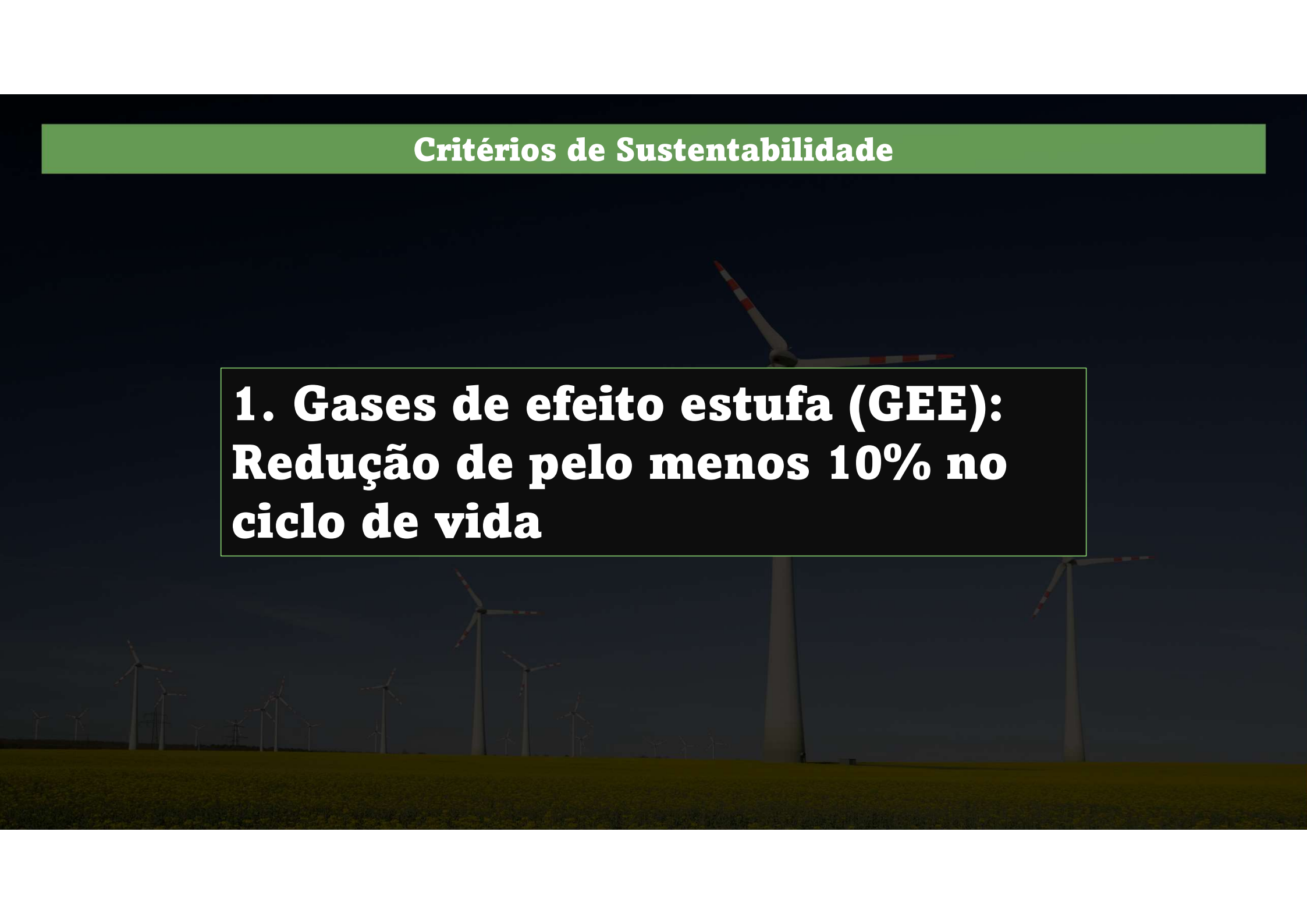


# Critérios de Sustentabilidade



## **Critérios de Sustentabilidade**

