

TERMS OF REFERENCE

Consultancy Services for a Study on Macaúba Oils for Sustainable Aviation Fuels (SAF) via HEFA Route for the UN Tourism Regional Office for the Americas in Brazil, Rio de Janeiro

1. Justification/Background

The United Nations World Tourism Organization (UN Tourism), through its Regional Office for the Americas, requires a comprehensive, reliable, and cost-effective study on macaúba oils as a feedstock for sustainable aviation fuels (SAF) to support the decarbonization of aviation, which is critical for sustainable tourism and global mobility.

This document defines the scope and expectations for the provision of consultancy services to conduct a technical, economic, and environmental study on macaúba oils for SAF production via the Hydrotreated Esters and Fatty Acids (HEFA) route. This study will inform UN Tourism's efforts to promote sustainable practices in the aviation sector, particularly in Brazil, where tourism relies heavily on-air travel and where macaúba (*Acrocomia aculeata*) presents a promising native, non-food-competing feedstock for biofuels.

The selected provider shall be responsible for delivering a high-quality study in line with UN Tourism's standards of excellence, sustainability, and professionalism, and comply with all applicable requirements and guidelines outlined in these Terms of Reference (TOR) and Tender documents. Insights from relevant sources indicate that macaúba can yield up to 5 tons of oil per hectare/year, making it suitable for HEFA-based SAF production in degraded lands without competing with food crops or causing deforestation.

- a. Core Service: Provision of a comprehensive study on macaúba oils for SAF via HEFA route for a period of 12 months.
- b. Ancillary Services:
 - i. Data collection on Macaúba cultivation and oil extraction potential.
 - ii. Analysis of environmental impacts, including lifecycle GHG emissions.
 - iii. Economic feasibility assessments, including cost comparisons with other SAF pathways.

2. Objective and Expected Outcome

2.1 UN Tourism Regional Office for the Americas is seeking for an established and qualified company firm or research institution that can deliver a in-depth study on macaúba oils for aviation fuels, ensuring scientific rigor, sustainability, and alignment with international SAF standards (e.g., ASTM D7566 for HEFA-SPK).

2.2 Expected Outcome

- Efficient and timely delivery of a study to meet UN Tourism's needs for data-driven advocacy on sustainable aviation.
- Provide a detailed up to date analysis of macaúba potential as a new feedstock for SAF.
- Offer recommendations and policy insights on preventive and corrective measures for sustainable cultivation, including integration with native vegetation and cattle systems.
- Include experts' support in case of queries or revisions throughout the study.
- Handle all documentation (data sourcing, certifications, compliance reports, etc.).
- Manage all research, analysis, and compliance requirements for the study.
- Regular progress updates and interim findings provided through accurate reports according to the deliverables, ensuring transparency, traceability, and alignment with UN Tourism's standards.

3. Required Study Specifications

The selected service provider shall be responsible for conducting the study on macaúba oils for SAF production via HEFA, ensuring alignment with sustainability criteria and focusing on Brazil's context, as per the below requirements:

- a. The study must incorporate data from recent sources (e.g., 2025 or later where available).
- b. The analysis must demonstrate the extension of GHG reduction achieved compared to fossil jet fuel, per CORSIA or EU ETS standards.
- c. The study must include certification pathways, in compliance with international standards such as RSB (Roundtable on Sustainable Biomaterials) or ISCC.
- d. The study must focus on macaúba from degraded areas (e.g., low-vigor pastures in Pará, Minas Gerais or similar regions).
- e. The studies must be compliant with Brazilian regulations (e.g., tax, environmental, and biofuel policies) and registered with relevant authorities.
- f. The study must be equipped with functional tools for data validation, including LCA models, economic simulators, a reflective analysis framework, and up-to-date references with valid expiration dates.
- g. The study offered must be free of biases and in excellent analytical condition.
- h. The study offered must be robust and suitable for informing policy, clean in methodology, and free from any unsubstantiated claims.

4. Location and Duration

The proposed contract shall be for an initial period of 12 months (one year).

The study shall focus primarily on Brazil (e.g., Pará and Minas Gerais for macaúba projects) but shall incorporate global data and benchmark comparisons. Services shall be conducted remotely within the territory of the Federal Republic of Brazil.

5. Service requirements:

- a. Ability to initiate the study on short notice (within 30 days).
- b. Options for phased deliverables: interim reports (weekly/monthly).
- c. National coverage with expertise in Brazilian biomes (e.g., Cerrado, Mata Atlântica).

6. Activities and deliverables

The service provider shall be responsible for carrying out the following activities and delivering the corresponding outputs within the agreed timeframe.

