

The background of the entire page is an aerial photograph of a large circular industrial facility, possibly a power plant or a large-scale research facility. The facility is surrounded by a vast field of solar panels, which are arranged in a grid pattern. The solar panels are tilted at an angle, creating a repeating pattern of light and dark squares. The industrial facility itself is a large, circular structure with various components, including a central circular area with a grid of smaller circular elements, and several large, rectangular structures. The overall image has a high-contrast, geometric feel.

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## Sharing Mitigation Outcomes

How should climate benefits  
under Article 6 be distributed?

Nicolas Kreibich and Juliane Schell





**Wuppertal  
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# **Sharing mitigation outcomes:** How should climate benefits under Article 6 be distributed?

**Nicolas Kreibich and Juliane Schell**

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# Summary

With the adoption of the Paris Agreement in 2015 and the Article 6 rulebook agreed in Glasgow, the question about how to adequately distribute the mitigation outcomes of carbon crediting activities has gained increasing relevance.

This policy paper explores this question by first deriving different sharing approaches from literature. We **identify six sharing approaches** that could be used by Parties when cooperating under Article 6:

- Crediting baseline as an overarching sharing approach
- Technological sharing
- Temporal sharing
- Policy instrument-based sharing
- Geographical sharing
- Input-based sharing according to financial contribution

In a second step, we look into different Article 6 piloting activities to explore whether and how the different sharing approaches identified are being implemented in practice. The analysis shows that **Parties are already applying and combining some of these sharing approaches** in practice. The analysis also allowed to identify relevant differences. Switzerland for instance uses the crediting baseline as a tool to combine several sharing approaches by integrating technological, temporal and policy aspects. Some Parties such as Japan do apply a generalized quantitative sharing approach that determines ex-ante a certain percentage of ITMOs being allocated to one of the Parties, while others do not.

The findings further indicate that there is no one size fits all approach and that the **choice of the sharing approach should be made by considering the characteristics of the individual**

**mitigation activity.** The choice of the sharing approach and its design cannot be delinked from the broader impact of the mitigation activity. This may also include long-term climate benefits through technology transfer as well as non-climate benefits in the form of sustainable development contributions.

The findings further indicate that the choice of **the sharing approach should be considered a part of host Parties' broader Article 6 strategy.** It will be of utmost importance for host Parties to understand the implications of the different sharing approaches as these might have severe implications for NDC attainment. Since exclusively focusing on a specific sharing approach does not seem advisable, the question on how to identify a suitable sharing approach must be addressed. Possible parameters relate to the host Party and its Article 6 readiness on the one hand and the proposed Article 6 activity on the other hand.

In order to support host Parties in the selection and design of appropriate ITMO sharing approaches more **tailored capacity-building activities** are advisable. Ongoing as well as future Article 6 capacity building initiatives will have to explore the support needed for Parties to deal with the complexity of ITMO sharing and how they can integrate sharing approaches into national governance frameworks for Article 6.

Developing an Article 6 strategy that is clear about how mitigation benefits are shared will be key for dealing with ongoing private sector initiatives, including from the voluntary carbon market. Robust sharing strategies must ensure that future mitigation activities do not only align with the interests of investors and project proponents but first and foremost serve the benefits of the host Party and its people.

# 1 Introduction

Over the last years, the question about how to adequately distribute the mitigation outcomes of carbon crediting activities has gained increasing relevance. This more recent interest contrasts with a long phase in which sharing of mitigation outcomes played a subordinate role in the operation of market-based mechanisms. This particularly holds for the world's quantitatively most successful crediting program, the Clean Development Mechanism (CDM). Operating as one of the Kyoto Protocol's flexible mechanisms, the CDM allowed for mitigation activities to be implemented in developing country Parties that did not have any international climate change mitigation obligations. Therefore, all mitigation outcomes could be exported from the host Party to the investor in the form of certified emission reductions (CERs) while sharing of mitigation outcomes was not relevant.

The situation was somewhat different for Joint Implementation (JI), the second project-based mechanism under the Kyoto Protocol that enabled mitigation projects and programs to be implemented in Parties that had committed to internationally binding mitigation targets. The emission reduction units (ERUs) generated by JI activities had to be converted from assigned amount units (AAUs) that are derived from the host Party's Kyoto commitment. Despite this conversion potentially impacting the achievement of the host Party's Kyoto commitment, sharing of MOs was generally not explicitly managed by JI host Parties but mainly addressed through methodological approaches, such as additionality testing and baseline setting. Only some Parties, like France, captured part of the rent in order to address the risk of non-additional projects adversely impacting economic efficiency (Shishlov et al., 2012). During this time, the equitable distribution of mitigation outcomes played a subordinate role

and the focus was rather on how to prevent the integrity of the Kyoto Protocol from being undermined through the sale of hot air credits (Kollmuss et al., 2015).

The situation changed gradually after the adoption of the Paris Agreement in 2015 with its universal scope and ambitious long-term targets. The principles for market-based cooperation under Article 6 of the agreement require Parties to avoid double counting of emission reductions, making the question about how to share mitigation outcomes more salient. The relevance of this topic was further stressed in the negotiations of the Article 6 rulebook, in the course of which Parties struggled to find consensus regarding the application of corresponding adjustments as a means to avoid emission reductions being counted more than once. The Article 6 rulebook agreed in Glasgow in 2021, however, does require application of corresponding adjustments to any authorized mitigation outcomes.

Sharing of mitigation outcomes therefore becomes a key question in the design of an Article 6 cooperation. This policy paper explores this question by first deriving different sharing approaches from literature. In a second step, we look into different Article 6 piloting activities to explore whether and how the different sharing approaches identified are being implemented in practice. Based on these findings, we discuss the implications of the different sharing approaches for the Article 6 strategy of host Parties and provide recommendations on how to integrate these considerations in the ongoing capacity development activities.

