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<https://www.carbon-mechanisms.de/en/news-details/cmm-wg>

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Abbreviations

A6.4M	Article 6.4 Mechanism
A6.4SB	Article 6.4 Supervisory Body
BAT	Best Available Technology
BAU	Business-as-usual
CDM	Clean Development Mechanism
COP	Conference of the Parties
GHG	Greenhouse Gas
IC-VCM	Integrity Council for the Voluntary Carbon Market
II-AMT	International Initiative for Development of Article 6 Methodology Tools
ITMO	Internationally Transferred Mitigation Outcome
JI	Joint Implementation
LT-LEDS	Long-term Low Emissions Development Strategy
NDC	Nationally Determined Contribution
RMP	Rules, Modalities and Procedures
UNFCCC	United Nations Framework Convention on Climate Change

1. Objective and scope of the discussion paper

The adoption of the Article 6 decisions at the 26th Conference of the Parties (COP26) to the UN Framework Convention on Climate Change (UNFCCC) in Glasgow ushered in a period of implementation and operationalisation of international market-based cooperation under Article 6 for enhancing ambition of countries' nationally determined contributions (NDCs). The principle of environmental integrity is thus taking centre stage. The Article 6.2 guidance and the rules, modalities and procedures (RMPs) of the Article 6.4 mechanism (A6.4M) (UNFCCC 2021a; UNFCCC 2021b) lay down the guardrails for methodology development, with the latter stipulating far-reaching, specific requirements for baseline setting, such as baselines being set below BAU and alignment with the long-term goal of the Paris Agreement, which we will discuss further below. But much technical work remains to be done.

Now the focus of the international carbon market community shifts to the operationalisation of Article 6. The Article 6.4 Supervisory Body (A6.4SB) is beginning its work on developing guidelines for the implementation of methodological principles, approaches, and methods for establishing baselines and additionality determination. It needs to be prevented that many years of methodological work are lost with the elaboration of methodologies from scratch. Under the CDM, over 250 baseline methodologies were approved over the span of 15 years, covering a variety of mitigation activity types. Each of these methodologies generated costs of 0.1-0.2 million USD and its development could take up to two years. Throwing away this wealth of knowledge would be counterproductive as creating new stand-alone methodologies from scratch would result in a waste of resources and slow down the proliferation of new mitigation activities. This, in turn, would create a domino effect wherein achievement of NDCs will be impaired, causing no increase in ambition to achieve long-term mitigation targets. Therefore, it is of utmost importance to promote the discussion on how to transform existing Clean Development Mechanism (CDM) and Joint Implementation (JI) methodologies to reflect the requirements of the Article 6 decisions. The International Initiative for development of Article 6 Methodology Tools (II-AMT) is developing a toolset for this methodological transition. This discussion paper puts the spotlight on the Article 6 baseline setting tool being developed under the II-AMT.

The input provided by the participants at the CMM-WG Article 6 methodology workshop that took place on 27 July 2022 has been incorporated into this discussion paper (see chapter 6) and will directly feed into the development phase (May 2022 – February 2023) of the II-AMT baseline setting tool.

2. The potential of Kyoto baseline methodologies for Article 6 cooperation

Baseline setting is one of the fundamental concepts for baseline and credit approaches in international carbon markets. How a crediting baseline and thus the reference scenario is set determines the volume of emission credits by calculating the difference to the activity level of greenhouse gas (GHG) emissions. Criticism has been levied regarding the subjective nature of baseline setting. In the past, the question was how to most robustly define a counterfactual scenario of what would have happened without the crediting programme (Lo Re et al. 2019), i.e., a "business-as-usual" (BAU) emissions scenario. This was the predominant approach under the Kyoto mechanisms. Moreover, baseline parameters were mostly denominated in GHG emissions per unit of output, i.e., in terms of intensity (Partnership for Market Readiness 2012).

The Article 6 decisions now clearly state that baselines should be set below BAU and should not lead to emissions increases within and between NDC periods. This means that intensity-based baselines are problematic if absolute emissions increase in host countries. This happens if their output grows faster than emissions intensity falls.

Further ‘blind spots’ in approved CDM methodologies that must be remedied for them to be applicable in the context of the Paris Agreement include the consideration of national mitigation policies and NDC targets of the host country as well as alignment with the long-term goals of the Paris Agreement.

In the following chapter, the new requirements for baseline setting under Article 6 are elaborated on before the subsequent chapter provides an overview of initiatives that are currently redefining and shaping baseline setting. In this context, we discuss how Article 6-related methodological work can be undertaken in an efficient manner and enable the rapid operationalisation of the adopted Article 6 rules.

3. Baseline setting in the context of the NDCs and the Paris Agreement’s long-term goal

Ensuring environmental integrity of market-based approaches implies that the issuance of emissions credits does not result in a net increase of global GHG emissions as compared to emissions in the absence of these approaches. In this regard, stringent baselines play a crucial role in safeguarding environmental integrity.