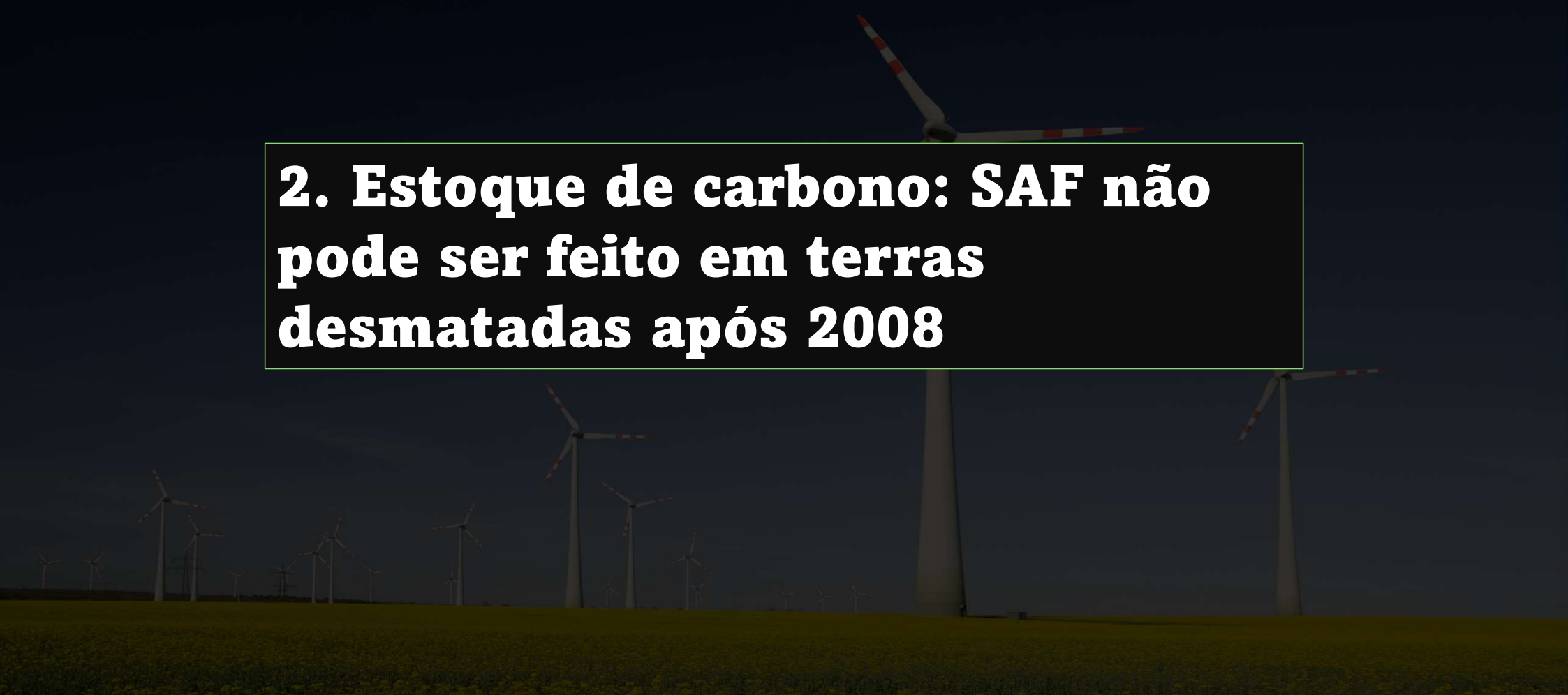
**1. Gases de efeito estufa (GEE):  
Redução de pelo menos 10% no  
ciclo de vida**



