Terms of reference (ToR) for the procurement of services: Development of business models to scale up biomethane utilization in East Kalimantan and South Sumatra

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General information

a. Brief information on the project

The Innovation Regions for a Just Energy Transition (IKI JET) project is funded by the German Federal Ministry for Economic Affairs and Climate Action (BMWK) under the International Climate Initiative (IKI). The project is implemented by a consortium of six organisations led by GIZ as Joint Project Coordinator and with the Climate Action Network (CAN), International Institute for Sustainable Development (IISD), International Labour Organisation (ILO), International Trade Union Confederation (ITUC)/Just Transition Centre, and Wuppertal Institute für Klima, Umwelt, Energie gGmbH.

The overall IKI JET project aims to support and accelerate just energy transitions away from coal to renewable energies and other sustainable economic activities in Colombia, Chile, South Africa, Indonesia, Vietnam, Thailand, and Mongolia. Focusing on required economic transformations in coal regions, IKI JET works with government, industry, employers, unions, communities, civil society, and academia to redirect localised pathways to low-carbon and resilient energy systems and sustainable and just local economies and decent jobs in line with the Paris Agreement and the ILO Just Transition Guidelines. In Indonesia, GIZ partners with the Indonesian Ministry for National Development Planning (BAPPENAS) and coordinate the IKI JET consortium in supporting East Kalimantan and South Sumatra to transition towards more sustainable economies fairly by achieving the following results:

- Informed social dialogue and stakeholder engagement on just energy transition in coal regions takes place in Regional Consultation Forums;
- Policy advice to improve the policy framework for just energy transition, including gender aspects, is fed into respective policy processes;

- Transformational measures to support the JET on coal regions are rolled out.

To support the implementation of JET-CR platform and the Country Component Indonesia, IKI JET project is seeking for support to conduct a **comprehensive business model development on biomethane as one of the economic diversification activities for just energy transition in coal regions** in Indonesia (South Sumatra and East Kalimantan). Given the abundance of palm oil in these coal regions, biomethane stands as a valuable asset for the transformation of regions like South Sumatra and East Kalimantan in Indonesia. It has the potential to substitute diesel, leading to reduced emissions and pollution while diminishing our dependency on fossil fuels. Prioritizing the development of biomethane offers the prospect of economic expansion and a more environmentally friendly energy future for these regions.

b. Context

As the top palm oil producer, Indonesia has a massive biogas potential. The 2022 production volume of 48 million tons could generate about 2.4 billion m^3 of biomethane. Currently, Indonesia boasts over 800 palm oil mills, with only a 10% having established biogas plants. So, only very small percentage of biogas that already utilized. The low utilisation is due to unattractive tariffs, regulatory uncertainties, complex procedures, and the obligation to transfer (BOOT) the plants to the utilities when contracts ends becomes huge challenges to sell electricity to the grid[1]. Yet, the introduction of biogas upgrading and bottling technologies offer new possibilities beyond electricity generation. The transportable biomethane increases the possibility to convert uses of diesel and liquified petroleum gas (LPG), both of which are primarily imported, inside and outside the palm oil production system.

The coal transition policy, introduced through the Presidential Regulation 112/2022, may facilitate a structural change of the coal regions' local economy. South Sumatra and East Kalimantan are among the few of the Indonesian coal regions, with significant potential of unutilised biomethane. Scaling up use biomethane for diesel and LPG conversion is not only accelerating energy transition but also a promising opportunity for economic diversification in these regions, offering a sustainable and environmentally friendly alternative to traditional fossil fuels. By emphasizing the utilization of biomethane, these regions can not only promote environmental sustainability but also bolster their resilience and long-term economic well-being, as it typically comes at a lower cost compared to unsubsidized diesel fuel and LPG.

c. Objective

The objective of the study is to comprehensively assess of potential business models for scaling-up POME-based biomethane utilization with a focus on diesel and LPG conversion in South Sumatra and East Kalimantan.

d. The contractor shall provide the following service:

The contractor shall study on potential business models for POME-based biomethane utilisations focusing on diesel and LPG conversions.

The report should be in English (35-50 pages) with an executive summary (3-5 pages)

[1] Robbi Sukardi and Windri Aji Brata, *Desktop Study Report: Biomethane Utilization from Palm Oil Mill Effluent,* page 7

The report's details should contain the following information, - any change or development of the outline report can be made based on the consultant inputs and should be discussed with the project through the regional economic transformation advisor.

I. Executive Summary

A. *Introduction*
Briefly introduce the two regions and the potential roles of POME biogas as new source of economic growth, serving as an alternative to coal, and contributing to the transition toward renewable energy sources for local energy needs.

B. *Possible Business Models*
Summarise the identified business model possibilities and assessment of application scalability of each model. .

C. *Recommendations*
Present the most recommended business models (one each for diesel and LPG conversion) based on the agreed selection criteria, the need for enabling framework development, and estimation of public and private funding needed to reach the full potential of the suggested models.

II. Introduction

A. *Background and Rationale*
Explain why the development of a biomethane business model in coal regions is important It includes, but not limited to, the following information: (a) Energy mix and use of (subsidised and unsubsidised) diesel and LPG inside and outside the palm oil production system in the regions, (b) Projection of diesel and LPG demand in the future, (c) Biomethane potential and current level of utilisation as well as challenges for scaling up

B. *Objectives of the Report*
Clearly outline the goals and objectives of the report.

C. *Scope and Limitations*
Define the boundaries of your study and any limitations or constraints you encountered.

III. Literature Review

A. *POME-based Biomethane Potential*
The potential volume of POME-based Biomethane within the two regions, East Kalimantan and South Sumatra.