Baseline setting in the Kyoto Protocol era

The Kyoto Protocol era was characterised by a wide range of baseline setting approaches. Under the CDM, three baseline approaches were available as defined by the Marrakech Accords (UNFCCC 2002):

- Existing actual or historical emissions
- Emissions from a technology that represents an economically attractive course of action, while considering barriers to investment
- Average emissions of similar project activities undertaken in the previous five years, in similar social, economic, environmental, and technological circumstances, and whose performance is among the top 20 percent of their category

Baseline methodologies had to be developed by project participants adhering to principles of conservativeness, considering existing national and sectoral policies (UNFCCC 2002). The “E+ and E-rules” stipulated, however, that policies and regulations that increase GHG emissions (“E+ policies”) should not be considered in the baseline if introduced after 1997 and that policies and regulations that decrease GHG emissions (“E- policies”) should also not be taken into account if implemented after 11.11.2001. The idea was to prevent perverse incentives for countries to artificially inflating their baselines (Shishlov and Bellassen 2012; Füssler et al. 2019). As the CDM evolved, simplified procedures for small-scale CDM projects and separate baseline tools applicable to different baseline methodologies were developed (Ahonen et al. 2021). In 2011, the CDM Executive Board developed standardised baselines based on conservative default factors for key parameters or emission-rate thresholds or benchmarks (UNFCCC 2012).

Under Joint Implementation (JI), the Marrakech Accords specified that baselines must be set on project-specific basis and/or use a multi-project emission factor, taking into account relevant national and/or sectoral policies and using conservative assumptions (UNFCCC 2002). Three options for baseline setting were available under JI (UNFCCC 2016):

- JI-specific approach based on guidance provided in the Marrakech Accords
- A methodology for baselines setting approved by CDM Executive Board
- An approach for baseline setting already taken in comparable JI projects

Lessons learned

Under JI, the onus of oversight initially rested with the host countries themselves, giving them the discretion to introduce their own rules regarding project approval and crediting. Some countries significantly contributed to domestic mitigation efforts by setting the crediting baselines below the level required by regulation, while other countries with ‘hot air’ in their targets were crediting against inflated baselines set above realistic BAU due to the lack of international oversight, thereby undermining environmental integrity (Michaelowa et al. 2021a).

With regards to the CDM, it was acknowledged by many experts engaged in the discussions on international carbon markets that CDM baseline methodologies set a high standard and provide a natural starting point for baselines under Article 6. However, some revision needs were identified (Michaelowa et al. 2021a):

- Need to reduce complexity and associated transaction costs in the application of CDM methodologies
- Need to streamline the use of CDM methodologies
- Need for an appropriate consideration of policies and regulations in the baseline
- Need for more stringent approaches to baseline setting that go beyond BAU reference scenarios as often used in CDM approaches
- Consideration of sector-specific circumstances, technologies and trends.

Linking baseline setting with long-term goals of the Paris Agreement

Under the Paris Agreement, all Parties have mitigation targets laid down in their NDCs. As host countries must undertake corresponding adjustments, they have a clear interest to not approve methodologies that do not consider policies as their own NDC achievement could otherwise be undermined. This makes the “E-rule” inconsistent with the principles of Paris Agreement (Füssler et al. 2019; Michaelowa et al. 2021a).

The principles of the Paris Agreement stipulate host countries with NDC targets to reflect these mitigation targets while setting their baselines. Article 6 shall help host countries in reducing emission levels. The baseline emissions trajectory needs to be equal to or lower than the emissions pathway which corresponds to the host country meeting its NDC target. This mitigates the risk of failure to achieve NDC targets and avoiding double counting of emission reductions that are transferred internationally (Füssler et al. 2019). With Article 6 aiming to encourage higher ambition in mitigation and adaptation actions of participating Parties, it is highly critical to align Article 6 methodologies with NDCs such that they provide incentives for NDCs to become more ambitious over time, as recognized in the Article 6 decisions.

The RMPs of the A6.4M outline three approaches to baseline setting (UNFCCC 2021b):

