Identifying Potential Policy Approaches under Article 6 of the Paris Agreement

Initial Lessons Learned

Description

The aim of this paper is to provide key lessons learned and best practices in identifying potential policy approaches under Article 6 of the *Paris Agreement*. Scarcity of theory and experience in this field required GGGI to develop its own methodology and processes to assess policy approaches aligned with countries' NDCs and climate change strategies. The paper explores the strengths and limitations of a theoretical/academic analysis and addresses key challenges in developing practical policy approaches that can generate tradable mitigation outcomes. It also emphasizes the key role that GGGI's embeddedness played in scoping potential policy approaches within the countries.

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Abbreviations and Acronyms

BAU	Business as Usual
CBIT	Capacity Building Initiative for Transparency
CDM	Clean Development Mechanism
CPF	Carbon Partnership Facility
cNDC	Conditional NDC
DAPA	Designing Article 6 Policy Approaches
ETS	Emission Trading Scheme
GGGI	Global Green Growth Institute
GHG	Greenhouse Gas
INDC	Intended Nationally Determined Contributions
ITMO	Internationally Transferrable Mitigation Outcomes
JCM	Joint crediting mechanism
JI	Joint implementation
LOI	Letter of Interest
MACC	Marginal Abatement Cost Curve
MOPA	Mitigation Outcome Purchase Agreement
MRV	Monitoring, Reporting and Verification
NDC	Nationally Determined Contribution
NAMA	Nationally Appropriate Mitigation Actions
OECD	The Organisation for Economic Co-operation and Development
OMGE	Overall Mitigation in Global Emissions
PMR	Partnership for Market Readiness
REDD+	Reducing Emissions from Deforestation and forest Degradation, and the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks in developing countries
uNDC	Unconditional NDC
UNFCCC	United Nations Framework Convention on Climate Change
TCAF	Transformative Carbon Asset Facility

1. Introduction

1.1. Background

The *Paris Agreement* provides a fundamentally new framework[1] for global climate policies, including the possibility for signatory Parties to cooperate on implementing policy approaches. This paper explores the potential of policy approaches to deliver transformational change and scaled-up reductions of the host countries' greenhouse gas (GHG) emissions. We review and conceptualize the early lessons learned from emerging pilot projects and draw some conclusions relevant for the design and implementation of the policy and sectoral approaches[2] under Article 6 of the *Paris Agreement*. Our analysis also highlights a number of significant challenges linked to the implementation of these policy approaches.

Article 6 of the *Paris Agreement* has established a framework for international cooperation to achieve its objectives. It removes several limits of the existing project-based mechanisms under the Kyoto Protocol. These mechanisms are generally not designed to achieve the required structural changes in countries' economies needed to continuously reduce the countries' GHG emissions and to effectively limit the implications of climate change.[3] It is expected that cross-country cooperation and finance flows generated by the exchange of internationally transferrable mitigation outcomes (ITMOs) will substantially strengthen emission reductions. All countries should transparently evaluate the extent of their emission reductions, which contributes to the global mitigation efforts and which meets their own Nationally Determined Contribution (NDC) achievements.

The efforts to design and implement Article 6 pilot projects fall under the broader strand of work aiming to catalyse the spread of carbon markets and carbon pricing within developing countries. Lack of expertise and understanding of the functioning of carbon markets in developing countries is cutting them off from new potential sources of finance and increases the overall costs of meeting the goals of the *Paris Agreement*. Increasing the number of national and international institutions has therefore turned their attention to support the creation of an enabling environment, development of host countries' regulatory framework, setting necessary institutional and governance arrangements, and build required market infrastructure.

Currently, practitioners face limited experience in designing and implementing policy approaches under Article 6 of the *Paris Agreement*. The majority of the ongoing pilot programs' focus is rather to increase the viability of the pipeline of projects by monetizing the climate related benefits these projects deliver (e.g., reductions of GHG emissions, increasing share of renewable energy). Though at some point the long-term viability of such projects will hinge upon the host country policies. Countries, together with a number of multilateral institutions, pioneer the development of new methodologies to design policies well aligned with the project host countries NDCs and domestic strategies on climate change.

The paper is organized as follows: The first chapter provides background and outlines objectives. The second briefly describes the project framework and the role of GGGI within this project. The third discusses key challenges linked with design and implementation of policy approaches. Chapter four provides a brief outlook on the steps to implement policy approaches in the host countries. Finally, the fifth chapter presents the key lessons learned.

1.2. Program objectives

Pilot projects implementing policy and sectoral approaches are emerging as a new and promising way to implement transformative policies to drive long-term structural changes and contribute to the sustainable reduction of global GHG emissions at the considerably higher scale. Long term set-up of abatement policies is important to ensure that the countries start transforming their economies rather than employ one-off measures and move on. The adoption of well-designed, coherent, and evidence-based "good" policies is critical not only to deliver incentives for emission reductions, but also to achieve continuous results and to ensure that the achievements are cost efficient.

The gradual expansion of national and regional carbon markets contributes to strengthening in-flows of carbon finance and private investments across multiple and/or single thematic areas or sectors and countries. The new, less polluting technologies, institutional and human capacities financed through the inflows of carbon finance are expected to act as multipliers, indirectly scaling-up emission reductions and contributing to raising the governments' demand for higher ambition in terms of emission reductions. The overall impact largely depends on the way the inflows of carbon finance and investments are recycled back to the economy.

The Environmental Defense Fund's (EDF) framework of "*Climate teams*"[4] to a certain extent resembles GGGI's concept of policy approaches. It offers a specific concept of delivery – a mix of climate and carbon finances to a host country by a number of partner countries within a so-called climate team. The team includes "host countries" (those with significant opportunities to reduce emissions in the short term but without resources to quickly undertake the required reductions) and "partners" (countries with resources but with limited short-term opportunities to meet their own mitigation commitments). The matching process allows countries to exploit potential efficiency gains from mutual cooperation. The overall gains might be somewhat limited due to the exclusive participation of the climate team, though the potential efficiency losses might be outweighed by more certainty from the long-term pace of allocation of climate finance, acting to relax the supply of emission reductions.

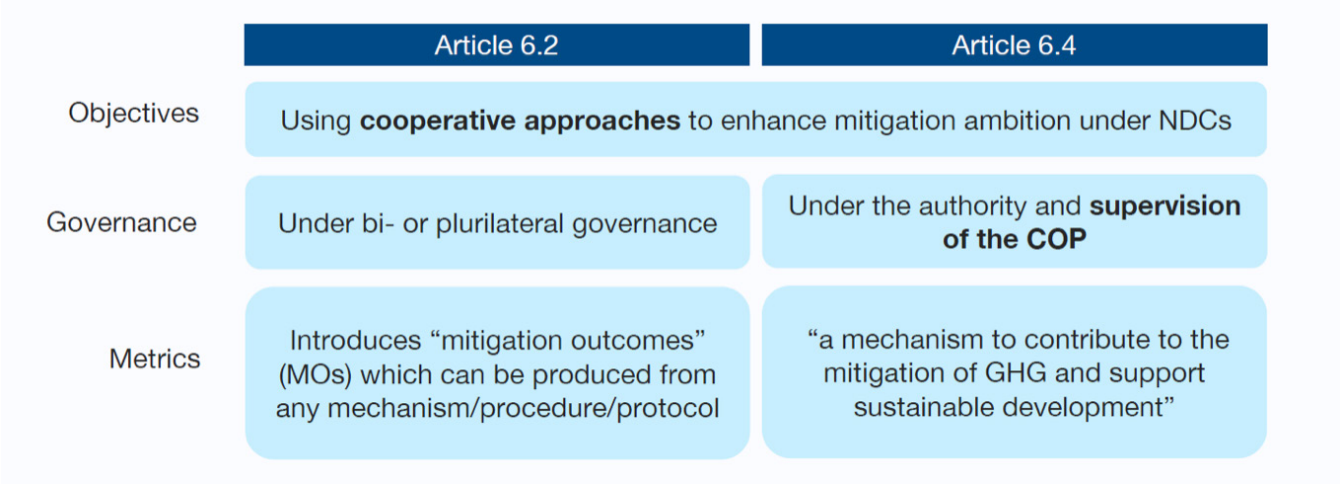
KLIK Foundation has indicated a total demand for GHG emission reductions in the order of magnitude of 35 - 54 million tCO2e between 2021 – 2030. The funding is made available for implementation of projects with a particular focus on the energy sector, industrial processes, and agriculture developed in the host countries. Agreements were already signed with Peru and Ghana and negotiations are under way with Senegal, Morocco, Thailand, Mexico, Chile, and Argentina.[5]

Several national-led programs allocating carbon finance to specific projects in developing countries, in particular to energy-related mitigation actions, waste, or industrial processes are being implemented by the Swedish Energy Agency or Japan Fund for the Joint Crediting Mechanism. Moreover, the Korean domestic emission trading scheme permitted the use of international offsets to meet up to 5 percent of the total compliance obligation.

