

São Paulo, March 31, 2026

To

The Presidency of the 30th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP30)

Subject: Contribution to the COP30 Presidency Roadmap for Transitioning Away from Fossil Fuels

Your Excellency Ambassador André Corrêa do Lago,

In response to the invitation from the COP30 Presidency to submit contributions to the “Roadmap for Transitioning Away from Fossil Fuels in a Just, Orderly and Equitable Manner”, ComBio Energia S.A. respectfully presents its considerations and recommendations, based on its practical experience in decarbonizing Brazilian industry through the replacement of fossil fuels with biomass.

1. Context and diagnosis: a structural gap in industrial energy transition

Brazil is widely recognized for having a predominantly renewable electricity matrix. However, this perception does not adequately reflect the reality of the industrial thermal energy matrix, which remains heavily dependent on fossil fuels.

While Brazil’s energy matrix is approximately 50% renewable and its electricity matrix exceeds 88% renewability, industrial thermal energy — responsible for a significant share of energy consumption — remains substantially less decarbonized. In several key industrial sectors, such as cement, chemicals and refining, the share of renewable sources in thermal energy can be below 30%.

This gap is consistent with the global context. Studies by the International Energy Agency (IEA) indicate that industrial heat represents one of the most challenging frontiers of decarbonization and is often underrepresented in energy transition strategies.

 (11) 3030-0040

 contato@combioenergia.com.br

 combioenergia.com.br

 R. Fradique Coutinho, 30 - Pinheiros,
São Paulo - SP, 05416-000

2. Biomass as a scalable and immediate solution for industrial decarbonization

Sustainable biomass represents a mature, available and scalable solution for replacing fossil fuels in industrial thermal processes.

The Intergovernmental Panel on Climate Change (IPCC) recognizes sustainable bioenergy as a relevant component of mitigation pathways, particularly in hard-to-abate sectors. In parallel, the International Renewable Energy Agency (IRENA) highlights the role of modern biomass in industrial decarbonization.

Unlike other technological pathways still under development or facing cost and infrastructure challenges, biomass is already widely used in Brazil, with established supply chains and abundant availability of feedstock, especially agro-industrial and forestry residues.

ComBio's experience demonstrates the technical, economic and environmental viability of this transition:

- More than 1.1 million tonnes of biomass consumed annually;
- Operations across multiple industrial units;
- More than 665 thousand tonnes of CO₂ equivalent avoided annually;
- More than 4 million tonnes of CO₂ avoided since the beginning of operations.

Additionally, replacing fossil fuels with biomass allows, on average, the avoidance of 0.22 tCO₂ per tonne of steam produced when compared to fuel oil, and approximately 0.16 tCO₂ per tonne of steam when compared to natural gas.

Beyond its direct climate mitigation benefits, the use of biomass derived from agro-industrial residues provides a dual environmental benefit: it contributes to reducing environmental liabilities associated with improper disposal of these residues — such as water body siltation and soil degradation — and avoids methane emissions resulting from their decomposition, a gas with high global warming potential.

 (11) 3030-0040

 contato@combioenergia.com.br

 combioenergia.com.br

 R. Fradique Coutinho, 30 - Pinheiros,
São Paulo - SP, 05416-000

3. Brazil's strategic potential in the global context

Brazil holds unique comparative advantages to lead industrial decarbonization based on biomass:

- High availability of agro-industrial residues (such as sugarcane bagasse, rice husk and forestry residues);
- Well-established supply chains in the sugar-energy, forestry and agricultural sectors;
- Potential for sustainable expansion through dedicated energy forests.

Institutions such as FAO and IRENA have highlighted the role of countries with strong agroforestry bases in the development of the bioeconomy and in replacing fossil fuels with biogenic solutions.

In this context, the energy use of residues also represents a circular economy solution, adding value to by-products that would otherwise generate negative environmental impacts.

It is important to highlight that the climate benefits of this transition are global in nature. Emissions reductions achieved in Brazil contribute directly to climate mitigation at a planetary scale.

4. Barriers to biomass expansion in the energy transition

Despite its significant potential, biomass expansion faces relevant barriers:

- Economic and financial: lack of carbon pricing mechanisms and adequate financing instruments;
- Institutional: limited prioritization of industrial thermal energy in energy and climate policies;
- Regulatory: absence of specific frameworks to value renewable thermal substitution;
- Perceptual: underrecognition of the role of biomass compared to other technological pathways.

5. Policy levers and recommendations

To accelerate the transition, we suggest that the roadmap consider:

- The implementation of carbon pricing instruments that recognize emissions reductions from fossil fuel substitution by biomass;
- The creation of dedicated financing lines for industrial thermal transition;

 (11) 3030-0040

 contato@combioenergia.com.br

 combioenergia.com.br

 R. Fradique Coutinho, 30 - Pinheiros,
São Paulo - SP, 05416-000

- The development of more accessible regulated or voluntary carbon markets for biomass-related projects;
- The explicit inclusion of industrial thermal energy in national decarbonization plans;
- The promotion of biomass traceability and certification, ensuring sustainability and environmental integrity.

6. Practical experience and replicability

ComBio's business model demonstrates that industrial energy transition can be implemented in a way that is:

- Technologically viable;
- Economically competitive;
- Environmentally robust, with biomass traceability and certification systems audited by independent third parties.

This experience can be adapted and replicated in several countries with agricultural potential, particularly in emerging economies.

7. Just transition and sustainable development

Biomass contributes to a just transition by:

- Generating local employment in decentralized value chains — biomass boilers employ approximately six times more people than fossil-fuel-based systems;
- Promoting the use of residues;
- Stimulating regional development;
- Integrating climate solutions with economic development.

 (11) 3030-0040

 contato@combioenergia.com.br

 combioenergia.com.br

 R. Fradique Coutinho, 30 - Pinheiros,
São Paulo - SP, 05416-000

8. Core recommendation to the COP30 Roadmap

We recommend that the COP30 Presidency Roadmap explicitly recognizes the strategic role of sustainable biomass in the decarbonization of industrial thermal energy, incorporating it as one of the main solutions for the global energy transition, particularly in countries with high availability of biogenic resources.

We believe that the inclusion of this agenda is essential to ensure an effective, pragmatic transition aligned with the diverse realities of countries, as advocated by the COP30 Presidency itself.

We remain at your disposal to further contribute to this process and to support the development of this important international instrument.

Sincerely,



Camilla Albani

Sustainability Director

ComBio Energia S.A.

 (11) 3030-0040

 contato@combioenergia.com.br

 combioenergia.com.br

 R. Fradique Coutinho, 30 - Pinheiros,
São Paulo - SP, 05416-000