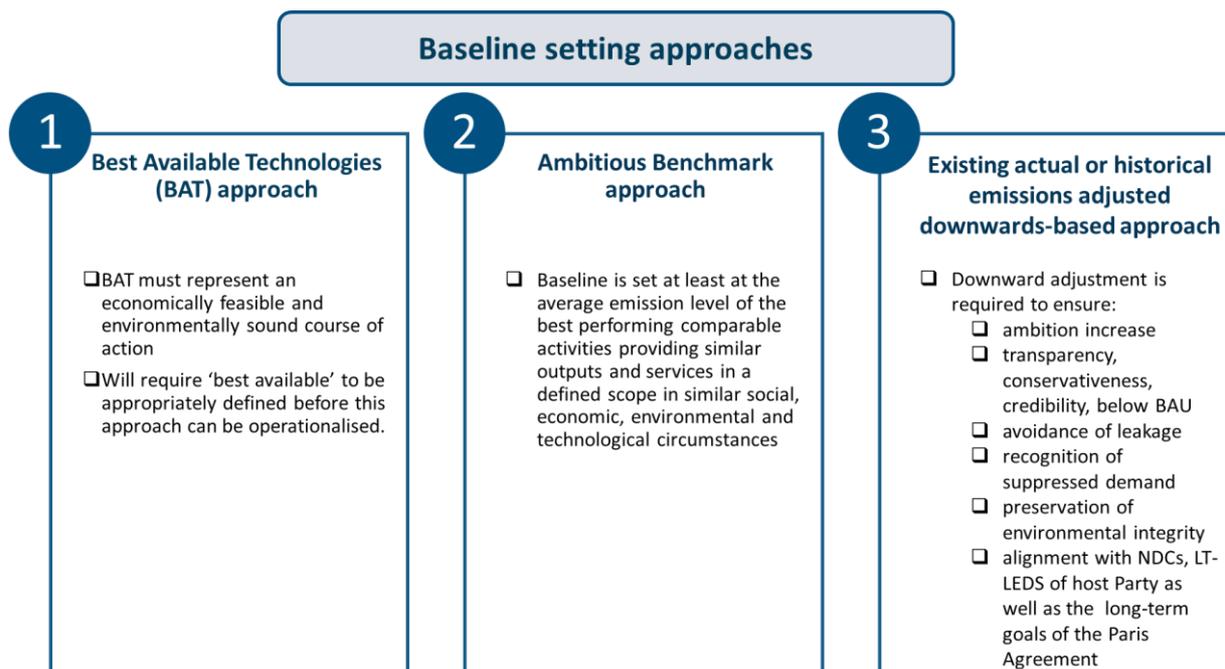


Figure 1: Baseline setting approaches under the Article 6.4 mechanism

Under the A6.4M, baseline methodologies are required to take into account policies and measures, and align with the host Party NDC, LT-LEDS and the long-term goals of the Paris Agreement (UNFCCC 2021b). When discussing the consideration of **'policies and measures'**, there are diverging views as to whether only existing policies should be considered or both existing and planned policies. The consideration of planned policies in mechanism methodologies has direct implications for sectoral and policy crediting. However, due to the uncertainty of whether the planned policies are implemented or not, this issue continues to remain a point of contention (Ahonen et al. 2021).

Beyond alignment with the NDC, baseline setting approaches should also **consider LT-LEDS** in baseline setting. LT-LEDS provide a greater understanding of a host country's long-term vision of the transformation required to meet the Paris Agreement's long-term goal and can have important implications on baseline setting (Ahonen et al. 2021; Füssler et al. 2019). When the trajectories of NDCs and LT-LEDS are not aligned with the long-term goals of the Paris Agreement, as is often the case, baselines could be set at a level more stringent than the NDC/LT-LEDS trajectory so as to not undermine environmental integrity. In a perfect scenario where host countries align their NDCs and LT-LEDS, baselines can be aligned to the NDC/LT-LEDS trajectory, thereby preserving the incentives for ambitious unilateral action by the host country (Michaelowa et al 2021a).

4. Initiatives shaping baseline setting approaches

A number of initiatives are actively engaging in the discussion how baseline setting approaches should be adjusted to meet the Article 6 requirements.

Gold Standard has, for example, been pursuing efforts to align its operations with the Paris Agreement and has established an Expert Consultation Group (Gold Standard 2022a). What

concerns new baseline-setting requirements to ensure an alignment with the Paris Agreement, the crediting standard asks for below BAU baselines, the reflection of host country policies in it and a regular update of baseline parameters (Gold Standard 2022b).

The Integrity Council for the Voluntary Carbon Market (IC-VCM) is currently deliberating Core Carbon Principles including requirements for baseline stringency and the length of crediting periods. It remains to be seen which principles will make it in the final version of the guidance to be issued in Q4 2022 after a public consultation period starting in July 2022.

In 2021, an international team of researchers came forward with a concept for a new mechanism for international climate cooperation under the Paris Agreement (Climate Action Teams 2022). The so-called “Climate Action Teams” offer a cooperation model at large scale where several governments from countries where GHG mitigation would entail high marginal costs work with a host country government with potential for mitigation at comparatively lower marginal cost (Climate Action Teams 2021). The model builds on a multi-year emissions crediting baseline that is set well below BAU and below NDC emissions based on credible modelling (Climate Action Teams 2021). The new cooperation model foresees that the crediting baseline is at least set at the level of emissions that are in line with a conservatively modelled pathway to meet the host country’s unconditional NDC. The determination of achieved mitigation outcomes occurs against the emissions as reported in the host’s GHG inventory. Figure 2 illustrates how the CAT crediting baseline compares against the national reference scenario and the unconditional NDC target.