## 2 Background and key assumptions

### 2.1 New circumstances of market-based cooperation

After years of intense negotiations, Parties adopted the Article 6 rulebook at the Glasgow climate summit in 2021, outlining the functioning of market-based cooperation under the Paris Agreement. More specifically, Decision 3/CMA.3 specifies the rules, modalities and procedures (RMPs) of the Article 6.4 mechanism (UNFCCC, 2021b) while Decision 2/CMA.3 provides guidance for the cooperative approaches under Article 6.2 (UNFCCC, 2021a).

While both trading options under Article 6 are still in the process of development and part of ongoing negotiations between the Parties under the UNFCCC, there are several ongoing piloting activities on the ground and Parties are already developing bilateral cooperation agreements to pave the ground for the trading of carbon credits (UNDP, 2022). Thus, ongoing negotiations and practical steps do not exclude one another but should be considered to be parallel processes that mutually influence and reinforce one another.

#### *Corresponding adjustments*

One of the most contentious issues that had prevented Parties' from adopting the rulebook was

the application of corresponding adjustments to avoid double counting of emission reductions. In particular Brazil took the view that under the Article 6.4 mechanism such adjustments should not be required for mitigation outcomes generated through activities in sectors and gases outside the NDCs (Marcu, 2021). The rules agreed in Glasgow do not allow for such a distinction but require corresponding adjustments to be applied for any ITMOs, regardless of whether they are covered by the host Party's NDC or not. The principle of applying corresponding adjustments is simple: The acquiring country deducts the amount of emissions that corresponds to the emission reductions acquired from its reported emissions while the host Party, in turn, adds the exact amount of emissions to its reported emissions balance. With the adjustment of reported emissions by Parties, double claiming as one form of double counting of emission reductions is effectively avoided.<sup>1</sup>

#### *Diversity of units*

While the application of corresponding adjustments is required for all ITMOs, not all mitigation outcomes generated under Article 6.2 must necessarily become ITMOs. Mitigation outcomes and emission reductions only become ITMOs (and trigger later the application of corresponding adjustments) if they are authorized by the host Party. Host Parties can authorize ITMOs to be

<sup>1</sup> Double claiming is one of three forms of double counting. Double issuance is when one emission reduction leads to the issuance of more than one credit that are used to comply with climate targets. Double use is when one credit is used more than once, for instance if two entities claim the

emission reductions from the same carbon credit. To address these other forms of double counting, other measures such as registries and units with unique identifier are needed. In practice, the term double counting is often used to refer to double claiming as the particularly challenging form of double counting.

used by the buyers for one of the following purposes (UNFCCC, 2021a, Annex paras 1c and 1f):

- NDC achievement – ITMOs can be used by the acquiring Party for NDC attainment.
- Other international mitigation purposes (OIMPs) – the buyer can use ITMOs to comply with obligations in international schemes outside the UNFCCC, in particular under the international civil aviation organisation (ICAO) and possibly the international maritime organization (IMO).
- Other purposes – ITMOs can be used for purposes that are not specified further. This is generally understood to refer to corporate offsetting on the voluntary carbon market.

Parties have further decided that the Article 6.4 mechanism can issue so-called mitigation contribution A6.4ERs. These non-authorized credits will by nature not be backed by a corresponding adjustment. These non-adjusted credits may be used, inter alia, for “results-based climate finance [...] for the purpose of contributing to the reduction of emission levels in the host Party” (Decision, Annex, para 29b).

#### *Changed circumstances for host Parties to engage in carbon crediting*

Under the Paris Agreement, all Parties must communicate nationally determined contributions (NDCs) and pursue domestic policies with the aim of achieving the objectives of their NDCs (Art. 4.2 PA). This together with the requirement for Parties to apply corresponding adjustments for transferred ITMOs makes it more complex for host Parties to engage in market-based activities: They have to find a balance between the fulfilment of their NDC on the one and the authorization of ITMOs on the other hand. They must manage the risk of overselling, which is understood as a situation in which the sale of ITMOs makes it more difficult for host Parties to achieve their NDC.

At the same time, limiting the amount of ITMOs to be transferred will result in higher prices for the investors. The acquiring party could therefore be seen as an investor who wants to maximize the amount of ITMOs the activity generates. To reduce transaction costs, the acquiring party can be assumed to have an interest in the development of standard procedures for sharing ITMOs.

Thus, while both actors share a general interest in trading high quality ITMOs, acquiring parties strive to maximize ITMOs, while the host Party is assumed to be restricted in its ability to authorize ITMOs due to its commitments under the Paris Agreement. Trading partners will therefore have to agree upon ways of sharing ITMOs adequately.

An additional aspect that must be taken into consideration is the opportunity for Parties is to contribute to “overall mitigation in global emissions” (OMGE) by cancelling a share of the ITMOs generated. While OMGE is a requirement under Article 6.4, it is strongly encouraged under Article 6.2 (UNFCCC, 2021a, Annex, para 39).

## 2.2 Assets to be shared

Another relevant question relates to the assets that can be shared among those participating in the activity. Climate change mitigation activities can generate a broad range of benefits, including but not limited to climate change mitigation. In the context of market-based cooperation and carbon markets, the benefits of projects are often integrated into the broader framework of the 17 Sustainable Development Goals (SDGs) adopted by the UN under the 2030 Agenda for Sustainable Development. The Gold Standard, for instance, certifies the SDG impacts of its projects with the impact registry including information on the specific SDG to which each individual project contributed (Gold Standard, 2022b). For some of its SDG impacts, the Gold Standards even issues specific certificates (Gold Standard, 2022a). The role of non-climate impacts has also been strengthened



under Article 6 and its assessment will be a mandatory and integrated in the project cycle (UNFCCC 2023).

While this could in principle also allow participants to make claims on the basis of some of these impacts, we will in this paper focus on the mitigation impacts that can be shared. Here, three different layers must be differentiated:

- The ITMOs that are authorized by the host Party for a specific use.
- The MOs that the activity generates.
- The mitigation impact of the activity.