The World Bank developed a number of programs addressing the cooperative approaches under the Article 6, including its concepts of *Climate Market Clubs* and *Climate Warehouse. Climate Market Club*[6] acts as a knowledge sharing platform established by a group of national governments jointly developing modalities for piloting carbon market transactions under the Article 6.2. *Climate Warehouse Program* creates an enabling environment for cooperative approaches under Article 6 by sharing experiences and best practices on countries' regulatory frameworks and supports the development of market infrastructure and institutional arrangements.

Raising awareness is an integral part of the climate policy design process. Limited understanding of the functioning of carbon markets significantly constrains countries' willingness to engage in carbon transactions. Close cooperation with local governments is needed to secure ownership of the reforms and their successful implementation. The ongoing pilot projects strongly build on the work of a number of organizations including Capacity-building Initiative for Transparency (CBIT), NDC Partnership, Preparation for Market Readiness (PMR), Carbon Partnership Facility (CPF), and Environmental Defense Fund (EDF. These programs jointly develop an enabling environment and raise capacities to deal with the complexities of the mechanisms introduced by the Article 6 of the *Paris Agreement*.

Figure 1.2.1 Cooperative approaches under the Article 6 of the *Paris Agreement*.



1.3. Role of Article 6

Article 6 is the most complex concept within the *Paris Agreement*, covering the core regulatory framework to operationalize international cooperation. Well-designed rules are essential to incentivize emission reductions across the countries, increase emission reduction efforts, and exploit the opportunities global cooperation offers.[7] Due to its strategic role and broad implications on environmental integrity or finance, the actual technical rules are still under negotiations.

Current delays in the negotiation process provide a momentum for early action and space for implementing pilot projects to collect the necessary practical experiences under Article 6. At this stage, most of the emerging pilot programs are instrument neutral or focus on Article 6.2. In addition, most of the pilots adopt baseline and crediting approaches on a project-by-project basis. Only two of them (EDF and GGGI) aim for implementing creditable policy and sectoral approaches.

Article 6 can provide two main contributions which can generate gains from international cooperation. It sets the framework for the emerging global carbon markets and provides a both market and non-market channels to unlock access to finance. Limited access to finance is one of the major constraints to realizing emission reductions, particularly in the developing world.

Article 6 establishes a framework for cooperative approaches, facilitating cost-efficient compliance with the objectives of the *Paris Agreement* at a global level. The emerging carbon markets are specifically covered by two operative paragraphs of Article 6 (see Figure 1.2.1).

Box 1.2.2 Carbon vs. climate finance

Carbon finance

Carbon finance is commonly defined as a branch of environmental finance typically referring to the revenue streams generated by sale of greenhouse gas emission reductions either in the form of credits or emission permits.[8]

Climate finance

"Climate finance aims at reducing emissions and enhancing sinks of greenhouse gases and aims at reducing vulnerability of, and maintaining and increasing the resilience of, human and ecological systems to negative climate change impacts." [9]

Article 6.2 provides a basis for countries to engage in various modes of joint market cooperation, including mechanisms such as bilateral crediting mechanisms (at project, program, or policy levels) or linking of existing domestic climate policy instruments under bilateral or multilateral agreements. Article 6.4, still largely under negotiation, aims to establish an international market mechanism functioning under the authority and guidance of an international body, such as the UNFCCC.

Article 6 provides a balanced framework for channelling both carbon and climate finance (see Box 1.2.2) from the source (i.e., the ITMO acquiring country) to the specific mitigation actions in the host countries, leading to better access to finance with more attention paid to synergies among different sources of finance. The provision related to climate finance is governed by Article 6.8, setting a framework for non-market approaches.[10]

1.4. Raising ambition in Article 6

Raising the ambition of emission reduction efforts is one of the key elements of the *Paris Agreement*, necessary[11] to successfully limit the increase of the global temperature.[12] In general, ambition raising refers to both increasing countries' emission reduction target levels in their NDC as well as to the expansion of the NDC's coverage (or scope) in terms of economic sectors, specific policies, or mitigation actions. Several provisions of the *Paris Agreement* underline the importance of progressive ambition raising and highlight the principle of common but differentiated responsibilities and respective capabilities.

Commitment to raise ambition has been recognized as one of the central elements of the *Paris Agreement* and Article 6 as a tool to increase ambition.[13] This Article emphasizes that voluntary cooperation of countries should lead to "*the implementation of their NDC to allow for higher ambition in their mitigation and adaptation actions*."[14] Unlike the *Kyoto Protocol*, the *Paris Agreement* directly links the use of cooperative approaches to raising ambition. As a result, the emerging global emission trading framework is expected to generate net benefits for the climate, rather than remain a zero-sum game.

Carbon markets are indispensable for long-term ambition. Cost savings achieved through international cooperation are the key contribution to lower the existing economic and political barriers preventing governments from adopting more ambitious emission reduction targets. Global carbon markets have the potential to significantly reduce the costs of meeting the current NDCs by up to 79 percent.[15] Other estimates suggest overall savings delivered by the global carbon markets at USD 250 billion per year in 2030.[16] This implies that cross-country cooperation in emission abatement can deliver 50 percent more abatement by 2030 at no additional costs if the cost savings were invested in additional mitigation efforts.[17] Implementation of appropriate policies is required to unlock the cost-effect mitigation potential. Revenues generated by the sales of ITMOs can generate new carbon finance flows needed to finance the necessary investments and mitigation actions in the host country.

Cooperative approaches - if not handled appropriately - may generate potentially perverse incentives to prioritize countries' short-term gains over long-term decarbonization. These in turn may cause countries to reduce or limit the ambition of their NDC in order to increase their potential for international crediting. Similarly, the use of non-ambitious baselines could cause continuing transferring of hot air and weaken incentives to enhance the ambition of mitigation targets in future NDCs in order to get higher benefits from international transfers.[18] It is the role of the regulatory framework, as well as the way of implementation of the cooperative approaches, to ensure the elimination of potential perverse incentives generated by cooperative approaches.

Countries may also have less incentives to ensure environmental integrity, as they would achieve their NDC target even if they engage in transfers that do not represent actual mitigation outcomes.[19] Similarly, the ITMO user countries may be motivated to rely on cheaper reductions from abroad rather than pursue the necessary, but more costly domestic transformation and delay decarbonization of their economies. Other challenges typical for crediting instruments constitute

Box 1.4.1 Definition of policy approaches

Policy is "a course of action or principles or set of ideas and plans adopted or proposed by a government, party, business or individual and used as a basis for decision making." [20]

Policy approaches are "targeted use of a combination of different policy instruments in order to achieve specific pre-defined policy objectives."

Policies are implemented using a combination of policy instruments. Typically, three major groups of climate policy instruments have been recognized:

- Regulatory policies (technology / efficiency standards, best available technology)
- Market based instruments (taxes, subsidies, feed in tariffs, ETS)
- Other market mechanisms (renewable energy certificates, energy efficiency certificates, offset systems).

situations when payments for ITMO would not only depend on the performance of the particular policy instrument, but also on the performance of the transferring country's national climate policy and its achievement of the conditional NDC.[21]

1.5. Designing policy approaches[22]

The key factors behind the calls for the concepts reaching beyond the boundaries of the project-based approaches are the limitations of the project-based offsetting mechanisms to induce fundamental structural changes in the host countries' economies, needed to meet the objectives of the *Paris Agreement*. The potential candidates include sectoral CDMs,[23] NAMAs[24] along with *policy-based cooperation*. In contrast to the project-based offsetting mechanisms, cooperation at the policy level offers broader potential to set the long-term incentives for all market agents[25] radically changing the ways how business, investment and consumption decisions are made.

Finding a suitable approach to implement the policy approaches appears crucial, bearing in mind that these may be country specific. Policy approaches are designed in close consultation with the host government. They are building directly on the analysis of the scoping phase which identified relevant sectors targeted by the policy. The design process includes a detailed feasibility study, identification, and development of necessary regulatory instruments to operationalize the policy approach and consultations with the government on market mechanisms and potential transaction arrangements.

