

An aerial photograph of a dense forest with a winding river. The trees are a mix of vibrant green and yellow-green, suggesting a seasonal change or a specific type of forest. The river is dark and meanders through the landscape, creating several loops and curves. The overall scene is lush and natural.

# CARBON MECHANISMS REVIEW

Vol. 9 | No. 2

Summer 2021

# Taking the Natural Approach

Nature-based solutions in global  
carbon markets

**Transforming Methodologies**

Making CDM methodologies fit for  
Article 6 cooperation

# Content

Summer 2021



Source: Sapelli tree being cut near Lieki, DRC by Axel Fassio/CIFOR (<https://flic.kr/p/297HcJ7/>)  
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# editorial

## Dear Reader!

Nature-based solutions (NbS) have recently attracted considerable interest in global environmental forums such as the UNFCCC and the Convention on Biological Diversity (CBD). They serve in addressing a considerable number of societal challenges and can also be deployed in adapting to and mitigating climate change. This has sparked a debate on if and how NbS might be integrated into global carbon markets.

We at Carbon Mechanisms Review take up this debate with a special focus issue on nature-based solutions in market-based climate action. We begin with a tour d'horizon of the concept and the challenges it brings. We also look at a recent initiative to scale up REDD+ activities in an environmentally sound, integrative way. The cover feature is rounded off by an introduction to the EU's Carbon Farming Initiative (CFI).

Also in this issue, we analyse ways to transition CDM methodologies and report on Article 6.2 activities, and look at approaches for use in operationalising Articles 6.8 and 6.9 of the Paris Agreement.

On behalf of the editorial team, I wish you an inspired read and a relaxing summer break.

*Christof Arens*  
*Editor-in-chief*



Carbon Mechanisms Review (CMR) is a specialist magazine on cooperative market-based climate action. CMR covers mainly the cooperative approaches under the Paris Agreement's Article 6, but also the broader carbon pricing debate worldwide. This includes, for example, emission trading schemes worldwide and their linkages, or project-based approaches such as Japan's bilateral off-setting mechanism, and the Kyoto Protocol's flexible mechanisms CDM/JI. CMR appears quarterly in electronic form. All articles undergo an editorial review process. The editors are pleased to receive suggestions for topics or articles.

#### Published by:

Wuppertal Institute for Climate, Environment and Energy  
(Wuppertal Institut für Klima, Umwelt, Energie gGmbH)  
Döppersberg 19 · 42103 Wuppertal · Germany

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#### Distribution:

Carbon Mechanisms Review is distributed electronically.  
Subscription is free of charge: [www.carbon-mechanisms.de](http://www.carbon-mechanisms.de)

#### English language support:

Words-Worth, Stocks & Stocks GbR, Bonn/Düsseldorf (except pages 44-56)

Layout: [www.SelbachDesign.com](http://www.SelbachDesign.com)

Title page: ©Christopher Brunner - [stock.adobe.com](http://stock.adobe.com)

Back page: ©zentilia - [stock.adobe.com](http://stock.adobe.com)

This magazine is compiled as part of the Carbon Mechanisms project at the Wuppertal Institute for Climate, Environment and Energy ([wupperinst.org/p/wi/p/s/pd/853](http://wupperinst.org/p/wi/p/s/pd/853)). The editorial team works independently of the Market mechanisms and Article 6 coordination unit at the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety.

Vol. 9, No. 2, Summer

ISSN 2198-0705

# Scaling-up Nature-based Solutions

## Leveraging the long-term experience in carbon markets

by Jacqueline Gehrig-Fasel and Martin Gehrig, TREES, and Owen Hewlett, Gold Standard

Nature-based Solutions (NbS) have long been successfully implemented in carbon markets and environmental programs. What is different about NbS today is the way they are framed: NbS are now regarded as a solution to achieving ambitious social and environmental goals on a mass scale. Besides climate impact, the focus is on food and water security, disaster risk reduction, human health and socioeconomic development, as well as combating environmental degradation and biodiversity loss.

Different definitions for NbS are now being used which can be summarized as an umbrella concept for many approaches addressing climate-related challenges and using nature to emphasize different aspects of either the problem to be solved or the nature to be used. The World-wide Fund for Nature (WWF 2020) recommends including in the NbS definition the use of nature for both climate change mitigation and adaptation, to set ambitious, measurable and time bound numeric targets, to maximize benefits from biodiversity, and to include all ecosystem types that can provide climate benefits such as wetlands, forests, mangroves, coral reefs, grasslands, working lands, and urban landscapes.

Though there is no common practice definition of NbS in carbon markets, the respective NbS scopes

and implemented project activities are streamlined across the voluntary carbon standards. Thoroughly reviewed, science-based quantification methodologies are available for NbS activities in forestry, land use and blue carbon<sup>1</sup> scopes. Implementations of different types of NbS in carbon markets are successfully delivering greenhouse gas (GHG) emission reductions, removals, and avoided emissions (Table 1). These mitigation activities are not only urgently needed to limit global warming to 1.5°C and 2°C respectively by 2030 (IPCC 2018), they also contribute, through various co-benefits, to meet the Sustainable Development Goals (SDGs).

## Growing demand for NbS due to blending and evolution of carbon markets

With the provisional end of the Clean Development Mechanism (CDM) in 2020 and pending the conclusion of negotiations on Article 6 of the Paris Agreement, the biggest compliance market for project-based mitigation benefits has come to a halt. Following the Paris Agreement, the voluntary carbon market has become the main driver for NbS climate mitigation projects and is now at the

<sup>1</sup> Blue carbon is the carbon stored in coastal and marine ecosystems.

Table 1: Scope, NbS activities and their GHG mitigation impacts in carbon markets

Scope	Activity	Carbon Credit Units		
		Emission reduction	Avoided emissions	Removals
Forestry	Afforestation/reforestation (A/R)			X
	Improved forest management (IFM)			X
	Avoided deforestation or forest degradation (REDD)		X	
Agriculture	Agroforestry			X
	Nutrient management (fertilizer/inputs)	X		X
	Improved practices (tillage)	X		X
	Irrigation / water management	X		
	Organic inputs (compost, green manure / mulch, biochar)			X
	Livestock (CH <sub>4</sub> reduction in enteric fermentation)	X		
Blue Carbon	Peatland and wetland conservation and restoration	X	(X)	X
	Coastal mangrove restoration	X	(X)	X
	Tidal wetland restoration	X		X

forefront in testing and developing NbS project types in land use, forestry, and the blue carbon sector.