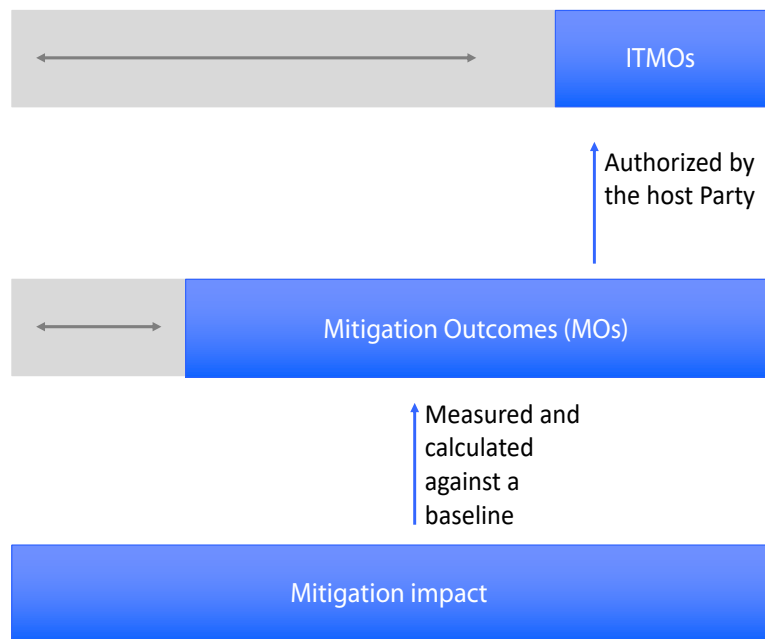


Figure 1: Three different layers of mitigation benefits

As can be seen from Figure 1, the mitigation impact of the activity provides the basis for all mitigation-related assets that can be shared. This mitigation impact may not be fully quantified (or even quantifiable). The mitigation impact that is monitored and calculated against a baseline can be expressed in form of mitigation outcomes (MOs). MOs that are authorized by the host Party for one of the three purposes outlined above (NDC achievement, international mitigation purposes, other purposes) become ITMOs.

In theory, the total amount of ITMOs could correspond with the amount of MOs and with the mitigation impact of the activity, as indicated by the grey arrows in the figure: MOs (second layer) could be equivalent to the mitigation impact (first layer), if methodologies capture the entirety of the activities' mitigation impact. This, however, is technically challenging. At the same time, a situation that should be avoided by any means as it may adversely impact environmental integrity or lead to overselling is overcrediting: Overcrediting refers to a situation in which the amount of MOs calculated is higher than the actual mitigation impact of the activity. We will in the following

assume that the MOs have been measured and calculated using robust methodologies that do not lead to overcrediting.

Whether the volumes of the second (MOs) and the third layer (ITMOs) are equivalent will depend on the host Party's decision regarding ITMO authorization. This policy decision will in turn also be influenced by the design of the mitigation activity and how MOs are quantified. As will be shown in the following, decisions on sharing the mitigation impact will affect both levels.

## 2.3 Modes of sharing

So how might the different layers of mitigation benefits generated by a mitigation activity be used by the participants of the cooperative approach? Figure 2 below shows how the activity's mitigation impact (its MOs and ITMOs) either flows to the host Party or the acquiring Party.

An important differentiation is made between the actual mitigation impact, MOs and ITMOs

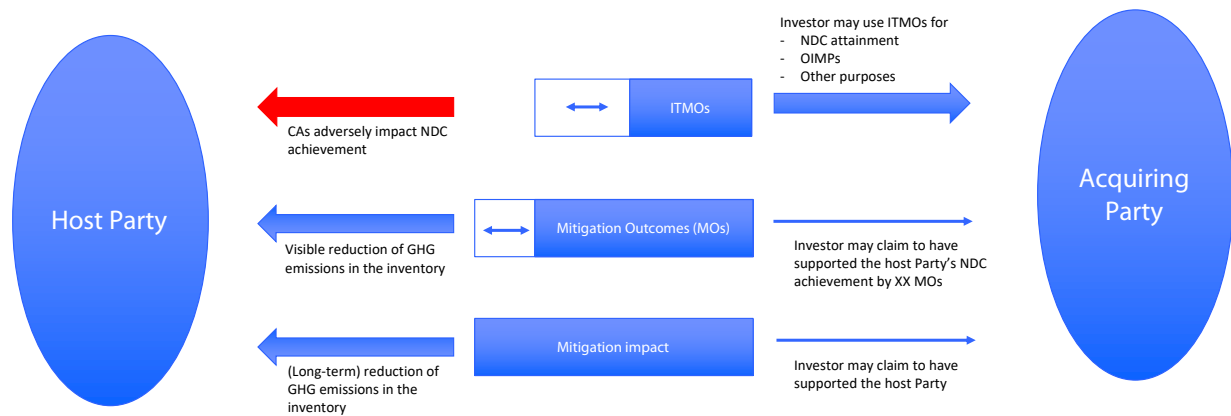


Figure 2: Modes of sharing

(bold arrow) and the claims that can be made on the basis of these flows (fine arrow).

Sharing agreements can be expected to be influenced by the relationship between the different uses and the three layers. A key question from a host Party perspective is therefore: Do the benefits in terms of MOs and mitigation impact make up for the "costs" resulting as a consequence from the application of CAs?

An example: if the mitigation activity does provide a meaningful contribution to the reduction of GHG emissions in the long-term, the host Party can be expected to be more willing to authorize ITMOs and accept the adverse impact the corresponding adjustments have on NDC attainment.

# 3 Mapping different sharing approaches

The question of how to share the mitigation benefits of an activity has been explored in the literature from different perspectives.