Policy-based cooperation under Article 6 follows a fairly simple mechanism. Country A assists Country B to design and implement a national climate policy or to increase the ambition of already implemented policies and provides carbon finance as financial assistance. In exchange for the financial support, Country A receives (a share of) the emission reductions achieved by the policies implemented in Country B. Country A is free to dispose of the emission reductions according to its own will. Among other options, Country A can use the emission reductions for its NDC attainment (offsetting), ambition raising, or for climate finance. Emission reductions generated through a policy which the host country implemented, with support of the acquiring country, meeting a specific set of criteria, can be converted into carbon credits and sold through Mitigation Outcome Purchase Agreement. The "creditable" amount of emission reduction is calculated as a difference between baseline emissions and the sum of actual and leakage[26] emissions.

Crediting mechanisms typically operate outside emissions trading systems or other mitigation measures. Under a crediting program, the investing country acquires credits from the host country corresponding to the achieved reductions of GHG emissions below

the level set by a baseline. Received credits can in turn be used for compliance purposes in any ETS that recognizes the use of the credits as compliance assets. A methodology to quantify emissions baseline is established prior to emission reducing activity. The overall process is needed particularly to ensure the environmental integrity of the overall mechanism, which is further addressed in Chapter 3.

Expertise and strong political ownership are essential for policy design. A unique combination of analytical and technical expertise on functioning, regulation, and performance of the carbon markets, along with trust and reputation among the Member and partner countries, has been accumulated by GGGI since its inception. Such combination of capacities is required for projects that are pioneering new policy-based approaches with direct involvement of governments.

Choice and design of the proposed policies as part of the policy-based cooperation requires an up-to-date and detailed understanding of the countries' existing policies. This includes strategic sector-specific goals, entry points for new policies to complement the countries' development strategies, and local institutional practices for policy implementation. In this context, GGGI as a trusted advisor to the Member countries' governments, is in a unique position to combine its expertise and networks to provide substantial insights into sectors' specific emission reduction potential, institutional capacities and can facilitate transactions between the host and acquiring countries.

2. Project framework

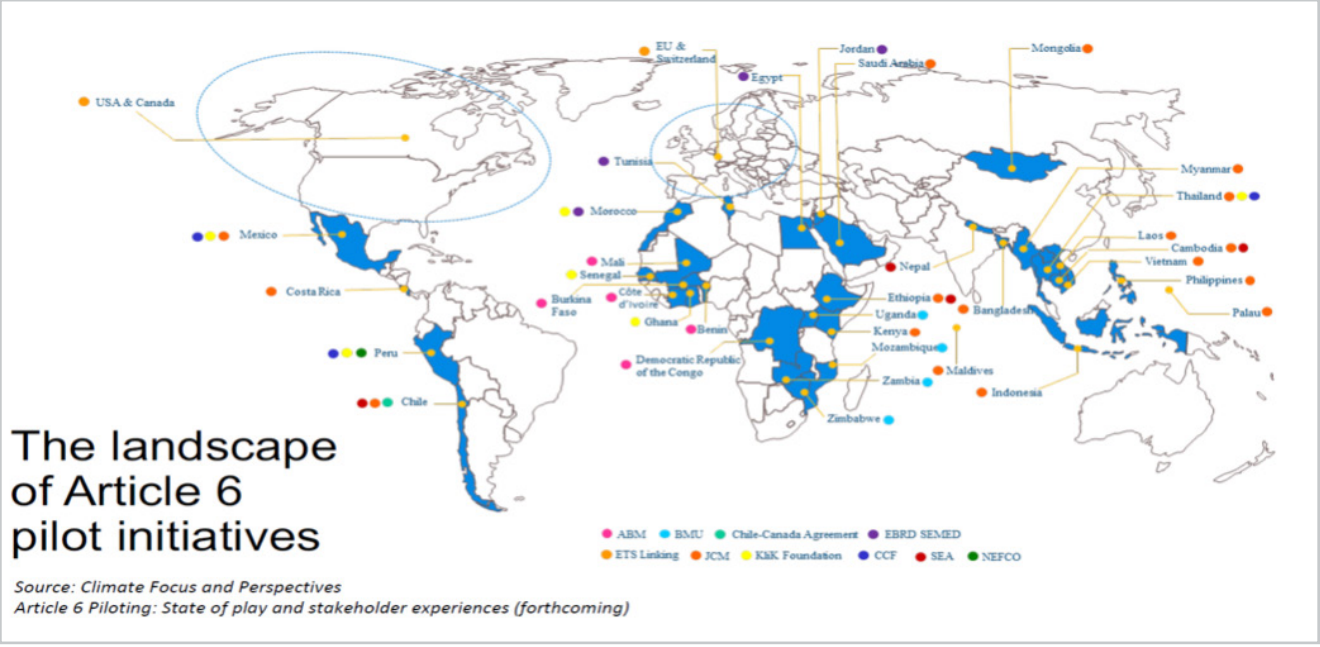
The number of pilot programs seeking to test the operationalization of concepts stated in Article 6 is increasing around the globe. At the same time, these programs seek to prepare countries to participate in the cooperation under the Article 6. s. Pilot activities significantly contribute to the evolving institutional (e.g., registries and tracking systems) and methodological (e.g., crediting of policy instruments and sectoral activities) frameworks. They also provide a valuable source of information and experiences related to the project implementation and feedback into the ongoing negotiations process.

Pilot projects implementing policy approaches come with a similar approach, usually split into two or three distinct steps. The preparatory or scoping phase usually starts with an assessment of countries' situations and readiness for implementation of activity under Article 6. This step includes desk research of facts and data collection, including in depth exchange with local government agencies on a range of issues (e.g., countries' experience with carbon markets, availability of the infrastructure and human resources). Sector analysis reviews the available emission reduction potential and estimates the cost range. The final activity within the scoping phase covers the risk assessment of potential non-compliance with the NDC and an evaluation of countries' NDC ambitions. Much of this work typically draws on economic modelling.

Figure 2.1.2. illustrates the geographic distribution of countries currently implementing pilot activities with support from various agencies. GGGI engaged eight countries for review of readiness to undergo a pilot activity under the Article 6: Morocco; Thailand; Vietnam; Indonesia; Senegal; Colombia; Peru; and Mexico. A set of qualitative and quantitative criteria were adopted to pre-select the participating countries, including GGGI Membership or partnership, interest to pursue policy-based cooperation under Article 6, and working relationships with relevant local authorities or countries' alignment with partners activities, such as PMR, TCAF or CBIT. As a result of the pre-selection process, Indonesia and Morocco will further continue with the activity.

GGGI's core strength lies in the unique placement of the dispersed country teams within the countries' government agencies. They are very actively engaged with key countries' stakeholders in the policy dialogue. GGGI country offices have direct access to the key policy

Figure 2.1.2 The landscape of Article 6 pilot initiatives



Source: Climate Focus and Perspectives
Article 6 Piloting: State of play and stakeholder experiences (forthcoming)

makers, climate policy diplomacy offices and, at the same time, are actively involved in the countries' networks for policy dialogue. Therefore, they can help identify the potential policies which best fit the conditionalities of the Article 6 and support their effective implementation from their function as advisors to governments.

As with all of GGGI's deployment, any intervention will draw on the country's full ownership, and implementation will be country-led. GGGI will act as enabling partner supporting the government when needed. This approach will be readily supported by the GGGI's country-based teams embedded in the local governmental agencies, who have long-term experience in supporting the host governments with policy advisory and implementation of the green growth-related measures.

3. Key factors in designing the policy approaches under the Article 6

Although there has been much expectation from international cooperation based on policy approaches, it is still a rather new element of countries' climate policies. Policy approaches are generally viewed positively and met with high expectations, but their implementation remains associated with several challenges. Practical experiences are currently scarce, and there are effectively no guidelines or blueprints to follow. Other known pilot activities under Article 6 focus rather on the implementation of projects contributing to the host country's emission reductions. This chapter identifies and reviews some of the key factors (see table for overview) considered and addressed during the project scoping phase.