In the transition from the Kyoto Protocol to the Paris Agreement, and thus to global emission reduction targets and contributions across all countries and sectors, the formerly clear separation of compliance and voluntary markets is softening. New applications and schemes are emerging, including sectoral programs (e.g. CORSIA scheme for international aviation) and corporate initiatives, and compliance and voluntary market components are aligning (e.g. South African and

Colombian carbon tax systems allowing heavy emitters to purchase offset credits from voluntary standards; Figure 1).

Many of these systems specifically include NbS impacts such as GHG removals (e.g. the Science-based Targets Initiative Net-Zero Approach), providing a great opportunity for the use of NbS mitigation units across different markets, but also bringing with it the challenge to align all carbon markets with national accounting to avoid double claiming of benefits.

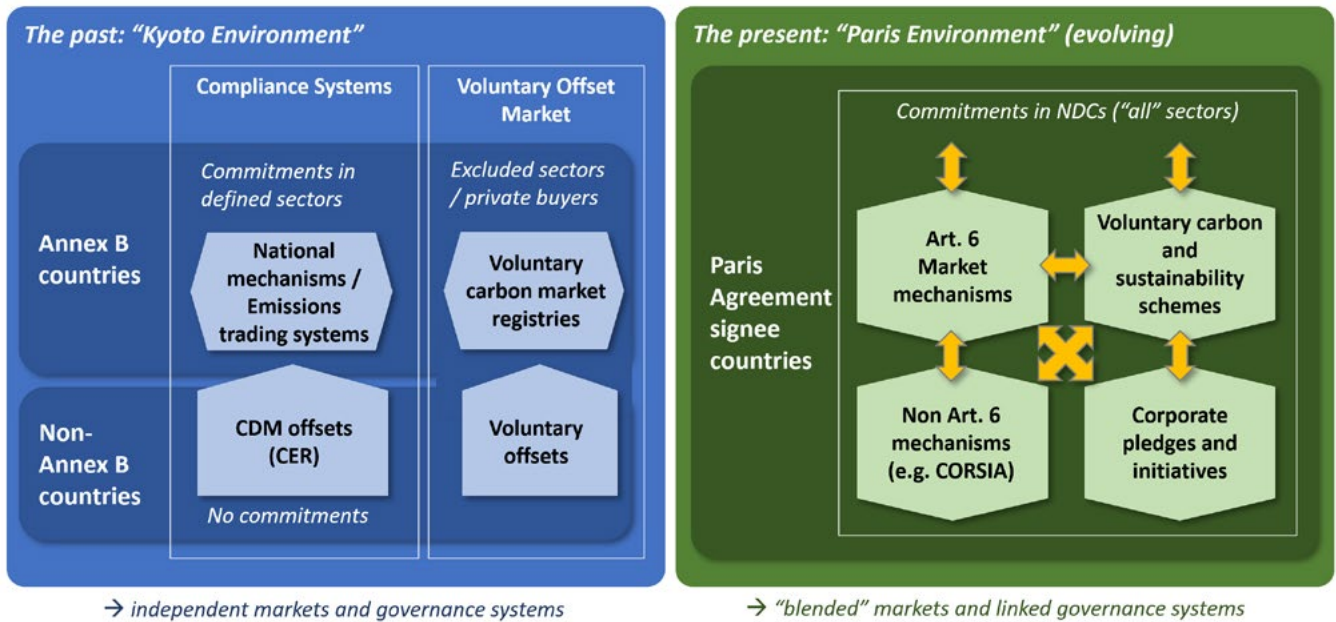


Figure 1: Simplified schematic view of Kyoto and post-Paris carbon market environments

### Considerable potential for countries to strengthen the role of NbS in NDCs

The importance of NbS for climate change mitigation and adaptation is evident by its inclusion in the majority of the Nationally Determined Contributions (NDCs). However, most NDCs mainly reference efforts in the forestry sector covering management, restoration and/or protection of forests and/or afforestation. By comparison, other ecosystem types that can provide NbS benefits such as grasslands, drylands, coastal and/or marine ecosystems (e.g. mangroves), other wetlands (e.g. peatlands), working lands, and urban landscapes are poorly represented.

Many NbS targets in NDCs are non-specific and not defined per sector, stating instead a general emission reduction target covering all sectors (e.g. EU NDC). In addition, most NDCs do not include robust NbS targets that are linked to a clearly established baseline and are measurable, time-bound and based on science and/or local knowledge and consultation; only few are expressed in

tons of carbon dioxide equivalent or even state specific quantification/measurement approaches for NbS activities. There is vast potential to improve quantification precision and accuracy in NDCs by leveraging expertise from the voluntary carbon standards. Under such standards, carbon projects are required to apply an activity-specific, science-backed, reviewed, and registered quantification methodology to calculate the emission reduction or sequestration potential in tons of carbon dioxide equivalent. In addition, the quality and accuracy (uncertainty) of data and models used for quantification need to be assessed for any carbon project, with penalties in place to incentivize improved approaches compared to simply applying IPCC Tier 1 defaults with high associated errors (e.g. Gold Standard, Climate Action Reserve).

Challenges inherent to NbS such as the management of climate risks that threaten the long-term viability or potential reversal are currently not addressed in the NDCs but are vital to the success

of NbS for climate mitigation and adaptation. In contrast to the CDM, the voluntary carbon standards such as the Gold Standard and VCS have established standard-level risk mitigation tools and safeguards to address these challenges and ensure successful implementation and delivery of NbS climate benefits for their long-term carbon projects. These tools and safeguards could also be considered for application with NbS in NDCs.

Another issue is the uncertainty around how carbon units will be embedded in the accounting and governance structure of a country's NDC. At the core of this is a lack of clarity as to whether countries will allow voluntary carbon market projects to contribute to the NDC goals or export carbon units to private buyers without simultaneously making corresponding adjustments to their own NDC goals – which could lead to “double counting” or overestimating the amount of carbon.

Thus, considerable potential remains for countries to strengthen the role and facilitate implementation of NbS in future NDCs.

### **Carbon market approaches offer solutions to many barriers inherent to NbS projects**

NbS have been successfully implemented at project level but often face a range of challenges that impede large-scale implementation, such as regulatory and social environments, cultural barriers and traditions, funding difficulties, and technical and operational challenges.

However, not all barriers discussed in relation to NbS are actually NbS specific. It is important to distinguish between general barriers for the implementation of carbon market activities and barriers inherent to NbS activities. Table 1 provides an overview of barriers inherent to NbS activity implementation and available solutions under the voluntary carbon standards.

Barriers and challenges faced by all carbon projects and not inherent to NbS include the lack of supportive and aligned policy and legal frameworks, lack of financial incentives and access to upfront funding. Also, not specific to NbS but crucial for their implementation at landscape level are challenges in common practice and additionality considerations. It is essential when upscaling NbS that robust additionality approaches with adequate benchmarks are applied in next-generation market systems.