One aspect that academics have been focusing on and which is linked to the question of MO sharing is the risk that host Parties could compromise achieving their NDC due to the overselling mitigation outcomes. Spalding-Fecher et al. (2020) identify different strategies to avoid such overselling, with one category consisting of strategies to share the MOs that are generated by the cooperative mitigation actions. The authors describe three strategies (Spalding-Fecher et al., 2020):

One strategy is the simple division of mitigation outcomes, allowing the host Party to set a fixed share of MOs to be shared ex-ante. The share might vary by sector or activity type. The key challenge associated with this approach is to define the ‘right’ share that is sufficiently high to avoid overselling while not making the activity unattractive for the investor.

Another sharing strategy that would limit the overselling risk is limiting the crediting periods of cooperative approaches, thereby reducing the time during which a mitigation activity can generate transferrable mitigation outcomes. Similar to the ex-ante division of mitigation outcomes, the challenges of this approach are to determine the length that allows to limit the overselling risk while still being sufficiently large to attract carbon finance.

The third strategy proposed by Spalding-Fecher et al. (2020) is the use of conservative baselines. Conservative baselines limit the overall amount of mitigation outcomes that a cooperative approach can generate, allowing the host Party to

keep the remainder of the activity’s mitigation impact for NDC attainment, thereby reducing the risk of overselling.

Sharing of mitigation outcomes has also been subject to another strand of literature focused on how climate finance and carbon finance could be blended in order to jointly support one mitigation activity. Here, the focus is put on the attribution of the mitigation impact to the respective streams of support. Fuessler et al. (2019) identify and compare three different attribution approaches:

- all to climate finance;
- all to carbon markets; and
- proportional attribution.

They find that proportional attribution is preferable from an environmental integrity and economic efficiency perspective, and propose such proportional attribution to be based on grant equivalents. The mitigation outcomes attributed to climate finance would hence be calculated on the basis of the incremental cost of mitigation.

With Article 6 moving from the conceptual phase towards implementation, sharing of mitigation outcomes has also become a relevant aspect of the literature that reviews the current status of Article 6 pilots.

The following section presents a typology of hypothetical sharing approaches that partially draws from the existing literature.

### 3.1 Crediting baselines as a sharing mode

The baseline of a crediting program determines the total amount of credits that can be issued. Baseline setting therefore is a key step in the design of a crediting mechanism. To safeguard environmental integrity, baselines must at least be established at levels that ensure that only reductions below business-as-usual (BAU) emissions levels will be credited (Broekhoff, 2012).

However, baselines could (and should) be set at lower levels in order to be aligned with other policy targets. Parameters could be derived from the national climate policy context such as the Party's NDC or its long-term low greenhouse gas emission development strategies (LT-LTS), that all Parties are to develop according to Art. 4.19 of the Paris Agreement. Additional parameters could be included in order to align baselines with the objectives of the Paris Agreement (for a discussion on aligning baselines with the Paris Agreement see: Michaelowa et al., 2021; Hermwille, 2020).

The baseline setting approach will also impact the distribution of MOs among the Parties participating in the program. Ambitious baselines will generally reduce the total amount of transferable MOs, with the remainder of the emission reductions contributing to the host Party's NDC. If baselines are set at less ambitious levels, the total volume of MOs is increased. As highlighted by Broekhoff et al. (2017), baselines set at less ambitious levels will require host Parties to restrict a certain share of emission reductions from being transferred or to manage transfers more actively to address the risk of overselling. Using conservative baselines could in turn also be considered a way of dealing with the risk of overselling (Spalding-Fecher et al., 2020).

### 3.2 Technological sharing

Sharing of mitigation outcomes could also be based on the technologies applied and combined in one mitigation activity. Consider a mitigation activity that combines the introduction of new technologies with project activities that are tried and tested. In the transport sector, for instance, bus rapid transit (BRT) systems were one of the most successful project types under the Clean Development Mechanism. Given the success of this project type and its diffusion, BRTs could well be introduced unilaterally by host Party governments and need for external assistance in the form of carbon finance might be limited. However, this might change if the BRT system is combined with innovative technologies that are not available in the host Party, for instance hydrogen engines. In a BRT system that introduces hydrogen-driven buses, mitigation outcomes would only be issued for those emission reductions resulting from the use of the new technology, while the remainder of the MOs achieved through the improvement of urban transport system and modal split will stay with the host Party.

### 3.3 Temporal sharing

Sharing of mitigation outcomes to the Parties involved could also change over time. Lack of seed funding is still a key challenge for the implementation of mitigation activities in many developing Parties. In order to deal with this bottleneck, acquiring Parties could provide larger amounts of funding during the initial implementation phase of the activity that would lead to a larger share of MOs being allocated to them as ITMOs in the interim. As the implementation of the activity progresses, the share of MOs being transferred as ITMOs would then be reduced over time, with an increasing share of the mitigation impact being allocated to the host Party. This gradual shift of mitigation outcomes being allocated to the host Party can be expected to align with increased



ambition levels of the host Party. Temporal sharing could also be integrated into the activity's crediting baseline: a shortened crediting period or a crediting baseline that becomes more ambitious over time could limit ITMO generation.

### 3.4 Policy instrument-based sharing

In international climate cooperation, different policy instruments are often combined within one program. Consider a cooperation program that combines a capacity building component with a practical piloting component. In theory, both components could lead to emission reductions. If the capacity building component leads to emission reductions as an outcome of successful policy transfer and learning, these indirect MOs will remain with the host Party. For the second component, by contrast, emission reductions could be authorized by the host Party and transferred as ITMOs to the acquiring Party.

### 3.5 Geographical sharing

Another option to consider is the sharing of MOs depending on the location of the mitigation activity. This option is linked to the geographical scope of national policies, which might be sub-national. In the forestry sector, for instance, some Parties define in their NDCs targets for avoided deforestation for some jurisdictions only, while the forests in neighbouring jurisdictions is not covered by the policy. A cooperative approach that assists the host Party in protecting its forest would need to take this into through sharing of MOs. The MOs achieved in the jurisdiction whose forest is covered by the policy will remain with the host Party, while those generated in the second jurisdiction could be exported to the acquiring Party in the form of ITMOs.

