Agenda item 3.4.
Paragraphs 16 and 17 of the SBM 021 annotated agenda

“Methodological tool: Analysis of lock-in” risk, and revision of the “Standard: Demonstration of additionality in mechanism methodologies”.

SBM 021
18 - 22 May 2026

UNFCCC Secretariat
Mitigation Division

Procedural background

- At SBM 015, the Supervisory Body (SB) adopted the "Standard: Demonstration of additionality in mechanism methodologies'' (Additionality Standard) and requested the MEP to initiate **work on a methodological tool for the analysis of lock-in risk**, including a robust analysis of the key issues, taking into account inputs from the scientific community and relevant stakeholders.

- MEP 008, while continuing to work on the tool, identified that **some of the its elements may better fit within the Additionality Standard** and therefore decided to seek a mandate from the Supervisory Body to recommend such elements.

- At SBM 018 the SB mandated the MEP to revise, as necessary, the Additionality Standard, noting that some elements identified in the work of the draft ''Methodological tool: Analysis of lock-in risk" may better fit into the standard.

Procedural background

- MEP 011 agreed to seek input from stakeholders on the draft version of the methodological tool, and to make any changes to the Standard, ***if required*****,** based on the inputs to the draft Tool.

- MEP 011 also agreed, in parallel with the call for public inputs, to road test the proposed methodological tool using hypothetical A6.4 activities, to identify areas for improvement and clarification.

- At SBM 020, the SB, noting that the draft "Methodological tool: Analysis of lock-in risk" is currently published for stakeholder inputs, **requested the MEP to ensure its alignment with the Additionality Standard, including consideration of relevant national circumstances of Parties** when finalizing the tool for recommendation to the SB.

- MEP 012 finalized drafting and recommended the tool to the SB for adoption.

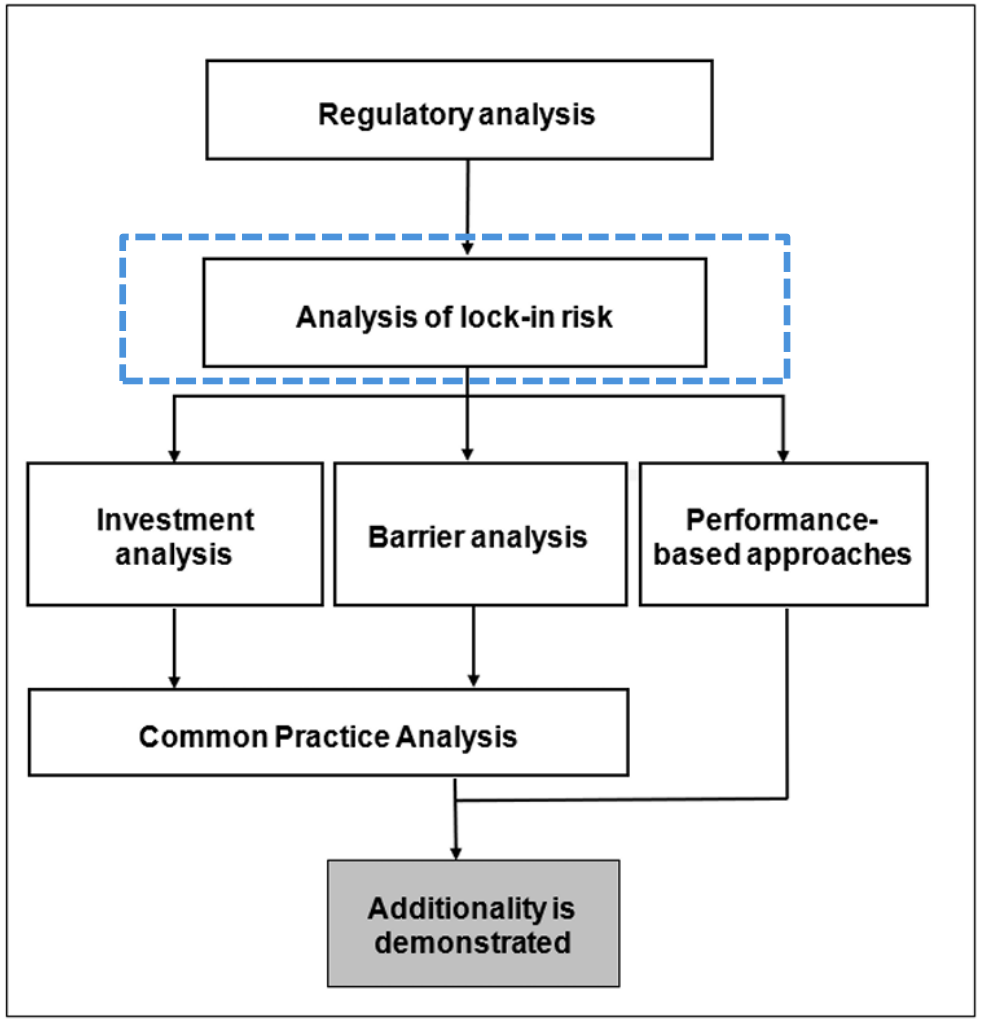
Purpose

- The purpose of this methodological tool is:

  - To provide **guidance and specific requirements** for the assessment of lock-in risk in demonstrating the additionality of activities under the Article 6.4 mechanism.