Safeguards and solutions have been implemented in carbon markets on project-scale already, with stakeholder consultation and alignment at the core of many solutions. However, if NbS activities are to be upscaled to country/landscape level, some critical barriers linked to diverse, multi-activity and multi-stakeholder environments remain to which solutions are still needed. Newly emerging barriers – not specific to NbS but to mitigation projects in general – like avoiding double counting between different markets and accounting systems (e.g. carbon markets, NDCs, corporate supply chain, emerging systems like CORSIA), must be addressed, e.g. by applying corresponding adjustments (aligned with Paris Agreement Article 6) to ensure that a mitigation unit (i.e. a GHG emission reduction or removal) is only counted once across all market and systems.

### **Substantial innovation potential for blue carbon and urban scope**

There is substantial potential for innovation, especially for the NbS sector and activities not yet (fully) tapped by carbon markets (namely in the blue carbon and urban sector):

- Expansion of blue carbon NbS, e.g. macroalgae in marine carbon sequestration; algae as a replacement resource for food, animal feed or fossil products, as a power source, or for carbon sequestration, e.g. in coatings.

**Table 1:**  
Barriers specific to the implementation of NbS activities at project level, and available solutions in carbon markets

Type of barrier	Examples of barriers and challenges	Solution approaches available in voluntary carbon markets
Social and cultural barriers	Dominating traditional practices (e.g. land use)	Multi-year (10-50) crediting period ensures long-term practice change.
	Lack of knowledge/skills	Projects require public stakeholder interaction to raise awareness, and to provide support and training.
	Food security Water security	Voluntary carbon standard's principles and safeguards ensure that yields are not reduced, and water quality and quantity are not adversely impacted.
Land tenure and social conflicts	Long-term land tenure/conflicts	Voluntary carbon standards require uncontested land right proof or long-term lease to ensure carbon rights.
	Multi-stakeholder environments, land use conflicts	Mandatory public stakeholder consultation creates transparency, identifies common goals, and reduces risk of conflicts.
	Gender equality and child labor (in agriculture systems), illegal land use activities/land use change	Grievance processes are required for any carbon project to deal with potential conflicts during the entire project duration.  Standard level safeguards forbid child labor and require gender equality.
Quantification of GHG benefits	Complexity of natural processes	Models and data are rigorously verified and calibrated by third party auditors to ensure project and activity applicability.
	Interaction of benefits if several NbS activities are applied in one project.	On site field measurements directly quantify net multi-activity impact.
	Variability and uncertainty in quantification models, data and measurements	Voluntary carbon standards such as GS require credit deductions for high uncertainties in models or data (i.e. reducing credits issued).
Climate risks	Climate change impacts (drought, water shortage)	Risk assessments for projects include climate change effects and require risk management and mitigation at project setup.
	Natural disasters (fires, floods)	Deductions of credits are applied for non-mitigated risks.
		Recovery of losses through retirement of credits in carbon standard's risk buffer pool.
Environmental integrity and quality assurance	Permanence of stored carbon	Carbon standards such as GS and VCS require risk buffer credit contribution for NbS projects, CAR allows insurance solutions or ton-year accounting (see Section 3.3). All voluntary carbon standards have implemented strict reversal rules resulting in project non-compliance or required credit compensation.



- Expansion of urban NbS, both in and around cities, linking urban processes to climate mitigation and adaptation objectives (e.g. green roofs, urban gardens, green spaces, city trees, community gardens, green indoor areas for climate control, green infrastructure and urban forests).
- Use of natural solutions in artificial systems such as controlled aquatic systems or integration of carbon sequestering organisms into production processes. Note: Such approaches may technically not be categorized as NbS if deeply embedded in industrial or manufacturing processes. However, connecting these to or integrating them into NbS programs can be -beneficial, e.g. to link resource supply chains.

To enable the application of these new NbS activities in carbon markets, respective research on GHG impacts quantification and influencing factors as well as development of respective quantification methodologies is urgently needed. Ideally, such activity-based quantification follows a standardized approach as applied under the voluntary carbon standards, but one which applies program-specific/locally-applicable parametrization and/or models (IPCC Tier 2 or Tier 3, IPCC 2019) instead of using globally applicable Tier 1 defaults with a high degree of associated errors.

## Upscale from Individual Projects to Landscape Programs

As with NbS, landscape management approaches are nothing new. Forest landscape restoration programs have been implemented using programmatic approaches and carbon funding. However, applying NbS principles to a landscape in multi-use productive systems or urban areas would help to scale up NbS and allow implementation in situations where a single, smaller project cannot achieve the desired objectives.

NbS at their core are recovery activities, restoring, re-introducing, improving, or adapting natural processes to benefit the climate, the environment and human society. However, in many situations, counteractive objectives require trade-offs, with an increase in one contribution leading to a decrease in another (e.g. an increase in socio-economic productivity leads to a decrease in biodiversity). While in the best case this can be overcome, it remains a reality in many NbS applications. One solution is to expand the NbS space from a single site to a larger landscape as an incentive to address conflicts and integrate all relevant stakeholders.

Diversifying natural structures and human land use enables the harnessing of different benefits from different activities in a landscape. Each type of activity has one



Figure 2: NbS landscape approach with multiple benefits

or more clear and transparent objectives and is managed accordingly. Beyond this, integrating all activities into a NbS program attaches great weight to understanding and improving interactions between different activities, eliminating negative effects, and improving overall performance towards all NbS goals. Benefits (commercial as well as carbon revenues) can be shared across stakeholders to maximize impacts. In such approaches, the whole is indeed greater than the sum of its parts (Figure 2).

Tapping carbon markets with landscape program activities serve multiple purposes in a landscape program, including provision of additional income from carbon credits, providing transparent and consistent mechanisms to quantify impacts (and thus performance indicators for the program), and increasing commitment for long-term governance and stakeholder contributions.

A promising, innovative approach to facilitate the urgently needed upscaling from project to landscape/country level is the combination of

jurisdictional and credit-based mechanisms in “hybrid” programs (Figure 3), leveraging overarching framework programs (governance, data, stakeholder support) across multiple operational activity implementations (carbon projects). The development of system-wide frameworks could also help to address interactions and potential trade-offs between different NbS activities, taking the perspectives of different stakeholders into account. Especially for NbS in diverse productive environments, harmonized overall policies, regulatory requirements and incentives need to be managed during program setup.

