



Methodologies for policy crediting under the Paris Agreement Crediting Mechanism

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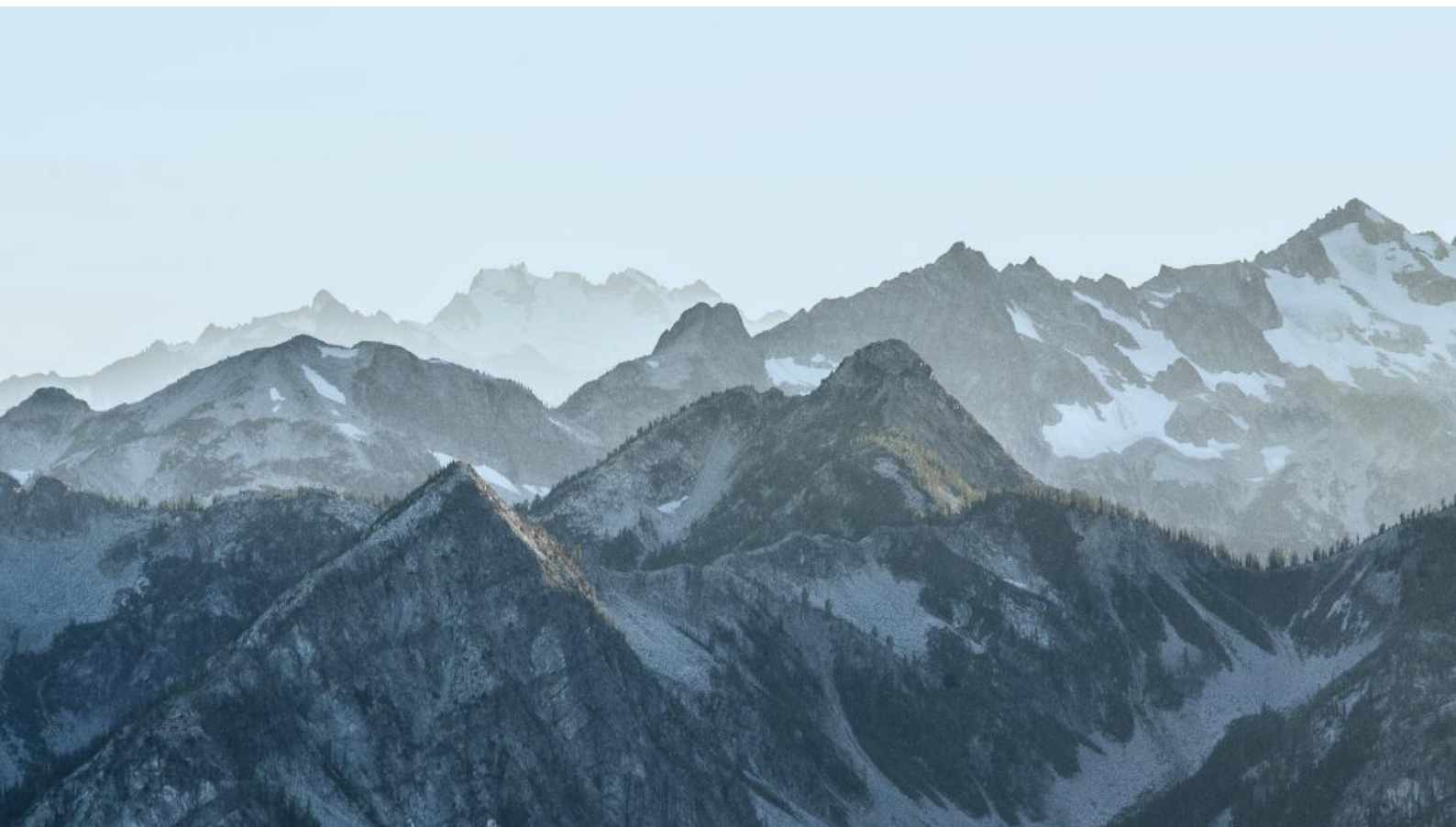


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Abbreviations

A6.4ER	Article 6.4 Emission Reduction
BAT	Best Available Technology
BAU	Business-as-usual
CDM	Clean Development Mechanism
CMA	Conference of the Parties serving as the Meeting of the Parties to the Paris Agreement
ER	Emission Reduction
ETS	Emissions Trading Scheme
EV	Electric Vehicle
GHG	Greenhouse Gas
IPCC	Intergovernmental Panel on Climate Change
LT-LEDS	Long-Term Low Emission Development Strategy
MEP	Methodology Expert Panel
MRV	Monitoring, Reporting, and Verification
NDC	Nationally Determined Contribution
PACM	Paris Agreement Mechanism
PoA	Programme of Activities
UNFCCC	United Nations Framework Convention on Climate Change

1. Introduction

This section provides an overview of the context of this study, the principles of policy crediting and requirements under the Paris Agreement Crediting Mechanism (PACM).

1.1. Context

The Paris Agreement established an international carbon crediting programme, known as the Paris Agreement Crediting Mechanism (PACM)¹. The PACM issues carbon credits (Article 6.4 Emission Reductions, A6.4ERs) for projects and programmes of activities (PoAs) for greenhouse gas (GHG) emission reductions and removals (jointly referred to as mitigation outcomes) that meet the mechanism's requirements. The mechanism is overseen by a Supervisory Body, which operates under the authority and guidance of the Paris Agreement's decision-making body (Conference of the Parties serving as the Meeting of the Parties to the Paris Agreement, CMA) and is supported by the United Nations Framework Convention on Climate Change (UNFCCC) Secretariat.

The PACM become operational at the end of 2024. In 2025, the Supervisory Body is likely to approve the first methodologies, register the first projects and programmes and issue the first A6.4ERs under the PACM.

To date, crediting under international and domestic carbon markets has focused on stand-alone projects and programmes. However, there is increasing interest to also include policy-level approaches in order to upscale the mitigation achieved through carbon crediting. Policy crediting refers to issuing carbon credits for mitigation achieved through one or several policy instruments.

This study describes the existing PACM requirements for project activities and provides recommendations on how they could be applied to policy crediting methodologies for different types of policies (Chapter 2), using fossil fuel subsidy removal and tariff reductions for electric vehicles (EV) as illustrative case studies (Chapter 3). Key steps for methodology development and approval under the PACM are also described (Chapter 4). Chapter 5 concludes.

1.2. Principles for policy crediting

Policy crediting refers to the issuance of carbon credits for emission reductions achieved through policy interventions, rather than by specific projects or PoAs. Policies considered for policy crediting would mobilise multiple mitigation actions and could be applied at various levels ranging from sub-

¹ The mechanism is formally referred to as the Article 6.4 Mechanism, but it is commonly known as the PACM, also on its official website.

sectors to the entire economy. Policy crediting approaches would have the advantage that policies could be designed to overcome barriers faced by individual activities, and mobilise mitigation more systematically and at significantly greater scale compared with project-level approaches.

Policies vary in their suitability for crediting, depending on how their impact can be attributed to measurable and additional mitigation outcomes. For policy crediting to be credible, the credited mitigation outcomes must be directly attributable to the implementation of the policy instrument, and the impact of various factors such as macroeconomic and social trends must be taken into account (Michaelowa et al. 2019). Attribution should be based on a credible theory of change that describes how the policy intervention, or set of interventions, are expected to lead to the implementation of activities and associated mitigation outcomes that would not otherwise occur. The more uncertain or indirect the attribution of mitigation outcomes to the policy instrument, the less suitable the policy instrument is for crediting. Uncertainties in attribution can relate to:

- **Policy interactions** – Multiple policies often influence emissions in a sector, making it difficult to isolate the impact of a single intervention.
- **Macroeconomic factors** – Economic shifts, fuel price fluctuations, and technological advancements can reduce emissions independent of the credited policy.
- **Behavioural and market responses** – Policies influence consumer and industry decisions in unpredictable ways, complicating direct measurement of emissions impacts.

In its Fourth Assessment Report, the Intergovernmental Panel on Climate Change (IPCC) classified policy instruments into the following categories: regulations and standards, taxes and charges, subsidies and incentives, tradable permits, information-based tools, and research and development initiatives (Gupta et al. 2007). Building on this classification, Michaelowa and Keßler (2024) identify three main categories of policy instruments that are suitable for crediting:

- **Mandates** require the adoption of low-carbon technologies or behaviours, the implementation of specific technologies, or the restriction of carbon-intensive technologies or behaviours. These function as direct regulatory measures that enforce compliance with environmental standards, accelerating the shift toward low carbon emissions.
 - **Examples:** Emission standards, technology standards, energy efficiency standards, mandates for fuel switch, ban of incandescent light bulbs or coal-fired power generation
- **Financial incentives** promote the uptake of low-carbon technologies or behaviours by offering financial benefits such as subsidies, tax reductions, or setting a carbon price through mechanisms like carbon taxes or emissions trading schemes (ETS). Additionally, they can introduce financial penalties to discourage the use of carbon-intensive technologies or practices. Removal of subsidies for emissions-intensive activities principally falls under this category (see Wooders et al. 2016 for a detailed discussion of the appropriateness of that category).

- **Examples:** “Carrots”: Feed-in tariff for renewable electricity, payment for ecosystems services, tax credit for removal technologies, “Sticks”: carbon tax, ETS, fossil fuel subsidy removal
- **Elimination of restrictions or prohibitive barriers to mitigation activities** focuses on addressing regulatory or governance obstacles that have previously hindered mitigation. This may involve revising legislation to enable the deployment of emission-reducing technologies or adopting policies that facilitate the transition to low-emission pathways (WB 2023; WB 2025).
 - **Example:** A policy to enable independent power producers to feed electricity into the grid in a context where they had not previously been allowed to do so due to an incumbent electricity generation monopoly.

Information-based tools, and research and development initiatives generate outcomes that are difficult to quantify in terms of GHGs. They are thus not suitable for policy crediting.

On one end of the spectrum are policies that mandate specific types of activity that are clearly and solely attributed to the policy and generate quantifiable mitigation outcomes. For example, a regulation that requires capturing and flaring landfill gas results in emission reductions that can be directly attributed to the policy, given that landfill operators would otherwise have no motivation to capture and flare landfill gas. In cases where all the activities associated with the policy are known, the mitigation outcomes attributed to the policy could be quantified using project-level methodologies.