Key factors subject to assessment
1. Assessment of countries' Article 6 readiness
2. Selection of targeted sectors
3. The role of emission baselines
4. Additionality of the policy approaches
5. Corresponding adjustment
6. Attribution of mitigation outcomes to policies
7. Risk factors

3.1. Article 6 readiness

There is no universal approach to evaluate countries' readiness[27] to engage with Article 6. A qualitative approach[28] was adopted, though still drawing on a number of quantitative indicators. Two broader indicators were employed to evaluate countries' readiness to pursue activities covered by Article 6. The first is comprised of countries' enabling conditions: the actual availability and technical capacity of the country-specific actors and stakeholders responsible for the operation and regulation of carbon markets, as well as countries' plans to develop such markets. These belong

Assessment of countries' Article 6 readiness	
1. Enabling conditions	a) Prior experiences in use of market-based instruments b) Political will c) Quality of countries' MRV framework
2. Environmental integrity	a) Scope of countries' NDCs b) Ambition of countries' NDCs

Table 3.1.1. Review of indicators

Indicators	Factors of assessment
Prior experience	Review of the prior experiences with carbon market operations
Political will	Assessment of the political will
Accounting quality and MRV	Quality of the institutional framework

to the decisive factors considered as precondition for further assessment. The second indicator measures countries' ability to maintain the environmental integrity of the transactions.

3.1.1 Enabling conditions

In the next step, countries were observed as to whether they actively engage with key development agencies (e.g., World Bank, PMR,[29] TCAF[30]) and whether they seek to enhance their carbon market capacities. Requests for technical assistance were raised to strengthen the countries' capacities. Major focus of capacity building interventions is on the development of MRV infrastructure (Indonesia, Senegal) and accounting procedures for corresponding adjustment (Senegal, Morocco). Interest to strengthen countries' capacities to administer ITMO transactions on the international carbon markets and enlighten the overall negotiation process including ITMO price setting was voiced by all countries.

Scoping countries have shown extensive experience in engaging in carbon market operations, though they are mostly biased towards Clean Development Mechanism (CDM). Existing capacities are unevenly distributed and primarily driven by the countries' participation in the carbon emission offset mechanisms such as CDMs.[31] Project portfolios also vary across the countries. For example, Vietnam shows only limited experience in non-hydro CDM projects and Mexico focused mostly on methane avoidance, landfill gas, and wind energy.

Joint crediting mechanism (JCM)[32] projects were implemented in cooperation with the Government of Japan in Indonesia. Indonesia, Colombia, and Mexico are in the process of implementing a policy framework for carbon pricing through an ETS. Indonesia also participated in a voluntary carbon market, covering forestry, such as REDD+, and energy-based sectors. Mexico implemented a carbon tax in 2013.

The regulatory environment of the scoping countries appears relatively well developed but varies among countries. Existing technical and human resources might require support, for example in coordination between different agencies (e.g., Morocco), or require institutional strengthening (e.g., Senegal). Participation in the project activities is conditional upon the availability of the MRV infrastructure including the functioning national inventory system and full registry of mitigation actions.

Political support to pursue cooperative approaches in the interested countries was also assessed. Political will and interest to proceed with the implementation of the project was expressed by issuing an official Letter of Interest (LOI), which have already been received from Indonesia, Morocco, Peru, Senegal, and Vietnam.[33]

Project scoping countries perform relatively well in terms of the likelihood to meet their NDC targets. Analyses of Morocco and Senegal conclude that cooperation is less likely when there is potential to fail to meet their NDCs. These findings will need further reflection in the design phase of the project implementation.

3.1.2. Environmental integrity

Environmental integrity requires that market activities result in real, additional, and verifiable emission reductions that equal or exceed the emission reductions that would have occurred otherwise. Moreover, leakage of emissions must be avoided.

Assurance of environmental integrity of ITMO is vital. These are the criteria subject to assessment: type of emission reduction targets (conditional or unconditional); scope of the NDC (sectoral, actions only, economy wide); robustness; degree of ambition; and quantifiability through emission trajectories or specific abatement actions. A particular point of contention is the potential eligibility of the NDC. In light of the challenges associated with non-GHG targets, in the following we will assume that whether countries can or cannot use Article 6 depends on whether they have adopted a quantified NDC expressed in terms of CO2e. Finally, an assessment of the degree of ambition of countries' NDCs needs attention.

NDCs[34] introduced by the *Paris Agreement* are the means through which countries communicate their commitments to reduce GHG emissions to the international community. Emission reduction commitments presented in the countries' NDCs are meant to reflect each countries' ambition to reduce emissions, considering their specific domestic circumstances and capabilities.

Four major impact channels were identified, through which environmental integrity of the international carbon market mechanisms under Article 6 can be influenced:[35]

- Accounting of international transfers.
- The quality of units issued by the Article 6 mechanism.
- The ambition and scope of the NDC target of the host country.
- Potential of Article 6 to generate incentives or disincentives for future mitigation action.

Sources of potential risks were also identified. These include:

- Emission sources not included within the scope of an NDC target.
- Adoption of NDC targets that are less stringent than BAU (i.e., contains "hot air"). Additional check of the selected countries stringency of the NDC targets might be required to exclude the possibility of trading *hot air*.[36]

All scoping countries submitted their NDCs to the UNFCCC. Emission reduction pledges of all scoping countries are expressed as a percentage deviation from their business as usual (BAU) level of emissions in 2030. Emission reduction targets are denominated in terms of CO2 equivalents. All scoping countries except Colombia differentiate between conditional and unconditional emission reduction commitments within their NDCs. Three countries, Indonesia, Morocco and Senegal also adopted sector specific targets.

The level of ambition of emission reduction efforts is crucial but remains low. No agreed metrics are available as a guidance on what constitutes a fair or ambitious level of contribution to the global GHG emission reduction efforts. Our evaluation was therefore somewhat arbitrary and drew on the framework developed by Climate Action Tracker, whose evaluation draws on the five effort sharing indicators from the Paris Equity Check.[37] For example, Senegal's pledges are ambitious enough to meet the equitable share. In Vietnam, as another example, a significant over-achievement cast some doubt on the setting of the base line.

There is uncertainty regarding the countries' abilities to comply with their NDC commitments and to predict the availability of the emission reductions for sale on the international carbon markets (Colombia, Thailand, Morocco). In addition, lack of agreed rules on Article 6 has also been making government representatives careful in expressing any commitments. Several countries have also felt that the existing infrastructure, such as MRV, does not meet the required standards to carry out Article 6 transactions and called for technical assistance to address this issue. As Article 6 still remains subject to negotiations, limited capacity and budget allocation to pursue activities on Article 6 at the time also prevented further cooperation in some circumstances (e.g., Mexico).

Assessment of the scoping countries' progress to meet their unconditional and conditional NDCs was based primarily on the analysis of the countries' current policies and mitigation commitments carried out by the New Climate Institute.[38] Progress towards meeting the

unconditional NDC is a relevant variable to assess and in particular to minimize risks for the environmental integrity of the ITMO generated as the policies credited might not be additional. Hence, countries failing to meet their NDC commitments might not be suitable to undertake crediting pilot programs. The analysis has developed countries' GHG emissions projections up to 2030, considering existing, and in some cases planned, climate and energy policies. These are compared with emission reduction commitments adopted under the countries' NDCs.

Credibility of countries' actions to meet their NDCs is essential. Any creditable emission reductions will have to go beyond the countries' unconditional NDCs. Persisting uncertainties related to the likelihood the countries would meet their NDCs warrant further assessment. Countries in noncompliance with their NDCs could deter potential buyers of ITMO. A high-level assessment was carried out in order to compare the countries' GHG emission levels by 2030 forecasted by Climate Tracker with pledges submitted to the UNFCCC as part of the NDC.

The time frame for emission reductions is also important.[39,40] All scoping countries adopted a single year emission reduction target in their NDCs. Single year targets are however generally linked with greater uncertainty of the potential emission pathways, raising concerns regarding comparability and ambition. Moreover, the single year targets may pose a limit to the use of emission trading schemes. NDCs with targets formulated on the basis of a multi-year emissions trajectory are more desirable.