### 3.6 Input-based sharing according to financial contribution

The implementation of Article 6 activities usually requires contributions from both, the acquiring and the host Party. Both Parties may provide financial support that allow for the implementation of the project activity. This could also be used as a basis for sharing the mitigation benefits: Parties might agree to share mitigation outcomes according to the financial contribution Parties invested into the realization of the Article 6 activity.

## 4 Pilots and sharing

While the Article 6 negotiations proved particularly contentious and agreement was only reached in Glasgow in 2021 after years of intense debate, some future acquiring Parties have been engaging early on with partners around the world to foster implementation on the ground. This section looks at the role of sharing in the Article 6 activities supported by Switzerland, Sweden, Japan, Germany and Canada.

### 4.1 Switzerland

Switzerland committed in its NDC to reduce its emissions by at least 50 per cent by 2030 compared to 1990 levels (Switzerland, 2021). While these reductions are to be realized mainly domestically, Switzerland will also use ITMOs from cooperative approaches under Article 6. ITMOs may however also be used for other purposes, such as voluntary climate neutrality targets by private or subnational actors. For this purpose, the Swiss ministry of environment (Federal Office for the Environment - FOEN) has signed bilateral agreements with numerous partner countries,<sup>2</sup> establishing frameworks for bilateral cooperation. The actual ITMO transactions and payments will, however, take place at a subordinate level between the project developer and the buyer. The Foundation for Climate Protection and Carbon Offset (Klik) is the private sector buyer acting on behalf of motor fuel importers that are required by the Swiss CO<sub>2</sub> law to offset part of the emissions generated by the fossil motor fuels sold. Switzerland and Ghana made a major step towards implementation in December 2022, when both governments authorized the world's first Article 6 mitigation activity implemented by

UNDP to transfer ITMOs to Switzerland (Carbon Pulse, 2022).

Switzerland and its partner countries do not apply a generalized quantitative sharing approach that determines a certain percentage of ITMOs being allocated to the host Party, as such an approach could adversely impact the incentive and the capacity development effects for host Parties to identify those mitigation options that are best suited to be funded via Article 6. The sharing of the mitigation impact is instead organically built into the design of the intervention, in particular in its baseline (Klik Foundation, 2023).

The **crediting baseline** usually consists of two components: an autonomous component that is based on technological considerations and a NDC component (or domestic policy component) that takes into account the policy circumstances of project implementation. The application of the autonomous component leads to very different outcomes **depending on the technologies used**. For very innovative technologies, all emission reductions generated would translate into ITMOs. If less innovative technologies are applied, such as solar PV, the baseline is adapted to take into consideration expected uptake of the technology in the future. The **domestic policy component** factors-in the role of the technology in the domestic policy. If there is, for instance, a goal for installed capacity for solar PV, the baseline for solar PV is aligned with this policy goal. Article 6 activities implemented under the Swiss partnerships do also apply a **temporal sharing** approach. As crediting baselines are limited to the year 2030, any emission reductions accruing afterwards will contribute to the host Party NDC. This is very likely as many of the technologies applied

<sup>2</sup> The countries listed on the websites from FOEN (2022) and Klik (2022) include: Dominica, Chile, Georgia, Ghana,

Malawi, Morocco, Peru, Thailand, Senegal, Ukraine, Uruguay and Vanuatu.

can be expected to run for a much larger timeframe (Klik Foundation, 2023).

## 4.2 Sweden

With Sweden being an EU member state, it is bound by the EU NDC that is to be achieved domestically. Use of ITMOs for NDC attainment is, therefore, not an option. However, Sweden aims to become net-zero by 2045 at the latest and achieve negative emissions thereafter as part of its long-term low emissions development strategy (LT-LEDS) adopted in 2020. The goal is to be achieved by a combination of emission reductions and removals implemented domestically as well as outside the Swedish territory, including through the purchase of ITMOs (Sweden, 2020).

To evaluate the potential for cooperation under Article 6.2 with partner countries and explore how mitigation activities could be designed, the Swedish Energy Agency (SEA) has commissioned **nine virtual pilots** focusing on seven different countries (Chile, Colombia, Kenya, Mongolia, Nigeria, Philippines, Indonesia) (SEA, 2020). All pilots highlight the importance of securing projects' additionality and ensuring that the project is not part of the host Party's unconditional NDCs. The overachievement of the conditional and unconditional NDC target is thus a precondition for the generation and transfer of ITMOs (Climate Focus, 2019).

Sweden is not only exploring the technical potential of Article 6 but also advances the political cooperation with partner countries. During COP26, the SEA and Ghana signed a Memorandum of Understanding (MoU) on Article 6 cooperation (Rönnerberg, 2021). In 2022, two further bilateral agreements for cooperation under Article 6.2 followed in order to support mitigation action in Nepal (SEA, 2022a) and the Dominican Republic (SEA, 2022b). The aim of these MoUs is the establishment “of the basis for the Parties to cooperate on mutual areas of interest related to the

implementation of Article 6 of the Paris Agreement, including the development and evaluation of opportunities to generate Mitigation Outcomes that may be transacted as ITMOs” (SEA, 2022b, p. 2). These MoUs foresee on the one hand the negotiation of a binding bilateral Framework Agreement between both Parties, and on the other hand separate “Mitigation Outcome Purchase Agreements” between Sweden and the respective project developers. In addition, the SEA together with the Global Green Growth Institute (GGGI) seeks to support capacity building for Article 6 through the Mobilizing Article 6 Trading Structures (MATS) program (’t Gilde et al., 2022, p. 7).