On the other end of the spectrum are mitigation outcomes that could be attributed to a mix of activity types that, in turn, are driven by a mix of different policies as well as other factors, such as financial profitability even in the absence of any policies. For example, reductions in emissions from electricity generation could be due to a combination of reductions in the emissions intensity of electricity generation and reductions in electricity use. While these can be robustly quantified, their attribution to specific policies and external factors is challenging, since they can be simultaneously driven by a mix of energy policies that disincentivise fossil fuels and promote renewable energy and energy efficiency, as well as improved financial attractiveness of renewable energy and energy efficiency due to reduced technology costs. External events, such as economic recessions, may also lead to reduced electricity use and associated emission reductions. In cases where the exact activities associated with a specific policy are unknown, the mitigation outcomes attributed to the policy could be quantified through modelling, which takes into account the impact of other policies and external factors. The more factors impact the observed mitigation outcomes, and the more these factors vary over time, and the more non-policy related drivers impact these factors, the more challenging it is to model the impact attributed to a particular policy. Where the same mitigation outcomes are driven by multiple policies and external factors, it is challenging to estimate the impact of specific policy.

1.3. Overview of PACM requirements

To generate A6.4ERs, activities have to fulfil the requirements specified in the modalities and procedures of Article 6.4 of the Paris Agreement and elaborated in various standards, procedures, tools and methodologies (hereafter interchangeably referred to as the “PACM rulebook” or “PACM requirements”).

Articles 6.4 to 6.7 of the Paris Agreement provide the legal foundation for the establishment of an international crediting mechanism to promote the mitigation of GHG emissions while fostering sustainable development. The mechanism aims to incentivise and facilitate participation of public and private entities in the mitigation of GHG emissions, contribute to the reduction in emission levels in the host Party, and deliver an overall mitigation in global emissions. A share of proceeds from activities under this mechanism will support administrative costs and assist developing countries in adapting to climate change.

In 2021, the CMA adopted the rules, modalities and procedures for the PACM (UNFCCC 2021a) and tasked the Supervisory Body to develop recommendations on the application of methodological requirements as well as on activities involving removals. Since then, the CMA has adopted further decisions on the PACM at its annual sessions, and may adopt further decisions in future sessions.

In October 2024, the Supervisory Body adopted its recommendations in the form of the Methodologies and Removals Standards (UNFCCC 2024 a,b). These standards form the basis for the development and assessment of PACM baseline and monitoring methodologies. In February 2025, the Supervisory Body adopted the Additionality Standard (UNFCCC 2025a). In May 2025, the Supervisory Body adopted Baseline and Leakage Standards (UNFCCC 2025 b,c), enabling the approval of new methodologies. The Supervisory Body’s workplan for 2025 also includes the development of various other products, including the tools for investment analysis and common practice analysis and a concept note for large-scale crediting programmes.

Although the Supervisory Body’s and MEP’s 2025 workplans also include the development of a concept note for “large-scale crediting programmes” (covering also policy crediting), this work is likely to be postponed to 2026, due to the prioritisation of methodological work for projects and PoAs (UNFCCC 2025d) and the extremely high workload of the Supervisory Body and MEP which includes conceptually difficult and contested items. In its February and April 2025 meetings, the MEP was unable to cover the topics assigned and had to defer several relevant topics to future meetings. Over time, more standards, tools and guidance, as well as methodologies, will be developed and revised, to operationalise the methodological principles and requirements. Thus, the PACM rulebook will evolve over time, as was the case for the PACM’s predecessor, the Kyoto Protocol’s Clean Development Mechanism (CDM).

Under the PACM, activity participants must apply Supervisory Body-approved baseline and monitoring methodologies that are applicable to the activity in question. Methodologies must comply with all relevant requirements, including the requirements of the Methodologies Standard, the Additionality Standard, the forthcoming Baseline Standard and any other relevant standards. These requirements are designed to ensure environmental integrity under the PACM. The UNFCCC Secretariat expects the first methodologies to be approved before the end of 2025 (Arumugam, Perumal 2024).

2. Applying key PACM requirements to policy crediting

This section describes the key requirements under the PACM for additionality demonstration, baseline setting, and monitoring, reporting and verification (MRV) and provides recommendations on applying them to policy crediting. These recommendations take into account key cross-cutting requirements, such as encouraging ambition over time, being real, transparent, conservative, credible, aligning with nationally determined contributions (NDCs), long-term low emission development strategy (LT-LEDS), and long-term goals of the Paris Agreement, and considering policies, measures and relevant circumstances.

2.1. Additionality demonstration

2.1.1. Key requirements for demonstrating additionality under PACM

According to the PACM rulebook, additionality shall be demonstrated using a robust assessment that shows the activity would not have occurred in the absence of the incentives from the mechanism, taking into account all relevant national policies, including legislation, and representing mitigation that exceeds any mitigation that is required by law or regulation (UNFCCC 2021a, p.34).

The PACM Methodologies Standard (UNFCCC 2024a) and Additionality Standard (UNFCCC 2025a) outline a structured approach to demonstrating additionality for activities seeking crediting under the PACM. The Additionality Standard approved in February 2025 is explicitly limited to projects and thus not applicable to PoAs or policies. An extension of the Additionality Standard to PoAs and policies could still happen in 2025 as in May 2025, the Supervisory Body asked the MEP to expedite this issue (UNFCCC 2025d). Below, the steps for demonstrating additionality for projects are described. The next section considers how these requirements could potentially apply to policy crediting.

- **Prior consideration of the benefits of the mechanism:** Demonstrating that the benefits of the PACM were considered necessary in the decision to implement the project, by notifying the UNFCCC Secretariat of the intention to seek registration of the project under the PACM, no later than 180 days after the start date of the project, which, according to the Project Standard, is the

“date on which the activity participants commit to making expenditures” under the proposed project (UNFCCC 2024d, p.16). The notification includes a summary of project information.

- **Regulatory analysis:** Demonstrating that the “activity represents mitigation that exceeds any mitigation that is required by law or regulation, unless the law or regulation refers to or formally integrates the mechanism as an instrument for implementation” (UNFCCC 2025a, p. 5). In contrast to the CDM, which allowed for exceptions for enacted policies that were deemed not to be enforced, the PACM standards do not provide for such exceptions. So, under the PACM, credits cannot be issued to mitigation outcomes mandated or incentivised by an enacted policy on the basis that this policy is not enforced.
- **Avoidance of lock-in risks:** Activities must:
 - 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
 - be consistent with host country’s LT-LEDS
 - rely on a technology or practice that is among those within the lowest GHG intensity in the relevant region taking into account the lifetime of the technology or practice in line with national circumstances
 - not involve a technology or practice that constitutes an inefficient use of a resource that is important for mitigating climate change.

In addition to these mandatory steps, project activities must demonstrate financial additionality or, subject to applicability conditions, may apply performance-based approaches as an alternative to financial additionality demonstration.

- **Financial additionality:** Consists of investment analysis (default approach) or barrier analysis (subject to specific conditions), complemented with common practice analysis:
 - **Investment analysis:** The following types of investment analyses may be used:
 - **Simple cost analysis:** Demonstration that the implementation of an Article 6.4 activity is associated with costs and does not generate any cost savings or revenues other than from A6.4ERs.
 - **Benchmark analysis:** Comparison of the financial attractiveness of an Article 6.4 activity with a financial benchmark
 - **Investment comparison analysis:** Comparison of the financial attractiveness of an Article 6.4 activity with alternative options
 - **Barrier analysis** requires explaining and justifying why an investment analysis is infeasible or inappropriate. It is applicable for project activities that are implemented at individual households or undertaken by small public or private entities without access to public third-party finance. Other cases may be proposed with due justification and demonstration that such barriers are prohibitive, including examples of relevant barriers.
 - **Common practice analysis:** Required to complement investment or barrier analysis, consisting of: i) defining a suitable indicator to assess common practice based on the

recent uptake or existing stock or diffusion of technologies, services or practices in relation to a realistic maximum market size or potential; ii) appropriate geographical boundary; and iii) specifying appropriately conservative threshold that may not be surpassed for an activity to be deemed additional.

- **Performance-based additionality (alternative approach to financial additionality):** As an alternative to financial additionality (investment/barrier analysis, complemented with common practice analysis), performance-based additionality demonstration may be applied where it can be proven with at least 90% probability that activities exceeding an emissions performance benchmark are additional and the likelihood of additionality increases with increasing performance of the activity. The Additionality Standard includes further conditions for applying performance-based approaches to project activities:
 - The methodology applies an applicable baseline approach (see section 2.2)
 - The activity involves the production of a highly homogeneous product or the provision of a highly standardised service (e.g. electricity);
 - The performance of the type of activity can be defined through one or several suitable indicator(s);
 - Information is available to demonstrate that activities with a better performance in respect to the indicator(s) have a higher likelihood of additionality;
 - Data is available or can be collected on the performance of activities with respect to the indicator(s), and the data is robust and representative.

The proponent must demonstrate and justify that these conditions are met.

2.1.2. Recommendations for additionality demonstration for policy crediting

In the context of policy crediting, additionality can be tested at the level of a policy and/or at the level of individual activities triggered by the policy, depending on the type of policy instrument and the type of mitigation activities driven by that policy instrument. Furthermore, additionality can be considered from the perspective of the policymaker and/or the entities that implement the activities triggered by the policy.

Some policies can trigger clearly identifiable activity types (e.g. a policy mandating the use of LED lights will – if enforced – mean that only LED lights are sold in the future; or a subsidy for wind farms, if set at the right level, will mobilise wind farms). For other policies, it may not be possible to identify the activity types triggered by that policy (e.g. the introduction of a carbon tax may incentivise a wide range of different types of activities that reduce emissions, from closure of fossil fuel plants and reduction of energy use to fuel switching, increased energy efficiency and renewable energy).

Depending on the characteristics of the activity types, activities may not happen at all without the policy or their implementation may be slower without the policy. The former would be the case if

activities are unattractive for the entities implementing them under all circumstances, the latter is relevant if activities are attractive under some circumstances, but not others.

Prior consideration and **regulatory additionality** would be demonstrated at the policy level, from the perspective of the policymaker. For prior consideration, the policymaker would need to demonstrate that the benefits of the PACM were considered necessary in the decision to implement the policy. Compared to project activities, prior consideration can be more challenging for policies, given the complex, multilayered and non-linear processes relating to the design, decision-making and implementation of policies. To meet this requirement, policymakers would need to proactively stay abreast of the opportunities offered by the PACM and have the capacity and resources to integrate PACM into the policy. The process for policy crediting would likely mirror the existing process for projects and PoAs, entailing a notification to the UNFCCC Secretariat within 180 days from the official promulgation of the policy, which could be the formal date of the policy becoming effective, e.g. the date in which a law is published in the official gazette. So if a renewable electricity feed in tariff law is agreed by Parliament on May 1, 2027 and it is published in the State Gazette on June 15, 2027, the latter date counts. For regulatory additionality, the policymaker would need to provide credible evidence that the policy represents mitigation that exceeds any mitigation required by laws and regulations other than the policy in question. This policy should include a clear reference or formal integration of the PACM as an instrument for implementation, meaning that host country government legislation would have to “carve out” the policy to be credited before the policy is introduced. Eligible policies could be either entirely new (e.g. the introduction of a carbon tax) or the enhancement of an existing policy (increase of a carbon tax beyond the previously set levels). Defining the policy and its start date is straightforward for policies that introduce completely new requirements or incentives. By contrast, in cases where crediting is used to enhance or expand an existing policy, it may be more challenging to determine the start date of the policy enhancement or expansion.