What is lock-in risk & why?

Figure 1. Flowchart of the approaches to demonstrate additionality



What is lock-in risk?

The risk that the implementation of an Article 6.4 activity results in the **adoption, or prolongation of the lifetime**, of *technologies, measures or practices….*

Why is this important?

…that are **incompatible** with the long-term goals of the Paris Agreement, taking into account different national circumstances, approaches and pathways**.**

Applicability

This methodological tool **is applicable** to Article 6.4 activities:

a) That introduce *greenfield technologies, measures, and/or practices* where none existed previously;

b) That generate *at least one measurable output*; and

c) Whose greenhouse gas (GHG) intensity and resource use intensity, if required, can be reasonably determined.

This methodological tool is **only applicable** where the referring mechanism methodology specifies:

a) The main *technology, practice, or measure* for which lock-in risk shall be assessed;

b) The *type of lifetime* that shall be determined for the applicable activities, either technical lifetime or operational lifetime;

c) How to identify the *relevant region* (e.g., global, multi-national, national, or sub national jurisdiction) that shall be considered when identifying comparable activities in steps 2 and 3;

Applicability

d) How to calculate the GHG emissions intensity of *(i)* the Article 6.4 activity, *(ii)* the business as usual (BAU) scenario, and *(iii)* the lowest emissions intensity alternative;

e) Whether the list of comparable alternatives identified in steps 2 and 3 shall: *(i)* only include alternatives that can be implemented by the activity participants; *or (ii)* also include alternatives that could be implemented by third parties;

f) The type of resource(s) subject to resource use efficiency assessment or the approach used to identify them, as well as the appropriate resource use intensity indicator, and the approach used to calculate its value;

g) *For each relevant resource*, the threshold for resource use intensity above which the resource shall be deemed inefficiently used in step 3; and

h) *Whether a scale assessment is required*, with justification, and if so, the approach for such an assessment.

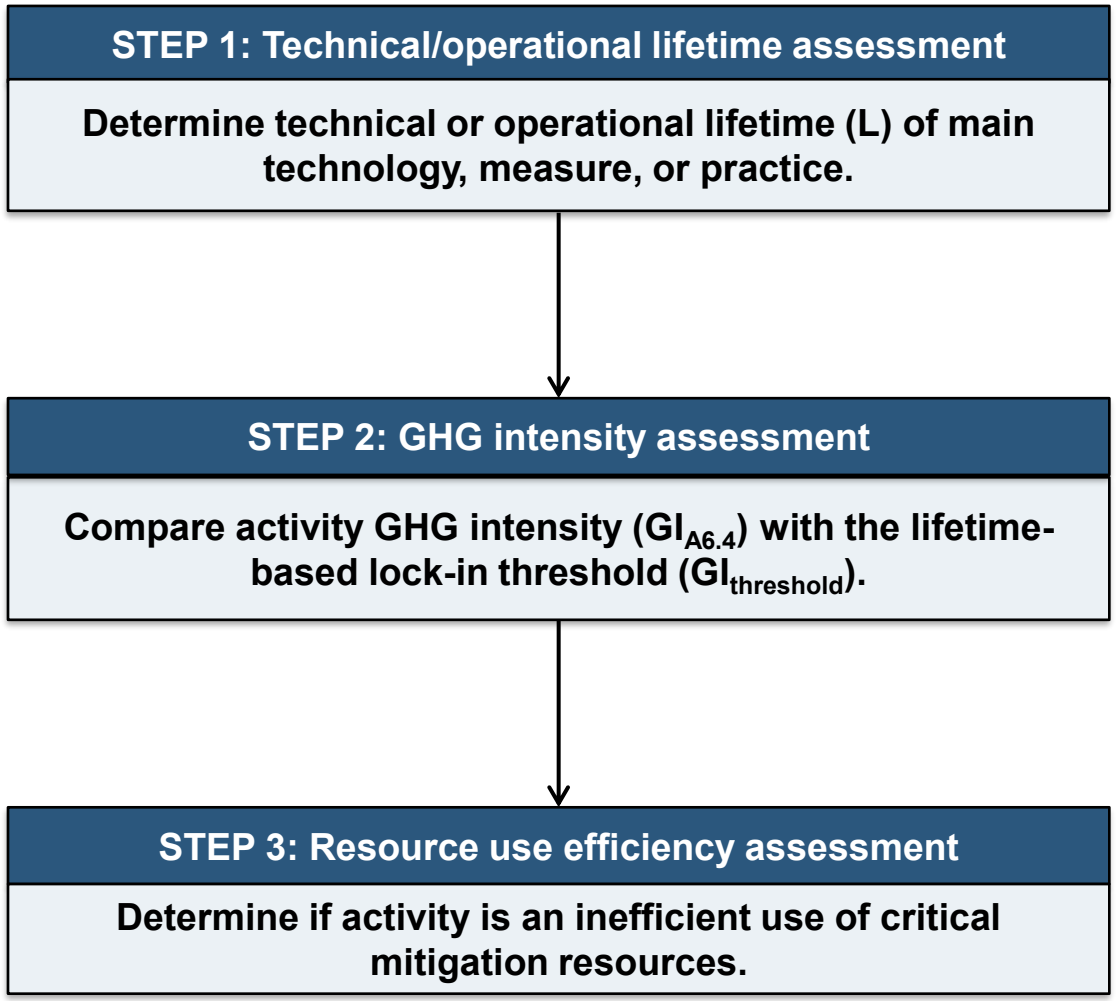
Applicability

- Where the mechanism methodology referring to this tool specifies approaches that differ from those described in this methodological tool, the requirements contained in the mechanism methodology shall take precedence.

