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New Paths to Policy Crediting?

Challenges and Opportunities of Policy-based Cooperation under Article 6 of the Paris Agreement

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Summary

With the adoption of Article 6 of the Paris Agreement, former debates about generating carbon credits on the basis of national policies have resurged. National policies have not been eligible as project activities under the Kyoto Protocol's flexible mechanisms. The Paris Agreement opens the possibility for such policy crediting but also provides an entirely new context: Universal participation, ambitious long-term targets and nationally defined contributions (NDCs) that are to be made more ambitious over time. As this paper shows, these changes in the framework conditions add an additional layer of complexity to policy-based cooperation.

The authors explore the potential for policy-based cooperation by first briefly presenting the regulatory basis provided by the Paris Agreement before outlining a prototype for policy-based cooperation and its key challenges. These are explored in greater detail by analysing the applicability of three policy instruments: Renewable energy feed-in tariffs, energy efficiency (white) certificates trading schemes, and building codes combined with funding instruments.

The analysis finds that policy-based cooperation is associated with significant challenges. Ensuring the additionality of policies was found to be particularly challenging given the strong co-benefits of many policies and taking into account that the Paris Agreement requires Parties to raise their ambition over time, limiting the scope for additional policies. At the same time, there is practical evidence showing that countries' progress in implementing climate policies is insufficient, despite there being significant no-regret options.

This shows that there is a need for external support, which could be provided through Article 6. Alternatively, it could be provided as public climate finance, which would pose fewer accounting challenges. In any case, such support should be temporary and only target the initial phase of introducing policies or increasing their ambition level. Support should then be phased-out and the mitigation measures transferred under the domestic responsibility of the host country.

The authors also suggest exploring input-based transfers, where the amount of ITMOs to be transferred would be determined on the basis of the support provided, not on the basis of the results achieved. Such direct government-to-government transfers would allow focus to be placed on the ambition level of NDCs as a key determinant of ensuring the environmental integrity of cooperation. It might also have the potential to better align the support provided under Article 6 with climate finance contributions. In conjunction, both these support measures could, in a stepwise approach, place emission sources and the respective mitigation actions under the responsibility of the host country.

1 Introduction

Article 6 of Paris Agreement allows Parties to cooperate internationally in achieving their nationally determined contributions (NDCs). In contrast to the mechanisms of the Kyoto Protocol, cooperation under Article 6 may be based not only on projects and programmes, but also on national policies. This would provide the potential to achieve emission reductions at scale while also supporting countries in implementing transformative policies.

While expectations on such forms of scaled-up market-based cooperation are high, so are the concerns: The experience gained with project-based crediting under the Kyoto Protocol's Clean Development Mechanism and Joint Implementation are mixed and policy-based cooperation is still largely uncharted territory.

The objective of the paper is to fill this void by sketching out how market-based cooperation under Article 6 (6.2 or 6.4) could be used to co-finance and support national mitigation policies. This is to provide insights into which kinds of instruments are best-suited for policy-based activities in the Article 6 context and how cooperation could function.

This paper therefore first looks at the framework conditions for market-based cooperation provided by the Paris Agreement. It then outlines the key steps of prototypical policy-based cooperation under Article 6 before delving into some of the key challenges. In a next step, the paper analyses three different policies and explores how cooperation could look like: It first looks at how, as one of the most successful policies in fostering the deployment of renewables, renewable energy feed-in tariffs could be used for cooperation under Article 6.

Moving on, the paper then looks at energy efficiency (white) certificates trading schemes in order to explore linking as a specific policy-based form of cooperation under Article 6. Finally, with energy efficiency (EE) measures in buildings holding vast, yet largely unexploited mitigation potential, the paper analyses how building codes that are combined with a funding instrument could be used as a basis for Article 6 cooperation.

In the analysis of each of these instruments, we explore how such a cooperation activity could look like and zoom into specific issues such as additionality demonstration and baseline setting. Following these analyses, the paper discusses the main findings and provides some concluding remarks on the potential future role of policy-based cooperation under the Paris Agreement.

2 Framework conditions for policy-based cooperation

2.1 From Kyoto to Paris

Until now, crediting of mitigation activities has been limited to individual projects or programmes while crediting of policies was excluded. Under the Clean Development Mechanism (CDM), the question of whether to allow crediting of policies was a point of contention at a very early stage (Samaniago and Figueres 2002; Sterk and Wittneben 2005). At its meeting in November 2005, the CDM Executive Board could not resolve the issue and forwarded it to the CMP (UNFCCC 2005, para 22), who decided that "a local / regional / national policy cannot be considered as a clean development mechanisms project activity" (Decision 7/CMP.1, para 20, UNFCCC 2006).

The debate about crediting national policies resurged with the introduction of "nationally appropriate mitigation actions" (NAMAs) – a concept that was introduced with the Bali Action Plan in 2007 to accommodate the fact that developing countries were not willing to engage in the same kind of mitigation commitments as developed countries. NAMAs are to be implemented by developing countries in the "context of sustainable development, supported and enabled by technology, financing and capacity-building, in a measurable, reportable and verifiable manner" (Decision 1.CP13, para 1 (b)(ii), UNFCCC 2008). Soon proposals were put on the table that suggested that NAMAs could be financed through crediting. An early proponent of this approach was the Republic of Korea with its proposal to incentivise NAMAs by awarding carbon credits (Republic of Korea 2008).

This and other proposals on policy crediting also found their way into the debate about the up-scaling of the CDM and the development of new market mechanisms (Sterk et al. 2015). Discussions about reforming the CDM and installing new mechanisms with a reach going beyond individual projects were held against the background of the CDM's limited success in inducing a broader sectoral change in its host countries. Developing and testing sectoral approaches was hence also one of the recommendations of the CDM Policy Dialogue, a discussion process on the future of the CDM initiated by the CDM Executive Board (CDM Policy Dialogue 2012).