Negotiations are being conducted at two levels: while the bilateral agreement must be closed with the host Party, the purchase agreement will be agreed with the activity proponent. The question about how to share the mitigation benefit is relevant for both processes, for instance for implementing **temporal sharing** as one of the approaches applied by Sweden: this could be achieved through shortened crediting periods or through a respective clause in the bilateral agreement with the host Party. It is this double layered structure that makes sharing of mitigation outcomes particularly challenging, as the activity proponent may want to sell residual emission reductions to a third Party instead of contributing to the host Party’s NDC (SEA, 2023).

## 4.3 Japan

The Japanese NDC foresees a reduction of GHG-emissions by 46% in 2030 compared to the level in 2013. Japan is striving to reach its NDC partly through international cooperation: „Japan aims to contribute to international emission reductions and removals at the level of a cumulative total of approximately 100 million tCO<sub>2</sub> by fiscal year 2030 through public-private collaborations. Japan will appropriately count the acquired credits to achieve its NDC” (Government of Japan,

2022, p. 9). Credits will be acquired through the Joint Crediting Mechanism (JCM) that was already established in 2013. The JCM encompasses bilateral agreements between Japan and 25 partner countries in 2022 and over 200 projects between 2013 and 2022 (GEC, 2022). The overall purpose of these projects is the reduction of greenhouse gas emissions through the diffusion of leading decarbonization technologies and infrastructure in developing countries. In return for financial support from the Japanese government, Japan acquires carbon credits generated by the supported projects to achieve its NDC (Government of Japan, 2022).

The allocation of the credits is a consultation process between the project participants under the rules of implementation for the JCM. At least fifty percent of the issued credits shall be transferred to the account of the Japanese government: “Allocation of the rest of the credits will be decided among both governments and project participants, taking into consideration their contributions to the project implementation” (*FAQ / Carbon Markets Express*, n.d.). These sharing arrangements, which are not reflected in a separate purchase agreement (’t Gilde et al., 2022), are therefore an example of **input-based sharing** according to the financial contribution of Parties. According to Greiner et al. (2020), this mostly leads to an equal sharing of mitigation outcomes between the government of Japan and the host Party.

The underlying processes are embedded in the JCMs organisational structure: Each bilateral cooperation has a Joint Committee (JC) with representatives from Japan and the respective partner country to develop the rules, guidelines, and methodologies as well as the notification of the issuance of credits. The crediting is based on a below BAU emission scenario to secure environmental integrity. After third-party entities approved by the JC submitted the verification report of a project, project participants determine the allocation of credits and request the JC

to notify the issuance of credits. If the JC decides with consensus on the issuance of the number of credits, the Government notifies the number of credits to be issued (Government of Japan, 2022), while in the latest country-specific rules for JCM implementation the partner country has to prove measures to avoid double counting (Joint Committee of the JCM-Japan and Mongolia, 2022; ’t Gilde et al., 2022).

## 4.4 Germany

With the overall objective to make Article 6 operational and build capacity in its partner countries, Germany is supporting several Article 6 piloting activities. For the time being, Germany does not intend to purchase ITMOs for compliance purposes.

One of the activities funded by the German government is the Program for reducing technical losses in the power grid (’TD-Losses’). The program aims to increase energy efficiency in the host Party grids by installing so-called Reactive Power Compensation (RPC) equipment in four African countries (Uganda, Mozambique, Zambia, Zimbabwe). To share the mitigation outcomes between the Parties involved the program applies an algorithm that differentiates the emission reductions according to their financial viability: the share of emission reductions that would have been financially viable without the Article 6 financing structure would go to the host Party, while those reductions that have only been generated due to the financial support provided would be allocated to Germany. The project applies a dynamic approach to split the emission reductions between Germany and the host Party. If the electricity tariff increases and interventions become financially viable without carbon subsidy, more MOs are being allocated to the host Party. Over time, the financing Party’s share becomes smaller while the overall volume of emission reductions becomes larger due to increased



financial attractiveness (Ahlberg & Forth, 2020; Greiner et al., 2020).

Another activity supported by the German government is the Cooling Program for Southern Africa, which supports the replacement of conventional air conditioners (ACs) with energy efficient and F-gas-free ACs in Botswana, Eswatini, Namibia and South Africa. The program works on improving the framework conditions for an AC replacement programme and will further conclude bilateral agreements to transfer ITMOs (Green Cooling Initiative, 2022). Here, MOs are shared by differentiating direct vs. indirect emission reductions: On the one hand direct emission reductions are generated through the promotion of energy-efficient refrigerants in ACs<sup>3</sup>. These direct emission reductions resulting from the technology transfer from the acquiring country to the host Party are authorized and transferred to the acquiring party. On the other hand, the project foresees the generation of indirect emission reductions through the introduction of a minimum energy performance standard for certain products (in this case ACs). This newly introduced standard leads to a reduction of electricity consumption and hence indirect emission reductions related to power generation. These emission reductions are quantified and remain as MOs in the host Party. The programme applies a policy instrument-based sharing approach (Burian & Kreibich, forthcoming).

unconditional NDC target envisages the reduction of GHG emissions per unit of GDP by 30% below 2007 levels by 2030. It is estimated that international support could lead to an increase of 35% to 45% (Greiner et al., 2019, p. 52). Canada launched a climate finance budget of \$800 Million per year starting in 2021, with \$ 7 Million to support the NDC implementation in the waste sector in Chile (Portalupi, 2018, p. 2). Canada offers financial and technical support to Chile to deploy technologies and innovative approaches to support the reduction of methane emissions in the waste sector (Greiner et al., 2019, p. 51).

