African Forest Forum

A platform for stakeholders in African forestry

TERMS OF REFERENCE

CONSULTANCY SERVICES NO 06 -2.1.1 AFF

ON

ASSESSMENT OF KEY SUSTAINABILITY DETERMINANTS FOR EXISTING TREE-BASED ENERGY OPTIONS FROM BIOMASS PROCUREMENT, PROCESSING TO CONSUMPTION.

FEBRUARY 2025

1.1 INTRODUCTION

The African Forest Forum (AFF) is a pan-African non-governmental organization with its headquarters in Nairobi, Kenya. It is an association of individuals who share the quest for and commitment to the sustainable management, use and conservation of the forest and tree resources of Africa for the socio-economic wellbeing of its people and for the stability and improvement of its environment. The purpose of AFF is to provide a platform and create an enabling environment for independent and objective analysis, advocacy and advice on relevant policy and technical issues pertaining to achieving sustainable management, use and conservation of Africa's forest and tree resources as part of efforts to reduce poverty, promote gender equality and economic and social development.

AFF has secured funding from the Swedish International Development Cooperation Agency (Sida) to implement a project entitled "*Transforming the African Forest Forum to enhance its capacity to improve livelihoods and environmental stability through better management of African forest and tree resources.* The project seeks to generate and share knowledge that enhances sustainable management of forests and trees outside forests, in the context of climate change for improved human wellbeing and environmental protection in Africa. One of the key project objectives is to "Identify and assess key sustainability determinants for existing tree-based energy options from biomass procurement to consumption."

1.2 BACKGROUND

Bioenergy is increasingly attracting attention as an essential element in socio-economic development in Africa. This is attributed to ongoing climate change concerns and dwindling supplies at economical prices of fossil fuels, as well as adverse environmental impacts of some alternative sources of energy. Excessive dependence on importation of fossil fuels has raised concerns among many African governments with respect to energy security, compounded by scarcity of foreign reserves amidst declines in prices of traditional exports. The clean energy transition to renewable energy sources aimed to reduce emissions of greenhouse gases also offers African governments the opportunity to achieve energy security. Although many Africa governments have invested in measures to enhance access to clean cooking fuels the population without access has continuously increased since 2010 (IEA, 2022). In the Sustainable Africa Scenario on energy access, roughly 10% of the current Africa's population each year gain access to clean cooking each year between 2022 and 2030 a rate far too low to close their access gap by 2030. In the absence of adequate access to clean energy in the region solid bioenergy options such as biomass wood fuel and charcoal constitute an integral component of the energy mix of African countries.

These tree-based energy options are essential energy sources for cooking, heating, and cottage industries especially in rural communities, and enhance the continent's energy security. Their use dominates residential energy demand, with 70- 80% of the population relying on it (Piabuo and Puatwoe, 2020; IEA, 2022). Their reliance at 80% is more significant than in other regions, considering that the world's average dependence rate is 50-40% (Piabuo and Puatwoe, 2020). In rural areas, harvesting of firewood and production, transportation and retail of charcoal also provides an important source of income and employment in many sub-Saharan African countries although largely informal. However, the large population reliance on these biomass fuels has consequences for deforestation, greenhouse gas emissions and human health.

A cross-sectional study in 48 countries in sub-Saharan Africa reveals that the sustainability of tree-based energy sources is under threat due to extensive deforestation (in the case of charcoal), estimated at 3.4 million hectares per year, and forest degradation (in the case of firewood collection) and poor management practices (Byaro, et al. 2022). This results in considerable loss of forest biodiversity and associated ecosystem goods and services. In the context of containing global warming, deforestation and forest degradation also contribute to shrinking of the forest carbon pools. The

alarmingly high deforestation rates are also occasioned by agricultural expansion and illegal logging. Further, Greenhouse Gases are emitted through combustion of the woody biomass and unsustainable harvesting of firewood thus contributing to climate change. Consequently, effective management and conservation strategies are crucial for sustaining tree-based energy in African countries. Enhancing the efficiency of biomass energy systems is critical to reducing negative environmental impact. Technological advancements, such as improved cook stoves and kiln, can significantly increase biomass utilisation efficiency reducing the amount of wood required for energy.

In terms of peoples' health, these fuels are also associated with widespread respiratory diseases, with indoor air pollution from the combustion of traditional biomass argued to kill more people on the continent than malaria. Women and children living in severe poverty have the greatest exposures to household air pollution and are particularly susceptible to the toxic effects of pollution (Gordon et al, 2014). The exposure accounts for an annual pre-matured death of 1.3 million people, mostly women and children (IEA, 2006). Further, as the availability of wood fuel continues to decline, women and children, the main collectors, walk longer distances to fetch them and thus lose considerable time that could have been used for studying or other socio-economic activities.