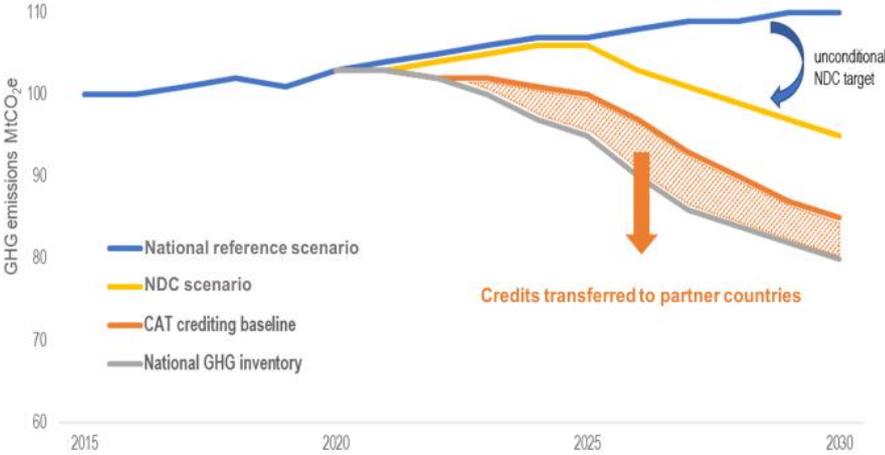


Figure 2: Baseline setting under the Climate Actions Team Agreement (Climate Action Team 2021)

In order to align crediting baselines with the Paris Agreement, Michaelowa et al. (2021b) propose the application of a so-called ambition coefficient to gradually reduce the baseline emission intensity downwards from BAU levels towards zero at the time a respective country needs to reach net zero emissions. To reflect the different historical responsibilities and capabilities of countries, the coefficient falls more quickly for high-income than for low-income countries (Michaelowa et al. 2021b). The latter implies that crediting of emission reductions would be possible for a longer period of time (even well beyond 2050) in low-income countries as compared to high-income countries. Figure 3 shows the application of a decreasing ambition coefficient for a high- and low-income country over time based on the net-zero target years communicated.

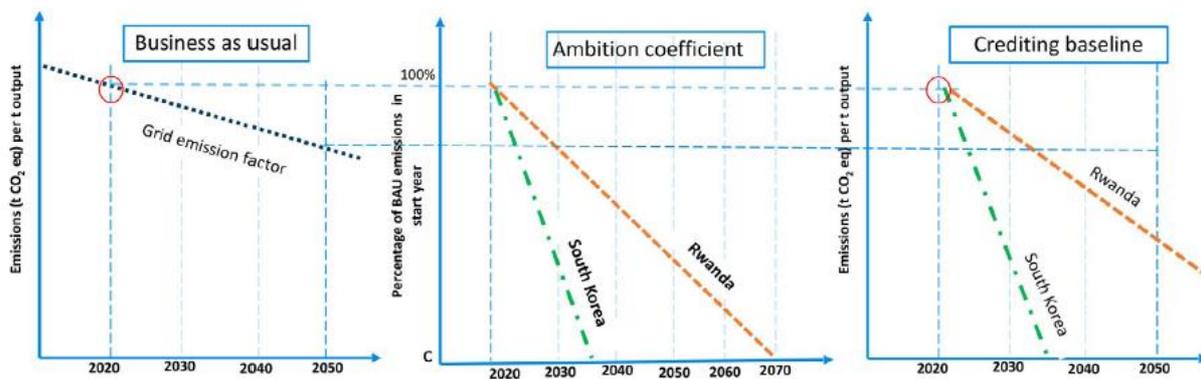


Figure 3: Application of the ambition coefficient to BAU for deriving a dynamic crediting baseline (Michaelowa et al. 2021b)

In the context of the II-AMT, a group of experts has developed a concept note for a tool for robust baseline setting under Article 6 from January to April 2022, which is described in the following section. Based on this concept note, an Article 6 baseline tool is to be developed until the beginning of 2023. The tool is to be added to existing CDM methodologies to enable the rapid uptake of crediting of projects and programmes under Article 6.

There are other initiatives and approaches that promote conservative baseline setting under Article 6. Since these initiatives and approaches are mainly focusing on sectoral and policy crediting, they are not further discussed in this paper.

5. Elements of a future II-AMT baselines tool

In this section first the key challenges identified in the development process of the concept note are outlined before the subsequent section describes the different steps for robust baseline setting under Article 6 proposed by the expert team.