These debates can inform our deliberation about policy-based cooperation under Article 6 of the Paris Agreement. However, climate policy-making after 2020 will take place under circumstances that deviate significantly from the pre-Paris situation.

First: Universal participation. All Parties will have to prepare and communicate NDCs they intend to achieve and implement domestic mitigation measures aimed at achieving those NDCs (Decision 1/CP.21, Annex, Article 4.2 UNFCCC 2016). This clearly limits the uncapped environment, historically the largest source of mitigation options for crediting activities.

Second: Ambition raising. Parties are required to increase the ambition level of their nationally determined contributions (Decision

1/CP.21, Annex, Article 4.3 UNFCCC 2016) and their mitigation actions.

Third: Ambitious global long-term temperature goals that require transformational activities to be implemented (Decision 1/CP.21, Annex, Article 2 UNFCCC 2016). In the context of NAMA crediting, critics maintained that the focus on direct and short-term GHG reductions inherent to market-based approaches could be incompatible with the intended transformative nature of NAMAs (Röser and de Vit 2012).

These changes in the framework conditions add an additional layer of complexity to policy-based cooperation and make it more difficult to address some of the key challenges that were already left unanswered in previous debate. Before focusing on these challenges, we will in the following look at how policy-based cooperation could look like under Article 6.

2.2 Article 6 basics and rulebook assumptions

Article 6.2 of the Paris Agreement allows Parties to cooperate internationally in achieving their nationally determined contributions by exchanging "internationally transferred mitigation outcomes" (ITMOs). The Paris Agreement does not envisage international governance overseeing these transfers but requires Parties to adhere to some overarching principles (ensure environmental integrity and transparency, promote sustainable development, avoid double counting) and to be consistent with "guidance" adopted by the CPA.

Article 6.4 establishes a "mechanism to contribute to the mitigation of greenhouse gas emissions and support sustainable development". This mechanism, which will be supervised by an international body, is to generate emission reductions that can be used by Parties other than the originating Party to fulfil their nationally determined contributions.

However, some important provisions are still to be fleshed out by the negotiators in order to find their way into the Paris rulebook. Against this background and in order to allow for a discussion of how policy-based cooperation could look like, some assumptions on outstanding issues to be regulated by the Paris rulebook will be made.

Relationship between Article 6.2 and Article 6.4: In our view, Article 6.2 could serve as an overarching accounting framework which could also be used for transfers of mitigation outcomes generated under Article 6.4. Since it is still unclear whether the Article 6.4 mechanism will issue some kind of certificates or units, we will use the term ITMO for any mitigation outcomes generated under Article 6, both the mechanism under Article 6.4 and Article 6.2, that are internationally transferred.

A question closely related to this is the *nature of ITMOs*. To allow for maximum fungibility, we will assume that ITMOs will be defined in terms of CO_2e only. Another point is the origin of ITMOs: We assume that ITMOs can be generated within and outside the scope of a Party's NDC.

A particular point of contention is the potential *eligibility of NDCs*: In light of the challenges associated with non-GHG targets, we will in the following assume that eligibility of using Article 6 is limited to Parties that have adopted a quantified NDC expressed in terms of CO_2e, be it a multi-year or a single year target.

In terms of accounting we expect that originating Parties will have to make corresponding adjustments for ITMOs that are used against the investor Party's NDC. Corresponding adjustments can either be made by ad-

justing the NDC target (target-based accounting) or the emissions (emissions-based accounting) (see: OECD and IEA 2017).

2.3 Forms of policy-based cooperation under Article 6

So how do the basics provided by Article 6 relate to policy-based cooperation and how could such cooperation look like under the Paris Agreement? While the export of ITMOs does not necessarily require financial flows and transfers, it can be expected to involve some kind of conditionality, usually in the form of financial support. Different forms of cooperation can be envisaged, including simple government-to-government transfers as well as some sort of activity-based crediting following the pattern known from the Kyoto Protocol. These are, however, not part of this study, which focuses purely on policy-based activities. For the sake of simplicity we assume that only two countries are involved in the cooperation and that emission reductions flow only in one direction (from Party A to B), while funds flow in the opposite direction.

2.3.1 Policy crediting

One form of policy-based cooperation under Article 6 could be bilateral policy support: Party A assists Party B in introducing and implementing a national climate policy instrument by providing financial assistance. In exchange for the support provided, Party A receives (a portion of) the emission reductions achieved by the national climate policy of Party B, which it can use for NDC attainment (offsetting), ambition raising or for climate finance. While similar to government-to-government transfers, the emission reductions transferred are contingent on the results of the specific policy. Policy crediting is also possible if the policy has already been introduced: In this case, Party A assists Party B in increasing the ambition of the policy concerned.

2.3.2 Policy linking

A second form of policy-based cooperation is (full or partial) linking of national climate policies. Under this scenario, the national policy instrument of Party B is linked to that of Party A. Entities (companies, installations) covered by the national climate policy of Party A can use emission reductions generated through the climate policy of Party B in exchange for financial means. Each policy contributes to achieving the NDC of its respective Party, which is to contribute to the achievement of the Paris Agreement targets.

2.4 Prototypical policy-based cooperation

Based on the project cycle of market-based mechanisms under the Kyoto Protocol and work undertaken by WRI (Rich et al. 2014), we propose a prototypical step-wise process for policy-based cooperation (see Table 1 below). The cooperation activities can be divided into 5 phases and 15 steps.