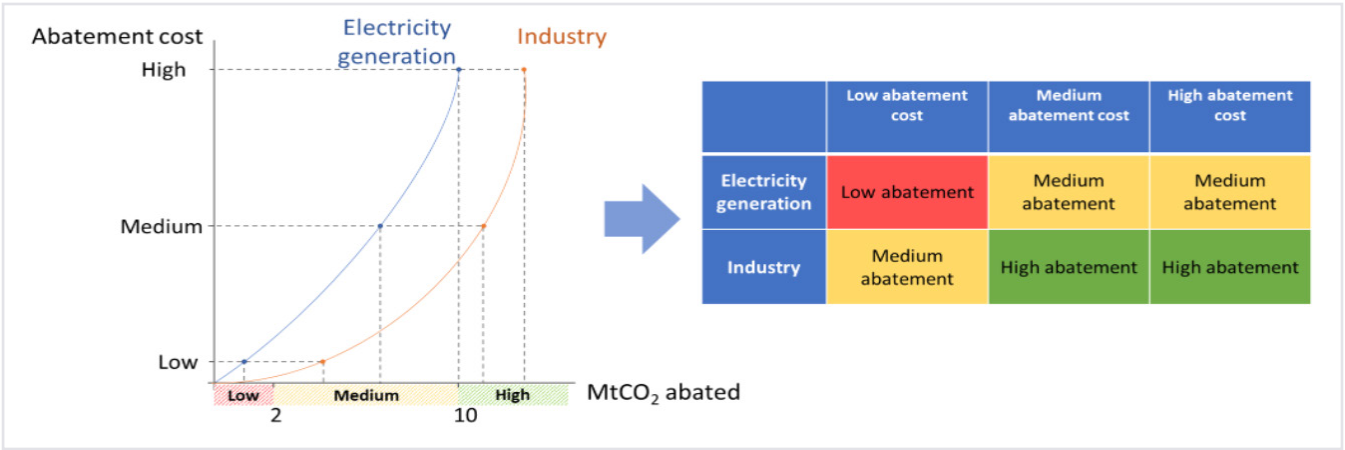
When measuring and assessing reductions, cumulative emissions are what need to be examined. Comparability issues arise from the need to account the same vintage points of reductions. Risks of single year targets include failure to keep cumulative emissions below the target, particularly when emissions increase in the goal period and must be reduced shortly before the target year. Single year targets could also be problematic for the functioning of emission trading schemes and international carbon markets. There could be issues on the comparability, ambition, and functioning of the market mechanism. Single year emission reductions can be unrepresentative and provide less frequent measuring of progress. Greater use of international market mechanisms and restriction on vintage uses can distort the emission markets (e.g., due to strong demand in a specific year).

3.2. Selection of targeted sectors

Existing GHG emission reduction potential across the economic sectors was evaluated in the project scoping countries. Assessment was based on the use of marginal abatement cost curves (MACCS).

MACCs[41] are a useful tool to frame GHG emissions abatement options and signal the size of the abatement potential across the scoping countries using a simple economic metric.[42] Global datasets such as ENERDATA serving as a basis for model-based policy assessment offer considerable detailed geographic, sectoral, and commodity coverage of the key indicators and cross-sectoral flows. As a result of our analysis, economic sectors were ranked according to their abatement potential within all cost categories, see graph 3.2.1.

Graph 3.2.1. Analysis of the MACCs



The highest abatement potential was estimated in Vietnam, Indonesia, and Colombia. Power generation appears as the most attractive sector in terms of its abatement potential across all scoping countries. The buildings and transport sectors provide medium size abatement potential. In terms of power generation, the increasing use of biomass received the most attention (Indonesia, Morocco), followed by energy efficiency measures (Morocco, Vietnam). The abatement potential in agriculture and waste varies greatly, though that might be linked to the quality of data. Peru proposed addressing the car fleet renewal program, while for Senegal the linkages between power generation and agriculture are of interest.

Availability of the relevant data is a major limitation for such analysis, particularly in case of non-OECD countries. Moreover, ENERDATA only covers data on countries' energy transformation and manufacturing sectors, leaving out sectors such as agriculture and waste. As a result, data for Colombia, Peru, Morocco, and Senegal were estimated from composite regions including all of South America, Morocco, Tunisia, and rest of sub-Saharan Africa, respectively. The aggregated indicators were split using the country specific emission shares[43] as weights to obtain country-specific abatement costs from ENERDATA.

3.3. The role of emission baselines

Emissions baselines play a central role in designs of climate policy instruments[44] The purpose of emission baselines is to set a specific reference level of emissions, against which the relative impacts of abatement policies are measured. For crediting mechanisms, the baseline is used to determine the quantity of credits to be awarded in exchange for emission reductions through implementation of any specific policy.

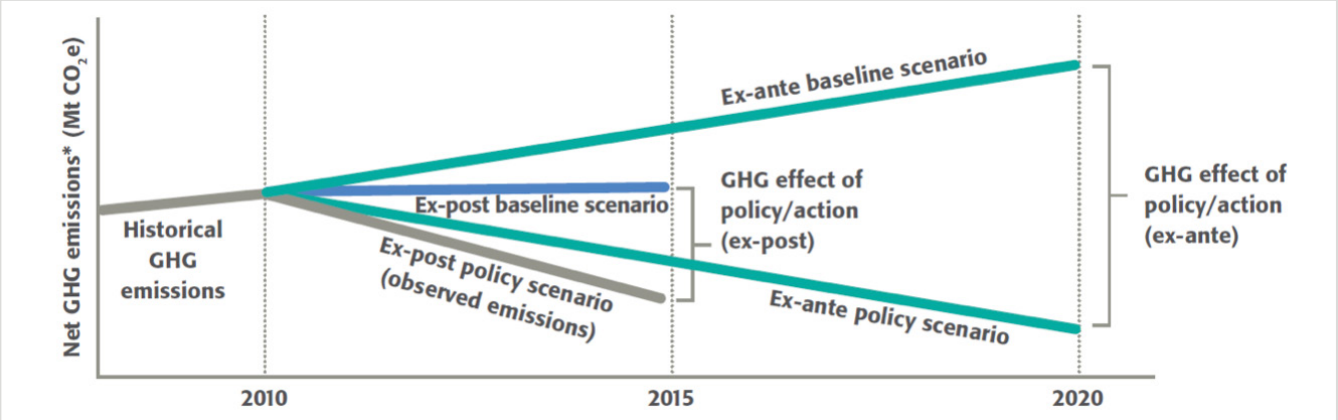
The choice of the methodology is crucial. General GHG accounting principles offer rather general guidance for the baseline setting process, highlighting the importance of practicality, completeness, transparency, and predictability. Design of the baseline scenario particularly depends on the assumptions related to key drivers of GHG emissions, including economic policies, country-specific economic conditions, energy prices, and technological development. Setting the policy baselines includes identification of systematic boundaries and most relevant drivers and external factors (e.g., changes in behavior, prices, available technologies.), that will presumably affect emissions in the absence of the policy and boundaries. Construction of policy-based cooperation baselines requires the use of economic modelling.[45] The downside to this approach is the large uncertainty of the baselines[46] In order to maintain consistency of baselines within countries' NDCs, extensive use of the data, assumptions, and methods used to develop the countries' NDCs are required. Among other things, it might be considered to regularly update the baselines throughout the policy implementation and type of emission reduction target (e.g., single or multiple year target).

The complexity of baseline setting[47] has been raising doubts regarding the feasibility of crediting large-scale emission reduction programs. The response has created robust and conservative[48] approaches for the development of baselines. Moreover, potentially biased baselines have direct implications on additionality of the emission reduction policies and hence on environmental integrity. Issues related to additionality of policies and their environmental integrity are addressed in more detail in the next section.

Box 3.3.1. Different types of baselines

- A business-as-usual (BAU) baseline represents a projection of the emissions or emission rates that would occur in the absence of the mechanism or instrument in question (crediting, trading, or other). It captures how emissions would evolve without the incentives provided by the policy under investigation. Another challenging aspect of the development of BAU baselines includes the treatment of the existing and planned policies.
- A crediting baseline represents a reference level against which creditable emission reductions are quantified and which might differ from the BAU baseline. The crediting baseline might be set at or below the BAU baseline for emissions level. As a result, the crediting baseline below the BAU level prevents perverse incentives or market distortions resulting in over-crediting.

Graph 3.3.1. Comparison of different baselines



Source: GHG Protocol, Policy and action standard[49]

3.4. Additionality of the policy approaches

Additionality is a key concept for the crediting schemes[50] and for quality assurance of the achieved emission reductions. It requires that *a credited activity would not have occurred in the absence of the revenue from the crediting of this activity. Hence for example, emission reduction credit is additional if, in the absence of the incentive provided by the crediting scheme, that mitigation action likely would not have occurred*. Additionality reflects the causality (i.e., attribution of the cause to the results). Attributing causality to government policies is highly complex due to a large number of influencing factors. A specific methodology is required to separate and assess the effects attributable solely to the specific policy instrument.