5.1. Key challenges identified

Throughout the concept phase, the expert team identified a number of challenges for the development of an Article 6 tool for robust baseline setting. In the following, an overview of the key challenges is provided:

- In the context of the CDM, a combined baseline and additionality tool had been introduced and widely used. While there are similar considerations for activity developers under both key carbon market concepts, the different methodological steps should clearly be separated whenever the baseline emissions level does not reach zero for projects that do not satisfy the additionality criterion. An example is grid-connected renewable electricity: the combined margin will always be positive and generate credits even for projects that would clearly happen anyway. However, some carbon market actors are used to the combined approach and therefore, might not support a differentiated approach. During the development phase of the initiative, experts may consider options to combine parts of the additionality determination and baseline setting approach, for example through an assessment of “best available technologies” that considers investment parameters.
- A key challenge is ensuring that the baseline is aligned with the long-term goals of the Paris Agreement. Therefore, the concept note specifies that the activity should not

feature on a negative list adopted by the A6.4SB or by the host country. However, not each host country will adopt such a negative list. Also, the development of a negative list will need to build on generic criteria. The activity should thus be in line with the communicated LT-LEDS of the host country. In cases where an LT-LEDS does not exist, generally accepted emissions scenarios will need to be used as reference scenario. In the absence of negative lists and an LT-LEDS, it can be challenging to determine whether an activity does not lead to a lock-in of current emission levels or to assess whether the emissions intensity of the technology is aligned with generally accepted emissions pathways. Guidelines might need to be developed for the mandatory pre-step.

- The need for further disaggregation when it comes to the applicability of certain baseline setting approaches for specific activities was identified as a key challenge. Therefore, the tool hints at the need for sector-level guidance for these aspects. For example, the concept note specifies that performance benchmarking is to be chosen as appropriate baseline setting approach if the sector is characterised by homogeneous production. The challenge will be to strike a balance between detailed guidance disaggregated according to sector and sub-sector and efficiency in terms of broad applicability of the tools.
- Due to the Paris Agreement's long-term goal, suppressed demand cannot be factored into the crediting baseline in the medium to long run as it would not allow for absolute emission reductions. Factoring in suppressed demand would hurt the host country itself as it transfers more internationally transferred mitigation outcomes (ITMOs) out of the country than the actual reduction in the NDC-covered GHG inventory. Therefore, other solutions will need to be identified to address development needs and national circumstances. Options are for example the partial authorisation of ITMOs or higher prices for ITMOs.
- Due to the heterogeneous nature of different NDCs, ensuring that the baseline set is in line with the NDC unconditional target scenario and sector-specific strategies is particularly challenging. Some countries do not define the unconditional part clearly, others even state that also the unconditional part would be contingent on external support. While this is a very important step, it may not always be the case that all required information to assess this alignment is available in a host country.

5.2. Proposed stepwise approach to set a robust crediting baseline

A stepwise guidance on how to set crediting baselines for mitigation activities under Article 6 has been developed by the II-AMT, following the guidelines from the decisions 2/CMA.3 and 3/CMA.3 adopted at COP26 in Glasgow. The experts propose a five-step approach for setting a robust, below BAU crediting baseline (II-AMT 2022). Figure 4 provides an overview of the proposed approach to baseline setting.