Phases		Steps		Generic description
1	Design	1	Definition and delimitation of the policy intervention and its effects	In this first step, the host party and the investor party define the policy that will be subject to the cooperation effort. They agree on what changes will be considered an impact of the intervention (causal chain) and define the boundaries of the intervention.
		2	Additionality demonstration	The host Party demonstrates that the policy instrument would not have been introduced/implemented without the cooperation under Article 6.
		3	Definition of baseline scenario and emissions	The host Party defines what the baseline scenario is and estimates the baseline emissions. The investor Party agrees a baseline as a basis for calculating emission reductions.
		4	Ex-ante estimate of mitigation impact	By comparing the ex-ante baseline with the expected effect of the policy, the ex-ante mitigation impact of the policy is estimated. The ex-ante mitigation impact could be used as a basis for the cooperation effort, for instance by linking the support provided by the investor Party to (a share of) the expected outcome.
		5	Development of the monitoring plan	The host Party and the investor Party agree on a monitoring plan.
		6	Determining the share-out of mitigation outcomes	The host Party and the investor Party define how the mitigation outcomes will be shared.
		7	Validation	Documents are validated by an independent third party.
		8	Registration	The policy-based cooperation is registered in a public (international or bilateral) or private registry.
2	Imple-ple-men-tation	9	Monitoring	The host Party must monitor the emission reduction activity impact.
3	Determination of MOs	10	Ex-post calculation of mitigation impact	Updated baseline emissions are compared with monitored emissions and adapted to account for uncertainty and undesired impacts such as rebound effects.
		11	Verification	Reports are verified by independent third entities (not the buyer).
		12	Reporting	The host Party submits verified reports to international level.
		13	Issuance	International level issues credits on the basis of verified emission reductions. This step might only be required for cooperation under Article 6.4.
4	Transfer of MOs	14	Transfer	The host Party transfers the ITMOs to the acquiring Party.
5	Use of MOs	15	Accounting	Both Parties make corresponding adjustments to their emissions or NDC target level according to the ITMOs transferred.

3 Challenges

3.1 Ensuring additionality of policies

Additionality is a concept that has been relevant in the context of international market-based cooperation from the very start as it is particularly prevalent in project-based offsetting activities under Kyoto Protocol's Clean Development Mechanism. And while the Paris Agreement is fundamentally different from the Kyoto Protocol in many respects, additionality (including in the context of policy-based cooperation) will retain its relevance for two key reasons:

First, in the context of offsetting, meaning the use of emission reductions generated abroad to achieve a mitigation target, additionality must be ensured to safeguard environmental integrity. Crediting of non-additional activities leads to an increase of global emissions if ITMOs are used for NDC attainment. Under the Paris Agreement, this risk will *partially* be addressed by the requirement to implement 'corresponding adjustments': For every ITMO transferred, the host Party will have to adjust its emissions (or its NDC). Hence, in principle, ITMOs generated by non-additional activities cannot adversely impact environmental integrity as they are backed by respective additions to the emissions of the transferring country (or by an increase of the mitigation target). In practice, however, non-additionality may undermine environmental integrity in cases where activities are not covered by an NDC at all or when they are covered by an NDC that is lacking ambition ('hot air').

Second, additionality may also be relevant in the context of climate finance, to avoid inefficient allocation of funding. Non-additionality of supported activities is problematic from an investor country perspective because funding activities that would have been implemented anyway are a waste of scarce resources. Hence, additionality must also be ensured for activities supported by public climate finance.

3.1.1 Potential approaches for ensuring additionality of policies

The CDM has developed numerous methodologies and tools to demonstrate additionality. These, however, are intended to demonstrate additionality at the level of individual projects and programmes. In the following, the applicability of some of these approaches to policies is discussed.[1]

Investment analysis

Investment analysis is the approach most commonly used under the CDM to demonstrate additionality. There are three ways to conduct the investment analysis.

In the *simple cost analysis*, project proponents show that at least one scenario is less costly. The approach is rarely applied under the CDM and is only suitable for projects that have no other revenues than the emission credits. In terms of additionality of policies, its applicability will presumably be limited to policies that do not provide benefits in addition to the mitigation outcomes – such as

[1] Other approaches are: common practice analysis, prior consideration, use of default values, performance benchmarks, penetration rates, discounting and standardised baselines.

policies targeting the reduction of industrial gases – as these policies have limited non-climate benefits.

The *investment comparison analysis* compares the economic attractiveness of the policy (without revenues from credits) with alternatives providing similar outputs or services. This approach is rarely used under the CDM (Cames et al. 2016). In the context of demonstrating the additionality of policies, investment comparison analysis could be used in cases where governments are conducting impact assessments to identify the most promising approach to achieve a predefined target. Consider, for instance, a national government that explores options to meet its future electricity demand by comparing a situation in which this demand is satisfied with fossil fuel-based energy or renewable energy. This assessment could include a simulation of policies that compares the respective investments needed. Governments could build on these impact assessments and simulations in order to demonstrate the additional need for external support. If, however, such impact assessments are not part of the ongoing policy process, the potential of using an investment comparison analysis seems limited, as it would require a cumbersome simulation of other policies.

The *benchmark analysis* is the most common form of investment analysis used under the CDM (Cames et al. 2016). It allows project proponents to show that the prospective project would not be financially viable without the revenues from CERs as it does not meet a previously defined financial benchmark. The benchmark analysis seems a promising approach for conducting an investment analysis of policies. To be robust, however, it would require the definition of these benchmarks at the international level, which could be politically cumbersome.

More generally, the applicability of the investment analysis to policies suffers from the fact that policies, even more than project activities, are not only driven by economic factors because some mitigation activities are associated with strong non-climate benefits. These co-benefits would have to be factored in when applying an investment analysis. It is disputed whether such co-benefits can be robustly quantified and monetized. Another aspect that makes it questionable to include co-benefits in the investment analysis is that it is unclear whether policymakers do actually believe in the generation of these co-benefits (see: Michaelowa and Butzengeiger 2017).