Larger programs and frameworks can also contribute to reducing financial loads on operations by providing basic functions funded from non-market sources (e.g. grants, readiness funds) and facilitate access to innovative finance approaches such as ex-ante credits or early credit issuance to close the gap between upfront investments and lagged financial returns.

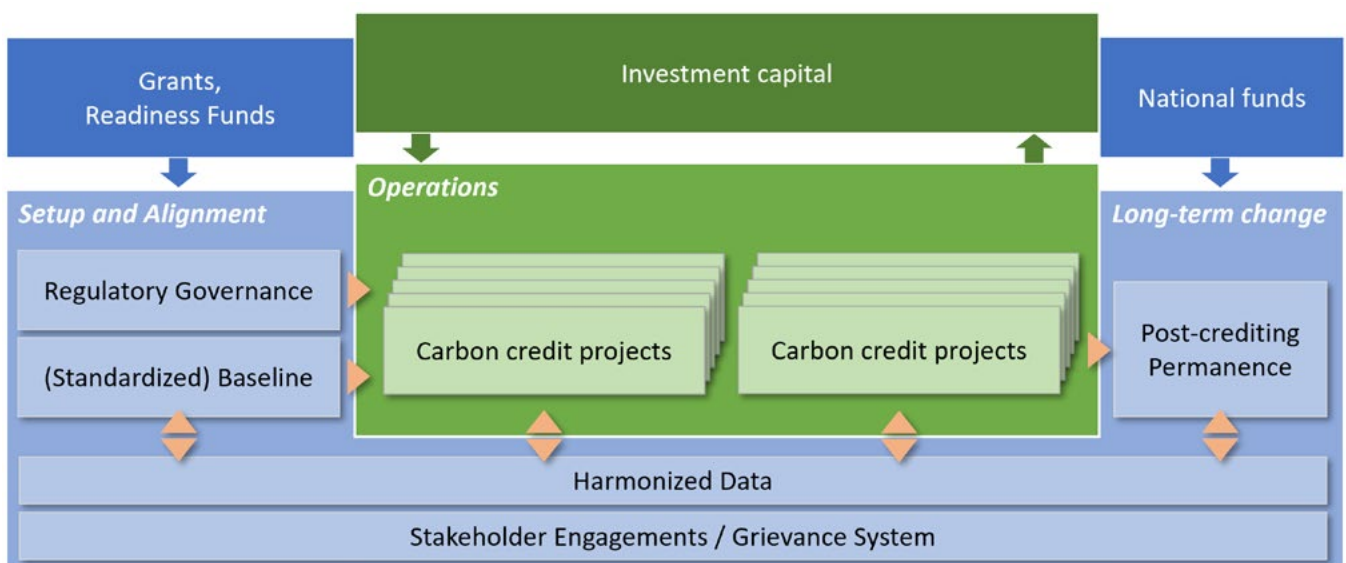


Figure 3: Conceptual setup of a hybrid program framework and integrated carbon credit projects

## Conclusions

We conclude that the long-term experience from Nature-based Solutions (NbS) in voluntary carbon markets can be leveraged to ensure that large-scale NbS programs provide the required contribution to climate change mitigation, adaptation, and the Sustainable Development Goals. Voluntary carbon standards' safeguards, guidelines, impact quantification methodologies, and risk tools for all NbS activity scopes (forestry, land use, blue carbon, urban) can be used and expanded for broad application across different market systems and purposes.

To enable the application of new NbS activities not yet fully tapped by carbon markets, such as blue carbon and urban scopes, respective research on GHG impacts quantification and influencing factors as well as development of respective quantification methodologies is needed.

National policies and regulatory systems currently impeding NbS implementation need to be improved and aligned to allow the urgently needed upscaling from a project-scale, single NbS activity approach to programs covering multiple NbS activities on landscape or country level. NbS frameworks with consistent policy and incentives across all involved NbS scopes, stakeholders, and governance levels need to be established.

Barriers inherent to NbS activities can be overcome, with solutions available that can be targeted to different mechanisms (e.g. NDC, CORSIA, corporate supply chain interventions, compliance/voluntary markets). The same is true for new challenges faced by all market-based approaches (e.g. specification of Article 6 implementation, avoidance of double counting).

Lessons learned from international carbon trade as well as voluntary carbon schemes and non-market mechanisms (e.g. jurisdictional programs and corporate interventions) can be applied in the design of new markets and new, integrated "hybrid" models combining market mechanisms with jurisdictional programs to maximize climate benefits, scale up NbS activities and accelerate implementation.

## Further information:

This article is a summary of the study on Nature-based Solutions (NbS) in Carbon Markets developed by TREES and the Gold Standard for the Foundation Future of the Carbon Market (Stiftung Zukunft des Kohlenstoffmarktes). It discusses the opportunities, barriers, and innovation potential of NbS in carbon markets with a strong focus on new emerging mechanisms, markets, and governance systems. The study can be downloaded here:

<https://www.carbon-mechanisms.de/en/publications/details/nature-based-solutions-in-carbon-markets>

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# Ramping up Efforts

## The LEAF Coalition for tropical forest protection and climate collaboration

by Ruben Lubowski, Environmental Defense Fund

Eliminating and reversing the loss of tropical forests within the next decade is necessary to preserve chances of meeting the Paris Agreement's goals for stabilizing global temperatures (IPCC 2018), as well as meeting biodiversity and sustainable development goals. In addition, there have also been large-scale demonstrations of how deforestation can be effectively reduced at large jurisdictional (national and state/province) scales while increasing agricultural production and economic development (Nepstad et al. 2014).

International climate cooperation through carbon markets and other pay-for-performance systems that include tropical forest protection could result in almost double the emissions reductions at the same total cost, compared to a non-cooperative scenario for implementing Nationally Determined Contributions (NDCs) (Piris-Cabezas et al. 2019). Nevertheless, an enormous gap remains between the mitigation potential from forests and the financial flows to date.

Private finance is critical to closing this gap, and emerging carbon markets – both regulated and voluntary – offer a crucial opportunity to significantly scale up both private and public finance flows for high-integrity programs to protect and restore tropical forests. When governed by appropriate rules and criteria, these markets hold the promise of transforming economic incentives to eliminate and reverse global deforestation.

The good news is that private and public actors have never been more willing to move forward with finance for programs to reduce emissions from deforestation and forest degradation in developing countries (REDD+). Growing numbers of corporations are committing to reduce their own carbon footprints, including through voluntary purchases of carbon credits, with special interest in forests and other natural climate solutions.