Demonstrating **avoidance of lock-in** can be done at a single step on the policymaker level. With regard to policies, avoidance of lock-in could mean that policies that support continued use of fossil fuels, unsustainable use of biomass or increased waste generation would not be eligible for policy crediting. The policymaker needs to assess the scale, lifetime, and emissions intensity of the activities envisaged to be triggered by the policies and show that these do not prolong the lifetime of fossil fuel technologies or generate incentives for the use of fossil fuels. Methodologies can include provisions that are specific to the lock-in risk of a country. Countries with a low level of development will have a later date for full decarbonisation and thus the lock-in risk at a specific point in time will be lower in such countries. The methodology could make reference to the date when fossil fuel phaseout needs to be achieved and exclude all activity types using fossil fuels whose lifetime exceeds that date.

For policy crediting, **financial additionality** should be demonstrated at **two levels**: the policy level (implementation of the policy itself) and the activity level (implementation of the activities triggered

by the policy). The policy-level analysis would be carried out from the perspective of the policymaker while the activity-level analysis would be done from the perspective of the activity implementer. The activity-level analysis can be done for all policies, regardless of whether they aim to mobilise specific activities or activity types or trigger various unspecifiable activity types. In cases where the policy could trigger a range of different types of activities, for example in case of the removal of fossil fuel subsidies, the activity-level analysis can be based on a generic assessment of activity types. Financial additionality testing is applicable for most policy instruments, regardless of their type. Policies that meet specific conditions may apply performance-based approaches instead of demonstrating financial additionality (see below).

As for projects, financial additionality demonstration for policies should include **investment or barrier analysis**, complemented with **common practice analysis**. However, while investment and barrier analysis are mutually exclusive alternatives for projects, combinations of investment and barrier analysis should be allowed for policies, since one approach may be more appropriate for the policy-level analysis (step 1) and the other for the activity-level analysis (step 2). Table 1 summarises our general recommendations for demonstrating financial additionality for different policy instrument types, differentiated by step 1 (policy level) and step 2 (activity level).

The **investment analysis** should be the default approach also for policy crediting. For policy crediting, an investment analysis would mean demonstrating that the policy is not fiscally viable and/or the activities mandated or incentivised by the policy are not financially viable on their own and carbon revenue is needed to successfully implement the policy. The investment analysis can be applicable to all three types of policy instruments, for policy- and activity-level analyses (see Table 1 for detailed recommendations).

Where methodologies do not apply the investment analysis, the methodology proponents shall appropriately explain and justify why an investment analysis is infeasible or inappropriate. In this case, the methodology proponents should provide information on the fiscal viability of the policy and/or the financial viability of the activity types triggered by the policy.

For policy crediting, **barrier analysis** means demonstrating that the policy and/or the activities triggered by the policy face barriers that would prevent their implementation without the support from carbon credit revenue. While barrier analysis could be applied at policy and/or activity level, it is particularly relevant for the policy-level analysis given that many policies would reduce public spending but are still not implemented in practice. Theoretically, a policy instrument cannot be considered additional if its benefits outweigh its costs (Michaelowa and Keßler 2024). However, in practice, as people resist being taxed, public resources are scarce and thus insufficient for implementing all policies that have positive net benefits. Furthermore, a key challenge lies in the distribution of these effects—while costs are often concentrated, co-benefits tend to be less tangible, more distributed and accrue to different stakeholders. In reality, there are many barriers to the introduction of such policies. These barriers often relate to the political economy, such as power

of emitter lobbies and challenges in monetising non-monetary benefits, which are frequently undervalued or contested by policymakers. For example, economic theory and experience shows that fossil fuel subsidy reductions can reduce public spending significantly. Nonetheless, such reductions are implemented only rarely and fossil fuel subsidies are widespread and pervasive. Non-monetary barriers include opposition to fossil fuel subsidy reform by powerful interest groups that generate political pressure for using tax income to keep energy costs artificially low.

The policy-level barrier analysis would identify barriers to policy implementation faced by policymakers, even where implementation would be attractive from a fiscal point of view. The argumentation will be heavily scrutinised and thus needs to be particularly robust. Activity-level barrier analysis would entail assessing non-monetary barriers to the implementation of activities that the policy would trigger through the carbon credit revenue. It should be primarily limited to activities implemented at individual households and/or small public or private entities that typically do not have access to commercial or public third-party finance, applying the requirements for project-level activities as specified in the Additionality Standard. It requires the barrier analysis to show that the barriers are prohibitive, explain how the policy uses carbon credit revenue to remove these barriers, and demonstrate that the incentives from carbon credits are “the determinant element” in overcoming the identified barriers (as required for PACM in UNFCCC 2025a, p. 14). While this can be challenging to demonstrate in practice, it is key for trust in the environmental integrity of the generated carbon credits.

The investment or barrier analysis should be complemented by a **common practice analysis**, also for policy crediting. It should be conducted at both policy and activity levels, showing that the policy is not common practice and/or the activities triggered by the policy are not common practice in countries with similar characteristics with regard to e.g., GDP, income and wealth distribution, and governance system.

Table 1. Applying PACM’s financial additionality requirements to different policy instrument types

Policy instrument type	Applying PACM’s financial additionality requirements	Examples
<p>Regulatory mandates</p> <p>Policies that impose legal requirements for specific types of mitigation activities, such as technology or performance standards.</p>	<p>Policy-level analysis:</p> <ul style="list-style-type: none"> - Investment analysis: Default approach. Entails assessing costs of policy implementation (including assessing technology performance, cost of government staffing to manage the policy, introducing enforcement capacities, etc. vs. public budget benefits of policy introduction). - Barrier analysis: Applicable when the implementation of the policy is prevented by non-monetary barriers. Entails describing and 	<ul style="list-style-type: none"> - Mandatory energy efficiency standards for appliances - Technology mandates for specific technologies (e.g. lighting) - Industrial emission performance benchmarks

Policy instrument type	Applying PACM's financial additionality requirements	Examples
	<p>assessing political economy barriers to policy introduction.</p> <ul style="list-style-type: none"> - Common practice analysis: Complements investment/barrier analysis by assessing whether the policy is already widely applied in similar economies. <p>Activity-level analysis:</p> <ul style="list-style-type: none"> - Investment analysis: Default approach. Entails demonstrating that mandated activities are not financially attractive from the perspective of (some or all of) the activity implementers. In the former case, only those activities will be credited that show that they are not financially attractive. It can be implemented in a standardised way on the level of the policymaker for sufficiently homogeneous activity types, and needs to be done for each relevant activity type. - Barrier analysis: Only recommended for policies that mandate households or small entities to adopt certain technologies or comply with certain performance standards that are prevented by financial and/or other barriers. For example, households and small entities may not invest in increasing energy efficiency if they do not have access to loans or do not directly benefit from the associated cost savings. - Common practice analysis: Complements investment/barrier analysis by assessing whether the mandated activity types or performance levels are already widespread in similar economies. 	<ul style="list-style-type: none"> - Phase-out mandates for coal-fired power plants
<p>Financial incentives (taxes, subsidies, carbon pricing instruments)</p> <p>Policies that provide direct financial support or impose costs to encourage low-carbon technologies.</p>	<p>Policy-level analysis:</p> <ul style="list-style-type: none"> - Investment analysis: Default approach. Entails assessing costs of policy implementation (fiscal revenue loss, cost of government staffing to manage payments, introducing enforcement capacities, etc. vs. public budget benefits of policy introduction). - Barrier analysis: Only recommended for policies that are fiscally attractive but face non-fiscal barriers to implementation. Entails describing and assessing political economy barriers to policy introduction, e.g. opposition of consumers of fossil-based energy that suffer from subsidy removals or introduction of carbon pricing. 	<ul style="list-style-type: none"> - Fossil fuel subsidy removal - Reduction of tariffs for EVs - Carbon tax - Renewable energy feed-in tariffs - Concessional finance for industrial energy efficiency

Policy instrument type	Applying PACM's financial additionality requirements	Examples
	<p>- Common practice analysis: Complements investment/barrier analysis by assessing whether the policy is already widely applied in similar economies (strictly necessary).</p> <p>Activity-level analysis:</p> <p>- Investment analysis: Default approach. If the policy addresses specific activities, the analysis entails showing that these specific activities would not be financially attractive without the incentives provided by the policy. Where a policy incentivises only activities that would not be financially attractive without the policy, a simple cost analysis could be applied. Where a policy incentivises types of activities that can, in some cases, be financially attractive even without the policy (e.g. renewable energy in locations with high energy resources), an activity-level investment comparison or investment benchmark analysis needs to be undertaken. Such analysis can cover groups of activities.</p> <p>For policies like subsidy reform or carbon pricing, a generic assessment of the impact of the policy on the likelihood of implementation of activities is to be undertaken. Only activities where the likelihood of implementation is moved from “unlikely” to “likely” are to be credited. Ideally this is to be done through economic modelling. In cases where economic modelling is not possible in a robust manner, generic considerations on the shift of likelihood are to be undertaken in a conservative manner, e.g. by looking into how the policy impacts the payback period of the “median” activity.</p> <p>- Barrier analysis: Only recommended for policies that address households / small entities (see above)</p> <p>- Common practice analysis complements investment/barrier analysis by assessing whether the activities to be triggered by the financial incentives are already widespread in comparable countries (stringent approach).</p>	

Policy instrument type	Applying PACM's financial additionality requirements	Examples
<p>Policies removing prohibitions or market barriers</p> <p>Policies that eliminate obstacles preventing mitigation activities (e.g., grid access barriers).</p>	<p>Policy-level analysis:</p> <ul style="list-style-type: none"> - Investment analysis: as under regulatory mandates. - Barrier analysis: as under regulatory mandates. - Common practice analysis: as under regulatory mandates <p>Activity-level analysis:</p> <p>Activity-level analysis not applicable, but such policies should be deemed additional only for a limited period, as policies prohibiting financially viable projects are unlikely to persist for prolonged periods. We recommend a default limit of five years.</p>	<ul style="list-style-type: none"> - Enabling independent renewable producers to access the grid - Removing restrictions on net metering for solar energy - Providing legal frameworks for voluntary trading and use of carbon credits

Source: Key considerations from Michaelowa et al. (2023), complemented with PACM requirements

Automatic additionality determination through **performance-based approaches** based on benchmarks may be the appropriate alternative to financial analysis for policies that meet specific conditions. Performance-based approaches are applicable in sectors with homogeneous outputs whose emissions depend on multiple factors, and would thus be relevant for regulatory policies that define minimum performance levels for technologies or directly mandate certain technologies. If the performance of the mandated technology or the minimum performance level defined in the policy exceeds the benchmark level, the policy would be deemed additional. For example, a policy requiring air conditioners to exceed an Energy Efficiency Ratio of 9 is additional if the benchmark is set at a ratio of 8. For other types of policies, benchmarking is not appropriate, as these policies are conceptionally different from a benchmarking approach and are only amenable to a historical emissions approach. Here, no further additionality testing would be needed. It is important that, in this case, the benchmark approach is also applied for baseline determination, in order to ensure a consistent approach for carbon credit quantification. Carbon credits would accrue as per the difference between the performance level achieved due to the policy and the benchmark, applying the number of devices and their utilisation rate. Regulation of production technologies in steel or aluminium production or household devices through prohibitions or performance standards would be policy instruments where a benchmark could be set at a level of a technology whose generic economic parameters would show with a 90% probability not to be financially viable without the incentive from the sale of carbon credits.