B. *Biomethane Utilization*
Examining the comprehensive landscape of biomethane utilization: Assessment of business models, technological advancements, and volume trends to date.

C. *Challenges for Scalling Up*
Addressing the challenges to scaling up biomethane production: regulatory, technological, and cooperation.

IV. Business Model options

IV.1. Option #1: Biomethane for Diesel Fuel Conversion

- Model 1.1:
  a. Elaboration of nine business model building blocks as suggested by Osterwalder & Pigneur (2009).
  b. Feasibility assessment of the model: technical, social, political, and financial.
  c. Assessment of application scalability potential (size, location, number)
- Model 1.2:
  a. Elaboration of nine business model building blocks as suggested by Osterwalder & Pigneur (2009).

b. Feasibility assessment of the model: technical, social, political, and financial.
c. Assessment of application scalability potential (size, location, number)

IV.2 Option #2 Biomethane use for LPG conversion

- Model 2.1:
  a. Elaboration of nine business model building blocks as suggested by Osterwalder & Pigneur (2009).
  b. Feasibility assessment of the model: technical, social, political, and financial.
  c. Assessment of application scalability potential (size, location, number)

- Model 2.2:
  a. Elaboration of nine business model building blocks as suggested by Osterwalder & Pigneur (2009).
  b. Feasibility assessment of the model: technical, social, political, and financial.
  c. Assessment of application scalability potential (size, location, number)

V. Selection of business models

V.1. Selection criteria

Explain the selection criteria based on the consultations with experts, the project and its partners.

V.2. Proposed business models

Based on the agreed criteria, suggest one business model each for the two options.

V.3. Challenges for application of the proposed models at scale: What to be in place to reach the full development potential of the models

V.4. Enabling framework and investment needs

VI. Conclusion and recommendations

VII. References

Annexes

- Detailed Financial Projections of the four models (assumptions, balance sheet, profit & loss, cash flow).
- Business model canvas of the four models
- Technical Specifications and Engineering Diagrams (if available).
- Documentation of interviews

The methodology of the study shall include desk study, interview with experts, and consultation with the project and its partners.

Certain milestones, as laid out in the table below, are to be achieved during the contract term:

Milestone	Deadline
Agreed work plan and timeframe concept	November 2023

Inception report containing summaries of the desk research and a few preliminary interviews	March 2024
Draft report for review	May 2024
Final product	May 2024
Presentation of final report	May 2024

To meet the milestones, GIZ commits to review documents within 7 working days.

Tender requirements

1. Qualifications of proposed staff

1 Expert on Biogas

- Education/training: university degree (Phd/German 'Diplom'/Master) in energy system, biogas or other relevant fields .
- Language: B2-level language proficiency in English.
- General professional experience: 7 years of professional experience in renewable energy systems.
- Specific professional experience: 5 years in biogas-related topics.
- Regional experience: 1 year of experience in projects advising local governments in East Kalimantan or South Sumatra on energy-related topics.

2. Appropriateness of proposed concept

In the tender, the tenderer is required to show how the objectives defined in General Information subchapter c are to be achieved, if applicable under consideration of further method-related requirements.
Note: The numbers in parentheses correspond to the lines of the technical assessment grid.

Technical-methodological concept

Strategy (1.1): The tenderer is required to consider the tasks to be performed with reference to the objectives of the services put out to tender (see General Information Subchapter b Context of this ToR that corresponds with section **2.1** in the technical assessment grid). Following this, the tenderer presents and justifies the explicit strategy with which it intends to provide the services for which it is responsible (General Information Subchapter e of the ToR-Section **2.1** of the assessment grid).

The tenderer is required to describe the key **processes** for the services for which it is responsible and create a **work plan** (1.4.1) that describes how the services according to General Information Subchapter e are to be provided.

3. Specification of inputs

Sustainability Aspects for Travel

GIZ would like to reduce greenhouse gas emissions (CO2 emissions) caused by travel. When preparing your tender, please incorporate options for reducing emissions, such as selecting the lowest-emission booking class (economy) and using means of transport, airlines and flight routes with a higher CO2 efficiency. For short distances, travel by train (second class) or e-mobility should be the preferred option.

If they cannot be avoided, CO2 emissions caused by air travel should be offset. GIZ specifies a budget for this, through which the carbon offsets can be settled against evidence.

The market for carbon credits is made up of a large number of providers, each with different claims as to their climate impact. The Development and Climate Alliance has published a list of standards. GIZ recommends using the standards specified there.

Fee days	**Number of experts**	**Number of days per expert**	**Comments**
• Preparation/debriefing	1	2	Timesheet is required
• Implementation	1	48	Timesheet is required
Travel expenses	**Number of experts**	**Number of days/nights per experts**	**Comments**
• Per-diem allowance in country of assignment	1	28	GIZ travel regulation
• Overnight allowance in country of assignment	1	28	GIZ travel regulation
• Travel costs (car rental)	1	20	GIZ travel regulation
• Ground transportation to and from airports	1	4	GIZ travel regulation
Flights	**Number of experts**	**Number of flights per experts**	**Comments**
• Domestic flights	1	4	GIZ travel regulation
Other costs	**Number of experts**	**Amount per experts**	**Comments**
Material	1	2	

Calculate your financial bid exactly *in line with the quantitative requirements of the specification of inputs above. There is no contractual right to use up the full days/travel or workshops or budgets. The number of days/travel/workshops and the budgets will be contractually agreed as* ***maximum amounts****. The regulations on pricing are contained in the price schedule.*

4 Requirements on the format of the tender

The CV submitted for the expert can have a maximum of four pages. The **concept** (if required) should not exceed five pages. If one of the maximum page lengths is exceeded, the content appearing after the cut-off point will not be included in the assessment. External content (e.g. links to websites) will also not be considered.