In addition, a jurisdictional (national or large sub-national) approach to measuring and crediting REDD+ has been agreed under the United Nations Framework Convention on Climate Change (UNFCCC) – codified in the Warsaw Framework for REDD+ in 2013 and reaffirmed by the Paris Agreement in 2015 – and in major compliance carbon market forums. By supporting the government's role in forest and other land management and the inclusion of all relevant actors across the landscape, this approach has proven to yield lasting deforestation efforts at large scales (for more details, see below). The International Civil Aviation Organization (ICAO) Council's decision in 2020 to include jurisdictional-scale REDD+ programs in its Carbon Offsetting and Reductions System for International Aviation (CORSI) market the first time REDD+ credits were approved in an international compliance carbon market system. California provided another important signal in 2019 when it issued its Tropical Forest Standard (TFS), which is based on a jurisdictional REDD+ approach.



Source: Sapelli tree being cut near Lieki, DRC by Axel Fassio/CIFOR (<https://flic.kr/p/297Hcy7>) / Flickr / CC BY-NC-ND (<https://creativecommons.org/licenses/by-nc-nd/2.0/>)

*Scaling up: the jurisdictional approach enables large-scale, integrated emission reductions to avoid leakage and progress reversal*

An important step was taken at the Leaders Summit on Climate convened by U.S. President Biden on April 22, 2021. The governments of the UK, US, and Norway together with nine leading companies launched The Lowering Emissions by Accelerating Forest finance (LEAF) Coalition, a public-private partnership to provide large-scale finance for high-integrity REDD+ results, alongside commitments by the participants to cut their own emissions along a science-based pathway. The initial participating companies are Airbnb, Amazon, Bayer, Boston Consulting Group, GlaxoSmithKline, McKinsey & Company, Nestle, Salesforce,

and Unilever. More private and public participants are expected to join in coming months.

The LEAF partnership offers a new, high-integrity public-private results-based finance approach for accelerating global climate ambition through the protection of tropical forests. LEAF aims to mobilize at least \$1 billion this year with a call for proposals for 100 million tons of high-integrity, jurisdictional-scale emissions reductions to be delivered over 2022-2026 and be compensated for at a minimum price of \$10 per ton of CO<sub>2</sub>. This is intended to just the first tranche. The deadline for jurisdictions to



Source: Sapelli tree being cut near Imbolo, DRC by Axel Fassio/CIFOR (<https://flic.kr/p/297Hcy7>) / Flickr / CC BY-NC-ND 2.0 (<https://creativecommons.org/licenses/by-nc-nd/2.0/>)

*System change: reversing the loss of tropical forests within the next decade is crucial in achieving the Paris Agreement goals.*

submit proposal to LEAF is July 31 with the goal of signing transaction agreements by the end of the year. At least half the emissions reductions are expected to be paid for by the participating companies signing advance purchase commitments, with the remaining emissions reductions underwritten by minimum price guarantees provided by the participating governments.

LEAF will pay for emissions reductions achieved at jurisdictional scales and certified according to criteria set by an independent standard, The REDD+ Environmental Excellence Standard (TREES) managed by the Architecture for REDD+ Transactions' (ART), to ensure emissions reductions are real and verified and that social and environmental safeguards are respected. A key aspect of the LEAF

Coalition is ensuring the full and effective participation of Indigenous Peoples and local communities in implementation of the programs described in the proposals submitted by jurisdictions. LEAF participants and forest country partners will work together to ensure emission reduction programs address and respect the rights of Indigenous Peoples and members of local communities.

The initiative is being administered by Emergent Forest Finance Accelerator (Emergent), a US-based non-profit finance intermediary launched at the New York Climate Week in 2019 by the Environmental Defense Fund (EDF), The Rockefeller Foundation, Norway's Climate and Forest Initiative (NICFI) and other partners. Emergent was established to aggregate demand and supply and support

transactions for high-quality tropical forest protection credits at scale. The Green Gigaton Challenge – announced in late 2020 by UN-REDD+, Emergent and ART, in partnership with EDF and FT – aims to further catalyze funds by setting a goal of one gigaton of high-quality annual emissions reduction transactions from tropical forests by 2025.

## Private/public finance volume and price

The commitment of private companies in LEAF represents by far the largest private sector commitment for tropical forest protection and the first major private sector commitment to reward REDD+ emissions reductions at the jurisdictional scale. The \$1 billion commitment for the first 100 million tons LEAF is also significant numerically, as it is roughly equal to the total volume of all voluntary carbon market transactions and over triple the value in 2019, the last year for which data are available from the Forest Trend's Ecosystem Marketplace (FT Ecosystem Marketplace 2020).

The \$1 billion is also commensurate with major almost exclusively publicly funded efforts such as the Amazon Fund and the Forest Carbon Partnership Facility (FCPF) Carbon Fund managed by the World Bank, but notable as the majority if not all the emissions reductions under LEAF are expected to be paid for by private companies. Also, the \$10 price/ton that will be paid under LEAF is double the \$5 price paid to date under pay-for-performance jurisdictional REDD+ efforts financed chiefly by public donors. There is also potential for jurisdictions to receive more than \$10/ton if private buyers resell their credits or if Emergent can sell the emissions reductions underwritten by private donors at higher prices. This higher price is a recognition of the high quality of the emissions reductions and the high level of ambition represented by the ART-TREES standard and the jurisdictional approach.

## Supply-side integrity criteria

Payments are for demonstrated results, achieved at large scales, which is important for aligning incentives with environmental and social performance. The ART-TREES standard used by LEAF brings the highest assurance of environmental and social integrity, addressing many long-standing concerns with forest and other types of carbon credits. In particular, emissions reductions paid for under LEAF will be quantified at the level of jurisdictions (countries, states, provinces, and potentially Indigenous territories) containing over 2.5 million hectares of forests. Such a jurisdictional approach aligns with international frameworks for REDD+ under the UNFCCC and in compliance market systems, notably CORSIA. To date, the voluntary carbon market for forest carbon credits and other emissions reductions has been based on methodologies at the level of stand-alone “projects,” relatively small areas delineated voluntarily, rather than at the jurisdictional scale, under which projects can be integrated or “nested.” Under ART-TREES, jurisdictions can choose to distribute a portion of credits or finance to discrete projects, based on a variety of potential approaches, and these could support scaling and achievement of performance to reduce deforestation.

The overarching jurisdictional approach is important given the important role of the government in determining forest and other land management, including through establishment of protected areas, recognition of Indigenous rights, and law enforcement efforts. A jurisdictional approach enables government efforts to reduce deforestation, alongside actions by private sector, communities, and other stakeholders. The tropical forest conservation programs proven to reduce deforestation at large scales are those where the government has been centrally engaged. From 2004 to 2012, Brazil demonstrated that a combination of indigenous territories and protected areas, increased law enforcement, finance reforms, supply chain initiatives plus some at-scale incentives can achieve large-scale results, reducing deforestation by 80% within 10 years while increasing cattle and soy production (Nepstad et al. 2014).