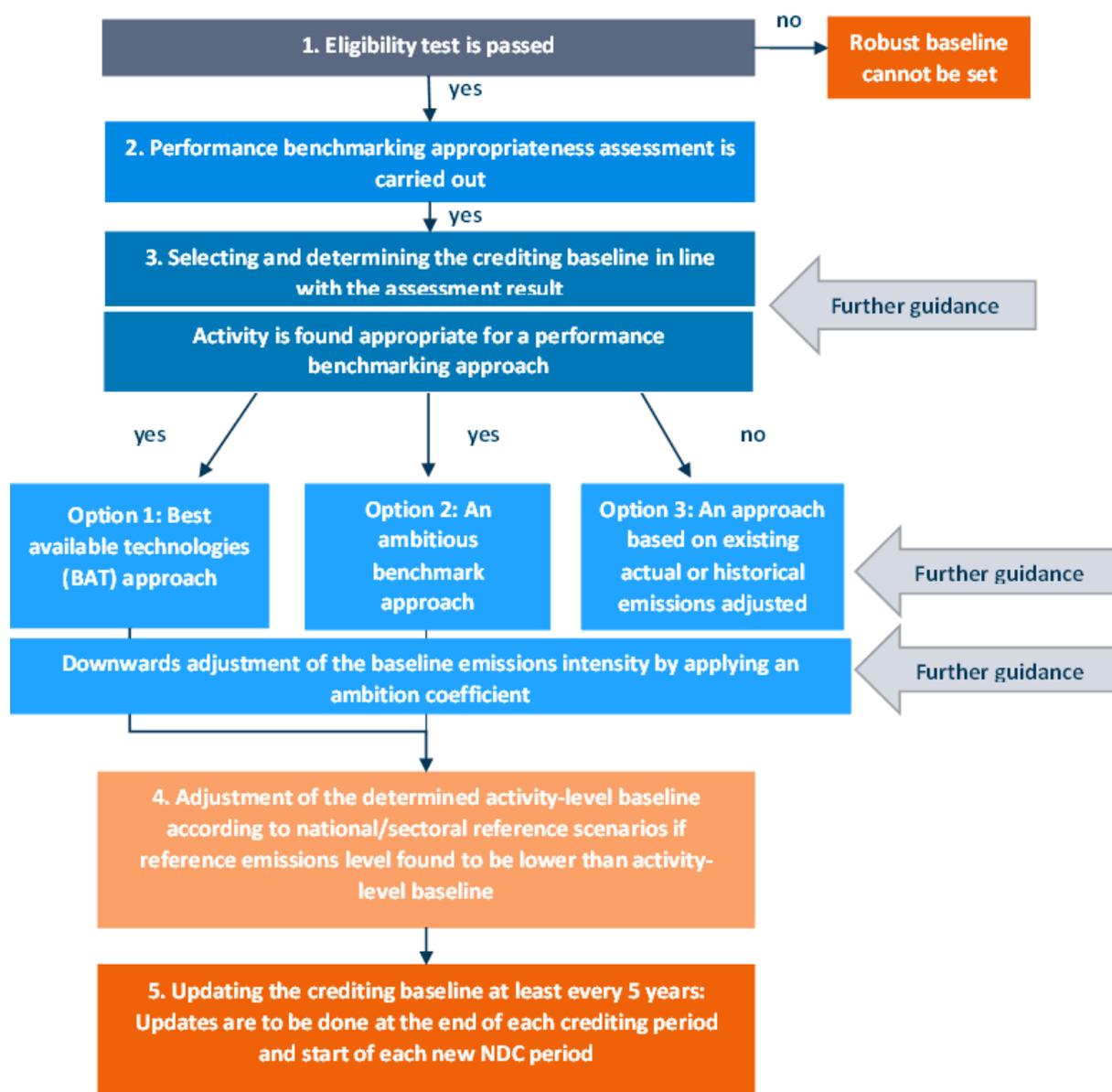


Figure 4: Flowchart of proposed stepwise process for robust baseline setting (II-AMT 2022)

Pre-step – A mandatory eligibility assessment must be undertaken for the proposed Article 6 activity to demonstrate that the activity will not lead to a lock-in of emissions levels incompatible with reaching the Paris Agreement’s long-term goals based on evidence. This assessment would include criteria to evaluate the activity in terms of its exclusion from the negative list adopted by A6.4SB or the respective host country, or the alignment with an existing and communicated LT-LEDS of the host country. Once the eligibility assessment is passed, the activity developer can proceed with the next step.

Step 1 – Assessing the appropriateness of performance benchmarking for the sector and sub-sectors targeted by the proposed activity: To determine which baseline setting approach is most suitable, relevant aspects are the characteristics of the (sub-)sector and the availability of entity-level data of the performance of the underlying technologies. If there is sufficient entity-level data available, option 1 among the Article 6.4 baseline options is recommended. If there is a lack of data, option 2 should be chosen. If the sector is characterised by strong discrepancies among installations e.g., differences in the emission intensity levels and multiple

products/services being offered, or if the activity promotes fuel switching in existing plants, the suitable option to set the baseline would then be option 3 (see Figure 5).