Another factor which exacerbates the application of the investment analysis to policies is that Parties are now bound to the Paris Agreement: The idea of a policy being considered additional if its costs exceed its co-benefits builds on the assumption that the host country has no genuine interest in implementing climate change mitigation measures. This assumption might (partially) hold for a CDM-like scenario in which all mitigation outcomes are exported and where the host country has no (future) obligations to mitigate climate change. Its suitability under the Paris Agreement, however, is questionable as today's mitigation activities will impact future mitigation potential. On the one hand, externally financed mitigation activities could reduce low-cost mitigation potential in the future – potential which the host countries might want to keep to achieve their own NDCs (see also: Warnecke et al. 2018). On the other hand, today's mitigation activities might create the preconditions for tapping mitigation potential at lower costs in the future, for example by creating capacities and stimulating technological learning.

As shown, an investment analysis would have to account for the non-climate impacts and the dynamic effects on future mitigation po-

tential in the host Party and is therefore associated with significant challenges.

For regulatory policies that mandate a certain efficiency level of a technology, Michaelowa and Butzengeiger (2017) suggest using payback period thresholds to assess the additionality. The payback period threshold is used as a proxy for the opposition of industrial lobby groups.

Barrier analysis

Another possibility would be to apply a barrier test, where the host Parties' governments identify barriers that prevent the introduction of the respective policy. Generally, the introduction of a policy depends on multiple factors, including a government's policy preferences and the country's political economy. *Political barriers* can be expected to play a key role. They are, however, difficult to assess and may need to be analysed policy by policy at the national level (Okubo, Hayashi, and Michaelowa 2011). By the same token, *cultural barriers* cannot be operationalized in a way that provides the basis for robust additionality assessment. *Technological barriers* might be relevant for the success of a policy – for instance, the availability of renewable energy (RE) technologies will be a precondition for a successful RE funding scheme. However, the absence of this technology does not prevent the government from introducing the policy.

Relevant technical barriers may include data availability or limited institutional capacities for the introduction and operation of a policy. Here, international support could make a key difference. This, however, raises the question of how such support could be provided through policy crediting, as it is a results-based approach were funding is contingent on the success of the policy.

NDC-based additionality testing

Under the Paris Agreement, Parties are given significant leeway in defining their NDCs. The NDCs submitted to date display great diversity: While some Parties have submitted GHG emission targets, others have adopted non-GHG targets, combined their GHG emission target with non-GHG goals or pledged mere actions (policies and measures) to mitigate climate change. One possibility would be to focus on NDCs that contain a specific action (policy) as a conditional contribution that is contingent on international support. There are, however, some significant concerns with this approach. First, there are no clear criteria to guide the decision to include a specific policy in the conditional section of the NDC. Hence, the definition of conditional policies remains an entirely political decision. Second, such an approach would provide a perverse incentive not to include specific policies in the unconditional part of the NDC. It is therefore not in line with the requirement to expand the reach and ambition level of the NDC.

3.1.2 Can additionality of policies be ensured?

As shown, ensuring the additionality of policies is extremely challenging. Schneider et al. (2014) come to the conclusion that for policy-based mechanisms, it is difficult – if not impossible – to develop objective criteria for assessing additionality. The introduction and implementation of climate policies usually depends on the political economy in the country and might in most cases be motivated by several policy objectives not directly linked to climate change mitigation. In light of these challenges, Schneider and colleagues recommend against pursuing crediting of policies (Schneider et al. 2014). While we do in principle agree with this observation, we also acknowledge the fact that Arti-

cle 6.2 gives Parties to the Paris Agreement the possibility to cooperate when achieving their NDCs. Hence, policies will presumably become the basis for such cooperation, making it relevant to ensure that cooperation is robust.

3.2 Calculating mitigation outcomes

A question closely related to the issue of additionality is how to calculate the emission reductions achieved by the instrument supported in the cooperation effort. There are no commonly agreed standards for calculating the mitigation impact of policies. While a common understanding is being fostered through recent initiatives from WRI and others, standards such as the Policy and Action Standard are not suitable for crediting of GHG reductions as they lack, among other things, detailed calculation methods and conservativeness (Rich et al. 2014). Hence, while they can provide a basis on which to work, in-depth development of methodologies is required to ensure the level of certainty needed for crediting policies.

One critical step in determining the mitigation outcomes of a policy is to define a reference (or baseline) scenario and to calculate the reference (baseline) emissions. The challenges associated with setting a robust baseline have already been discussed in the context of NAMA crediting: While critics maintain that crediting of policy-based NAMAs will be unlikely due to the difficulties in setting boundaries and baselines (Röser and de Vit 2012), Michaelowa (2013) points to the fact that the challenges are the same for assessing baselines underpinning national emissions commitments. In his view, policy crediting cannot be disregarded on the basis of this argument while at the same time allowing countries to develop their national targets based on similar assumptions (Michaelowa 2013).

Against this backdrop and in order to maintain environmental integrity and consistency, the baseline could be developed using the data, assumptions and methods that were used in the development of a Party's NDC (Broekhoff et al. 2017). This approach, however, is only sound if the processes that were used to define the Party's NDC were sufficiently robust.