A jurisdictional approach provides important assurances of environmental integrity, including enhanced confidence that emissions reductions are “additional” to what otherwise would have happened. Rather than quantifying emissions reductions relative to a projected future scenario or “baseline” for emissions area, the jurisdictional approach under ART-TREES is based on absolute emissions reductions below a 5-year historical average of emissions across a large area, monitored via satellite, with a set of additional deductions to ensure conservativeness. As a result, credits are issued for absolute reductions achieved, relative to recent levels. ART-TREES further requires this baseline to adjust downwards over time, setting the stage for forest jurisdictions to drive their deforestation rapidly to zero, consistent with the ambition needed to achieve the goals of the Paris Agreement.

The approach requires accounting for all the forest area within a jurisdiction, ensuring that any shifts or “leakage” of emissions within a jurisdiction’s boundaries are captured within the accounting. This comprehensive approach also avoids potential issues with small projects where participants can selectively choose whether or not to participate in the program, depending on whether the crediting methodology is economically advantageous (van Benthem and Kerr 2013). A large-scale approach helps pool risks of fires and other events that could reverse individual projects, and ART-TREES further provides for conservative crediting and the use of buffers to further manage the risk of potential reversals of progress in reducing emissions. A jurisdictional approach that drives systemic societal changes provides the best assurance that forests will be protected on a durable basis, even in the face of political changes.

LEAF also centrally incorporates social integrity criteria with the goal of ensuring Indigenous and local communities meaningfully participate in the design and implementation of REDD+ programs to share fairly in the benefits. The ART-TREES

standard specifically requires adherence and implementation of the Cancun safeguards, codified under the UNFCCC, to ensure social and environmental governance, in particular the recognition, respect, protection, and fulfillment of the rights of indigenous peoples and local communities. The LEAF call for proposals also states that proposals will be prioritized according to the jurisdiction’s ambition in reducing deforestation and broader climate goals, as well as the participation of all relevant stakeholders, notably Indigenous people and local communities.

## Demand-side integrity criteria

The companies and governments participating in LEAF are also modeling high climate ambition by taking on commitments to decarbonize their own emissions in their own operations and supply chains while supplementing these actions by paying to reduce emissions externally via the protection of tropical forests, an urgent and time-limited climate priority to help the planet as a whole achieve net zero emissions. In particular, companies are committing to setting science-based climate targets consistent with the Paris Agreement goals, and to commit to mid-century net zero targets covering all three scopes of their emissions. Thus, the emissions reductions secured through LEAF will be augmenting climate impact rather than substituting internal emissions reductions based on these targets. The buyers also are committing to publicly report on the use of the emissions reductions paid for under LEAF.

The terms of participation under LEAF offer a model for how voluntary carbon transactions can immediately support high ambition and aligned accounting under the Paris Agreement. The transactions are intended to be voluntary and support the host countries in the achievement of their Paris pledges, known as Nationally Determined Contributions (NDCs). Payments from government





Source: Aerial view of oil palm plantation by Nanang Sujana/CIFOR (<https://flic.kr/p/227QTNa>) / Flickr / CC BY-NC-ND 2.0 (<https://creativecommons.org/licenses/by-nc-nd/2.0/>)

*Addressing the drivers: palm oil plantation in Indonesia.*

participants will be results-based climate finance without taking any ownership to the emissions reductions. While the participating companies under LEAF have the option to take title to carbon credits issued under ART-TREES, they are committing to be transparent in any associated communications (e.g. to customers) that the underlying mitigation will be counted towards the host country's NDCs. In this way, the LEAF terms address potential concerns about double claiming, without a requirement for forest countries to give up their ability to claim the reductions themselves – through a “corresponding adjustment” to their Paris reporting – unless the host countries chose to do so. This would be required to sell credits into

CORSIA or a market where another country would be claiming the reductions towards their own Paris targets.

## The way forward

A massive increase in both international public and private results-based funding commitments is essential to protect tropical forests and deliver on other nature-based climate solutions. The LEAF Coalition is an important demonstration of private demand, linked to clear, high-integrity criteria for high-integrity and ambition on both the demand and supply sides. A critical next priority is successful implementation of pro-

grams in the participating tropical jurisdictions, ensuring integral engagement and benefits to Indigenous and local communities, as well as the mobilization of technical assistance and financing from variety of sources to achieve performance in reducing deforestation that can meet the guaranteed demand. Successful conclusion of the first round of transactions – and delivery of associated reductions – offers the potential to accelerate the development of a new private market capable of growing to several billion \$ per year to protect and restore global forests on the scale needed to address climate challenge.

#### Further information:

LEAF Coalition

<https://leafcoalition.org>

LEAF Call for Proposals

<https://www.leafcoalition.org/img/pdf/LEAF%20Call%20for%20Proposal.pdf>

Emergent Forest Finance Accelerator

[www.emergentclimate.com](http://www.emergentclimate.com)

Architecture for REDD+ Transactions

[www.artredd.org](http://www.artredd.org)

Green Gigaton Challenge

<https://www.greengigaton.com>

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# Earning Potential

## Towards a new business model for carbon farming

by Chiara Micelli, DG Climate Action, European Commission

Reaching climate neutrality in the EU by 2050 has been an aspiration for the Commission since the publication of 'A Clean Planet for all' in late 2018. The analysis behind this Communication shows that net-zero greenhouse gas emissions (GHG) can only be reached if ambitious emission reductions are complemented with the removal of carbon dioxide from the air to compensate for outstanding emissions. Reducing our emissions to net zero by mid-century is now a formal commitment under the European Green Deal, and the provisionally agreed European Climate Law confirms the need to increase removals to reach that aim. The law also foresees the need to increase EU carbon net removals by 2030 and to achieve net negative emissions after mid-century.

Closing the gap on climate neutrality requires solutions for capturing CO<sub>2</sub> from the atmosphere and storing it sustainably in ecosystems, geological reservoirs or purpose-made products. Both nature-based and engineered solutions are needed to remove several hundred million tonnes of CO<sub>2</sub> per year from the atmosphere. The Land Use, Land Use Change and Forestry (LULUCF) Regulation<sup>2</sup> (EU) sets a minimum level of climate mitigation performance in the LULUCF sector for each EU Member State. However, it does not establish

direct incentives at the level of the individual land manager, farmer or forester to increase carbon removals and protect carbon stocks. As of yet, there is no significant technological carbon removals to speak of in the EU, and there is no regulatory framework mandating or incentivising sustainable Bioenergy Carbon Capture and Utilisation or Storage (BECCUS), Direct Air Capture (DAC) or other clean technologies for capturing, recycling or storing carbon.