The step-wise approach: *lifetime, intensity, efficiency, and scale*

Activity participants shall apply the following steps to assess whether a proposed Article 6.4 activity involves a lock-in risk:

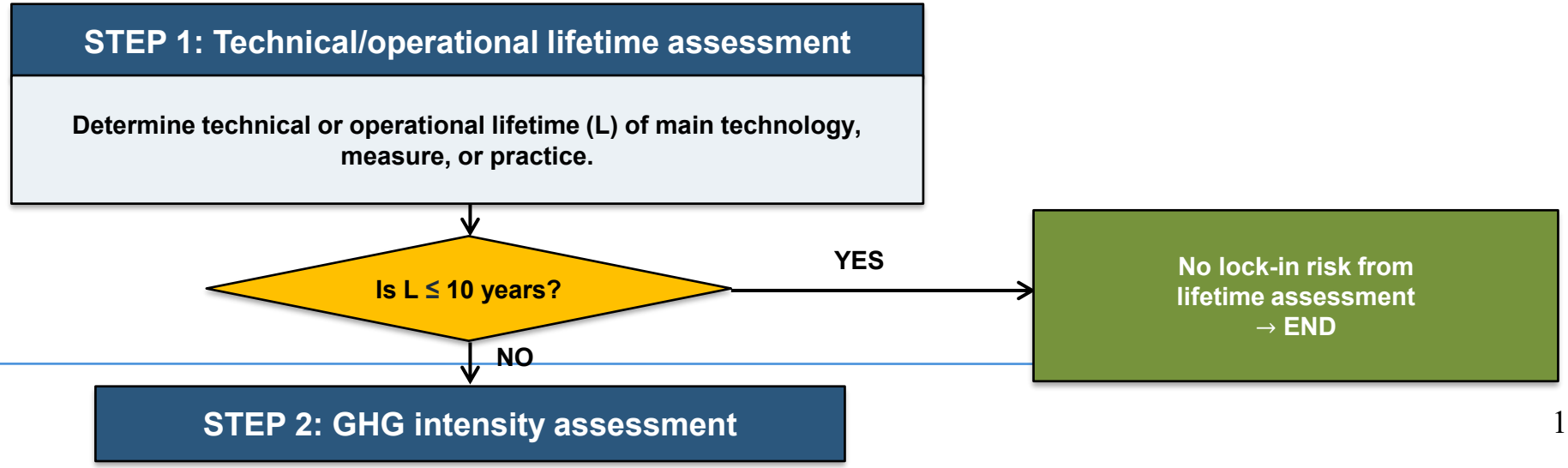
a) **Step 1:** Technical or operational *lifetime* assessment;
b) **Step 2:** Greenhouse gas *intensity* assessment;
c) **Step 3:** Resource use *efficiency* assessment;
d) *Scale* assessment (as per the mechanism methodology, if applicable).



Step 1: Technical or operational lifetime assessment;

1. Activity participants ***shall apply one*** of the following approaches to determine the technical or operational lifetime and assess whether it exceeds 10 years:

   a) To determine the ***technical lifetime***, activity participants shall use the "***Methodological Tool: Determination of the technical lifetime of equipment***" (A6.4-AMT-006), if the tool is applicable to the Article 6.4 activity;
   b) In cases where the "Methodological Tool: Determination the technical lifetime of equipment" is ***not applicable*** to the Article 6.4 activity, activity participants shall use ***procedures and specifications established in recognized standards (e.g., ISO***); or
   c) In cases where sub-paragraphs (a) and (b) are not applicable, and where the activity does not involve equipment but instead introduces new measures or practices, a ***third-party assessment by certified or suitably qualified experts*** shall be used to determine the operational lifetime of the measure or practice.