2.2. Baseline setting

2.2.1. Key requirements for baseline setting under PACM

Baseline setting under the PACM is a critical methodological step, as it defines the reference scenario against which emission reductions or removals are measured. The PACM Methodologies Standard (UNFCCC 2024a) outlines the core principles for baseline determination, while the Baseline Standard (UNFCCC 2025b) provides detailed guidance for project-based activities, elaborating on the stepwise approach and technical requirements, including the mandatory downward adjustment of crediting baselines.

According to the Methodologies Standard, methodologies must require the application of one of the following approaches, with justification of the appropriateness of the applied approach and provisions for downward adjustment (see also below):

- **Best Available Technologies (BAT)** that represent an economically feasible and environmentally sound course of action.
- **Ambitious benchmark** where the baseline is set at least at the average emission level of the best performing comparable activities providing similar outputs and services in a defined scope in similar social, economic, environmental and technological circumstances.
- **Existing actual or historical emissions, adjusted downwards.**

Factors affecting the appropriateness of the choice may include similarity of emission sources with respect to technologies and measures applied, or sectors covered by the methodology and availability of data required for a conservative and reliable estimation of the baseline.

Key steps for baseline setting include: selection of a baseline setting approach; application of the chosen approach to define the baseline scenario and unadjusted baseline emissions; application of a downward adjustment; establishment of a conservative business-as-usual (BAU) scenario; and comparison of the two to finalise the crediting baseline.

PACM methodologies must meet the following principles and requirements with regard to baselines:

- **Encouraging ambition over time:** Methodologies must encourage ambition over time by setting baselines below BAU and increasing the ambition of baselines over time (see below), while considering host country circumstances. Methodologies should also facilitate the deployment of low-carbon solutions and technologies, including by facilitating knowledge transfer, encouraging the deployment of technologies that reduce the costs of decarbonisation and unlock investment in low-carbon solutions, and facilitating the inclusion of progressively more efficient and less GHG-intensive technologies, replicable and scalable mitigation activities,

and after initial deployment, expanding the user base, broader geographic coverage, and greater penetration of low-carbon solutions.

- **Being real, transparent, conservative, credible and including data sources, accounting for uncertainty and monitoring requirements:** Methodologies must include provisions for ensuring that all emission reductions or removals, are real, transparent, conservative, and credible by, inter alia, choosing a conservative emissions baseline when multiple sources of data and parameters are available to set the baseline. Methodologies must be transparent and comprehensible with respect to included assumptions, parameters, data sources and key factors, and include requirements for the accounting of uncertainty associated with emission factors, activity data and other estimation parameters consistent with relevant IPCC guidelines. Methodologies must include requirements for listing data parameters that need to be monitored throughout the crediting period, including data needed to estimate baseline, project and leakage emissions.
- **Taking into account policies and measures, and relevant circumstances:** Methodologies must contain provisions to consider relevant circumstances, including national, regional, or local, social, economic, environmental and technological, based on robust data and verifiable information. Methodologies must specify the type of data and information that would be necessary to meet these provisions, including for baseline setting.
- **Establishing that the selected baseline is below BAU and adjusted downwards:** Methodologies must contain requirements for demonstrating that the selected baseline is below BAU. BAU emissions are “plausible reference benchmarks or scenarios for GHG emissions prior to or in the absence of the implementation of the activity” (UNFCCC 2024a, p.6). Methodologies must ensure that the final crediting baseline is set below a conservatively estimated BAU emissions scenario. This is achieved through a two-part process: first, a downward adjustment must be applied to the baseline emissions derived from the selected baseline-setting approach. This downward adjustment is mandatory—except in the first crediting year for BAT and benchmark approaches—and must increase over time (annually by at least 1% per year, or step-wise at least every three years), unless justified otherwise. The purpose is to drive progressive ambition, taking into account factors such as sectoral transformation, economic feasibility, and alignment with the long-term temperature goal of the Paris Agreement. Second, the methodology must define a conservative BAU scenario representing the most plausible emissions pathway in the absence of the Article 6.4 activity, considering prevailing practices, technological availability, and applicable policies (excluding those referring to Article 6.4). The final crediting baseline must be the lower of the two values: the downward-adjusted emissions level and the conservative BAU estimate. If the BAU scenario is already more ambitious than the adjusted baseline, no additional adjustment is required. This dual requirement ensures environmental integrity and guards against over-crediting.
- **Recognising suppressed demand:** In the PACM context, suppressed demand is a situation where services provided to a population are insufficient to meet the basic human needs (such as minimum amount of electricity for lighting, heating or cooling due to barriers, including low

income or lack of infrastructure), and where the growth of emissions resulting from meeting such needs requires special consideration in the assessment of baseline scenarios. The Supervisory Body will recognise suppressed demand under a situation where the BAU cannot realistically provide the required level of service by considering that the baseline scenario is not set based on the historical and continuation of the current condition, but rather based on an alternative that provides a level of service comparable to that provided by the proposed project. Suppressed demand will be recognised by including benchmarks and default factors in specific methodologies that may not be below BAU.

2.2.2. Recommendations for baseline setting for policy crediting

To prevent overestimation, the baseline scenario must be defined in a robust and credible manner. Data and assumptions used in developing NDCs can serve as foundation for setting baselines for policy crediting. This said, NDCs are not necessarily sufficiently detailed and/or ambitious to serve as a robust basis for baseline setting. Ensuring the robustness of this process is pivotal for the approach's integrity. There are several considerations that must be taken into account when quantifying mitigation outcomes from policy instruments (Michaelowa and Keßler 2024):

- Among the three baseline approaches under the PACM, the BAT approach is appropriate for technology mandates and policies subsidising activities relating to very specific technologies (e.g., clean cooking technologies, energy-efficient industrial processes). The ambitious benchmark approach may be appropriate for policies applied in sectors producing highly homogeneous outputs with different kinds of technologies whose performance is not site-specific (e.g., cement and steel); however the requirements for applying benchmarks are very stringent. Most policies do not target specific technologies or sectors with highly homogeneous outputs and, for them, the existing actual or historical emissions adjusted downwards approach would be most appropriate. In this approach, the impact of a new policy or policies is compared against the past or current emissions resulting from the existing set of policies.
- When determining the baseline scenario's boundaries and emissions drivers, the impact of the implementation of other mitigation policies and non-policy drivers must be taken into account. Key non-policy indicators include technological development, changes in fuel prices and behavioural changes. Factoring in all these external effects is challenging. It may be possible through Randomised Control Trials but these are very expensive and time-consuming and thus not recommended.
- Ideally, the existing and planned policies of a host country are sufficient for achieving the (unconditional) NDC. In that case, a baseline that takes all relevant existing and planned policies into account would align with the NDC trajectory. Countries with more ambitious unconditional NDCs will inevitably have lower crediting potential than countries with less ambitious NDCs, potentially disincentivising higher ambition. Although carbon crediting is

not suited for directly incentivising higher NDC ambition, carbon credit buyers can incentivise higher NDC ambition by favouring more ambitious host countries over less ambitious ones.

- For the setting of baselines for national mitigation commitments, modelling approaches are often recommended for policy crediting. Hybrid models, accommodating functions of both economy-wide approaches (top-down/aggregated) and sectoral scenarios (bottom-up/disaggregated), are recognised as a solution to address the limitations of purely macroeconomic models.
- When using models, they must be regularly updated throughout the implementation of the policy instrument to account for new emissions trends.
- Regardless of whether a model is used, baseline parameters should be periodically revised to account for technological advancements. One proposed approach is the use of dynamic baselines, where the baseline calculation is established ex-ante, but parameters are quantified ex-post (Michaelowa et al. 2021).

There are several approaches to setting baselines for policy crediting (Michaelowa and Keßler 2024), including economic modelling, used by e.g. Transformative Carbon Asset Facility and the Global Green Growth Institute (TCAF 2021; GGGI 2021), informed by the host country's NDC emissions trajectory; and discounting approaches, which may be informed by the Paris-aligned emissions trajectory and/or a control area with similar characteristics that has not implemented the policy instrument in question (e.g., Kreibich and Obergassel, 2018). Economic modelling approaches can be combined with discounting.

The current project-level Baseline Standard (UNFCCC 2025b) requires at least a minimum annual downward adjustment, i.e. a reduction of 1% in baseline emissions from the initial level, implying the achievement of net zero after 100 years, that is, around 2125. This is not consistent with the Paris Agreement's long-term temperature goal, which would require achieving global net zero significantly earlier, soon after 2050 as well as the provision in Article 4 to achieve a balance of emissions and sinks in the second half of the century. We recommend an approach that is aligned with the Paris temperature goal, that is, adjusting the BAU level downwards by a multiplier starting at the level of 1.0 in the year 2021 and declining linearly to zero at the point in time where the host country has set its net zero target (Michaelowa et al. 2022). Applying such a mechanism to policy crediting would help ensure alignment with national decarbonisation pathways and uphold environmental integrity until a dedicated policy crediting framework is established under the PACM. Note that the host country can count mitigation associated with the downward adjustment towards its NDC, so although this mitigation does not earn credits, it is not "lost" from the perspective of the host country.

2.3. Leakage

2.3.1. Key requirements for leakage under PACM

The Leakage Standard (UNFCCC 2025c) requires methodologies to identify potential leakage sources, avoid or minimise leakage where feasible, and quantify and subtract any residual negative leakage.