Hence, what are the steps needed in developing the baseline of a policy and in calculating the baseline emissions? First, the boundaries of the baseline scenario as well as the most relevant drivers that will presumably affect emissions in the absence of the policy must be defined. As the policy instrument involved in the cooperation activity will in most cases not be the only (planned) climate policy, the mitigation impact of these other policies must be taken into account. In addition to these (planned) policies, non-policy drivers must also be taken into account. External influences on GHG levels include behavioural changes, fuel price increases and technological advancement (Rich et al. 2014). Despite there being various methodological approaches and respective tools available for use in calculating baselines (see: Broekhoff et al. 2017), uncertainties will remain. Okubo et al. conclude that it might be practically impossible or not cost-effective to take into account all external effects. They therefore suggest applying some sort of discounting if the cooperation activity is to result in credits (Okubo, Hayashi, and Michaelowa 2011).

Furthermore, baselines must be regularly updated. To ensure robust updating of baselines, the baseline factors that could impact the baseline must be monitored throughout policy implementation. In terms of governance, Michaelowa and Butzengeiger (2017)

propose that BAU projections, one of the key determinants for the calculation of baselines, should undergo an international review and update process. The applicability of such an approach, however, will presumably be limited to Article 6.4 activities, which will be overseen by a supervisory body. For cooperation activities under Article 6.2, in contrast, the Paris Agreement does not envisage international oversight.

Another approach in dealing with external effects is establishing a control area. A control area could be a country or region with similar characteristics that has not introduced that kind of policy. Comparing the development in both areas would allow factors to be identified that influence the impact of the policy. These external factors could then be used to update the baseline (Michaelowa 2013). One challenge associated with this approach is that it might be difficult to both identify a proper control area and define the key characteristics that must be consistent across both areas.

3.3 MRV of national policies

Monitoring, reporting and verification (MRV) are key processes to ensure the high quality of mitigation outcomes. As highlighted by Okubo et al. (2011), policies whose mitigation impacts are quantifiable, such as trading schemes, are generally more suitable for use in crediting because the MRV of such policies can be output-based (e.g. in tCO_2eq/year). In contrast, policies with input-based MRV systems, such as research and development support measures, are less suited to crediting (Okubo, Hayashi, and Michaelowa 2011).

In generic terms, however, MRV of national policies might be challenged by political aspects. This relates to the question of who will be tasked to monitor, report and verify the policies as well as to the question of the methodologies used in these processes. Governments might cite arguments of national sovereignty to avoid use of internationally agreed methodologies and deny non-governmental entities access to information. This is particularly relevant for cooperation under Article 6.2, which will not be overseen by an international body and where Parties will only be required to adhere to generic guidance.

However, other processes established under the Paris Agreement could provide a basis for MRVing policies that are supported under Article 6. The enhanced transparency framework established under Article 13 of the agreement requires Parties to provide information on their climate mitigation action and how that action impacts the achievement of the NDC. Similarly, the enhanced transparency framework requires developed countries to inform on the support provided. The information submitted will undergo a technical expert review. This transparency framework could be used as an anchor for integrating MRV processes used in polices supported under Article 6. In order to provide the accuracy needed for Article 6 crediting, however, methodologies must be established that ensure MRV processes are sufficiently robust.

The global stocktake (Article 14) and the committee to facilitate implementation and promote compliance (Article 15) could also provide the basis for an assessment of policies.

3.4 Determining the share out between host Party and investor Party

Cooperation under Article 6 could be used to serve different purposes: While the use of ITMOs for achieving own climate targets (off-

setting) may be one key driver for acquiring Parties to engage, such cooperation may also be used as a tool for use in disbursing (results-based) climate finance. In contrast to offsetting, here ITMOs must not be transferred to serve the purpose. Cooperation under Article 6 may further be used to increase ambition in terms of climate change mitigation (see: Kreibich 2018). Hence, while the mitigation impact of the cooperation must be clearly determined, the amount of the emission reductions to be transferred and the amount that will remain with the host Party will depend on the purpose(s) of the cooperation activity. It is therefore basically a political decision and part of the negotiations between the Parties involved in the cooperation effort. Aspects that could be taken into consideration in this process are:

- The amount of mitigation outcomes (MOs) the host Party needs to achieve its own NDC
- The amount of climate finance the investor country is willing (and/or expected) to provide
- The cooperation activity's contribution in raising ambition

4 Exploring the suitability of policy instruments

In the following, we explore three policy instruments for their suitability for use in international cooperation under Article 6.

4.1 Supporting RE Feed-in Tariffs

4.1.1 Brief description of the policy approach

Feed-in tariffs are among the most popular policies to support renewable energy deployment. With feed-in tariffs (FIT), either a guaranteed fixed remuneration (fixed payment FIT) or a price premium on whole-sale prices (premium payment FIT) is disbursed for each MWh of renewable energy fed into the grid.

Costs accrue for the feed-in payments to RE plant operators as well as for operating the FIT. These costs can, however, only be partially be financed through the sale of the renewable energy. In Germany's Renewable Energy Sources Act (EEG in German), for instance, the difference between production costs and market value – the EEG surcharge – is borne by end users from the public grid, with some large consumers being exempt from this payment.

Despite their considerable potential to foster the deployment of renewable energy, the "international funding infrastructure has historically not been flexible enough to support national FITs in a broad and programmatic way" (UNEP 2012, 6).

4.1.2 How would international cooperation work in this case?

In principle, there are two starting points for the cooperation activity. In case one, the investor Party A supports the implementing Party B in introducing an FIT scheme. It hence assists Party B in developing the institutional and technical basis for implementing the policy instrument. This initial support could be provided as climate finance without linking it to the generation of MOs at a later stage. Alternatively, the investor Party A could link this initial support to the dispatch of ITMOs later on, by signing a purchase contract with Party B. Once the system is operational, Party A contributes a share of the premium/fixed payment per MWh of renewable energy generated in Party B and receives ITMOs in return.