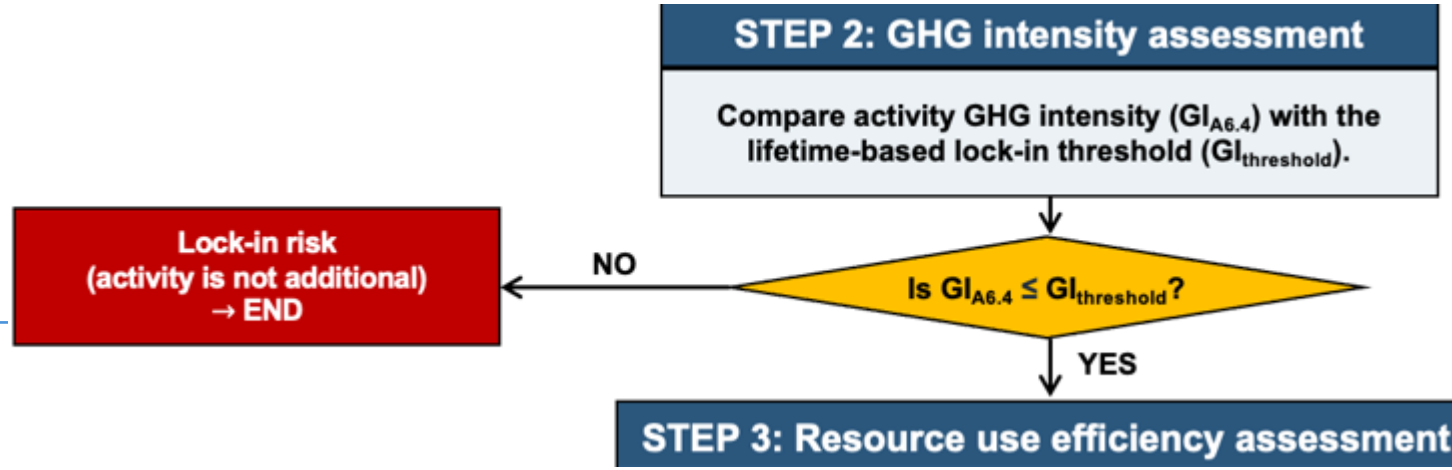


Step 2: Greenhouse gas intensity assessment

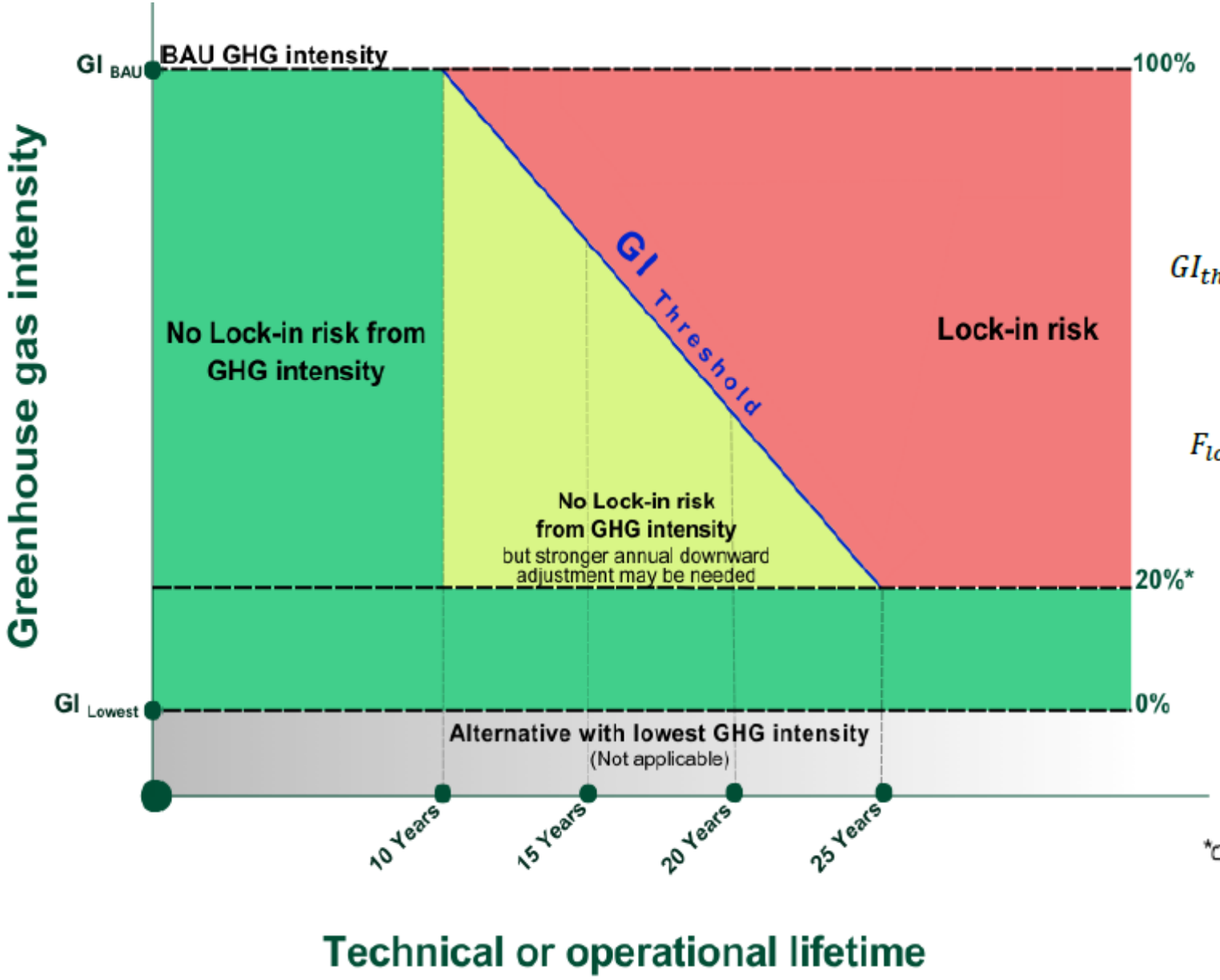
1. Activity participants shall ***compile a list of all credible alternatives*** comparable to the proposed Article 6.4 activity that can deliver the same or similar level of service, taking into account ***relevant national circumstances.***

2. Activity participants shall ***calculate the greenhouse gas intensity***, following the ***requirements and guidance in the applicable mechanism methodology***, of:
   a) The alternative with the lowest greenhouse gas intensity (GI_{lowest});
   b) The greenhouse gas intensity as per the BAU scenario (GI_{BAU});
   c) The proposed Article 6.4 activity ($GI_{A6.4}$),, and
   d) Compare it with a greenhouse gas intensity threshold ($GI_{threshold}$).

