 130 species of birds were recorded from the area. Characteristic mammals that occur in the area are leopard (Panthera pardus), caracal (Felis caracall), Colobus Monkey (Colobus guereza), and anubis baboon (Papio anubis).

The total numbers of people living within the biosphere reserve are about 52,000 inhabitants. The population of the biosphere reserve is predominately composed of the indigenous Majang and Shekacho ethnic groups. The main economic activities are agriculture (cereals, coffee, fruits and spices production), beekeeping and livestock husbandry.

From the agro-ecology perspective, Majang is a high rainfall area, with high altitudinal gradient from well over 2400 to around 560 m, which makes it suitable for major agricultural development. It has high potential for food crops, vegetables and fruit production. The area is

one of the few food self-sufficient areas in the country, where food aid is not known to the local community. There is also plenty of water for irrigation during dry season.

2. Objective of the assignment

MELCA-Ethiopia is implementing a project entitled **"Growth for the Future (G4F) Program II: Natural Resource Management for Resilience and Economic development, Majang Project"** from 2019 that ends December 2022. Thus the purpose of this assignment is to conduct assessment on land use land cover change and carbon stock of Majang Forest Biosphere Reserve as of June 2017.

3. Key Tasks

The tasks of the consultancy firm/consultant include the following among others;

- Identify land use land cover change the last 30 years (at interval of 10 years based on available data/image), in particular with reference to the registration of the forest as BRs and implementation of its management plan
- Estimate rate of deforestation, areas taken up by resettlement, agricultural expansion or unsustainable investment and forest fire in core, buffer and transition zones of Majang Forest Biosphere Reserve,
- Rainfall and temperature and other climate related pattern of change the last ten years, and beginning from the registration of the forest as UNESCO biosphere reserve
- Extent of erosion, flood and nutrient lose,
- Change of major endemic animals, birds and plant species diversity,
- Production of changes map
- Determine carbon stock changes
- Key recommendations for specific stakeholder.
- Production of reports, prsentaion to key stakeholders and revision based on MELCA and stakeholders in puts and submission of the final document

4. Location

The assignment will be undertaken in Godere and Mengeshi woredas of Majang Zone of Gambella Peoples' National Regional State.

5. Approaches/methodology

The consultant/firm should develop a methodology and action plan to undertake the assignment. In regards to land cover change, the consultant is expected to use latest high resolution satellite images to examine the trends in land cover change and determine the annual rates of deforestation. The consultant is expected to derive trends in land cover change within MFBR using interpretation of Landsat satellite images; and estimate the annual rates of changes (show the land cover changes by *woreda* and zonation-transitional, buffer and core, in order to see clear differences in the rate of forest in the two *woredas* and among the forest zones)

With regard to carbon stocks assessment, the focus of this assignment will be on estimating carbon stocks of forests that are subject to deforestation and degradation, possibly above and below ground carbon stock. The mean carbon stock in aboveground tree biomass per unit area is estimated based on field

measurements that are selected randomly or systematically in each of the three forest zones- transition, buffer and core areas. That is, carbon in standing trees in the three forest zones should be measured and be part of estimate of carbon storage in MFBR as this is where most of the carbon benefits will be derived from. More sample needs to be taken from the core areas while a reasonable or statistically sound sample plots should also be taken from the buffer and transition zones for comparison of the carbon storage and changes in carbon stocks (later on) along the three forest gradients.
It is also important to make document review and consultaions with key stakeholders and key informants to determine the factors of change and draw the recommendations.

6. Expected outputs

The following are outputs expected to be delivered by the Consultant.

- Land cover change map within the MFBR of the two *woredas*
- Land cover change within the three forest zones- transition, buffer and core
- Biodiversity survey focusing on major tree, ankmal and bird species/number of trees per hectare (for major species) or each vegetation type,that indicates abundance and diversity
- Assessment report of estimated plot level carbon stock at above and/or below ground carbon pools and a comprehensive picture of carbon stocks at *woreda* and zone levels
- Calculated average carbon stocks for various forest zonation- transition, buffer, and core areas.
- Reflection from secondary data on animal and avifauna is expected.
- Drivers of change and recommendations for future actions

7. Tentative work schedule

The consultancy firm/consultant is expected to submit schedule for executing the assignment. MELCA-Ethiopia proposes 45 days for the entire task after signing the contract agreement with the consultant/firm.

8. Qualification requirement of the consulting firm/consultant

- The consulting firm/consultant is required to be familiar with concept and principles of the biosphere reserve and have experience of conducting of forest resources assessment, preparation nomination documents and BR management plan and similar tasks,
- The team of experts is preferably required educational background in the areas of Natural science, agro economics, rural development, sociologist GIS and remote sensing and related,
- At least holding a minimum of MSc or MA in their respective fields.

9. Terms of payment

The payment modality will follow the following schedule:

- The first installment: 40% on submission of inception report and approval of the methodology and singing of agreement,
- The second installment: 30% on submission of draft report on the finding and recommendation to address the gaps to be presented on validation workshop to be organized by MELCA-Ethiopia and accepted by MELCA-Ethiopia,
- The third installment: 20% upon delivery of the final document that incorporated comments during the validation workshop and accepted by MELCA-Ethiopia approval body.
- The Final installment: 10% upon conducting training on identified gaps for relevant stakeholders, presentation of the revised document and submission of report.

10. Application process

Interested applicants who meet the requirement are invited to submit an expression of interest including: financial and technical proposal each sealed in separate envelops that carry the official seal, outlining methodology, training material, work plan, CV of participating staff and profile of the firm/consultant. In the financial proposal the applicants are expected to include consultancy service fee. Application can be submitted in person to the following address from Monday to Friday during working hours within ten calendar days starting from the appearance of the advertisement on the public notice.

MELCA'S Physical Address:

Lideta Sub City, Woreda 53, H. No. 903/6, P.O Box- 1519 code1250

Near to the main Post Office

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