In case two, Party B already has an FIT in place. In this case, cooperation involves Party A increasing the ambition level of the FIT. Hence, in order to receive ITMOs, Party A contributes a share of the premium/fixed payment per MWh renewable energy generated in Party B.

4.1.3 Determining the additionality of the policy

In principle, a policy could be considered additional if its costs exceed its benefits (Michaelowa and Butzengeiger 2017). One possibility of additionality demonstration therefore is the investment test. A feed-in tariff is a specific form of a subsidy that requires

funding from the national budget if the financial burden is not to be borne by the end users. One option would be to apply the investment comparison analysis used under the CDM. The transferring Party could show that the FIT is additional by demonstrating that the introduction of the FIT or an increase of its support level is economically less attractive than an alternative policy measure that leads to the same additions of power supply. This approach is particularly well suited if the government has analysed alternatives to the FIT.

In their analysis of the Korean FIT, Okubo et al. apply the investment test to the individual entities participating in the power sector, and not to the FIT policy as such. The authors calculate the difference between the FIT and the retail electricity price as well as the difference between the electricity cost of renewable energy and that of fossil energy. The investment test is passed if both parameters show a positive value (Okubo, Hayashi, and Michaelowa 2011). In our view, however, the approach applied by Okobu et al. suffers from the fact that it is not applied to the policy instrument level.

In order to assess additionality of subsidy schemes, Michaelowa and Butzengeiger (2017) suggest calculating an implicit carbon price and then applying specific thresholds to assess their additionality, arguing that carbon price levels are proportional to the lobbying against a carbon pricing system. With a carbon price of €5 per tonne of CO_2e being politically feasible, even in emerging economies, this is used as a threshold to assess additionality, assuming that carbon pricing is not additional if the average price lies below €5 over a period of more than a year.

A study by Vivid economics calculated the implicit carbon price of policies by taking the quotient between the total costs that the policy imposes, and the number of tonnes of CO_2 saved relative to the counterfactual fossil fuel-based generation. The carbon price of the policy is then weighted by the share of national generation it applies to (Vivid Economics 2010). Hence, the implicit price of carbon is highly dependent on the costs of implementing the policy – costs which are usually only known ex-post. We do not, therefore, think this approach is suitable for use in demonstrating the additionality of the FIT scheme. The application of the investment comparison analysis, by way of contrast, appears far more suitable for use in demonstrating additionality of the FIT.

Another possibility involves applying a barrier test to the FIT. This test revolves around the question of the barriers that have prevented the government from increasing the ambition level of an existing FIT or from introducing a FIT in the first place. Depending on the type of cooperation involved, Party B either must demonstrate that the FIT could not be implemented without the cooperation activity (Case 1) or that increasing the level of the payments would not be possible without it (Case 2).

Okubo et al. (2011) apply a barrier test to the Korean FIT, arguing that the planned substitution of the Korean FIT with a Renewable Portfolio Standard (RPS) due to a shortfall of public funds made available to the FIT proves the additionality of increasing the FIT. In our view, this is problematic as the planned introduction of the RPS would also have to be taken into consideration when setting the baseline and calculating the emission reductions of the FIT, significantly reducing the mitigation outcomes.

4.1.4 How to determine emission reductions?

When determining the mitigation impact of the policy cooperation, it should be kept in mind that the increase of the tariff may not

yield a proportionate increase of renewable energy supply capacity: An analysis by the World Bank of FIT-induced wind power has shown that higher remuneration levels have not necessarily led to proportionally greater levels of capacity installation (Zhang 2013). This can be explained by the fact that higher remuneration levels will allow for the installation of RE power plants in regions that have lesser potential. Hence, the increase of supply will in most cases not be proportionate with the increase of the FIT tariff (Obergassel et al. 2017). Both aspects, however, will not affect the determination of emission reductions, which occurs ex-post.

In principle, the emission reductions resulting from the introduction of a new FIT (or the increased ambition of an existing FIT) can be calculated using the following information:

- The type and capacity of existing power plants
- The electricity generation from the newly installed renewable energy capacity
- Indirect emissions from the renewable energy operation

Attribution is an issue, however. While a FIT can be expected to support the installation of new renewable energy power generation plants, the attribution of a certain amount of power generation capacity will be difficult as some plants might even have been built without (an increase of) the FIT. Hence, other policies as well as non-policy effects must be monitored and taken into account when determining the mitigation impact of the policy, which can be challenging. Another solution in dealing with the impact of other policies is to define a control area, with similar characteristics in terms of RE potential, financing conditions, etc., but without an (increased) FIT in place.

The key indicator used to determine the emission reductions will be electricity fed into the grid, which is reported annually.

4.2 Energy Efficiency White Certificates

4.2.1 Brief description of the policy approach

A white certificates trading scheme is a market-based instrument for use in trading credits for energy efficiency improvements. It is usually combined with a regulatory instrument that places energy efficiency obligations (an energy savings quota) on specific entities thereby creating demand for the white certificates. The energy savings quota can be imposed on different types of entities, usually suppliers of energy. The obligation does not necessarily have to be limited to the electricity sector: In Italy, for instance, where the first white certificates scheme worldwide became operational in 2005, the energy efficiency obligation is not only placed on distributors of electricity but also on natural gas distribution system operators (Di Santo et al 2014). These entities are required to implement energy efficiency measures. Alternatively, they can buy certificates from other (non-obligated) entities that have implemented efficiency measures. The efficiency measures take place at the level of the final energy consumers. The efficiency gains result in the issuance of white certificates that can be used for compliance by the obligated entities.

4.2.2 How would international cooperation work in this case?

In principle, there are several ways in which white certificates trading schemes could be

used in the context of international cooperation under Article 6.