3. Where the $GI_{A6.4}$ is ***equal to or lower*** than $GI_{threshold}$, activity participants shall proceed to ***step 3***.



Step 2: Greenhouse gas intensity assessment (a graphical explanation)



$$GI_{threshold} = GI_{lowest} + F_{lock-in} \times (GI_{BAU} - GI_{lowest})$$

$$F_{lock-in} = max\left[0.2, \{1 - \frac{0.8}{15} \times (L - 10)\}\right]$$

*or alternative value specified in the mechanism methodology

Step 3: Resource use efficiency assessment

1. Activity participants shall assess the use of resources to determine whether the activity …. ***constitutes an inefficient use of resources important for mitigating climate change or achieving other policy objectives***.

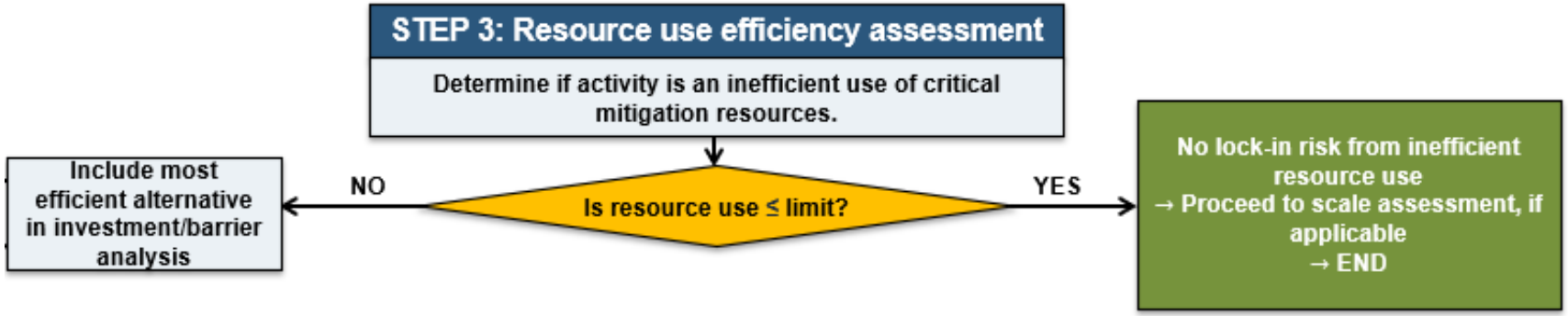
2. The type of resource(s) shall be -*either*- ***specified in the mechanism methodology or identified in accordance with the relevant approach specified in the mechanism methodology***. For example, ***land, freshwater, etc***.

3. Activity participants shall undertake, for each identified resource, an assessment as per the following provisions:
   - **a) Select**, from the list of ***comparable activities compiled in step 2***, all activities that use the identified resource and that are financially feasible for A6.4 activity;
   - **b) Calculate** the ***resource use intensity*** of the comparable activities and of the proposed A6.4 activity, using the ***indicator*** (e.g., m3 of water/unit output, ha of land/unit output, etc.) and the ***approach specified*** in the mechanism methodology;
   - **c) Identify the best resource use intensity value** (i.e., the lowest resource use per unit output according to the indicator among the comparable activities);
   - **d) Calculate the *resource use intensity limit*** by applying the ***threshold defined in the mechanism methodology*** to the best resource use intensity value; and
   - **e) Compare the *resource use intensity indicato*r** of the proposed Article 6.4 activity **with the resource use intensity limit.**

Step 3: Resource use efficiency assessment

- If the **resource use intensity of the A6.4 activity** …***is not greater than the resource use intensity limit***, then the proposed A6.4 activity shall be deemed to avoid the inefficient use of the resource, shall proceed to the scale assessment (if applicable).

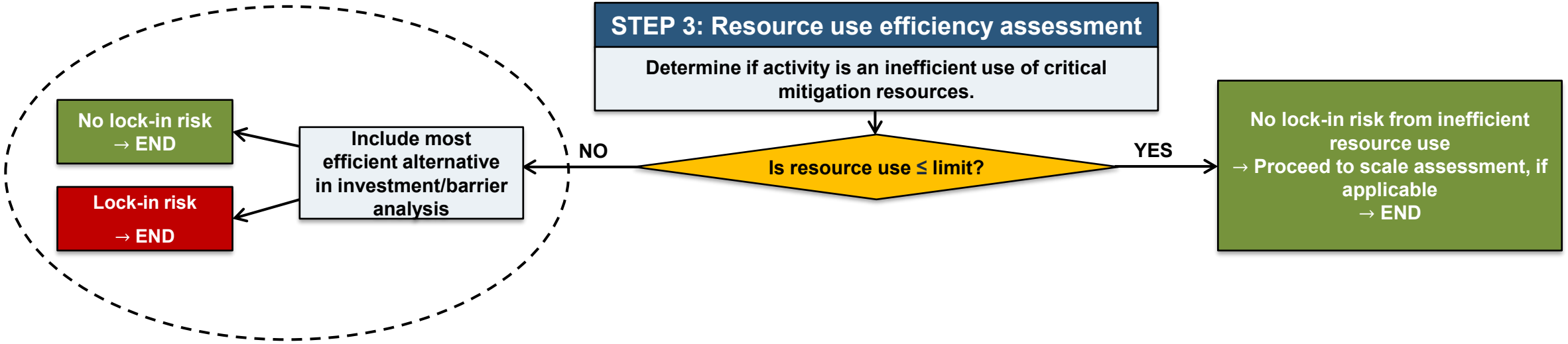
- If it the greater… the alternative with the ***best resource use intensity value shall be included in the remaining additionality demonstration of the proposed A6.4 activity*** alongside the other identified alternatives.