- **Identification of leakage sources:** Methodologies must assess leakage risks such as the transfer of baseline equipment, competition for limited resources (e.g., biomass), diversion of existing production or services, and increased emissions from environmental disturbances. International leakage must also be considered where applicable. These sources must be identified based on activity characteristics and addressed through conservative and transparent assumptions.
- **Measures to avoid or minimise leakage:** To prevent leakage, methodologies should incorporate measures such as requiring the destruction or decommissioning of replaced equipment, demonstrating resource abundance, or ensuring that project outputs and service levels match or exceed those in the baseline. Applicability conditions may be used to limit implementation to areas with lower leakage risk.
- **Quantification and subtraction of residual leakage:** If leakage cannot be fully avoided, methodologies must include procedures to conservatively quantify and subtract any remaining negative leakage. This includes calculating emissions from reused equipment, diverted resources, or changes in service levels. Projects that reduce output or service relative to the baseline are ineligible for A6.4ERs unless all associated leakage is fully accounted for and well justified.

The standard also introduces expectations around indirect impacts, such as rebound effects or emissions increases due to price effects of demand reduction, which is especially relevant for energy efficiency projects. These impacts, often overlooked under CDM, must now be considered in leakage assessments where relevant, reflecting a more robust and forward-looking approach to mitigation accounting under the PACM.

2.3.2. Recommendations for leakage for policy crediting

In the context of policies, leakage can structurally be larger than that of single projects. Therefore, leakage assessment needs to be done in a careful manner. If the requirement to take into account price effects for alternatives to goods and services whose production is facilitated by the policy is retained, almost all policies will face a discount due to the pervasiveness of such price effects. Technology mandates are unlikely to generate leakage other than baseline equipment transfer. Policies increasing energy efficiency will generally generate rebound and price effects. Competition

for resource use and diversion of existing production processes would be highly relevant regarding carbon pricing or subsidy removal and thus requires careful consideration.

2.4. Monitoring, Reporting, and Verification (MRV) under PACM

2.4.1. Key requirements for MRV under PACM

A robust Monitoring, Reporting, and Verification (MRV) framework is essential to ensure transparency, credibility, and alignment with Article 6.4 of the Paris Agreement. The MRV system should facilitate accurate tracking of policy implementation, emission reductions, and external influences that could impact mitigation outcomes.

The Methodologies Standard's (UNFCCC 2024a) principles of being real, transparent, conservative, credible, and including data sources, accounting for uncertainty and monitoring include key requirements for methodologies that are relevant for **robust and transparent MRV systems**, including:

- Include robust, transparent and user-friendly measurement, reporting and independent third-party verification systems
- Require the use of technical performance standards that are data driven
- Require transparent demonstration of changes in GHG emissions showing each step in calculations and the results, and ensuring that calculated emission reductions or removals are uniquely achieved by and attributable to the activity
- Ensure that information, including data sources and calculations are real, transparent, conservative, accessible and credible
- Include, where appropriate, the use of remote sensing and digital technologies to enable transparent, accurate and credible calculation and estimation of emission reductions and removals
- Require the accounting of uncertainty associated with emission factors, activity data and other estimation parameters applied in the calculation of emission reductions or removals consistent with relevant IPCC guidelines.
- Contain provisions requiring a listing of data parameters that need to be monitored throughout the crediting period. This may include the data that are directly measured where necessary on a sample basis, and the data that are collected from other sources such as official statistics, expert judgment, IPCC guidelines, and scientific literature. In this regard, methodologies shall contain provisions on monitoring plans related to the collection, open publication and storing of all relevant data needed to estimate baseline, project and leakage emissions, including provisions related to quality assurance and quality control.

The Baseline Standard (UNFCCC 2025b) proposes that, in the context of baseline setting, uncertainty must be quantified and that the more conservative end of the 95% confidence interval is to be chosen.

2.4.2. Recommendations for MRV for policy crediting

A robust MRV framework is essential for ensuring the credibility, transparency, and conservativeness of mitigation outcomes achieved by policy crediting. Compared with project-based crediting, policy crediting introduces more complex MRV challenges due to the broader scope, systemic interactions, and indirect nature of mitigation impacts. Effective MRV for policy-based crediting must track both policy implementation and external impacts, ensuring that credited emission reductions are real, additional, and measurable.

The broad nature of policy interventions presents challenges in MRV design. Policies such as subsidy removals or tariff reductions operate at a macroeconomic level, making direct attribution of emissions reductions difficult. Additionally, these policies often interact with other regulatory and economic measures, further complicating the MRV process. While researchers have developed methods to address these challenges, including Randomised Control Trials as well as advanced statistical modelling, the outcome of these analyses strongly depends on the correct specifications. The training of validators and verifiers in such methodologies in order to allow them to detect skewed / biased application of these methodologies would be costly and reduce the number of individuals able to do such assessments in a robust manner. We would suggest a research programme to assess to what extent the application of advanced statistical methods could be done in a way that credibility of international carbon markets is not impacted negatively.

Key challenges include:

- **Treatment of external shocks:** Political and economic fluctuations, such as changes in government priorities or global commodity prices, can influence policy outcomes and distort MRV results. We would recommend a minimum degree of change in a parameter that characterizes a “shock” and triggers an update of a model calculation.
- **Availability of reliable data:** Policy-level interventions rely on diverse data sources, many of which may have inconsistencies or gaps, particularly in developing economies. We recommend development of procedures for filling data gaps through conservative defaults.

MRV needs to cover all parameters that are relevant for the assessment of the baseline level, particularly in the case of application of models. Models cannot be a “black box”. For example, “impact channels” in models need to be defined in a way that parameters that credibly define the impact of the policy need to be verified.

Regarding data-driven performance standards, scientifically backed data-driven benchmarks should be used to measure performance. It must be ensured that estimates are based on real-world

data, best available technologies, and sector-specific performance standards. Modelling approaches need to be able to convincingly argue how the data fed into the model fulfil these conditions.

MRV approaches to policies need to check carefully whether they want to work with deeply conservative default parameters that can be shown to under all circumstances lie below the conservative end of the 95% confidence interval. Moreover, ex-post recalculation of model outcomes applying actual parameters for each year of the crediting period is recommended. We acknowledge that this generates substantial uncertainty regarding credit generation, but consider it as a necessary trade-off for the acceptance of policy crediting under PACM.

2.5. Addressing reversals

2.5.1. Key requirements for addressing reversals under PACM

Under the PACM, any reversals of emission reductions or removals must be fully addressed. Activities that involve removals and emissions reduction activities with reversal risks must meet the requirements of the Removals Standard (UNFCCC 2024b). The requirements in the standard aim to ensure that the reversal risk is assessed and minimised over multiple NDC periods, and any reversals are addressed in full, through assessing reversal risk using a risk assessment tool, monitoring and reporting during and also beyond the crediting period, notifying and taking action in case of potential reversals, and fully remediating any reversals through a Reversal Risk Buffer Pool. The Supervisory Body's 2025 workplan also includes the development of a standard for on addressing non-permanence/reversals.

2.5.2. Recommendations for addressing reversals for policy crediting

In the context of policy crediting, addressing reversals is relevant for policies that seek to trigger activities that can have reversal risks, such as policies aiming at the creation of new or protection of existing forests or other land-based carbon stocks. There is a risk that these carbon stocks are reversed, for example as a result of human activities such as illegal logging or natural events such as forest fires. Policies could include provisions for minimising reversals, monitoring of the aggregate level of stocks and compensating for any emissions from stocks through dedicated means, such as mandatory insurance, buffer stocks and dedicated financing for acquisition of A6.4ERs. These provisions need to extend beyond the crediting period and be in line with the requirements of the Removals Standard and relevant further standards, such as the forthcoming standard on addressing non-permanence/reversals.

2.6. Other considerations – crediting periods and avoiding double counting

As per the Methodologies Standard (UNFCCC 2024a), PACM methodologies must include provisions for contributing to the equitable sharing of mitigation benefits in a way that tangibly supports the sustainable development objectives of host Parties. This can include conditions to ensure that the

total length of the crediting period(s) of activities is shorter than the lifetime of the technology implemented including any replacements undertaken during the crediting period, where there is very high confidence that emission reductions from the technology continue to be achieved beyond the end of crediting period(s).

Crediting periods for policies could structurally be longer than for specific activities given that the lifetime of a policy should normally exceed that of a specific project. At the same time, host countries should consider including policies into their unconditional NDCs over time, so the crediting period should not be indefinite. There is thus a trade-off between the incentive for national level ambition – which calls for short crediting periods – and the incentive to sustain the policy through revenue from the sale of emissions credits. The crediting period should terminate if a policy is discontinued, at the time when the discontinuation takes effect. If a policy undergoes changes that have a material impact on emissions (exceeding 5% increase), we recommend requiring a revalidation of the policy, including its additionality and crediting baseline, and the revalidated crediting baseline should be applied from the point at which the policy change takes effect.

Regarding the avoidance of double counting, there are three types of double counting that need to be avoided in the context of policy crediting. Firstly, double registration and double issuance need to be avoided, meaning that there should not be any stand-alone projects registered within the influence area of the policy, so as to avoid issuing the same mitigation outcome for both the policy and for a stand-alone project. Nested approaches could also be allowed for a transitional period, subject to host country approval of all projects, clearly delineated boundaries, centralised tracking and robust accounting. Full monitoring is critical here. Secondly, double claiming of mitigation outcomes should be avoided, meaning that the same mitigation outcome should not be claimed more than once towards targets. Examples of double claiming include two countries claiming the same mitigation outcome towards their respective NDCs. Thirdly, double claiming between different sources of climate finance needs to be avoided. Regarding the two latter requirements, the enhanced transparency framework rules require parties to report how they avoid double counting in their Article 6 cooperation and between the climate finance provided or mobilised, and the resources used under Article 6 by the acquiring Party for use towards the achievement of its NDC (UNFCCC 2018, p. 37; UNFCCC 2021b; UNFCCC 2022). To avoid double counting under Article 6 cooperation, the international Article 6.2 rules require the host country to apply corresponding adjustments to its emissions balance for any mitigation outcomes that it authorises and first-transfers under Article 6.2. Besides avoiding the forms of double counting identified under the enhanced transparency framework and the Article 6.2 rules, it is important to ensure that mitigation outcomes achieved with public climate finance are not issued as carbon credits, except where carbon credits are specifically used as the means to deliver public climate finance. PACM credits can be used for delivering climate finance but they should not be issued for mitigation achieved with (other sources of) climate finance. This latter point is directly related to additionality. If emission reductions would happen anyway due to climate finance, they are not additional. This applies to

project- and policy-level crediting alike. In case of combining carbon credit revenue with (other sources of) climate finance, attribution approaches are needed to allow crediting of some, but not all mitigation. Attribution should be undertaken as recommended by Fuessler et al. (2019).

3. Case studies - Recommendations for PACM alignment

3.1. Description of illustrative case studies

This section illustrates the application of PACM requirements to policy crediting through two illustrative case studies: a policy that removes fossil fuel subsidies and a policy to reduce import tariffs for electric vehicles (EVs). In this section, “proposed policy” refers to a policy or a set of policies that seeks to generate carbon credits.