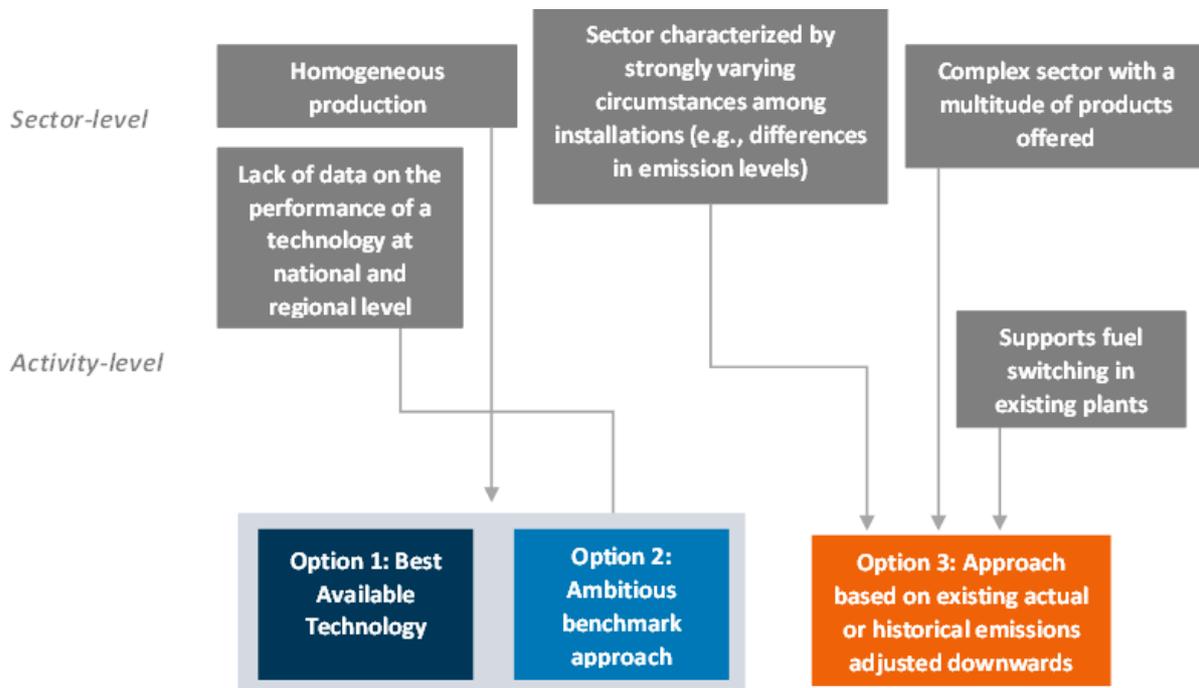


Figure 5: Assessment of the appropriateness of performance benchmarking for sectors (II-AMT 2022)

Step 2 – Selecting the crediting baseline according to mandated options: The concept note lists three concrete baseline setting approaches:

- **Option 1. Best available technologies (BAT):** It refers to the most effective technologies/techniques (hereafter referred to as “technologies”) developed at scale which allows implementation in the relevant industrial sector, under economically and technically viable conditions, taking into consideration the costs and advantages, whether the technologies are used or produced within the territory of that Party, as long as they are reasonably accessible to the operator of the facility as determined by the Party. (II-AMT 2022, p.5). For setting a BAT baseline, first the technology category would need to be defined, followed by the definition of the potential baseline technologies that produce an equivalent output level of a service, and finally the determination of economic feasibility and environmental soundness of identified baseline technologies. Based on this, the performance parameters and values of the best technology are determined and the II-AMT expert team foresees the downwards adjustment of the baseline emissions over the years through the application of a mandatory “ambition coefficient” set by the A6.4SB and by the host country for Article 6.2.
- **Option 2. An ambitious benchmark approach:** This would require first the determination of the current and/or historical performance (distribution curve) of all technologies that have similar outputs or services as the proposed activity. Subsequently, an ambitious benchmark (e.g., 10th or 20th percentiles of the market) is to be applied to the performance distribution curve to calculate the average emissions intensity of the benchmark group selected. The benchmark emissions intensity is then to be adjusted downwards over the years through the application of an “ambition coefficient”.

- **Option 3. “An approach based on existing actual or historical emissions adjusted downwards”** (Decision 3/CMA.3, Annex, paragraph 36): This approach should only be chosen for activities that would be developed in host countries that have communicated either a net-zero pathway/target or an LT-LEDS. It would also require the determination of the actual or historical emissions baseline based on existing methodologies used under the Kyoto mechanisms. Then, the actual or historical emission intensity needs to be adjusted downwards through a discount factor (“ambition coefficient”) that declines over time. The concept note specifies a process for the determination of the ambition coefficient in and beyond the current NDC period.

It is important to mention that for all three baseline setting approaches, the baseline parameters are to be monitored throughout the crediting period and regularly updated in line with step 4.

Step 3 – Assessing the alignment of the activity-level baseline with the NDC unconditional target scenario and sector-specific strategies, through a comparison of the stringency level of the NDC/sectoral reference scenario and the activity level crediting baseline. Once the comparison is made, the downscaling process of the reference level from the national scenario to the underlying mitigation activity would be different based on the activity sector inclusion or exclusion under the unconditional target or relevant sectoral strategy. In both cases and if the resulting downscaled reference emissions level is lower than the activity level baseline set under steps 1 or 2, it is to be applied as baseline emissions level.

Step 4 – Regularly updating the baseline considering the common timeframes decision, which states that all crediting baselines are to be updated with the start of each new NDC period, meaning every 5 years regardless of when in the preceding NDC period the activity started. For doing this and to ensure that activities starting late in an NDC period are not disincentivised due to the risk of the downwards baseline adjustment at the start of the next NDC period, a “baseline protection” of guaranteeing that the baseline does not fall below a certain threshold is required.

These proposed steps would not be applicable to mitigation activities on a higher level of aggregation such as sectoral approaches or mitigation policies.

6. Recommendations for the baseline tool’s development phase

Based on the issues raised by speakers and discussion with the broader audience at the CMM-WG workshop in July 2022, the key considerations for the experts developing the II-AMT tool to set robust baselines can be summarised as follows:

Cross cutting issues

- When defining a step in the proposed approach for setting a robust, below BAU crediting baseline, real project examples of the step’s application should be included, where possible. This is crucial for facilitating a better understanding of the users as to how the step is applied to specific project categories and to reveal possible challenges in the application of the tool.
- Furthermore, when defining a step or procedure, it is recommended that the rationale behind the step is included in the tool, as well as the reasoning for any hierarchy for the options listed under a step (e.g., choosing a BAT over an ambitious benchmark approach).

- The tool should not become too complex. It is better to have simple, but conservative approaches.
- The tool should provide sufficient certainty. Open-ended, dynamic shifts in the baseline should be avoided.