The European Union already provides some funding opportunities to kick-start the development of carbon removal technologies or practices. The Innovation Fund<sup>3</sup> supports promising clean technologies that include solutions for capturing, storing or recycling CO<sub>2</sub>, the LIFE programme<sup>4</sup> is an EU funding instrument well adapted to test nature-based approaches on the ground, and Horizon Europe<sup>5</sup> is essential to the development of new innovative solutions for removing carbon. They are all important instruments but deploying carbon removals at a scale that matches the EU objective of climate neutrality requires additional policies. In this context, the European Commission announced two initiatives in 2020 establishing the regulatory framework for certifying carbon removals and providing targeted support to car-

1 COM(2018) 773 final of 28 November 2018, A clean Planet for all - A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy.

2 Regulation (EU) 2018/841 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy framework

3 [https://ec.europa.eu/clima/policies/innovation-fund\\_en](https://ec.europa.eu/clima/policies/innovation-fund_en)

4 [https://cinea.ec.europa.eu/life\\_en](https://cinea.ec.europa.eu/life_en)

5 [https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe\\_en](https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe_en)



*Multifunctional buffer: riparian forests offer a wide range of both climate and biodiversity services and benefits*

bon farming initiatives promoting the uptake of carbon sequestration.

### **Towards a regulatory framework for the certification of carbon removals**

To help scale up and encourage carbon removals through both nature-based and technological solutions, the European Commission is working on the development of a regulatory framework for certifying carbon removals. Certification will be based on robust carbon accounting in order to monitor and verify the authenticity of carbon removals<sup>6</sup>, representing a necessary and important step towards providing regulatory mandates

and/or incentives for the medium-term market take-up of carbon removal solutions.

Certified carbon removals have the potential to fulfil various roles. They can be used as incentives or requirements under current climate policies, they can also demonstrate the achievement of voluntary pledges or climate objectives of non-state or corporate actors. Where deployed appropriately, such uses for carbon removals could help mobilize the financial resources necessary to support carbon removals and thus advance climate action.

The first priority and a necessary precondition for reducing the risk of carbon removals diluting

6 Announced in the Circular Economy Action Plan COM(2020)98

climate action is the creation of a robust and credible governance framework that only allows actual, sustainable, transparent and verifiable carbon removals to be certified. This implies setting the appropriate monitoring, reporting and verification rules with robust safeguard clauses to ensure the environmental integrity of the mechanism. The potential for synergies with other environmental priorities (e.g. on biodiversity, clean water, air and soil and resilience to climate change) should be explored and encouraged.

The scope of the initiative will define the type of projects that can be certified. Priority should be given to nature-based or engineered solutions that remove carbon from the atmosphere on a sustainable, efficient and long-term basis. The maturity of practices or technologies, their costs and potential barriers, as well as their overall quantitative and qualitative potential will determine which solutions are the most appropriate for an EU certification mechanism. Technological and economic factors will continue to evolve with the development and the initial implementation of the framework. The framework should therefore be flexible enough to incorporate lessons learnt along the way, while limiting regulatory uncertainty caused by too frequent revisions.

The durability and permanence of carbon removals are central criteria for their certification. The directive for the geological storage of CO<sub>2</sub> (so-called “CCS Directive”) already establishes a legal framework for the environmentally safe, geological storage of CO<sub>2</sub> to contribute to the fight against climate change. It lays down extensive requirements for selecting sites for CO<sub>2</sub> storage, including prior risk analysis of CO<sub>2</sub> leakage and the associated liabilities. Using captured CO<sub>2</sub> to produce long-lasting products such as building material through mineralisation processes or wood production is also contributing to the long-term storage of carbon. Other more short-lived products from the reuse of carbon, such as synthetic fuels, contribute to climate mitigation by

substituting fossil fuels, but cannot be considered permanent carbon storage.

The impermanence risk is higher for nature-based solutions exposed to natural hazards or changes in land management practices. The liability for carbon reversal depends on how crediting periods are established and how liability is attached to the landowner. Carbon reversal within a certification period can, for example, be managed through use of buffer accounts that withhold certificates to cover potential instances of carbon reversal. Other approaches include temporary certificates or the so-called “tonne-year” approach comparing activities that sequester (or release) carbon for different lengths of time by using an accounting convention or equivalency factor. Carbon reversals occurring after any certification period are more challenging to manage. Baseline setting and the concept of additionality are also critical for the certification of nature-based projects that remove carbon. A baseline sets the reference against which carbon removal should be measured and determines how much of the carbon sequestered can be attributed to the project itself and how much would have been sequestered regardless of the project. This distinction is essential to ensuring cost-efficient climate action.

A carbon removal certification mechanism involves several actors from the proposal of a carbon removal project, to the validation of the project, delivery of the certificate and its final use, as well as the important role of the accreditation and verification system. From a centralised EU system to a structure relying more on Member States, various options exist for a governance framework involving public authorities and the private sector to support its implementation. This should be feasible at a reasonable cost and without administrative burden hampering the deployment of carbon removals.

## Providing a new business model for carbon farming

The Farm to Fork Strategy<sup>7</sup> adopted in 2020 builds on the European Green Deal Communication, which encourages the agriculture and forestry sectors to deliver more on climate action by increasing their capacity to store and sequester carbon. In this strategy, the Commission announced a Carbon Farming initiative to promote a new green business model that rewards climate-friendly practices by land managers based on the climate benefits they provide.

Carbon farming aims to incentivise actors of the bioeconomy to take measures to increase carbon sequestration and storage by compensating them. This in turn creates a new source of income, while helping them to adapt their businesses to withstand the effects of climate change and become more resilient.

Examples of effective carbon farming practices include:

- planting new forests, restoring degraded forests and improving the management of existing forests;
- supplying biomass for the production of long-lasting bio-based products such as building material or furniture;
- enhancing soil organic carbon on depleted arable land;
- protecting carbon-rich soils, such as grasslands and peatlands, through appropriate management techniques.

Carbon farming can take the form of action-based or result-based schemes. In the case of

action-based carbon farming, beneficiaries receive payments for implementing defined management actions, independently of the resulting impact of those actions. A result-based approach, on the other hand, entails a direct and explicit link between the results delivered and the payments that the land manager receives. Result-based carbon farming schemes have the advantage of ensuring a more targeted use of the relevant funds towards the intended climate objective. Additionally, land managers enjoy a greater degree of flexibility, being able to choose their management strategies to achieve the desired results, rather than following a set of rules. Carbon farming incentives can also help to achieve the targets set out in several EU initiatives, such as the forthcoming Forest Strategy, the Biodiversity Strategy and the Adaptation Strategy.