Step 3: Resource use efficiency assessment

- This step assesses the involvement of lock-in risk of the ***A6.4 activity based on the financial indicators in the case of investment analysis*** and on the ***status of barriers in the case of barrier analysis***, with or without the A6.4 incentives. Thus, two options:

    1. Investment Analysis
    2. Barrier Analysis



Step 3: Resource use efficiency assessment – 1/2

Table 1. Interpreting results of the resource use efficiency assessment where an investment analysis is conducted to demonstrate additionality

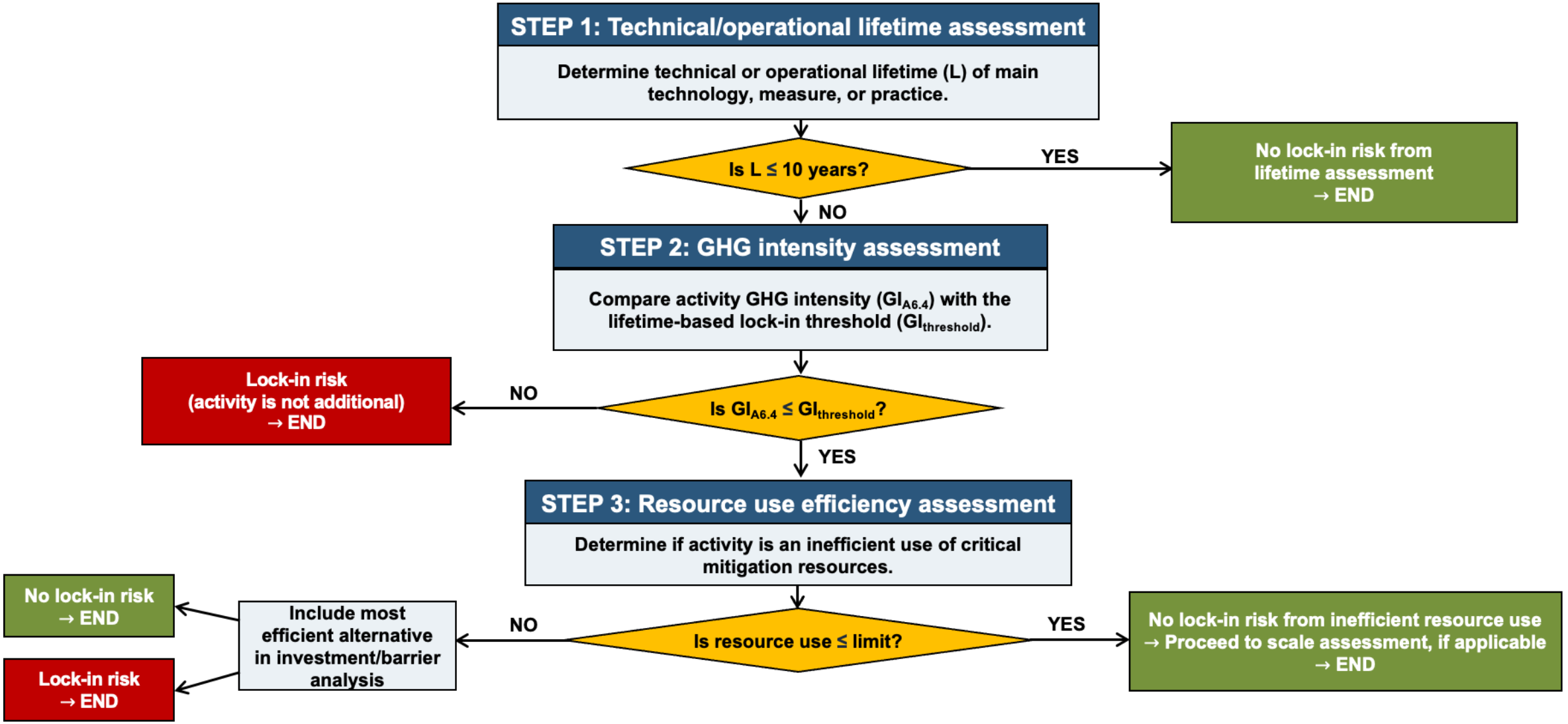
	Investment analysis			
	First analysis		Second analysis (if needed)	
Consideration of incentives	**Both without incentives**		**Both with incentives**	
	A	**B**	**C**	**D**
A6.4 Activity (less efficient resource use)	Less attractive	More attractive	Less or equally attractive	More attractive
Alternative (more efficient resource use)	More attractive	Less attractive	More or equally attractive	Less attractive
Results	Conclusion: Lock-in-risk exists	Inconclusive: Continue to second analysis	Conclusion: Lock-in-risk exists	Conclusion: No Lock-in-risk from inefficient resource use