## **Critérios de Sustentabilidade**

**1. Gases de efeito estufa (GEE): Redução de pelo menos 10% no ciclo de vida**

**2. Estoque de carbono: SAF não pode ser feito em terras desmatadas após 2008**



## **Critérios de Sustentabilidade**

**1. Gases de efeito estufa (GEE): Redução de pelo menos 10% no ciclo de vida**

**2. Estoque de carbono: SAF não pode ser feito em terras desmatadas após 2008**

**3. Permanência das reduções de GEE**

**4. Preservação da água**

**5. Preservação do solo**

**6. Preservação da qualidade do ar**

**7. Conservação da biodiversidade**

**8. Responsabilidade com lixo e uso de químicos**

**9. Evitar impactos sísmicos**

**10. Direitos humanos e do trabalho**

**11. Respeito ao uso e propriedade da terra**

**12. Direito de uso da água**

**13. Desenvolvimento local e social**

**14. Segurança alimentar**

**Certificação ASTM**



**Critérios do CORSIA**

# Rotas aprovadas



## Rotas aprovadas

### Processos de conversão (ASTM)

**FT**

**HEFA**

**SIP**

**FT-SKA**

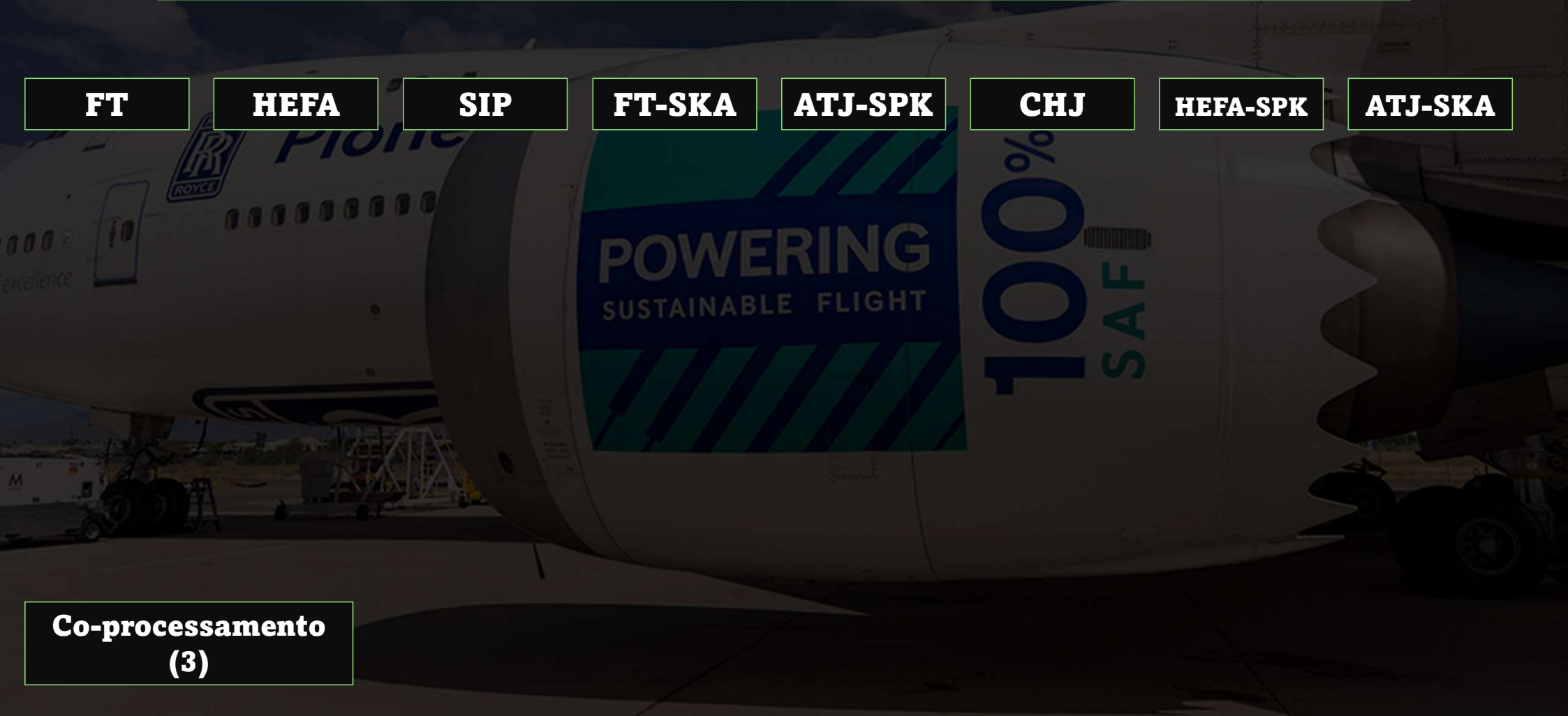
**ATJ-SPK**

**CHJ**

**HEFA-SPK**

**ATJ-SKA**

**Co-processamento  
(3)**



## Rotas aprovadas

### Processos de conversão (ASTM)

|            |             |            |               |                |            |                 |                |
|------------|-------------|------------|---------------|----------------|------------|-----------------|----------------|
| <b>FT</b>  | <b>HEFA</b> | <b>SIP</b> | <b>FT-SKA</b> | <b>ATJ-SPK</b> | <b>CHJ</b> | <b>HEFA-SPK</b> | <b>ATJ-SKA</b> |
| <b>50%</b> | <b>50%</b>  | <b>10%</b> | <b>50%</b>    | <b>50%</b>     | <b>50%</b> | <b>10%</b>      | <b>-</b>       |