In Case 1, Party A supports Party B in establishing an energy savings quota that is combined with a white certificates trading scheme. In Case 2, Party B already has an energy savings quota in place. However, Party A could assist Party B by increasing the quota and/or by establishing the white certificates scheme on top. Case 3 consists of linking the Parties' white certificates trading schemes. Such a link could be unilateral, allowing only entities from country A to use white certificates from the system of country B. Alternatively, a bilateral link could be established, allowing obligated entities from both countries to use white certificates generated abroad. Another option (Case 4) is the direct purchase of white certificates from EE projects in country B by the government of country A.

In the following, we focus on Case 3, the linking of white certificates trading schemes, as it differs significantly from the other cases of policy-based cooperation.

Building on research conducted in the context of ETS linking (Beuermann et al. 2017), we expect that harmonizing some features of the white certificates trading systems will be required, while differences in others could be maintained. For instance, both Parties will have to align the target type of their white certificates systems: They will have to make the energy savings quota mandatory and decide whether it will be expressed in primary or secondary energy. For other design features, mutual recognition will be needed – including the cap level, the MRV system and potential penalties. Harmonisation of other features would not be needed, but aligning them could facilitate linking. This also applies to the processes for the apportion of obligations to individual entities and the sectoral scope of the system (does the system only focus on the power sector or also cover other energy products, such as gas?). Differences could be maintained for some of the other features, such as determining obligated entities and the eligibility of energy efficiency projects (technologies/activities, actors, etc.).

In principle, Article 6 could be used in linking white certificate schemes in two ways: One option is to use Article 6 for the entire linking process. In this scenario, each white certificate would have to be translated into an ITMO before being transferred from one country to the other. Alternatively, the systems could be linked independently of ITMO transfers. Here, Article 6 is only used as an accounting framework in which ITMOs are transferred ex-post, possibly at the end of an NDC cycle, to account for the net balance of the white certificates transferred.

The second option described, in which Article 6 serves as an accounting framework, seems easier to implement. This option builds on the MRV systems in both schemes that ensure that the energy savings (not necessarily the GHG mitigation effect) achieved by energy efficiency projects are equivalent regardless of the scheme in which they were generated.

In the following example, we assume that the energy efficiency project is located in Party B. Once implemented, the proponent of the energy efficiency projects obtains the amount of white certificates corresponding to the amount of energy saved (depending on the target type of the system, these can be tonnes of oil equivalent or kWh saved). The efficiency project proponent then transfers the white certificate to an obligated entity in Party A in exchange for financial means. After their transfer, the white certificates are used by the obligated entity for compliance with its individual saving obligations by submitting the required number of (imported) white certificates. Once the white certifi-

cates have been transferred to and surrendered by the buying company, the net balance of the transfers can be calculated. This net balance is then translated into CO_2e and can be accounted for using ITMOs.

4.2.3 Determining additionality of the policy

The additionality of the policy is not an issue in the context of linking white certificates schemes, as additionality is only relevant in the context of policy crediting and we assume that both systems have already been in place in advance of the cooperation activity.

There are, however, other relevant determinants of environmental integrity. These include:

- Robust MRV framework and additionality rules for energy efficiency projects that ensure a high quality of the white certificates.
- A strong enforcement system that ensures compliance by obligated entities.
- Ambition of the energy savings quota (requirements put on obligated entities).

Policy makers intending to link their own white certificates trading scheme with another will have to assess whether the two systems align in terms of these environmental integrity relevant parameters.

4.2.4 Determining emission reductions

The calculation of the emission reductions can build on the energy savings determined by the individual white certificates schemes. For the power sector, the energy savings can be translated into climate metrics (tCO_2e avoided) using the grid emissions factor (GEF). Since the reduction of the energy demand occurs in the country where the white certificate is used, the GEF of the acquiring Party must be applied.

For the conversion of energy savings other than electricity, a different approach will be required. Depending on whether the efficiency project has resulted in a reduction of gas, oil, coal or LPG, a specific conversion factor must be applied. Here again, the conversion factors of the country in which the certificates are used must be applied. This is due to the fact that the climate impact of the fuel used may vary depending on its source. The climate impact of natural gas, for instance, depends on whether it was gained through conventional drilling or through use of shale gas, with the fugitive methane emissions of the latter being significantly higher. Other factors, such as transport emissions must also be taken into account when converting the fuel reductions into CO_2e avoided.

4.3 EE in Buildings: Improved Building Codes and Funding Schemes for Energy Efficiency

4.3.1 Brief description of the policy approach

The buildings sector holds vast emission reduction potential, especially when it comes to implementing energy efficiency measures. However, there are numerous barriers – such as imperfect information, high transaction costs and split incentives – which prevent this potential from being tapped. Regulatory instruments are important tools for use in addressing barriers such as these (Intergovernmental Panel on Climate Change 2014).

Energy building codes (also known as minimum energy performance standards (MEPS)) set an upper limit for the allowed energy consumption of a building. They are intro-

duced to ban the most inefficient building concepts from the market and to ensure a minimum level of energy efficiency in the building sector. Building codes can be applied to the construction of new buildings as well as to the refurbishment of existing ones and be either prescriptive, by setting a standard for individual components, or performance-based, setting thresholds for the building as a whole. Prescriptive standards and performance-based standards can also be combined (bigEE 2018). Building codes have historically suffered from low enforcement, leading to actual savings being below projections. In addition to strong enforcement, building codes must be regularly updated to account for technological improvements (Intergovernmental Panel on Climate Change 2014).

4.3.2 How would international cooperation work in this case?

In the context of NAMA crediting, Michaelowa (2012) considers household energy efficiency measures are particularly suitable for policy-crediting. In principle, two cases can be discerned.