The increasing demand for tree-based energy, coupled with the environmental and socio-economic challenges associated with its use, necessitates comprehensive studies on the status and sustainability of these resources in Africa to inform best practices for its development. It is in this context that AFF seeks to analyse the value chains of various biomass energy options in selected biodiversity hotspots, with a view to evaluate their potential to enhance food security, rural development transformation, women empowerment, market and income opportunities, as well as improvements in health, sustainably. The analysis aims to provide insights and recommendations for the sustainable management and development of tree-based energy options in selected African countries in biodiversity hotspots and other countries with similar characteristics to provide the continent with many opportunities to transition towards sustainable and modern energy systems that hold potential for economic, environmental, and social transformation.

1.3 RATIONALE

For its plan of work for 2025, AFF plans to conduct comprehensive studies to assess the current state of the resource base for tree-based energy options and their outlook for the future sustainability, taking into account gender considerations in selected countries representing biodiversity hotspots.
For this, AFF is recruiting seven (7) national experts one per country, to undertake country studies in selected biodiversity hotspots. The studies will focus on the following biodiversity hotspots: Eastern Afromontane; Guinean forests of West Africa; Coastal Forests of Eastern Africa, and Madagascar and Indian Ocean Islands. The experts will be recruited from the following countries that have high renewable energy use: Cameroon, Burundi, Madagascar, Mozambique, Rwanda, Liberia and Zambia.

1.4 PURPOSE OF THE STUDY

Assess the current state of the resource base for sustainable tree-based energy options and their future outlook for sustainability, efficiency, market and trade dynamics, and policy, regulations and institutional frameworks taking into account gender considerations in biodiversity hotspots in selected countries.

1.5 SPECIFIC TASKS

a) Describe energy scenarios for biomass sourcing, production, processing and consumption, including status of resource base including of species utilised, and their future outlook in resource availability, production and use, in selected biodiversity hotspots, taking gender into consideration.
b) Asses the efficiency in developing each energy option, energy efficiency on conversion/use, technology use, environment and health implications, and taking gender aspects into

consideration.

c) Undertake an analysis of market and trade dynamics for each tree-based energy option with gender consideration.
d) Assess the policy, regulatory frameworks, and institutional arrangements guiding development and use of tree-based energy options together with their gender implications.
e) Evaluate opportunities, challenges in production and use of tree-based energy options, and coping mechanisms for the challenges.
f) Based on findings of the above tasks propose measures, best practices and models for developing sustainable tree-based energy options that are efficient, provide income opportunities/economically viable, socially inclusive and environmentally friendly.

2.0 EXPECTED DELIVERABLES

i. A detailed report comprising about forty (40) pages, which comprehensively addresses the assigned tasks and key result areas, excluding references, and annexes.
ii. A policy brief, and a fact sheet to be finalised in collaboration with relevant staff at the AFF Secretariat.

3.0 MINIMUM QUALIFICATIONS AND SKILLS

- Have at least a master's degree in natural resources management, forestry, environmental
- science, natural resource economics, energy or related area; a PhD will be an added advantage.
- Be an expert with broad knowledge and at least five years' post MSc experience in forestry, natural resources management, bioenergy in Africa; multicounty or regional experience will be an added advantage.
- Have good writing skills and have at least written a book chapter and published peer reviewed journal papers; and
- Excellent written and oral communication skills in English or French.

4.0 DURATION OF ASSIGNMENT

The tasks in this ToRs are for one and a half person-months of workload, commencing on **17 March 2025** and spread over a period of six months. The consultant shall work from their location but be in close consultation with relevant staff at the AFF Secretariat while keeping to agreed delivery schedule.

5.0 HOW TO APPLY

Please email, quoting the title and number of this consultancy on the subject line and attach a proposal containing:

- Cover letter stating how you meet the above qualifications and experience requirements.
- Key results area, corresponding specific activities and methodology for executing them.
- A data matrix listing information needs plotted against data sources.
- A draft work plan (clear deliverables plotted against work weeks for each key result).
- A tentative table of contents with corresponding number of pages; and
- An updated CV.

Please apply, with the subject line: **"CONSULTANCY SERVICES NO 06 -2.1.1 AFF – "ASSESSMENT OF KEY SUSTAINABILITY DETERMINANTS FOR EXISTING TREE-BASED ENERGY OPTIONS FROM BIOMASS PROCUREMENT TO CONSUMPTION."** and indicating for which country you are applying for**,** to Dr Doris Mutta at d.mutta@cifor-icraf.org, and Delphina Dali at D.Dali@Cifor-Icraf.org, with a copy to exec.sec@afforum.org

Application deadline is **27 February 2025.** Only successful applicants will be contacted.