Terms of Reference: Biochar Feasibility Study Consultant

1. Background and Rationale

CARE International has been active in Lao PDR since 1992, dedicated to poverty reduction and strengthening the resilience of women and marginalized communities against climate change. Since its establishment in Laos, CARE has supported vulnerable groups in both rural and urban areas, particularly the ethnic minority communities. CARE works in partnership with community members, the government, local civil society organisations, and the private sector. CARE currently implements projects across seven provinces: Vientiane Capital, Phongsaly, Luang Namtha, Luangprabang, Salavan, Champasack and Sekong.

As part of its long-term commitment to climate-smart agriculture, CARE is exploring the technical and financial viability of biochar production from agricultural waste to support carbon sequestration and enhance soil fertility. Building on to CARE existing projects portfolio, rice husks and sugarcane bagasse have been identified as high-potential feedstocks due to their local availability and specific physicochemical properties (high carbon content and water-holding capacity). This feasibility assignment will require close collaboration with CARE Laos, regional and global technical advisors, and relevant private sector partners. The consultant will also consult with government partners, agricultural business associations, and key market players in Laos or the region to obtain the data necessary to identify viable opportunities.

2. Objectives of the Assignment

The primary objective is to evaluate the technical, financial, and operational feasibility of biochar production systems at various scales in Laos. The study must compare the viability of the following production pathways:

- Rice Husk Biochar: the assessment will focus on distributed production at rice mills recommended by partners. The study will assess farmer and business interests, understand potential production volumes/capacities, and estimate carbon sequestration based on existing methodologies and models.
- Sugarcane Bagasse Biochar: the assessment will focus on the feasibility of medium-to-large scale centralized production. The study will identify locations (with Vientiane and Savannakhet are mandatory priority provinces) with the capacity to scale, assess market interest, determine production volumes, and estimate potential carbon sequestration.

3. Scope of Work

The consultant will conduct a comprehensive feasibility assessment of the potential biochar production systems in Laos, with a focus on rice husk-based and sugarcane bagasse-based models. The scope of this assignment will include, but not limited to, the following tasks:

3.1 Feedstock Availability and Supply Chain Assessment

- Analyze the availability and seasonal supply of rice husks and sugarcane bagasse in target provinces.
- Quantify current and potential annual feedstock volumes that could realistically be mobilized for biochar production under different supply chain scenarios.
- Maps existing and potential biochar production locations and feasibility, including evaluating the cost of transporting bulky agricultural waste to production sites.
- Evaluate collection and logistics costs for both feedstocks. Compare and contrast possible approaches based on different scenarios of availability and capacity.
- Identify existing and emerging players and competitors in the biochar or waste-to-energy space.

- **Technical Feasibility & Characterization**
  - Assess, compare and recommend the most appropriate biochar production technologies for the Lao context.
  - Evaluate distributed biochar production models for small-scale rice mills (targeting at least 7,000 – 8,000 MTs of rice husks/year) versus centralized models for sugarcane processing.
  - Evaluate the production capacity, expansion potential and operational readiness for sugarcane-based biochar in Savannakhet. This includes assessing the Mitr Lao and Savan Sugar facilities to determine their readiness for industrial-scale biochar initiatives.
  - Estimate carbon sequestration potential and soil health benefits for the recommended production approaches.
  - Explore market demand with farmers/business biochar purchase once soil fertility and yield benefits are proven.
  - Identify operational risks and constraints, including feedstock reliability, technology performance, and capacity requirements.

3.3 Market and Financial Feasibility

- Analyze production costs, potential income from direct biochar sales and financial viability for each biochar production model.

- Assess market demand for biochar among farmers and agribusinesses, including willingness to pay once soil fertility and yield benefits are demonstrated.
- Evaluate potential revenue from the emerging Biochar Carbon Removal (BCR) credit market, including sensitivity analyses on variables such as fluctuating carbon credit prices and feedstock supply consistency.
- Research the feasibility of rice mill/sugarcane factories that provide capital equipment to millers in exchange for a long-term engagement.
- Identify density (mapping) the potential high-yield production zones of the production from crops to biochar for Savannakhet and Vientiane Capital.

3.4 Environmental & Social Impact

- Assess the potential for methane reduction in rice cultivation and permanent carbon sequestration with projected biochar volume.
- Conduct a dedicated gender analysis to ensure the project specifically benefits women and vulnerable groups involved in the rice and sugarcane sectors, aligned with CARE's core mission.
- Evaluate how the business model can prioritize women-operated mills or ensure women play significant roles in the biochar value chain.

4. Deliverables

No	Assignment	Timeline
1	Inception Report: Detailed work plan, stakeholder consultation list, and survey methodology.	23 March – 27 March 2026
2	Research, meeting, field visit and data collection	30 March – 15 April 2026
3	Draft Feasibility Study: Comprehensive findings, preliminary financial models, and initial mapping (RHB and SBB)	30 April 2026
4	Debrief on finding of the study to CARE team	15 May 2026
5	Final Report: A fully validated study including:	30 May 2026
6	Presentation of Findings: A formal presentation to CARE Laos, regional/global advisors, and relevant partners.	30 June 2026

5. Timeline & Reporting

The consultant/consultant team will report directly to CARE Laos, working in close coordination with designated technical partners. The assignment is scheduled from February to June 2026

and will follow a hybrid model, allowing for remote work alongside required field travel to target provinces for field study and data collection.

How to apply

If you are interested in this assignment, please submit your (1) CV, (2) cover letter, (3) two references, (4) Methodology for this feasibility study, and (5) cost quotation (daily rate) to: Lao.contracts@care.org by **20th March 2026**, **please include the text: "Application for Biochar Feasibility Study"** in the subject of your email.

Note that the cost quotation should include the consultant's daily rate as well as any materials and travel costs required for the consultant to complete the evaluation outlined above.