In a first cooperation scenario (Case one), the investor Party A is involved in the entire policy development process of Party B, providing funding and technical support in establishing the building code and setting up a funding scheme. In principle, support can be provided in all relevant processes, such as data gathering and baseline development, establishment of the national MRV system and development of a robust enforcement system to ensure compliance with the building code. Once these processes have been established, Party B can transfer (a share of) the mitigation outcomes generated by the building code and by the energy efficiency fund in exchange for funding.

In a second cooperation scenario (Case two), the cooperation activity is limited to the ITMO exchange process *after* the introduction of the building code, which Party B introduces on its own to then transfer (a share of) the certified emission reductions to Party A in exchange for financial means. The funding provided by Party A can then be used by Party B to re-finance its energy efficiency funding scheme and to bear the operational costs of the building code.

4.3.3 Determining additionality of the policy

Depending on which of the two cooperation scenarios applies, additionality must either be demonstrated for the entire policy or only for the additional mitigation outcomes generated through the external funding provided during the operation of the scheme.

Demonstrating the additionality of the entire policy is particularly challenging, as energy buildings codes as regulatory instruments generally address mitigation options that would be profitable but are not adopted due to other barriers, such as incentive problems or lack of information. This is particularly valid for energy efficiency regulations, which are associated with significant non-climate benefits and are therefore also referred to as "no-regret" mitigation options. Hence, an investment analysis is not feasible in demonstrating additionality. In order to determine the additionality of the policy, Michaelowa and Butzengeiger (2017) suggest requiring demonstration of "real barriers", such as limited access to finance. Here, a barrier analysis could be used to analyse the country-specific barriers that have prevented the government from introducing a building code. In addition to economic barriers, Parties could highlight specific technical barriers such as lack of high quality data on buildings' energy consump-

tion. The cooperation activity would then have to address these specific barriers.

For the second cooperation scenario, which is limited to the financial support of the energy efficiency fund during the implementation phase of the building code, the implementing Party would have to demonstrate that an increase in the funding would not be possible without external assistance.

4.3.4 Determining emission reductions

Determining the emission reductions resulting from the cooperation activity involves several steps. First, a baseline scenario must be developed that describes the energy consumption without the building code and the fund being in place. During the operation of the building code, not only must the energy consumption be monitored, but also potential distorting effects such as rebound effects. In order to calculate the energy savings, the energy consumed during the operation of the building code and the fund must be compared with the energy consumption in the (updated) baseline scenario. The energy savings can then be translated into a climate metric using the grid emission factor for electricity savings and national emissions factors for non-electric heat savings.

5 Discussion and Conclusions

In order to make a significant contribution to climate change mitigation, international market-based cooperation must be scaled up, going beyond the project-based approach used with the Kyoto mechanisms. Building on the experience gained with the programmatic approach under the CDM and JI, moving to policy-based cooperation seems the logical next step.

Applying the concepts known from the project-based Kyoto world to **policy-based cooperation is associated with several challenges**. Among these, ensuring **additionality** of policies has been identified as the key challenge. The problem with testing the additionality of policies is that relying on the simple assumption of profit-maximizing agents is even more difficult for governments than for private sector market participants. From a static perspective, policy-based crediting could focus on mitigation potentials that are too costly and provide only limited non-climate benefits to the host country, so that they will not be targeted by domestic efforts. This, however, changes with the dynamic perspective introduced with the Paris Agreement: A host country could decide to implement a policy targeting costly mitigation options if it expects that this will significantly reduce domestic mitigation costs in the future or lead to large co-benefits in the long run.

From this point of view, most climate policies are no-regret options and their implementation should, in principle, be in the interest of the host country. In practice, however, technological, capacity-related and other barriers prevent countries from introducing and properly implementing these policies. Hence, from a practical perspective, there is a need for external support to be provided and policy-based cooperation under Article 6 could make an important contribution in overcoming these practical challenges.

Other challenges specific to policy-based cooperation are technical difficulties in robustly determining the mitigation outcomes and attributing these to an individual policy. In political terms, finding an agreement on how to share these MOs between the host and the investor Party and agreeing on how the policy will be monitored, reported and verified can be expected to be particularly difficult.

The ambiguity concerning the additionality of policies and the determination of mitigation outcomes could be addressed by the following options that help reduce the risk of adverse environmental integrity impacts.

First, **Article 6 support should be limited and target only the initial phase** of introducing policies or increasing their ambition level. After this initial phase, the external support should be phased-out and mitigation measures transferred to the domestic responsibility of the host country.

Second, the mitigation outcomes generated through policy-based cooperation under **Article 6 should (at least partially) be used for climate finance** reasons, while use for NDC attainment should be limited. Combining climate finance with carbon finance could partially mitigate some of the impacts related to the challenges of additionality determina-

tion and robust determination of mitigation outcomes.

Furthermore, **alternative approaches in using Article 6 should be explored**. The challenges in robustly determining the additionality of policies as well as the difficulties in properly determining their mitigation outcomes highlight the limitations of the current results-based approach while pointing to the benefits of alternatives.

Direct government to government transfers might be much more straightforward, allowing ITMOs to be transferred on the basis of the funding provided (input-based). As long as the NDCs of the Parties involved are robust enough and their ambition levels sufficiently high, this could be much more pragmatic. Together with more traditional forms of bi- and multilateral climate finance, these Article 6 transfers could assist the host Party in tapping mitigation potentials that cannot be targeted through unilaterally funded climate action.

Further research would be needed to explore how these two forms of external support, more traditional forms of climate finance and Article 6, relate to each other and how they could be designed to maximize synergies while avoiding duplications. More broadly, clarifying the relationship between Article 6 and climate finance can be expected to also provide relevant insights into the future of policy-based approaches.

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