On the one hand this case seems to be a rather classic case for development cooperation and climate finance as Canada's government official, Franck Portalupi states, that "Canada is taking action at home to reduce emissions and achieve our own climate targets and is committed to helping those that need it most" (Climate & Clean Air Coalition, 2021). On the other hand it is also stated that the longstanding cooperation between the two countries is also the basis for a "virtual pilot", "where the two countries simulate what it would be like to trade emissions reductions to be counted against their NDC targets in accordance with Article 6 of the Paris Agreement" (Climate & Clean Air Coalition, 2021). The case of the environmental cooperation between Canada and Chile is thus an example of a climate finance cooperation that elaborates options for actions under Article 6.

## 4.5 Canada

The environmental cooperation between Canada and Chile was already established in 1997. Since the establishment of the Paris Agreement (2015) the cooperation focuses on the implementation of Chile's NDC, especially the reduction of methane emissions in the waste sector. Chile's

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<sup>3</sup> These natural refrigerants replace conventional refrigerants which are highly potent GHGs and further contribute to depleting the ozone layer.

# 5 IT(MO) sharing and Article 6 strategies

While the paradigm shift of the Paris Agreement has put all Parties in a new situation, in particular developing country Parties that have in the past benefited from hosting carbon finance activities will now have to decide whether and how to make use of market-based cooperation under the new climate regime. With the application of corresponding adjustments being required for all authorized mitigation outcomes, the host Party governments will have to prepare for Article 6 implementation and develop strategies that ensure exports do not compromise current NDC goals but instead support long-term climate ambition (Spalding-Fecher & Marcu, 2022). The choice of the sharing approach is therefore part of this broader Article 6 readiness and strategy development process.

## 5.1 Host Party readiness and Article 6 strategy

The Article 6.2 guidance contains numerous participation requirements that Parties must meet when willing to engage under Article 6 of the Paris Agreement. However, meeting the bare minimum requirements will presumably lead to the sub-optimal outcomes when it comes to deciding on how to make use of Article 6 and whether to approve and authorize specific activities. Instead, host Parties need to have need to have a solid political, technical and institutional readiness that involves different components.

**Political readiness** to make use of Article 6 is an important starting point for developing a national Article 6 strategy. In order to find a national position towards Article 6 that has a broad basis, an

exchange process could be initiated that allows key stakeholders from the public policy (line ministries, members of parliament) as well as the private sector (civil society, companies, academia) to express their expectations (and possibly concerns) about the use of Article 6. This process could then inform the country's national position, which could be included in the country's **nationally determined contribution (NDC)**, as already in the past: A recent analysis of the 195 NDCs submitted by Parties finds that more than half of the Parties until September 2022 intend (28%) or consider (25%) to use Article 6 (Kreibich, forthcoming). However, the NDC is not only relevant as a policy document that indicates the government's intention to use Article 6. The mitigation targets contained in the NDC should also preferably be expressed in GHG metrics that align with the country's GHG inventory data and allow for robust GHG accounting.

In addition to NDCs covering the short to mid-term perspectives, potential Article 6 host Parties could benefit from having formulated national long-term strategies. Article 4.19 of the Paris Agreement calls on all Parties to formulate and communicate **long-term low emission development strategy (LT-LEDS)**. LT-LEDS will not only provide the country with a better basis on how to develop sectoral decarbonization pathways and inform short term policy planning. They further allow the host Party to identify specific sectors and technologies that could benefit from international support through Article 6 (Kachi et al., 2020; Spalding-Fecher et al., 2020).

In terms of **technical readiness**, a **national greenhouse gas inventory** that builds on recent and accurate data with high granularity allows the host

Party to better understand the impacts a carbon market activity might have on the NDC implementation process. The visibility of carbon market activities in inventories is of key relevance for the host Party: If the mitigation impact of the Article 6 activity is not (or only partially) reflected in the national inventory, the host Party will have to implement more mitigation activities (Kreibich & Hermwille, 2016). As highlighted by Schneider et al (2022), the visibility of mitigation measures varies among sectors and can be higher for measures that reduce CO<sub>2</sub> emissions from fossil fuel combustion than for mitigation activities from the forestry sector. Host Parties will further need to have (access to) a **registry** in order to track mitigation outcomes, as required by the Guidance (UNFCCC, 2021a Annex, para 29).

**Institutional and legal readiness** is another key prerequisite for hosting Article 6 activities. Parties must develop an institutional framework and install respective governance processes that allow to evaluate and decide on proposed activities, monitor the emission reductions transferred in the registry and demonstrate NDC achievement by reconciling transfers with inventory and NDC target (Kachi et al., 2020). While some of these aspects are covered by the participation requirements of the Article 6.2 guidance, Parties will presumably want to go beyond these requirements and install additional institutional capacities that ensure Article 6 activities do support national climate change mitigation activities in the best possible way.

**Article 6 strategies** for host Parties have been increasingly discussed in the context of the avoidance of overselling (Spalding-Fecher et al., 2020; Spalding-Fecher & Marcu, 2022). An Article 6 strategy builds and informs the readiness elements outlined above. It allows the government to make strategic decisions about whether and how to use Article 6 by making use of the technical readiness, institutional and legal readiness and taking into consideration the broader political objectives. At the same time, the Article 6

strategy will also determine the specific tools and capacities needed, thereby feeding back into the readiness elements of the country.

## 5.2 Integrating ITMO sharing into the Article 6 strategy

This section explores how the choice of the sharing approach can be integrated into the national Article 6 strategy. It sheds light on specific questions that are relevant for dealing with ITMO sharing as well as political, economic and other considerations relevant for the choice of specific sharing approaches.

### *One or several sharing approaches?*

Should host Parties clearly determine that a specific sharing approach must be applied or could they embark on a more open strategy that allows for multiple approaches to be used?

On the one hand, making the application of a specific sharing approach mandatory for all Article 6 activities could support the processing of different project proposals, for instance by comparing their contribution to the national decarbonisation pathway.

On the other hand, donors are currently applying (and combining) different approaches to share ITMOs with the host Parties of the Article 6 piloting activities, as shown above. Host Parties that only allow for the application of one specific sharing approach may therefore put themselves at a disadvantage by limiting the spectrum of possible Article 6 activities from the outset.