A policy for fossil fuel subsidy removal aims to reduce emissions through the increase in the cost of fossil fuels. This impacts both the supply side, that is, activities that produce and use fossil fuels to generate electricity and heat, and the demand side, that is, activities by public and private organisations and households that use fossil fuels directly (e.g., natural gas for heating and petroleum for driving) or indirectly (e.g., by using fossil-based electricity for lighting, cooling, heating, communications and producing goods and services). The increase in fossil fuel costs incentivises a shift from fossil fuel-based to fossil fuel-free energy generation, an increase in energy efficiency and/or a decrease in energy use, depending on the options and resources available for public and private organisations and households. Carbon credit revenue could be used to support activities that reduce the resistance to removing fossil fuel subsidies, thus overcoming political and other barriers to implementing this fiscally beneficial yet widely unpopular policy.

A policy to reduce import tariffs for EVs aims to reduce emissions through a shift from fossil fuel-based transport to electric modes of transportation. This policy specifically targets the demand side by reducing the costs of purchasing an electric vehicle and thus incentivising vehicle adoption by public and private organisations and households. Carbon credits could be used to cover the fiscal revenue loss associated with the tariff reduction, thus overcoming the financial barrier to implementation.

Both types of policy instruments are likely to co-exist with other policies that can have overlapping impacts. For example, fossil fuel subsidy removal could co-exist with subsidies for renewable energy and energy efficiency, a carbon tax on fossil fuels and/or an emission trading system. All these policies promote a transition from fossil fuel-based activities to fossil fuel-free activities. The reduction of electric vehicle import tariffs may co-exist with policies that support, for example, the EV charging infrastructure and the training of EV technicians. All these policies promote the adoption of electric vehicles. In cases where multiple policies promote the same (types of) mitigation activities and only one specific policy utilises carbon crediting, it will be challenging to credibly estimate the mitigation impact attributable to that specific policy. While the impact of a set of

related policies may be more feasible to estimate, it is suitable for crediting only if it can be demonstrated that none of these policies would have been implemented without the incentives from carbon credits.

3.2. Additionality demonstration

Recommendations for PACM alignment – Additionality
Prior consideration of the benefits of the mechanism (mandatory)
<p>General</p> <ul style="list-style-type: none"> • Provide, within 180 days from the official promulgation of the policy, credible evidence that the role of carbon credits was considered in the design of the proposed policy, including of a sub-set of specific elements of the policy with a clear differentiation from earlier or existing policies. Only policy elements that are backed up with such evidence should be eligible for crediting. • In case an equivalent policy has already been introduced in the past, and subsequently be discontinued, credible evidence would need to be provided to demonstrate that the government did not back-track the policy only to link its reintroduction with carbon credit generation. In most cases, a reintroduction of a past policy would not be eligible to generate carbon credits.
<p>Case studies</p> <ul style="list-style-type: none"> • Fossil fuel subsidy removal: Provide dated minutes on negotiations between the host country and carbon finance provider that show that specific elements of the subsidy removal were introduced due to carbon finance. • EV tariff reduction: Provide dated minutes on negotiations between the host country and the carbon finance provider that show that specific import tariff reductions for EVs were due to carbon finance. Provide written evidence that any increase of import tariffs enacted prior to that reduction was not undertaken in order to be able to claim a high baseline.

Recommendations for PACM alignment – Additionality
Regulatory additionality (mandatory)
<p>General</p> <ul style="list-style-type: none"> • For existing policies, see recommendations on prior consideration. • For new policies, provide specific carve-out of the policy by specifying in it that it was only introduced due to the revenues from selling carbon credits, for example by formally stating that the policy is to be credited under the PACM and results in mitigation outcomes that would not occur as result of any other laws or policies. • Identify any other existing or planned laws and policies (including those supported through other sources of international climate finance) that provide a material contribution to promoting the same mitigation activities, and demonstrate how the proposed policy results in mitigation outcomes that would not have occurred as a result of these other existing or planned laws and policies.
<p>Case studies</p>

Recommendations for PACM alignment – Additionality

- **Fossil fuel subsidy removal:** Describe how other policies influence electricity consumption, including energy efficiency standards and rules for the import of goods and services, and demonstrate how the removal of fossil fuel subsidies results in mitigation outcomes that are additional to those resulting from existing and planned policies, based on credible and relevant data and research.
- **EV tariff reduction:** Describe other policies that could accelerate EV adoption, including financing programs for EV-related infrastructure and assess their role in promoting EV ownership and use.

Recommendations for PACM alignment – Additionality

Avoidance of lock-in (mandatory)

General

- Analyse lock-in risk and demonstrate that the proposed policy does not prolong the lifetime of existing technologies or incentivise new technologies that use fossil fuels or otherwise lead to locking in levels of emissions or carbon-intensive technologies or practices, including through an assessment of the scale, lifetime, and emissions intensity of the (types of) activities triggered by the proposed policy

Case studies

- **Fossil fuel subsidy removal:** Fossil fuel subsidy removal helps to avoid lock-in.
- **EV tariff reduction:** EV tariff reduction helps to avoid lock-in, provided that the electricity used for EV charging has lower emissions-intensity than fossil transport fuels.

Recommendations for PACM alignment – Additionality

Financial additionality – Investment analysis (default approach)

General

- Consider whether the investment analysis is the appropriate approach for the proposed policy at the policy-level and/or activity-level. Note that, for policy crediting, we recommend allowing the possibility to use the investment analysis for one level and the barrier analysis for the other level (see Table 1 above for the detailed choices). At the policy level, an investment analysis entails assessing whether the introduction of the policy requires more public money than is spent when the policy is not introduced.
- At the activity level, an investment analysis entails assessing whether the activities triggered by proposed policy are not financially attractive in the absence of the proposed policy.

Case studies

- **Fossil fuel subsidy removal:**
 - **Policy-level investment analysis:** A policy-level investment comparison analysis from the perspective of the policymaker would demonstrate that fossil fuel subsidy removal generates significant net revenue to the government and would thus not pass the investment test. Since fossil fuel subsidies are nonetheless widespread, indicating barriers to implementation, barrier analysis is the appropriate approach

Recommendations for PACM alignment – Additionality

- for demonstrating policy-level financial additionality of fossil fuel subsidy removal policies (see below).
 - **Activity-level investment analysis:** Use a simple cost analysis from the perspective of the energy consumer to show that the policy imposes costs to energy consumers, without generating any revenue. Moreover, assess which share of activities undertaken by the energy consumer (including reducing energy consumption, investing in more energy-efficiency appliances, and switching to non-fossil energy) would be financially attractive even without the fossil fuel subsidy removal (e.g., due to energy cost savings and revenue from renewable energy sales) even at a discount rate/payback period commensurate with the characteristics of subsidy recipients. This could be done in an aggregated way by modelling typical classes of energy efficiency for the purpose of investment comparison. This modelling needs to include a sensitivity analysis on key parameters, such as the price elasticity of energy demand, in order to cater for the uncertainty requirements of PACM.
- **EV tariff reduction:**
 - **Policy-level investment analysis:** Use simple cost analysis from the perspective of the policymaker to demonstrate that the policy results in losses of tariff revenues on EVs and fuels that would otherwise be imported without generating any revenue; and
 - **Activity-level investment analysis:** Use investment comparison analysis from the perspective of key private EV buyer classes to show that, without the EV tariff reduction policy and the incentives from carbon credits, (some or all) buyer classes would have purchased a conventional internal combustion engine vehicle instead of an EV due to the higher financial attractiveness of the conventional vehicles, taking into account high implicit discount rates of buyer classes (e.g., households) that face costly access to capital. For certain buyer classes, EVs may be more financially attractive than conventional vehicles over their technical lifetime even in the absence of the EV tariff reductions. In that case, only part of the observed increase in EV adoption should be attributed to the proposed policy. In cases where financial aspects are not the key barrier to EV update, an activity-level barrier test may be appropriate (see below).

Financial additionality – Barrier analysis (alternative to investment analysis on both steps)

General

- Policy-level analysis: For policies that face non-monetary barriers to implementation, describe the key barriers and how they prevent the implementation of the policy
- Activity-level analysis: For policies that address technologies used by households and small enterprises, activity-level barrier analysis is appropriate if it can be demonstrated that households and small businesses face relevant non-monetary barriers to adopting these technologies. Describe key barriers and how they prevent the implementation of the activities.
- At each level, describe how the proposed policy addresses the identified barriers and how carbon credit revenue is the decisive element to overcome these barriers.
- Support analysis with credible evidence.

Case studies

- **Fossil fuel subsidy removal: Policy-level analysis:** Describe how fossil fuel subsidy removal is a politically unpopular policy, with public opposition constituting a non-financial barrier to the policymaker for implementing and maintaining such policies. This requires describing how the carbon credit revenue enables to overcome public opposition to subsidy removal, especially by poorer strata of society.

Recommendations for PACM alignment – Additionality
<ul style="list-style-type: none"> • EV tariff reduction: Activity-level analysis: Describe and analyse why non-monetary barriers to adopting EVs (e.g. lack of charging infrastructure) are prohibitive for (all or some) households and small businesses and how the policy uses carbon credit revenue to overcome these barriers among all or some households and/or small businesses.
Common practice analysis (mandatory complement to investment/barrier analysis)
<p>General</p> <ul style="list-style-type: none"> • Demonstrate that proposed policy is not common practice in relevant contexts by providing an assessment of similar policies in a relevant comparison group of countries with characteristics comparable to the host country, including (1) per capita GDP ($\pm 25\%$ compared to the host country); and (2) comparable World Governance Indicator position ($\pm 25\%$ level of indicator). • Support analysis with credible evidence.
<p>Case studies</p> <ul style="list-style-type: none"> • Fossil fuel subsidy removal: Demonstrate that fossil fuel subsidy removal is not common practice in relevant contexts by providing a policy-level assessment of electricity subsidies in a relevant comparison group of countries with characteristics comparable to the host country, including (in addition to factors listed above), producer and exporter of fossil fuels used to generate electricity. Since fossil fuel subsidy removal can incentivise a broad range of different activity types, an activity-level assessment is not applicable. • EV tariff reduction: Provide policy- and activity-level analyses, that demonstrates that the EV tariff reduction and/or associated activities (adoption of EVs) are not common practice: <ol style="list-style-type: none"> 1. To demonstrate that the proposed policy is not common practice, provide an analysis of past and existing policies in the host country and similar countries (in terms of e.g. GDP) that shows that EV promotion policies are not widespread. 2. To demonstrate that the associated activity (adoption of EVs) is not common practice, provide a detailed analysis of actual EV adoption rates and practices in the host country and other countries with similar characteristics (e.g., GDP), including pre-policy implementation, to demonstrate that the adoption of EV is not common practice. For example, demonstrate that the EV adoption rate for the relevant type of EV and key EV buyer class is less than 5%.