Step 3: Resource use efficiency assessment – 2/2

Table 2. Interpreting results of the resource use efficiency assessment where a barrier analysis is conducted to demonstrate additionality

	Barrier analysis			
	First analysis		Second analysis (if needed)	
Consideration of incentives	**Both without incentives**		**Both with incentives**	
	A	**B**	**C**	**D**
A6.4 Activity (less efficient resource use)	Faces barriers	Faces barriers	Barriers remain	Fewer barriers relative to the alternative or barriers alleviated
Alternative (more efficient resource use)	Does not face barriers	Faces equal or more barriers	Fewer barriers relative to the activity or barriers alleviated	Barriers remain
Results	Conclusion: Lock-in-risk exists	Inconclusive: Continue to second analysis	Conclusion: Lock-in-risk exists	Conclusion: No Lock-in-risk from inefficient resource use

An overview: Step-by-step



Relevance of scale assessment (as per the mechanism methodology, if applicable)

- Scale assessment is **only applicable** if the output of the proposed Article 6.4 activity ***can be delivered by entities other than the Article 6.4 activity participant(s), e.g., grid-connected power plants***. Not applicable if the output can only be delivered by the Article 6.4 activity participants e.g., captive facilities.

- Scale assessment may be relevant:
  a) When the ***output provided occupies such a large market share*** that it limits or prevents the supply of the same or similar outputs by others, e.g., ***under monopoly conditions***.
  b) When an Article 6.4 activity, ***if replicated widely***, may generate impacts on ***a dominant emission-intensive sector*** that thereby further consolidating that sector.

- In other circumstances, scale assessment is unlikely to be relevant for analysing lock-in risk.

Additionality Standard – footnote 29 (c)

- A **footnote to paragraph 29(c) added** to clarify that mechanism methodologies *may facilitate analysis of lock-in risk by specifying the lowest GHG emitting technologies or practices at the mechanism methodology level*.

- **Why is this important?**
  - ➢ MM may not need to apply this Tool in all cases.
  - ➢ Allows MM the flexibility to define ***among*** the lowest GHG-emitting technologies or practices at the mechanism methodology level.

6.2. Analysis of lock-in risk

28. Mechanism methodologies shall ensure that the analysis of lock-in risk follows a neutral approach with regards to technology and source.

29. Mechanism methodologies shall ensure that an Article 6.4 activity:

(a) Does not lead to the adoption or the prolongation of the lifetime of technologies or practices that are incompatible with long term goals of the Paris Agreement, taking into account different national circumstances, approaches and pathways;

(b) Is consistent with the host country's long-term low-emission development strategy (LT-LEDS), as referred to in Article 4.19 of the Paris Agreement (where the host country has submitted one);

(c) For technologies or practices with a long lifetime, relies on a technology or practice that is among those within the lowest greenhouse gas intensity in the relevant region taking into account the lifetime of the technology or practice in line with national circumstances, approaches and pathways; and

(d) Does not involve a technology or practice that constitutes an inefficient use of a resource that is important for mitigating climate change or achieving other policy objectives.

Key issues and proposed solutions: inputs received on the SBM021 annotated agenda

Key issues and proposed solutions: Inputs received on the SBM021 annotated agenda

2 submissions (one on the Lock In Tool and one on the Additionality Standard) received, total of **10 inputs**

1. Green Farm CO2FREE
2. PreventX AI

*same submitter

Section in the draft tool	Number of inputs
COVER NOTE	-
1. Introduction	-
2. Definitions	-
3. Applicability	-
4. Normative and informative references	-
5. General requirements	-
5.1. **Step 1**: Technical or operational lifetime assessment	-
5.2. **Step 2**: Greenhouse gas intensity assessment	3
5.3. **Step 3**: Resource use efficiency assessment	2
5.4. **Step 4**: Scale assessment	-

Key issues and proposed solutions: Inputs received on the SBM021 annotated agenda

- **Inputs are technology/industry specify, advocating the support for** HWP and CDU technologies
- The submission do not define the acronyms but considered CDU as Carbon Dioxide Utilization and HWP as Harvested Wood Products.
- The comments while emphasizing their support to some of the requirements were mainly requesting changes and considerations specific to the HWP and CDU related activities. **These can be addressed by proper implementation of the provisions specified in the Tool and the Standard.**
- **After assessing the inputs and recommends no further changes to the methodological tool and standard are recommended.**

Impacts

- The methodological tool provides **guidance and requirements** that **activity participants shall fulfil** when undertaking the **analysis of lock-in risk** where a mechanism methodology includes a reference to this methodological tool.

- The revision to the Additionality Standard will allow mechanism methodologies the **flexibility to define the lowest GHG-emitting technologies or practices** at the mechanism methodology level.

Recommendations to the Supervisory Body

- The MEP recommends that the Supervisory Body adopt the **draft "Methodological Tool: Analysis of lock-in risk".**

- The MEP recommends that the Supervisory Body adopt the **draft revised "Standard: Demonstration of additionality in mechanism methodologies**".