Safeguarding the cost efficiency and environmental integrity of mitigation policies and actions[51] are the two major objectives of the concept of additionality of emission reductions. Use of non-additional units to offset, for example, a carbon tax liability implies an effective transfer either from the tax collection agency (in case of a carbon tax) or from the ETS participant (in case of an ETS) to the company generating the non-additional emission reduction. As a result, both cases fail to meet the environmental objectives.

The *Paris Agreement* includes safeguards limiting the potential harm to the environmental integrity by crediting non-additional activities by using provisions on corresponding adjustments. Nevertheless, non-additionality may still undermine environmental integrity in several cases where mitigation actions are not covered by countries' NDCs, in case of the lack of ambition of the country's NDC or when mitigation actions lead to 'hot air'. To identify a potential for hot air, the baselines definition plays a central role. Approaches proposed to limit generation of hot air and reduce the need to test additionality include the adoption of dynamic baselines. More detailed review of the scoping countries baselines and their potential to generate hot air is warranted during the design phase.

Testing additionality of a policy proposed for crediting is very complex and less developed. Many factors need to be considered: political factors such as the political power of different actors in the country or the public awareness on the issue. Identification of a specific impact of how the incentives from a crediting mechanism affect the balance of political power in a decisive way is very limited. An integrated approach to test the additionality of the bundle of policy instruments is required. The scoping phase of the project investigated additionality of mitigation actions. The additionality of the policy instrument is featured by costs to a specific market agent targeted by the instrument, unlocking the abatement potential.

Policy additionality requires that the implementation of the policy be driven by the incentives generated by the crediting mechanism. Additionality must be confirmed prior to any emission reduction credits being exchanged. Traditionally, considerations of additionality draw on financial factors, profitability measures (internal rate of return or payback period), access to financing, and technology use (measured by market penetration rate of a specific technology).[52] Implementation of policies follows a complex mix of objectives and might be strongly

driven by political economy. For example, Schneider et al. (2014)[53] recommend against pursuing crediting of policies.

Very limited experience on testing additionality of policy approaches is available from a small number of existing pilot programs. Some authors draw on two-level assessment of policy additionality adopted by TCAF.[54] The choice of the indicator for policy additionality testing is among the key questions. The current metric for additionality testing is centred around the cost of the mitigation measures borne by different market agents, such as mitigating entities (regulatory measures, carbon taxes, ETS) or government budget (subsidies) and their relation to benefits, which each affected agent can gain from the policy.

The following sequence of steps has been proposed to test the additionality:[55]

- For policy instruments and sectoral level activities, first the ambition of the NDC needs to be checked.
- If the NDC target is more stringent than BAU, in the short term no dedicated policy additionality test would be required.
- In the long term, the additionality test could only be skipped if the policy achieves an emission reduction beyond a net zero compatible emissions path.

Assessment of the additionality of policy approaches under Article 6 retains its importance. Additionality testing has however become rather complex and requires further attention during the design phase of the project. New approaches for testing might be required. One possible approach is to consider the additionality through a prism of implemented policy instruments. Specific tests are needed to capture different features of the range of policy instruments (e.g., regulatory instruments, carbon pricing, subsidies etc.) as well as specific requirements of different mechanisms applicable under Article 6.[56]

3.5. Corresponding adjustment

Corresponding adjustment is an important step within the ITMO transaction, acting to prevent double counting. Double counting of credits occurs when the seller country transfers an emission reduction unit to an acquiring country and at the same time both countries claim emission reductions. As a result, reduction of one unit of emissions is reported twice.

In practical terms, corresponding adjustment refers to a joint adjustment of the ITMO trading partner countries' reflecting the emission reductions achieved. Making a corresponding adjustment means that when Parties transfer a mitigation outcome internationally to be counted toward another Party's mitigation pledge, this mitigation outcome must be 'un-counted' by the Party that agreed to transfer it. While this seems straightforward, questions around how and when a corresponding adjustment should be applied remain contentious. In other words, a country must increase its level of emission reductions in its NDC to make up for the fact that it sold some emission reductions to another country. Conversely, the country that purchased the credit adjusts its own emission reductions downward.

The notion of corresponding adjustments remains a concern, though it is increasingly well understood by our counterparts in technical terms. Nevertheless, more clarity on the calculation methods, illustrating economic implications of corresponding adjustment, remains as an important component to capacity building strategies. The focus needs to be placed on the overall concept, the implications for environmental integrity, countries' emission inventories, and NDC compliance.

3.6. Attribution of mitigation outcomes to policies

Attribution of mitigation outcomes to policies remains an issue. The key concern is to disentangle the impacts of other policies as well as non-policy effects in place together with policy intervention of interest. In addition, other technical difficulties limit any attempt to determine the mitigation outcomes and to attribute these to an individual policy with some reasonable degree of certainty. Potentially, alternative approaches might be sought to assess the contribution of policies in general, rather than seeking to identify cause-effect relations of a single intervention.[57]

3.7. Risk factors

A number of potential risks factors associated with ITMO transactions can be identified. Unless mitigation measures are adopted, these risk factors can affect countries' willingness to participate in international cooperation on policy approaches under Article 6. These include potentially high transaction costs, uncertainty regarding host countries' compliance with their NDCs, risk of overselling and potential for a purchase of hot air.

Initial transaction costs might be high, particularly due to the lack of experience in implementing the policy approaches across the countries or understanding their political economy dynamics. Similarly, uncertainty regarding the countries' ability to comply with their NDCs may compromise acquiring governments' willingness to engage in any further cooperation.

The risk of overselling[58] is another factor to consider for both cooperating countries. For the host countries, the consequence of overselling is to compromise NDC compliance. As a result, acquiring countries might face declining willingness to trade and commit to corresponding adjustments. In addition, non-compliance with NDCs would also make countries bear reputational risks. Overselling risks constitute a complex issue as they involve several different types of risks which all require different policy responses.

One of the key aspects behind the risk of overselling is the quality of data used as a basis for decision making. The weaker the countries' frameworks for data collection (i.e., the GHG emission inventories), the higher likelihood that the risks of overselling will materialize.

Several policy safeguards were proposed to control these risks, though their implementation is not always straightforward. Concerns on overselling might also affect the country's attitudes towards participating in ITMO transactions under Article 6.

Limiting the risk of purchases of hot air would similarly require testing of additionality and assessment of NDC ambition. Alternatively, the developed policy approaches must undergo additionality tests. More detailed assessment of the risk factors and design of potential mitigating measures will follow during the design phase of the project.

4. Formulation of policy approaches

The most complex task within the overall project is the design of relevant policies and choice of their entry points for the interventions. The entire proposed intervention might prove ineffective unless it considers a wide range of factors, which include the host country's business environment, economic conditions, and institutional capacities. It is essential that the new policies do not apply stand-alone measures, but rather widely reflect existing sector-specific development strategies and goals. Interventions can adopt new policy instruments or complementary actions improving the existing mix of policy instruments. Climate-related policies often require the application of more than one policy instrument. In such cases, the design of instruments must be precisely defined in order to avoid an increase in transaction costs, which would negatively affect economic efficiency. Institutional capacities are important not only for the design of policy intervention, but also for its implementation and enforcement.

- **Step 1.** The NDCs of the scoping countries provide a starting point for the assessment of the NDCs compliance as well as a review of the relevant policies addressing the sectors of interest across the selected countries.
- **Step 2.** A comprehensive assessment of the country-specific conditions is carried out to maintain additionality of the policy approaches and ensure environmental integrity of the resulting ITMO transaction.
- **Step 3.** Status check for sectoral and cross-sectoral cNDC measures, policies, and potential combination of the two. cNDC may include policies and/or measures, which can be classified as either 'operationalized' or 'not operationalized'.
- **Step 4.** Policies and measures can be classified in fiscal or regulatory and sectoral or cross-sectoral. Following TCAF, preference is given to sectoral/ cross sectoral programs, which could include specific policies, measures, and other activities.
- **Step 5.** Identified policy interventions will be checked against potential buyer design parameters.

5. Conclusions & lessons learned / experiences

The paper reviewed the initial experiences from implementation of the pilot programs under Article 6 of the *Paris Agreement*. The particular focus was on the programs implementing policy approaches. The review has generated a range of valuable findings and preliminary lessons learned for the implementation of the scoping activities. A summary of these key findings is reviewed in this chapter and taken as a starting point for the project design phase.

Countries have demonstrated a range of experiences from implementation of project-based offsetting mechanisms, rather than policy approaches. Cooperation on designing policy interventions is much more complex and requires detailed understanding of the countries' legislative approaches, differences of institutional structures, economic conditions, strategies, and specific processes relevant for implementation of policies. Substantial knowledge sharing and capacity building will be required to materialize the resulting ITMO trade.