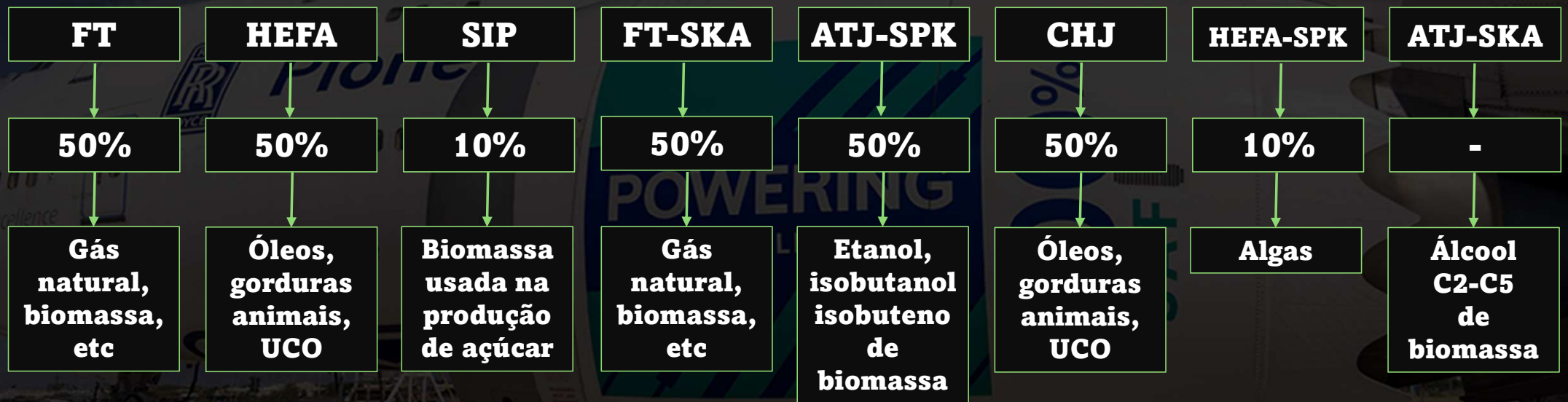
**Co-processamento  
(3)**

**Entre 5% e 10%**



# Rotas aprovadas

## Processos de conversão (ASTM)



**Co-processamento (3)**

**Entre 5% e 10%**

**Óleos, gorduras animais, UCO e outros hidrocarbonetos processados com petróleo**

## Rotas aprovadas

**Total de rotas aprovadas no  
CORSIA**

**70**

## Rotas aprovadas

**Total de rotas aprovadas no CORSIA**

**70**

**7**

**No Brasil**

**Soja (HEFA)**

**Carinata (HEFA)**

**Cana de Açúcar (ATJ-I)**

**Melaço (ATJ-I)**

**Cana de Açúcar (ATJ-E)**

**Cana de Açúcar (SIP)**

**Soja (HEFA – co-processado)**



**Onde e como novas rotas são discutidas?**

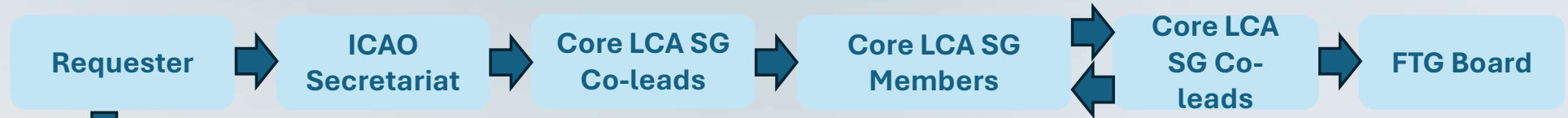


# ICAO Organização da Aviação Civil Internacional



FTG

# Inclusão na lista positiva (resíduos, etc)



FTG

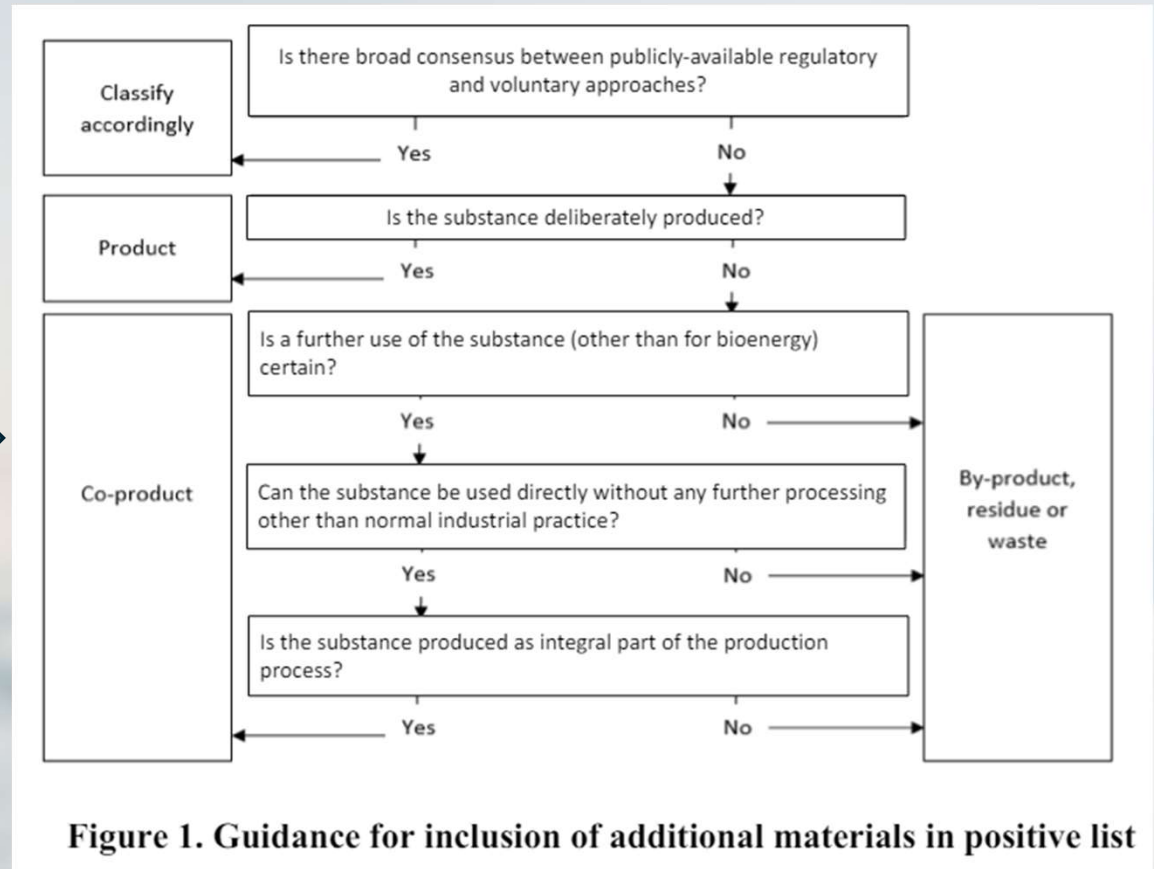
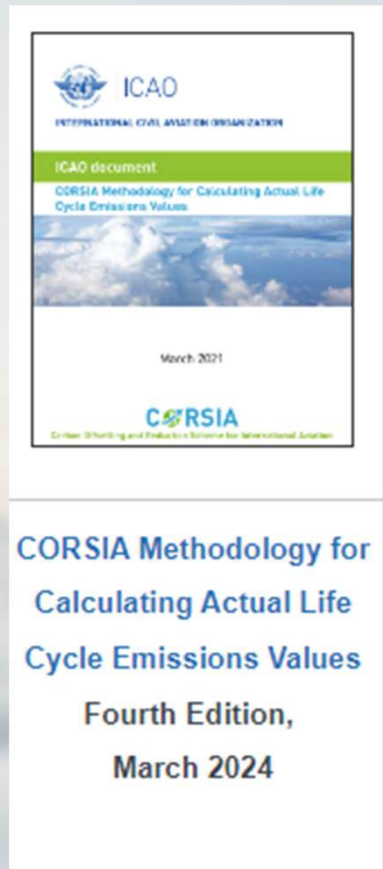
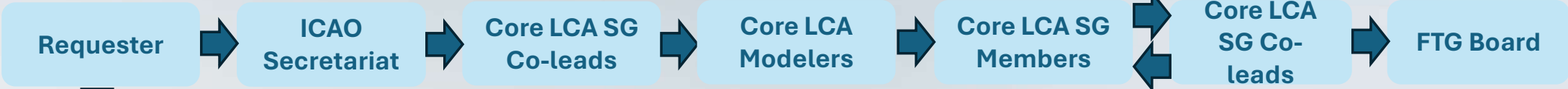