### *Timing: when should Parties decide on an ITMO sharing approach?*

Parties could determine ex-ante that activity proposals must apply a specific ITMO sharing approach by making this a requirement for host Party approval. Sharing approaches that are deemed beneficial to the host Party could be

included on a positive list.

As an alternative, Parties could include the assessment of the ITMO sharing approach ex-post by including it into the broader assessment of proposed mitigation activities.

While ex-ante determination might give activity proponents and investors an indication of the host Party priorities, the ex-post assessment would allow for a better consideration of the interaction of sharing approaches and their final impact.



## 6 Conclusions

Against the background of the circumstances for market-based cooperation under the Paris Agreement, this paper identified and discussed different approaches for sharing the mitigation benefits of Article 6 activities between host Parties and acquiring Parties. We **identified six sharing approaches** that could be used by Parties when co-operating under Article 6:

- Crediting baseline as an overarching sharing approach
- Technological sharing
- Temporal sharing
- Policy instrument-based sharing
- Geographical sharing
- Input-based sharing according to financial contribution

The subsequent analysis of Article 6 piloting activities showed that **Parties are already applying and combining some of these sharing approaches** in practice. The analysis also allowed to identify relevant differences. Switzerland for instance combines different sharing approaches by integrating technological, temporal and policy aspects into the crediting baselines. The **crediting baseline** therefore serves as a tool that allows to combine several sharing approaches. While Switzerland and its partner countries do not apply a generalized quantitative sharing approach that determines ex-ante a certain percentage of ITMOs being allocated to one of the Parties, under Japan's JCM at least fifty percent of the issued credits are allocated to the account of the Japanese government, while the rest is allocated on the basis of the financial contributions made.

The findings further indicate that there is **no one size fits all approach**. The choice of the sharing approach should be made by **considering the characteristics of the individual mitigation**

**activity**. For instance, an activity that applies a highly innovative technological component that is clearly beyond the host countries' reach would be suitable for the application of a technological sharing approach, while a mitigation activity that involves capacity building elements to allow for broad replication and scalability in the future would call for a policy-instrument based sharing approach. More generally, the choice of the sharing approach and its design cannot be delinked from the broader impact of the mitigation activity. This may also include long-term climate benefits through technology transfer as well as non-climate benefits in the form of sustainable development contributions.

From a host Party perspective, the choice of the sharing approach should be considered a part of the broader **Article 6 strategy**. Since exclusively focusing on a specific sharing approach does not seem advisable, the question on how to identify a suitable sharing approach must be addressed. Possible parameters relate to the host Party and its Article 6 readiness on the one hand and the proposed Article 6 activity on the other hand. It should be noted, though, that each of the sharing approaches identified above comes with its specific risks and uncertainties as well as advantages. For instance, building on the mitigation activities' baseline as a sharing approach requires strong technical understanding and knowledge of the activity. The Box below provides an overview on **key considerations** regarding the different sharing approaches that might assist Parties in the process of deciding on a specific sharing approach.

In order to gain experience with sharing approaches and limit adverse consequences, host Parties could start by limiting the number of applicable sharing approaches. In a first step, a focus could be put on those approaches that align

Sharing approach	Considerations for integration into Article 6 strategy
<b>Crediting baselines</b>	<p>The crediting baseline can be used for combining different sharing approaches within one activity.</p> <p>Integrating the sharing approach into the crediting baseline requires in-depth knowledge of the activity. The approach cannot be applied across several activities.</p>
<b>Technological Sharing</b>	<p>Can be used if two technological/technical components are combined within one activity.</p> <p>Allocation requires clear understanding of the technology's role: How relevant is the technology introduced with the activity for achieving the NDC and LTS? What are the long-term benefits?</p> <p>Would it be possible (and preferable) to implement the activity unilaterally without the innovative technology component?</p>
<b>Temporal Sharing</b>	Requires a thorough assessment of the activity's operational lifetime.
<b>Policy instrument-based sharing</b>	<p>Allows for the combination of diverse yet linked components within one activity (e.g. on the ground project implementation with capacity building elements).</p> <p>Relevant consideration may include: How are the two components of the support activity linked? Are the expected long-term benefits of the domestic component sufficiently high to justify the authorization of short-term mitigation outcomes?</p>
<b>Geographical sharing</b>	Operationalisation of geographical sharing approaches is straight forward. Relevant consideration may include: Why should carbon finance be used for closing existing gaps in my domestic policy? What are the reasons for the gaps and why is carbon finance in a position to close them?
<b>Input-based sharing according to financial contribution</b>	Input-based sharing can be easily operationalized as it allows to link the financial contribution of partners to the final share of ITMOs. However, participating partners may be in different positions to make financial contributions.

Table 1: Integrating sharing approaches in an Article 6 strategy

best with the existing capacities. As capacities get stronger and broader, they may combine different sharing approaches, allowing for the considerations of multiple parameters. This would allow governments to pro-actively define a set of sharing approaches that can be used.

In addition, more **tailored capacity-building activities** are needed to support host Parties to decide on the appropriate selection and design of ITMO sharing approaches. What support is needed for Parties to deal with the complexity of ITMO sharing and how can these be integrated

into national governance frameworks for Article 6? There are several ongoing Article 6 capacity development initiatives, such as the Paris Agreement Article 6 Implementation Partnership established at COP27, where Parties could exchange and develop solutions for dealing with this question.

The relevance of ITMO sharing must also be seen in the context of a **key role of the private sector as a proponent and investor of carbon finance**, whose priorities must be taken into consideration. Developing an Article 6 strategy that is clear about how mitigation benefits are shared will

also be key for dealing with the voluntary carbon market to ensure that future mitigation activities do not only align with the interests of investors and project proponents but first and foremost serve the benefits of the host Party and its people.

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