- The MEP seeks a mandate from the Supervisory Body to further work on **a revision of the methodological tool to include Article 6.4 activities involving retrofit, refurbishment, and the addition of new components to existing facilities**.

Thank You!

UNFCCC Secretariat
Mitigation Division

- **Step 1**
- **Step 2**
- **Step 3**
- **Miscellaneous**

Step 1: 10-Year Threshold

- The recommended draft tool provides guidance to operationalize the Additionality Standard.

- The **10-year reference** derives from the **lock-in provisions** in the **Additionality Standard:**

32. *'Where the technologies or practices applicable under the mechanism methodologies have a technical or operational lifetime of* ***no more than 10 years, a mechanism methodology may assume that no lock-in risk exists.*** *Appropriate* ***evidence and justification shall be provided*** *for the estimation of the technical or operational lifetime of the technology or practice...'*

This implies that methodologies **may justify**:

- **Shorter time horizons (e.g., 8 years)** -> reflected in the recommended revised changes while answering the comments received via the commenting template, where para 16 (a) is revised to consider this as part of the Step 1 analysis
- **No fixed threshold**, where lock-in risk is not material (e.g., rapid technological change)

Step 2: 20 percent threshold

- The 20% threshold is a policy-choice default – trying to reflect the need to consider the technologies that ***are among the lowest emission intensities***. Expert opinion used (MEP intended to calibrated to avoid both excess strictness or leniency). Paris-alignment, take into account best practices from CDM, and aligned with Additionality standard.

Draft tool allows for *alternative values specified in mechanism methodologies*

- GHG intensity levels, how do they change over time (e.g., whether values set in 2026 would still apply in 2050)? Are these figures updated over time? On GHG intensity, since it is a comparison between an activity and its alternatives, it is not expected to change over time for a given activity (until renewal of crediting period). **Yet,** alternatives could change over time so GHG intensity levels may be different for activities undertaken (starting) in different years.

- i.e., benchmarks are not necessarily static over time. Methodologies retain flexibility where justified.

Equation 02

If the mechanism methodology is to consider a lower threshold than 10 years and/or 20% threshold, then corresponding changes need be reflected in equation (2):

$$F_{lock-in} = max\left[[0.2][\mathbf{A}], \left\{1 - \frac{0.8}{15} \times (L - [10][\mathbf{B}])\right\}\right]$$

Where:

A is a value less than or equal to 0.2; and
B is a value less than or equal to 10 years
Mechanism methodologies shall specified **[justified with adequate, well-substantiated rationale**] **A and B**

Step 3: Resource efficiency

- Questions on how resources efficiency would be assessed and how they relate to the GHG impact of the activity. Whether decisions on resource-use efficiency should instead be determined at the methodology level, given that different methodologies and sectors may involve different resources.

- **On sector-specific flexibility:** the tool is designed to be generally applicable.
  - Yet, to find out whether and how we can incorporate sector-specific considerations when reviewing individual methodologies. Sector-specific considerations, sectoral characteristics may appear on the choice of lowest emission alternative, key resource, necessity of scale etc.

- **Resource use efficiency:** requirement from Additionality Standard.
  - The MEP recommended draft tool translating this requirement led to considerations of key resources such as land, water, etc.
  - Sector specific characteristics will be reflected through the flexibility allowed in the selection of the threshold values and indicators but justified, for example, ha of land or MWh for renewable energy.

The type of resource(s) to be analysed shall be those specified in the mechanism methodology or identified in accordance with the relevant approach specified in the mechanism methodology.

Miscellaneous

- **On scope of tool:** explicitly limited to greenfield activities (i.e., new projects), and brownfield (existing ones) could be included (as per the MEP mandate being sort at this meeting).
    - Since this tool can be applied broadly to a range of activities, the MEP found it difficult to set a conventional definition beyond the current definition in relation to the need for avoiding lock-in risks, and the definition of the brownfield activities.
    - This was a deliberate choice to simplify development of the tool.

- The methodology shall define if its **technical or operational lifetime**. (not used interchangeability)

- What are the **financial implications** of applying this tool to Activities Participants? The goal of this tool is to provide guidance for the operationalization of Lock In Risk requirement from the Additionality Standard

Miscellaneous

- Sector-specific characteristics will be reflected through **flexibility in the definition of parameters and indicators** – with proper justification (e.g., hectares for land, MWh for renewable energy).

- Applicability of the lock-in tool to CCS depends on whether the activity **produces a measurable good or service**, per the tool's requirements.
  - **Standalone CCS or pure CO_2 storage** falls outside scope, as no qualifying output is produced.
  - This limits Step 2 applicability, which requires **GHG intensity comparison across comparable outputs or services**.

- CCS applied to **output-generating activities** falls within scope (e.g. power, cement, industrial production, BECCS, biochar).
  - Enables comparison of emissions across **alternative ways of delivering the same output**, allowing Step 2 to be applied.

- Selection of comparable alternatives must reflect **national circumstances** (e.g. limited access to technologies, feasibility, commercial viability) in line with the **applicable methodology**.
  - Required under the **definition and para 19 (a–c) in Lock-in Tool**.

Thank You!

UNFCCC Secretariat
Mitigation Division