Recommendations for PACM alignment – Additionality
Performance-based approaches (alternative to financial additionality analysis)
<p>General</p> <ul style="list-style-type: none"> • Consider whether all activities linked to the policy relate to homogenous outputs/services and it is possible to ensure with 90% probability that all activities linked to the policy that exceed the benchmark are additional
<p>Case studies</p> <ul style="list-style-type: none"> • Fossil fuel subsidy removal: Performance-based approaches are not appropriate for fossil fuel subsidy removal due to the wide range of activities to reduce electricity use that does not satisfy the basic conditions for performance-based approaches.

Recommendations for PACM alignment – Additionality

- **EV tariff reduction:** Performance-based approaches are not appropriate for non-industrial sectors, such as transport, with multitude of actors and very different usage patterns of the vehicle owners that constitute very different types of services.

3.3. Baseline setting

Recommendations for PACM alignment – Baseline setting

Being real, transparent, conservative, credible and including data sources, accounting for uncertainty and monitoring requirements

General

- Provide clear explanation, with justification and supporting evidence, of how the proposed policy triggers mitigation impacts and how these can be clearly attributed to the proposed policy and separated from the impacts due to other existing or new policies using the same levers.
- Use conservative assumptions when setting the BAU scenario, choosing the lower of the extrapolation of BAU and the trajectory for the (unconditional) NDC assuming that, in the absence of revenues from carbon credits, the government would just achieve the unconditional NDC target. If the NDC does not differentiate between a conditional and unconditional component, describe how the BAU trajectory is set. In this case, a conservative approach would be to assume that the entire NDC target is unconditional.
- Incorporate a clear uncertainty analysis in the baseline setting process and justify why the values used are conservative.
- Modelling may be used to estimate BAU scenarios and the impact of specific policies (with policy scenario). When modelling is used, ensure that models include all critical parameters, including enabling conditions (e.g., policy reforms, infrastructure development) and external variables (e.g., fuel prices, economic activity), and use conservative values for these parameters. This is particularly relevant for default values taken from the (academic) literature such as the price elasticity. Clearly explain why the values chosen are conservative. The uncertainty and error analysis should also cover the model itself, demonstrating that the emissions in the BAU and crediting baseline scenarios are not overestimated by the model. The model needs to be able to attribute mitigation to the policy and to other causes, based on a credible theory of change.

Case studies

- **Fossil fuel subsidy removal:** For fossil fuel subsidy removal policies, modelling could be used to estimate BAU emissions and mitigation outcomes attributed to the proposed policy compared with BAU. When using modelling to estimate BAU emissions, the conservativeness of key parameters, such as the price elasticity of electricity and natural gas, should be supported with credible evidence, such as robust recent research, ideally in the country itself or comparable countries.
- **EV tariff reduction:** Estimate the BAU using a control group of countries similar to the host country with similar socio-economic and geographical characteristics, with a comparable set of policies in the transport sectors that do not use carbon markets in the EV sector, with the actual EV penetration rate achieved in the control group in each year of the crediting period (dynamic ex post approach).

Recommendations for PACM alignment – Baseline setting
Taking into account policies and measures, and relevant circumstances
<p>General</p> <ul style="list-style-type: none"> • Identify relevant policies and measures, and describe how these are taken into account in baseline setting. • When modelling is used, describe how the modelling takes the NDC into account and ensures that only mitigation attributed to the proposed policy generates carbon credits, and mitigation resulting from other policies are excluded from carbon credit generation.
<p>Case studies</p> <ul style="list-style-type: none"> • Fossil fuel subsidy removal: Assess effects of other policies that influence energy supply and demand. • EV tariff reduction: Identify relevant policies and measures that impact EV adoption, and describe, with supporting evidence, how they are taken into account in baseline setting and modelling so that any mitigation outcomes attributed to these other relevant policies are not credited under the proposed policy. Besides the reduction in EV tariffs, other relevant policies and measures include efforts to promote, inter alia, charging infrastructure, availability of spare parts, expertise in EV maintenance and repair, and trust of end-users in the technology. Relevant circumstances include assumed changes in income levels among key EV buyer classes, and its impacts on EV purchases in the absence of EV tariff reductions. Furthermore, policies, measures and relevant circumstances that impact the development of the grid emission factor should be taken into consideration.

Recommendations for PACM alignment – Baseline setting
Approaches to set the baseline, establishing that the selected baseline is below BAU and adjusted downwards, and encouraging ambition
<p>General</p> <ul style="list-style-type: none"> • Apply either (1) Best available technologies that represent an economically feasible and environmentally sound course of action; (2) An ambitious benchmark approach where the baseline is set at least at the average emission level of the best performing comparable activities providing similar outputs and services in a defined scope in similar social, economic, environmental and technological circumstances; or (3) an approach based on existing actual or historical emissions, adjusted downwards. • Describe how and calculate how much the baseline is set below the BAU, potentially applying a discount or quantitative methods elaborated and adopted under the PACM. For the historical emissions approach, The Baseline Standard requires applying a discount of up to 10% in the first year of the crediting period, depending on project emissions. • Provide a clear approach to progressively increase the stringency of the crediting baseline over time, for example through an increasing discount. An increasingly stringent baseline means that a decreasing share of actual emission reductions achieved would be issued as carbon credits and the difference would accrue to the host country. To the extent that these emission reductions are reflected in the national GHG inventory and are included in the NDC scope, they contribute towards the achievement of the host country's NDC. The Baseline Standard requires to apply a minimum of 1% per year.

Recommendations for PACM alignment – Baseline setting

Case studies

- **Fossil fuel subsidy removal:**
 - For fossil fuel subsidy removal policies, the applicable approach to setting the crediting baseline could be based on **existing actual or historical emissions, adjusted downwards**, using discount factors or quantitative methods elaborated and adopted under the PACM. Apply the following steps:
 1. Identify a conservative BAU scenario (see above), set the crediting baseline below BAU by applying a discount, quantify the difference between BAU and the crediting baseline, and demonstrate that the amount of this downward adjustment is in line with (PACM requirements).
 2. The crediting baseline could be set by modelling an emissions trajectory for the unconditional NDC (representing the BAU) and applying a downward adjustment using a discount value (to set the baseline below BAU).
 3. Describe in detail how the discount is set, how its “materiality” is ensured and why it is suitable for ensuring a below BAU baseline.
 4. Specify a clear numerical downward adjustment and demonstrate that the amount of downward adjustment is in line with PACM requirements
 - Apply an annual discount of 2% per year which is the value of long-term energy efficiency improvements in normal policy environments.
- **EV tariff reduction:**
 - For EV tariff reduction policies, the applicable approach to setting the crediting baseline could be based on existing actual or historical emissions, adjusted downwards, operationalised using discount or quantitative methods elaborated and adopted under the PACM. Key steps are described above.
 - Apply share of EVs found in the control group for the common practice test ex post to discount the baseline, with a minimum of 1% increase per year.

Recommendations for PACM alignment – Baseline setting

Recognising suppressed demand

General

- As the PACM approach to suppressed demand is not yet known, no recommendation can be given.

Case studies

- **Fossil fuel subsidy removal:** No suppressed demand exists due to the long historical subsidisation of electricity.
- **EV tariff reduction:** Methodologies that look at vehicle emission intensities implicitly cover suppressed demand (i.e. allows for the generation of carbon credits even if the absolute emissions from transport do not fall).

3.4. Leakage

Recommendations for PACM alignment – Leakage
Identify, and avoid or minimise all sources of leakage
<p>General</p> <ul style="list-style-type: none"> • Provide clear procedures to define and identify leakage. If leakage is relevant for the policy, it should be quantified whether it remains constant between scenarios or if it can lead to different emission levels in the different scenarios. • Describe transparently which sources of leakage specified in the Leakage Standard are attributable to the policy, and identify and justify which sources of leakage are not relevant. • If other sources of leakage are included, include options to minimise them. • MRV of identified sources of leakage
<p>Case studies</p> <ul style="list-style-type: none"> • Fossil fuel subsidy removal: Identify relevant sources of leakage, such as replacement of electricity by fuels that become more attractive due to changes in relative prices. Ensure scrapped, in line with the project-level Leakage Standard. • EV tariff reduction: Include an analysis of leakage if the exemption of EVs from duties/taxes leads to a reduction of ICE vehicle import prices and thus an increase of transport emissions. Ensure scrapping of any ICE vehicles replaced by EVs. In some cases, new EVs may satisfy increased demand for vehicles rather than lead to the replacement of old ICE vehicles.

3.5. Monitoring, Reporting and Verification (MRV)

Recommendations for PACM alignment – Monitoring, Reporting and Verification (MRV)
<p>General</p> <ul style="list-style-type: none"> • When designing MRV, take into account data availability and possibilities to monitor parameters • The methodology needs to ensure the robust quantification of uncertainty. In case of modelling, this means model assumptions, input parameters and critical equations need to be specified in all model documentation and confidence intervals for these parameters established. Modelling should take into account the overall numerical uncertainty associated with the model, run a range of scenarios, and choose those that provide a conservative estimate of the baseline (lowest scenario) and the with policy outcome (highest scenario). • The methodology needs to include a provision to monitor policy implementation. If the policy is fully or partially discontinued, the with policy and baseline scenario need to become the same and crediting needs to stop. • The methodology should allow for digital MRV, where possible, provided that it can show higher robustness than traditional MRV. • When the methodology allows for modelling to estimate mitigation outcomes, it should include requirements for covering all critical parameters and credibly attributing the estimated mitigation outcomes between the proposed policy, other policies and the influence of external factors (e.g., changes in overall economic conditions, or behavioural dynamics), as well as requirements for the model's transparency and replicability by an independent third party.

Recommendations for PACM alignment – Monitoring, Reporting and Verification (MRV)

- Modelling should be underpinned by a robust theory of change that establishes a logical causal pathway from the implementation of a policy to its anticipated mitigation impact.
- Modelling should be based on robust data and research, including ex post values for parameters that can be monitored (e.g., electricity use or EV adoption rate) and conservative and up-to-date values for key parameters that are not monitored (e.g., price elasticity of electricity demand).