Figure 1. Guidance for inclusion of additional materials in positive list

# Inclusão de valores de Ciclo de Vida (CoreLCA)



FTG



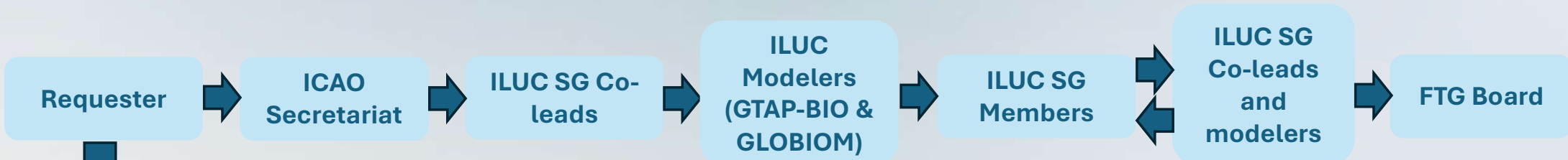

Template for data submission to ICAO

An Excel template is available for ICAO Member States, Observer Organizations, or approved SCS to request the calculation of a new default core life cycle emission value or a new default ILUC value.

| Pathway information  |   |                                   |                       |       |
|--|---|-----------------------------------|-----------------------|-------|
| Proposed feedstock   | [please include the proposed feedstock here]  |                                   |                       |       |
| Proposed conversion process  | [please include the proposed conversion process here]   |                                   |                       |       |
| Details  | [please include any necessary details, as needed]   |                                   |                       |       |
| <b>DATA REQUIREMENT FOR THE CALCULATION OF DEFAULT CORE LCA VALUES</b>   |   |                                   |                       |       |
| <i>Note: Not all materials may be relevant to each pathway, and materials that are relevant may be missing. Please add or disregard fields as relevant to the pathway of interest.</i> |   |                                   |                       |       |
| #  | Parameters  | Unit                              | Note                  | Value |
| <b>Category: Feedstock Characteristics</b>   |   |                                   |                       |       |
| 1  | Density   | [mass/volume of (dry) feedstock]  | At harvest/collection |       |
| 2  | Lower heating value   | [energy/mass of (dry) feedstock]  | At harvest/collection |       |
| 3  | Higher heating value  | [energy/mass of (dry) feedstock]  | At harvest/collection |       |
| 4  | Carbon content  | [% mass of (dry) feedstock]       | At harvest/collection |       |
| 5  | Sulfur content  | [% mass of (dry) feedstock]       | At harvest/collection |       |
| 6  | Moisture content  | [% mass of (dry) feedstock]       | At harvest/collection |       |
| 7  | Content of sugar, starch, cellulose, hemicellulose, lignin, vegetable oil, or other energy carrier (as applicable to feedstock of interest) | [% mass of (dry) feedstock]       | At harvest/collection |       |
| <b>Category: Material inputs for feedstock generation</b>  |   |                                   |                       |       |
| 8  | Nitrogen  | [mass/mass of (dry) feedstock]    |                       |       |
| 9  | Phosphoric acid   | [mass/mass of (dry) feedstock]    |                       |       |
| 10   | Potassium oxide   | [mass/mass of (dry) feedstock]    |                       |       |
| 11   | Calcium carbonate   | [mass/mass of (dry) feedstock]    |                       |       |
| 12   | Insecticide   | [mass/mass of (dry) feedstock]    |                       |       |
| 13   | Herbicide   | [mass/mass of (dry) feedstock]    |                       |       |
| 14   | Irrigation water  | [mass/mass of (dry) feedstock]    |                       |       |
| <b>Category: Energy inputs for feedstock generation and collection</b>   |   |                                   |                       |       |
| 15   | Diesel  | [energy/mass feedstock]           |                       |       |
| 16   | Liquidified petroleum gas   | [energy/mass feedstock]           |                       |       |
| 17   | Gasoline  | [energy/mass feedstock]           |                       |       |
| 18   | Natural gas   | [energy/mass feedstock]           |                       |       |
| 19   | Electricity   | [energy/mass feedstock]           |                       |       |
| <b>Category: Feedstock transportation</b>  |   |                                   |                       |       |
| 20   | Total transportation distance   | [distance]                        |                       |       |
| 21   | Transportation mode shares  | [% total transportation distance] |                       |       |
| <b>Category: Material inputs for feedstock to fuel conversion</b>  |   |                                   |                       |       |
| 22   | Feedstock   | [mass/total fuel energy yield]    |                       |       |
| 23   | n-Hexane  | [mass/total fuel energy yield]    |                       |       |
| 24   | Phosphoric acid   | [mass/total fuel energy yield]    |                       |       |