Deliverable 1 – Week 6: Inception Report – including methodology, timeline, data sources, risk mitigation plan

Activities:

- Kick-off meeting with UN Tourism Regional Office for the Americas.
- Development of a detailed workplan and methodology.

Deliverable 2 – Month 3: Interim Report I – including first data sets, preliminary findings on technical and economic feasibility.

Activities:

- Initial data collection on macaúba cultivation and oil extraction potential.
- Mapping of degraded lands suitable for macaúba production.
- Preliminary economic and environmental analysis.

Deliverable 3 – Month 6: Interim Report II – updated analysis with environmental and economic data.

Activities:

- Expanded lifecycle assessment (LCA) of GHG emissions.
- Comparative analysis of HEFA with other SAF pathways (e.g., PtL, ATJ).
- Stakeholder consultations with EMBRAPA, ANP, and universities.

Deliverable 4 – Month 9: Interim Report III – draft results, sustainability integration, regulatory analysis.

Activities:

- Draft sustainability certification pathways (RSB, ISCC).
- Integration of macaúba systems with cattle and other crops.
- Draft recommendations for policy and regulatory alignment.

Deliverable 5 – Month 11: Draft Final Report – full consolidated analysis for review

Activities:

- Consolidation of all research findings.
- Preparation of the draft full study.

Deliverable 6 – Month 12: Final Report, Policy Brief, and Presentation of Findings

Activities:

- Incorporation of UN Tourism comments and revisions.
- Final Report, revised and validated (including annexes with data and models).
- Preparation of executive summary and policy brief with finding and recommendations.
- Final presentation of results in PowerPoint format for stakeholders.

7. Minimum Qualification Requirements

- **Company Registration:** Valid company registration certificate (e.g., CNPJ for Brazil). Universities and research institutions may apply directly or through legally recognized support foundations.
- **Tax Compliance:** Valid federal and, where applicable, state/municipal tax clearance certificates (e.g., *Certidão Negativa de Débitos* – CND from Receita Federal). Equivalent institutional documentation from universities may be accepted.
- **Social Security and Labor Law Compliance:** Clearance certificates proving compliance with social security and labor obligations (e.g., *Certidão Negativa de Débitos Previdenciários* – INSS, and *Certidão Negativa de Débitos Trabalhistas* – CNDT). Equivalent institutional documentation from universities may be accepted.
- **Financial Stability:** Audited financial statements for the last two fiscal years, or equivalent proof such as a certificate of no bankruptcy/insolvency, or official financial statements certified by an accountant. For public universities, official financial statements or equivalent institutional documentation will be accepted.
- **Relevant Experience:** Minimum 3 years' experience in renewable energy, energy planning, green molecules, and/or project development, supported by institutional references, project records, or publications.
- **Technical Expertise:** Evidence of at least one relevant past project or publication in biofuels and sustainable aviation fuels (SAF), particularly in the HEFA pathway.
- **Sustainability Standards:** Familiarity with sustainability certification schemes relevant to biofuels and SAF (e.g., RSB, ISCC). Experience in projects aligned with these schemes will also be considered.
- **Track Record:** Proven experience working with government entities, international organizations, or comparable institutions.

8. Payment

These proposals must include all costs necessary to fulfill the required services, encompassing expenses related to communications, human resources, IT infrastructure, supplies, and any other items typically categorized as “contingencies,” “overhead,” “indirect costs,” or “administrative expenses.”

All costs must be quoted in Brazilian Reais (BRL) and should be inclusive of all applicable charges and taxes.



The assignment shall be carried out over a period of **12 months**. Payment to the contractor will be made in installments, upon submission and formal acceptance of each deliverable, in accordance with UN Tourism's rules, regulations, and established procedures.

- **Payment 1 [10%]:** Upon delivery and approval of **Deliverable 1 – Inception Report** (Month 1).
- **Payment 2 [15%]:** Upon delivery and approval of **Deliverable 2 – Interim Report I** (Month 3).
- **Payment 3 [15%]:** Upon delivery and approval of **Deliverable 3 – Interim Report II** (Month 6).
- **Payment 4 [15%]:** Upon delivery and approval of **Deliverable 4 – Interim Report III** (Month 9).
- **Payment 5 [20%]:** Upon delivery and approval of **Deliverable 5 – Draft Final Report** (Month 11).
- **Payment 6 [25%]:** Upon delivery and approval of **Deliverable 6 – Final Report, Policy Brief, and Presentation to UN Tourism and Stakeholders** (Month 12).

Any travel foreseen under this assignment must be included in the financial proposal.