Case studies

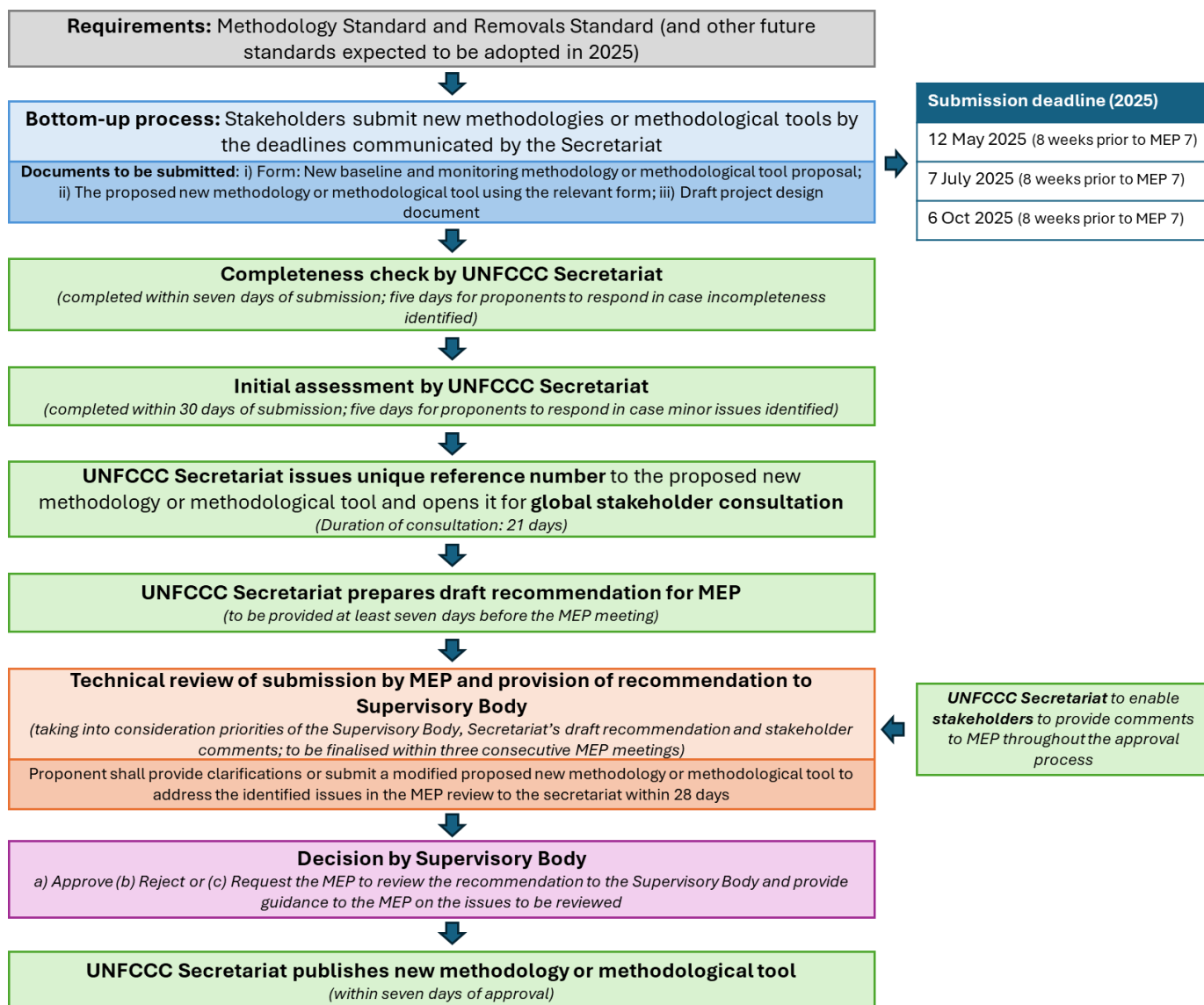
- **Fossil fuel subsidy removal:** Justify key parameters such as price elasticities, establish a confidence interval for them and specify that the conservative end of the confidence interval is to be chosen. Publish all assumptions feeding the model and equations and explain why they are conservative. Note that various data (energy consumption, electricity generation, demographics, GDP etc.) will only be available after 1-2 years. The methodology needs to clearly specify the vintages of data. Run the model with the levels of price elasticity in line with the lower end of the 95% confidence interval.
- **EV tariff reduction:** Develop a detailed MRV framework that includes procedures for data collection, and transparency measures. The role of grid emission factors is crucial to determine emissions and emission reductions under the policy. Increased electricity demand for transport could increase the carbon intensity of the power supply as more peaking power plants could be required. Actual emission reductions should be calculated ex-post, ideally based on actual data from each EV using digital MRV (i.e. collection of operational data from the battery, i.e. kWh consumed, kWh used to recharge the battery, distance driven, speed, etc.), where feasible, as this increases accuracy of the estimates as the exact number of functioning vehicles, actual electricity consumption and distance travelled are used. This digital MRV is already common practice for e-vehicle providers. Gather actual prices for internal combustion engine vehicles and EVs from vehicle dealers of producers, EV adoption rates in LDC control group need to be taken from global databases of reputable international institutions. Include procedures to mandate the use of the latest efficiency or emission standard applicable to internal combustion engine vehicles in the host country for the baseline emissions.

4. Methodology approval process under PACM

In March 2024, the Supervisory Body adopted the procedure for development, revision and clarification of methodologies and methodological tools (UNFCCC 2024c). The procedure is applicable to all “bottom-up” (i.e., initiated by activity participants, coordinating/managing entities of a planned programme of activity (PoA), host Parties, designated operational entities or any other stakeholder) or “top-down” (i.e., initiated by the Supervisory Body, based on inputs from the MEP) cases for the development, revision and clarification of methodologies and methodological tools. This section focuses on the process for the development of new methodology and methodological tools.

4.1. Bottom-up process

Figure 1: Bottom-up development of new methodology or methodological tool²

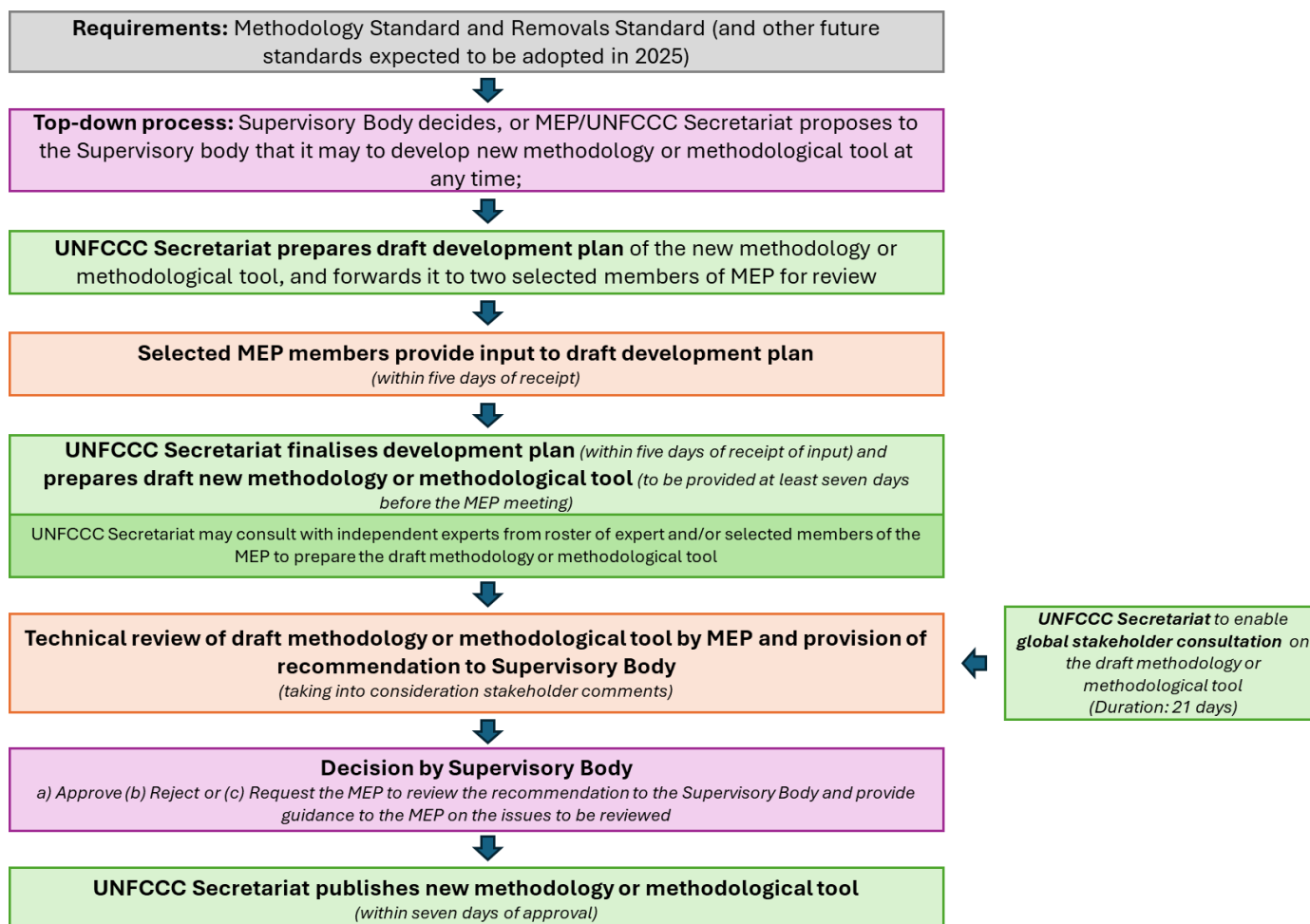


Source: Authors, derived from UNFCCC (2024c)

² Relevant documents that must be submitted by a proponent in a bottom-up process can be found [here](#).

4.2. Top-down process

Figure 2: Top-down development of new methodology or methodological tool



Source: Authors, derived from UNFCCC (2024c)

5. Concluding remarks

This study has explored the application of the PACM requirements as per June 2025 to policy crediting and provides general recommendations for different policy types. We acknowledge that their practical application can be challenging, given the diverse and dynamic circumstances that influence policy-making. The development of methodological approaches is a learning-by-doing process that can include top-down and bottom-up efforts, based on the existing PACM requirements for projects and potentially also innovative approaches specifically for policies. Regarding top-down efforts, the Supervisory Body has a key role in providing guidance on how key PACM requirements, such as those relating to prior consideration and investment analysis, should apply to policy crediting. In parallel, bottom-up piloting and case studies can facilitate the design

and road-testing of methodological approaches for specific policy types and circumstances, and identify challenges, opportunities and needs for innovation.

We recommend a research programme on policy crediting, which could develop methodological approaches for specific policy types and (hypothetical/real-life) case studies, drawing on existing PACM requirements as well as developing new and innovative approaches specifically for policies. Policy benchmarking is one potential area of innovation that warrants further research. This could entail, for example, a standardised approach to setting a carbon price threshold, above which carbon pricing policies could earn credits (Michaelowa and Keßler 2024). Modelling is another key area for further research, including options for the credible application of error and uncertainty analysis and advanced statistical methods to policy crediting. Other potential research topics include the crediting of policy packages, allowing transitional nested approaches (co-existence of project and policy-level crediting) and policy type-specific leakage risks.

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