Pre-step: Mandatory eligibility assessment

- The experts developing the tool should consider the impacts of a stringent definition of lock-in which would implicitly demand strong emission reductions from countries with increasing population and not be consistent with consideration of suppressed demand.
- Instead of having a negative list of non-eligible activities involving fossil fuel technologies, it may be better to have a positive approach to incentivise Article 6.4 activities that are aligned with the technology pathways of the NDCs or LT-LEDS. For example, some countries may incentivise and promote natural gas activities as green technologies but there are studies that suggest that natural gas could be a lock-in technology. This can be highly controversial and may be circumvented if a positive approach is adopted instead of a negative list.
- Notwithstanding the two preceding points, generally, having negative lists helps to eliminate uncertainty amongst investors.

Step 2: Selecting the crediting baseline according to mandated options

- **Option 1: BAT approach**
 - It is recommended that the tool develops provisions for ensuring certainty for investment which may not be the case with a dynamic BAT approach. For instance, PV, wind or battery storage have been constantly evolving in the last couple of decades, with levelized cost of electricity dropping substantially, recently below the level of fossil fuel technologies. If BAT means that the baseline for renewable energy becomes zero, the investments of Article 6 investors in renewable energy would cease to generate credits. Therefore, ensuring investment certainty under the BAT approach is requested by project developers.
 - Generally, the cost of determining BAT is significant. The tool should explore options on how these costs can be shared and reduced. It was stressed that a BAT approach might only be sensible if there is some government or industry association that gathers data and makes them publicly accessible.
- **Downward adjustment and long-term goal alignment of all Options through a linearly decreasing ambition coefficient**
 - A continuous reduction of the baseline makes it difficult for the project developer to refinance the project. For more investment certainty, it was suggested that instead of a linear approach for the ambition coefficient, a staircase function be applied wherein there is a constant baseline for five to ten years before the ambition coefficient is adjusted in a large “jump”. However, a linear ambition coefficient defined ex ante for several decades provides more certainty than a staircase approach where the level of the steps is not known ex ante.

Step 4: Regular updating of baselines

➤ Frequency

- The experts developing the tool should consider the costs and benefits of different frequencies of baseline updates.
 - Option 1: While keeping the baseline fixed for five years or longer depending on the crediting period provides better predictability in terms of mitigation outcomes, it lowers the overall ambition.
 - Option 2: For projects whose crediting period spans across two different NDC periods with a five-year update cycle, the baseline must be updated once a new NDC gets published. While this may have adverse impacts on predictability and investment flow, such updates would contribute to higher ambition. “Baseline protection” was discussed but not seen as crucial if longer term certainty can be achieved.
 - Option 3: Having dynamic baselines. While this may be appealing, it could be complex to apply.
 - Option 4: Applying a (continuously decreasing) baseline emission factor, defined ex ante for a very long period. While this may result in lower potential incentives due to fewer mitigation outcomes generated, the higher mitigation outcome prices owing to reduced supply of mitigation outcomes can still drive the market.

Among these four options there is no ‘one fits all’ approach but there could be a mix of options depending on the activity type.

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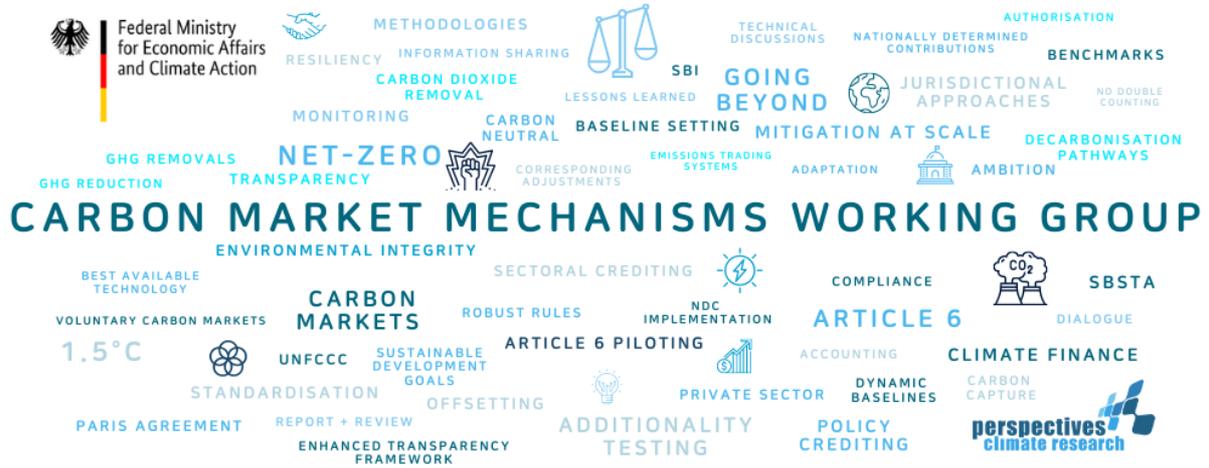
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