Countries have so far embarked on a promising path, potentially leading to securing their compliance with their NDCs, according to the preliminary assessment carried out during the scoping phase of the project. Design and implementation of policy approaches during the design phase of the project requires further and more detailed review. The review should assess the NDC compliance of the selected countries under a consistent methodology and identify any potential barriers and obstacles.

Several countries have shown active interest to pursue cooperative approaches under Article 6, in particular on the policy level. Generally, countries are open to international cooperation and seek the benefits they might gain from such cooperation beyond the emission reductions achieved. Expectations are linked with enhanced technical assistance and capacity building. In order to officially confirm project participation, five countries have formally signed letters of interest.

Preliminary methodology based on the use of MACC was useful in providing a quantitative basis for selection of the sectors to be targeted by the policy approaches. This approach allowed us to quantify the emission abatement potential and to set metrics for cost measurement.

Sound and broadly accepted concepts of policy additionality should be carried out in wider depth and applied within the project boundaries. Linkages between

the notion of additionality at the project, sectoral, and policy level should be explored.

A consistent methodology is required to assess economic, social, and environmental impacts of the policies implemented in the host countries. The assessment provides a basis to determine the amount and attribution of ITMO, resulting from the transaction as well as to evaluate potential risks linked to the transaction.

Conditions to undertake corresponding adjustments were in general accepted by the governments of the scoping countries. Further capacities should be built particularly with focus on understanding the economic and environmental implications of a consent to the corresponding adjustment.

A number of risk factors were identified, including the risk of overselling, non-compliance with countries NDCs and potential sales of hot air. Along with assessments of the economic and environmental impacts of the transactions, the risk factors should be reviewed.

Further research and gathering of experiences are necessary to answer many questions that remain open. These include, in particular, the methodology to determine the resulting attribution of the achieved emission reduction to the specific policies or policy instruments. Evaluation of the implemented policies and policy instruments can only be undertaken by the use of econometric or other modelling methods. Such approaches attempt to design models as realistically as possible, but they still necessarily draw on a range of theoretical assumptions.

Strategies were reviewed on how to design and implement feasible policy approaches in the selected countries. Further research is clearly needed to reconcile the existing approaches as well as to identify reasonable points were the existing bottom-up and top-down approaches would meet.

GGGI Carbon Pricing Global Practice

GGGI's Carbon Pricing Global Practice supports the organization's Member and Partner countries to set a price for carbon and facilitate access to carbon finance. The Practice plays an increasingly important role in delivering GGGI's strategic outcomes, primarily by unlocking international carbon finance to meet countries' climate commitments under the *Paris Agreement*, but also by building knowledge and awareness on the mitigation potential of well-designed carbon pricing policies. It provides key services in carbon pricing policy design, development of regulatory frameworks and institutional capacity, design, and structuring of transactions, and thought leadership. This work builds on GGGI's strong track record on related issues, such as the mobilization of over USD 270 million in results-based payments from the Forest Carbon Partnership and the Green Climate Fund through the design of emission reductions programs in Indonesia.

International carbon finance has the potential to become the dominant form of finance for climate action since it is transactional in nature, can involve the private sector in countries' climate ambitions, and is only limited by supply and/or demand. GGGI's Carbon Pricing Global Practice is a leading actor in global piloting of international carbon transactions under Article 6 of the *Paris Agreement*. It is currently working with the Swedish Energy Agency and Norway's Ministry of Climate and Economy to complete such transactions, which would be among the first in the world. Both programs are providing technical assistance to Member and Partner governments to put in place the required capabilities for engaging in such carbon transactions on an ongoing basis. It is also collaborating with leading organizations in the field, such as the World Bank, UNEP-DTU, Perspectives Climate Group, Carbon Limits, and Pollination Group, to advance global thinking.

Endnotes

1. Including universal participation, ambitious long-term targets & nationally defined contributions that are to be made more ambitious over time.
2. GGGI has been developing policy approaches in cooperation with the Government of the Kingdom of Norway as part of the Designing Article 6 Policy Approaches (DAPA) project.
3. Achievements and shortcomings of the CDM are discussed e.g. in Haya, B. (2009), Measuring Emissions Against an Alternative Future: Fundamental Flaws in the Structure of the Kyoto Protocol's Clean Development Mechanism. Berkeley, CA: Energy and Resources Group, University of California at Berkeley, Schneider, L. (2009), 'Assessing the additionality of CDM projects: practical experiences and lessons learned', Climate Policy, 9(3), 242-254, Spalding-Fecher, R., Achanta, A. N., Erickson, P., Haites, E., Lazarus, M., Pahula, N., Pandey, N., Seres, S., Tewari, R. (2012), Assessing the Impact of the Clean Development Mechanism, Report Commissioned by the High-Level Panel on the CDM Policy Dialogue. Luxembourg: United Nations Framework Convention on Climate Change Secretariat.
4. More details on climate teams available here: https://cpree.princeton.edu/events/climate-teams-not-carbon-commodity-markets-high-integrity-transfers-international-mitigation
5. https://www.climatechangenews.com/2020/10/21/peru-switzerland-sign-world-first-carbon-offset-deal-paris-agreement/
6. Membership in the World Bank Climate market club is differentiated between primary members (Bangladesh, Bhutan, Chile, Ghana, Chile, Ghana, Japan, Peru, Rwanda, Senegal, Singapore, Sweden, Switzerland) and non-primary members (representatives of private and public sectors and other entities).
7. Moving Towards Next Generation Carbon Markets, Observations from Article 6 Pilot, 2019)
8. Ohebergassel, W., Asche, F. (2017). Shaping the Paris mechanisms Part III. An update on submissions on Article 6 of the Paris Agreement. Wuppertal. Accessed: from https://epub.wupperinst.org/frontdoor/deliver/index/docId/6987/file/6987_Paris_Mechanisms.pdf [Google Scholar]
9. See: https://energypedia.info/wiki/Carbon_Finance
10. See page 5, Biennial Assessment and Overview of Climate Finance Flows Report (2014), by UNFCCC Standing Committee on Finance, accessed: https://unfccc.int/files/cooperation_and_support/financial_mechanism/standing_committee/application/pdf/2014_biennial_assessment_and_overview_of_climate_finance_flows_report_web.pdf
11. Davis Stacey (2019), Lessons from Virtual Pilots: Raising Climate Ambition through ITMOs, accessed: https://ccap.org/lessons-from-virtual-pilots-raising-climate-ambition-through-itmos/
12. For example, Article 3 of the Paris Agreement, requires Parties "to undertake & communicate ambitious efforts" which "will represent a progression over time". The context for ambition also reflects the general perception of unsatisfactory level of GHG emissions reductions envisaged by the submitted intended nationally determined contributions (INDC) & therefore "much greater emission reduction efforts will be required, Decision 1/CP.21 para 17.
13. New Climate, https://bit.ly/38onmIR