# Inclusão de valores de ILUC

Template for data submission to ICAO

An Excel template is available for ICAO Member States, Observer Organizations, or approved SCS to request the calculation of a new default core life cycle emission value or a new default ILUC value.

FTG

| Pathway information         |   |
|-----------------------------|---|
| Proposed feedstock          | [please include the proposed feedstock here]          |
| Proposed conversion process | [please include the proposed conversion process here] |
| Details                     | [please include any necessary details, as needed]     |

**DATA REQUIREMENTS FOR THE CALCULATION OF ILUC VALUES**

The template below lists the data needed for the ILUC modelling of new pathways and feedstocks with the two models, GTAP-BIO and GLOBIOM. These data fall into two classes: "required" and "recommended". Only seven elements have been classified as required. However, the Template also indicates the default assumptions that will be used for the case where some recommended information is not available.

When a new region/feedstock/pathway combination is evaluated, ILUC results will be requested from both GTAP-BIO and GLOBIOM models. Each model must be made available to the members of the CAEP Fuels Task Group (FTG), so they can perform their own analysis. However, only the results from model simulations agreed by FTG will be used in calculating new ILUC values. If the ILUC emission results between the two models differ by 8.9 gCO<sub>2</sub>e/MJ or less, the average value will be used. When the difference is greater than 8.9 gCO<sub>2</sub>e/MJ, the lower of the two values plus 4.45 gCO<sub>2</sub>e/MJ will be used. In the event that values cannot be obtained from both models within six months of the request date, the value from one model would be brought forward to CAEP for their potential approval and recommendation to the ICAO Council for inclusion in the default values contained in the ICAO document "CORSIA Default Life Cycle Emissions Values".

| #                           | Data   | Required / recommended | Rationale  | Value |
|-----------------------------|--|------------------------|--|-------|
| Category: Crop Productivity |  |                        |  |       |
| 1                           | Crop yield for the primary product                                       | Required               | Required to know the direct land use impact.   |       |
| 2                           | Crop yield for the secondary products (including transformation losses). | Required               | Required to assess the primary crop needs and the displacement effect of coproducts. Information on protein/energy content in the case of protein/energy cakes/distiller grains is recommended, otherwise a default value based on average protein/energy cakes/distiller grains content will be used. |       |
| 3                           | Above-ground living biomass at harvest                                   | Required               | Required to compute the agricultural biomass sequestration.  |       |
| 4                           | Below-ground living biomass at harvest                                   | Recommended            | Recommended to compute the agricultural biomass sequestration. A default IPCC value will be applied if no information is available. If IPCC does not provide a value, a proxy will be estimated.   |       |
| 5                           | Above-ground living biomass after harvest                                | Recommended            | Recommended to compute the average sequestration time in the field-plantation (e.g. tree biomass remaining for palm plantations, agricultural residue remaining, etc.). If not available, all biomass will be considered harvested.  |       |
| 6                           | Below-ground living biomass after harvest                                | Recommended            | Recommended to compute average sequestration as it may depend on the crop type (below ground biomass dying in case of annual crops but remaining for some perennials). If not available, all biomass   |       |

## Cálculo do Ciclo de Vida Completo (Lcef)

**Lcef**

**=**

**CoreLCA**

**+**

**ILUC**



Agradecidos pela atenção

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