14. See Article 6.1 of the Paris Agreement
15. See Environmental Defence Fund (2018), Carbon prices under carbon market scenarios consistent with the Paris Agreement: Implications for the carbon offsetting and reduction scheme for international aviation, accessed: https://bit.ly/34xSHry
16. Edmonds, Jae; Forrister, Dirk; Clarke, Leon; de Clara, Stefano; Munnings, Clayton (2019): The Economic Potential of Article 6 of the Paris Agreement and Implementation Challenges, IETA, University of Maryland and CPLC. Washington, D.C.
17. Note however Distribution of countries' benefits from carbon transactions and participation on the international carbon market would be critically dependent on the design of the trading framework and the willingness and ability of those who gain to compensate those who loose Emission trading might also have negative implications on countries welfare, particularly in case terms of trade loss more than offsets potential gains from improved allocative efficiency. Another aspect to consider is the impact of the potential demand surge for emission credits leading to Dutch disease symptoms in the host country economies, see Babiker M., Reilly J., Viguier L., (2004), Is emission trading always beneficial?, The Energy Journal, Vol. 25, No. 2, accessed: http://web.mit.edu/globalchange/www/MITJPSPGC_Reprint04-4.pdf
18. Stephanie La Hoz Theuer, Lambert Schneider & Derik Broekhoff (2019), When less is more: limits to international transfers under Article 6 of the Paris Agreement, Climate Policy, 19:4, 401-413, accessed: https://www.tandfonline.com/doi/full/10.1080/14693062.2018.1540341
19. Kollmuss, A., Schneider, L., & Zhezherin, V. (2015). Has joint implementation reduced GHG emissions? Lessons learned for the design of carbon market mechanisms (Working paper No. 2015-07). Stockholm Environment Institute (SEI). Retrieved from http://www.sei-international.org/publications?pid=2803. Schneider, L., & La Hoz Theuer, S. (2018). Environmental integrity of international carbon market mechanisms under the Paris Agreement. Climate Policy, 1–15.
20. Concise Oxford Dictionary, 1995.
21. Kreibich N. (2018), Raising ambition through cooperation, Using Article 6 to bolster climate change mitigation
22. Kreibich N., Obergassel W., (2018), New paths to the policy crediting?
23. S-CDM is defined as "a top-down approach that would provide a real incentive for developing countries to enact policies that make relevant sectors (energy, industrial, forestry, etc.) less carbon intensive over time, thus successfully mainstreaming climate considerations into the economic growth model", see https://www.mcgill.ca/mjsdl/files/mjsdl/2_1_3_figueres_0.pdf
24. Nationally Appropriate Mitigation Action (NAMA) is a concept developed by the Bali Action Plan in 2007 addressing the low willingness of developing countries to engage in mitigation commitments. 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", see Decision 1.CP13, para 1 (b)(ii), UNFCCC 2008).
25. With reference to COP 10 in Buenos Aires, see on page 87. Ott, Hermann E., Bernd Brouns, Wolfgang Sterk and Bettina Wittneben (2005): It Takes Two to Tango –Climate Policy at COP 10 in Buenos Aires and Beyond. In: Journal for European Environmental Planning& Law, Vol. 2, No. 2, S. 84-91

26. Leakage emissions refer to emissions occurring outside the coverage of the mechanism yet still attributable to it. As an example, emissions trading system may lead to the relocation of industrial activities or investments to the regions other regions or countries without comparable emissions limitations compromises the environmental effectiveness of the emission trading system as such.
27. Countries reviewed include Colombia, Indonesia, Mexico, Morocco, Peru, Senegal, Thailand, Viet Nam.
28. For comparison for example, the World Bank has developed a comprehensive assessment framework linking the key categories with specific scoring indicators
29. For example, Morocco just completed a PMR program looking at readiness for domestic carbon markets covering the electricity, cement, and phosphate sector.
30. TCAF had initiated work on an MRV crediting scheme covering electricity reforms (renewable energy acceleration, energy efficiency measures and fossil fuel subsidy revision).
31. in Indonesia around 147 CDM implemented projects
32. JCM is a project-based approach very similar to CDM. The differences from CDM include that the projects are approved and transacted on a bilateral basis between States rather than involving the UNFCCC and unlike the CDM where 100% of the emission reductions from a project are sold internationally, under the JCM a percentage of credits accrues to the host government and the rest are sold.
33. Note also that formulations of the LOI differ among the countries in particular with respect to the commitment to accept the corresponding adjustment.
34. As countries formally joined the Paris Agreement and started implementing the proposed climate actions, the INDC were converted into the Nationally Determined Contributions (NDC). This conversion happens when countries submit their respective instrument of ratification, accession, or approval to join the Paris Agreement.
35. Schneider L., Fuessler J., La Hoz Theuer S., Broekhoff D., (2017), Environmental Integrity under Article 6 of the Paris Agreement, accessed: https://www.researchgate.net/publication/315685295_Environmental_Integrity_under_Article_6_of_the_Paris_Agreement_Discussion_Paper
36. Axel Michaelowa, Lukas Hermwille, Wolfgang Obergassel & Sonja Butzengeiger (2019) Additionality revisited: guarding the integrity of market mechanisms under the Paris Agreement, Climate Policy, 19:10, 1211-1224, accessed: https://www.tandfonline.com/doi/full/10.1080/14693062.2019.1628695
37. Accessed: http://climatecollege.unimelb.edu.au/paris-equity-check-website
38. New Climate Institute (2017), Analysis of current climate policies and mitigation commitments: 2017 update, accessed: https://newclimate.org/wp-content/uploads/2018/04/ec-pbl_fact-sheet_currentpolicies_2017_final3b.pdf
39. See Michaelowa A., Espelage A., Muller B. (2019), Negotiating cooperation under Article 6 of the Paris Agreement, accessed: https://www.perspectives.cc/fileadmin/Publications/Michealowa_et_al._2019_-_Negotiating_cooperation_under_Article_6_of_the_PA.pdf.
40. Lazarus M., Kollmuss A., Schneider L., (2014), Single-year mitigation targets : Uncharted territory for emissions trading and unit transfers, accessed: https://www.researchgate.net/publication/265293402_Single-year_mitigation_targets_Uncharted_territory_for_emissions_trading_and_unit_transfers

41. MAC curves employed in our assessment were derived from POLES model (https://ec.europa.eu/jrc/en/poles) calibrated to the ENERDATA database (https://www.enerdata.net/). Data for the regions not covered by the ENERDATA database were estimated on the basis of the aggregated regional indicators.
42. Still, we are aware of several shortcomings of the assessments solely based on the use of the MAC and their dependence on a range of assumptions including on discount rates, consideration of non-financial costs and barriers and behavioural changes.
43. The shares were obtained from CAIT, accessed: https://cait.wri.org/
44. Broekhoff D., Fuessler J, Klein N., Schneider L., (2017), Establishing Scaled-Up Crediting Program baselines under the Paris Agreement: Issues and Options, accessed: https://www.researchgate.net/publication/321057832_Establishing_Scaled-Up_Crediting_Program_baselines_under_the_Paris_Agreement_Issues_and_Options
45. Kreibich N., Obergassel W., (2018), New paths to policy crediting? Challenges and opportunities of policy-based cooperation under Article 6 of the Paris Agreement, on page 9, accessed: https://www.carbon-mechanisms.de/fileadmin/media/dokumente/Publikationen/Policy_Paper/PP_2018_04_Policy_Crediting_bf.pdf
46. Okubo, Yuri, Daisuke Hayashi, and Axel Michaelowa. 2011. 'NAMA Crediting: How to Assess Offsets from and Additionality of Policy-Based Mitigation Actions in Developing Countries'. Greenhouse Gas Measurement and Management 1 (1): 37–46.
47. Röser, Frauke, and Caroline de Vit. 2012. 'Nationally Appropriate Mitigation Actions (NAMAs) and Carbon Markets'. 2012. https://www.ecofys.com/files/files/ecofys_policyupdate_issue4_may_2012.pdf
48. For example, by considering specific benchmarks of the BAT thresholds.
49. Accessed: https://ghgprotocol.org/sites/default/files/standards/Policy%20and%20Action%20Standard.pdf
50. In Kyoto Protocol the Articles 3.4, 3 6.1, 4 and 12.5 require additionality. In terms of Partis Agreement Article 6.4 explicitly refers to the principle of additionality and not much discussion on additionality of activities under Article 6.2 has taken place.
51. PMR (2016), Carbon credits and additionality, Past, present and future. Technical note 13. https://openknowledge.worldbank.org/bitstream/handle/10986/24295/K8835.pdf?sequence=2&isAllowed=y
52. Michaelowa, A., Fages, E. (1999), Options for baselines of the clean development mechanism. Mitigation and Adaptation Strategies for Global Change, 4, 167–185.
53. Schneider L., Fuessler J., Herren M., (2014), Crediting emission reductions in new market-based mechanisms.
54. Core parameters for TCAF operations, accessed: https://tcaf.worldbank.org/sites/tcaf/files/TCAF_Core%20parameters_July%202018.pdf
55. Michaelowa A., Butzengeiger S., (2017), Ensuring additionality under Article 6 of the Paris Agreement, accessed: https://www.icroa.org/resources/Documents/Art._6_Additionality_Perspectives_PRINT.pdf
56. See Michaelowa, Butzengeiger (2017).
57. Olsen, K. H., Singh, N., Rich, D., Mersmann, F., Neba, G. A., Ogahara, J., Uhlemann, K., Levin, K., Vieweg, M., Carman, R., Lee, S-Y., Lütken, S., Bujhawan, T., & Hansen, U. E. (2018). Transformational Change Guidance. Guidance for assessing the transformational impacts of policies and actions.
58. A comprehensive discussion of alternative strategies to avoid overselling for the cooperation at project-level is available: https://www.oeko.de/fileadmin/oekodoc/practical-strategies-to-avoid-overselling-final-report.pdf

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