Support for carbon farming can come from public or private initiatives, or a combination of the two. Result-based schemes, in particular, can be financed through carbon certificates that could either be bought directly from project developers or intermediaries, or traded on carbon removal markets. Experience of ongoing EU schemes has shown that carbon certificate prices are generally higher than those traded in the international voluntary carbon markets, and that buyers are generally willing to pay higher prices to secure co-benefits in terms of biodiversity and ecosystem restoration. The development of an EU regulatory framework for the certification of carbon removals would certainly benefit result-based approaches and provide new opportunities for farmers or foresters.

Carbon farming can also be promoted through EU and national policies. Member States will be able to accelerate the roll out of carbon farming practices in the context of the Common Agricultural Policy (CAP). CAP instruments can support a wide

<sup>7</sup> COM(2020) 381 final of 20 May 2020, A Farm to Fork Strategy for a fair, healthy and environmentally-friendly food system.



Source: *The cows are watching* by Adrian Snood (<https://flic.kr/p/oJGz2D>) / Flickr / CC BY-NC 2.0 (<https://creativecommons.org/licenses/by-nc/2.0/>)

*Herd improvement: reducing methane emissions from cattle herds is one of the livestock-related nature-based solutions*

range of measures (including advisory services, knowledge transfer and training actions, as well as non-productive investments), which are useful as they incentivise the uptake of carbon farming and promote the early involvement of land managers. In its recommendations on the CAP Strategic Plans<sup>8</sup>, the Commission has already highlighted the measures that look more promising to achieve the mitigation potential in each Member State. A further avenue for public funding could be State aid, if Member States consider supporting carbon farming initiatives through pure national financing to reduce net GHG emissions from the land use sector and meet targets under the LULUCF Regulation.

To target support to carbon farming in the most efficient way, it is important to understand which carbon removal solutions have the greatest mitigation potential under the given circumstances, as well as the benefits and risks associated with each of them. To that end, the “Technical Guidance Handbook – setting up and implementing result-based carbon farming mechanisms in the EU,”<sup>9</sup> explores key issues, challenges, trade-offs and design options in the development of carbon farming to guide practitioners starting up their own carbon farming initiatives.

The study looks at existing payment schemes rewarding climate-related benefits in five key areas: peatland restoration and rewetting; agroforestry;

8 Adopted in December 2020, available at [https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/cap-strategic-plans\\_en#cap-strategic-plans-recommendations](https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/cap-strategic-plans_en#cap-strategic-plans-recommendations).

9 Available at <https://europa.eu/!VW4gyw>



Source: Action on climate change by gov.scot (<https://flic.kr/p/SM10vc>) / Flickr / CC BY 2.0 (<https://creativecommons.org/licenses/by/2.0/>)

*Promising option: restoring peatlands has great potential in terms of climate benefits and other co-benefits*

maintaining and enhancing soil organic carbon on mineral soils; grasslands, and livestock farm carbon audit. The study highlights restoration, rewetting and conservation of peatlands as a particularly promising option, since climate action in peatlands can deliver significant emission reductions in relatively small areas and have great potential in terms of climate benefits and co-benefits.

The study concludes that result-based carbon farming can contribute significantly to the EU's efforts to tackle climate change, bringing benefits in terms of carbon sequestration and storage and other co-benefits, such as restoring biodiversity and ecosystems. Result-based carbon farming has, however, not yet reached its full potential: some implementation issues are yet to be addressed, in particular the establishment of cost-efficient

monitoring, reporting and verification systems and the lack of targeted advisory services for land managers and advisors needed to boost uptake.

The Commission will continue to promote carbon farming while developing the necessary governance framework for the certification of removals. A Communication setting out an action plan on the carbon farming initiative and the carbon removal certification mechanism is due to be tabled by the Commission before the end of 2021.



# Transforming CDM Methodologies

## How to make them fit for Article 6 market-based cooperation

by Nils Westling<sup>1</sup>, Axel Michaelowa<sup>2</sup>, Christer Gustafsson<sup>1</sup>, Christopher Zink<sup>1</sup>, Dario Brescia<sup>2</sup>, Aglaja Espelage<sup>2</sup>

<sup>1</sup>: Swedish Energy Agency · <sup>2</sup>: Perspectives Climate Group

When crediting emission reductions or removals, methodologies are used to set the reference scenario and crediting baseline, and to define the procedure to test additionality and calculate baseline, activity, and leakage emissions to estimate emission reductions. They also define how uncertainty in those calculations is to be addressed and how monitoring, reporting and verification (MRV) of the mitigation is to be done. There are also methodologies for MRV of sustainable development (SD) impacts of mitigation activities. Methodologies are therefore crucial to ensure both the environmental integrity and the quality of the carbon credits issued. The 252 methodologies approved under the Clean Development Mechanism (CDM) as well as the CDM's 32 methodological tools constitute the most important body of knowledge for crediting of projects and programmes. Therefore, these methodologies and tools are often used as a starting point in pilot activities for the use of market mechanisms under Article 6 of the Paris Agreement (PA).

The development of new methodologies aligned with the PA's principles is seen by many as necessary for issuing credits under Article 6. But this would be a time and resource-consuming exercise: a new methodology may need over a year

before approval and costs were significant. Given that the most widely used CDM methodologies have passed through over 20 review and updating processes, they have robust key design features.

The Swedish Energy Agency (SEA) has commissioned Perspectives to conduct several assignments related to methodology evaluation and development for its bilateral Article 6 pilot programme. We are jointly writing this article to share some initial learnings and views on how to design carbon market methodologies that are fit for Article 6.

## Some early lessons and leadership from Sweden

Sweden has been engaged in turning the Kyoto mechanisms into real projects on the ground from a very early stage. The goal of the Swedish programme has always been to innovate, to pilot, to be a first mover and to take risks to stimulate the market and push ever more innovation and development of mitigation projects.

Back in 1993, Sweden supported a district heating system abroad, which was later included in the

<sup>1</sup> Methodologies were also developed under voluntary standards, e.g., the Gold Standard and the Verified Carbon Standard, and in bilateral cooperation mechanisms, e.g., the Joint Crediting Mechanism.

<sup>2</sup> CDM methodologies cost USD 100-200,000, depending on the level of technical complexity.

official piloting of Activities Implemented Jointly in 1995. The first CDM project agreement, for a bioenergy project in India, was signed in 2003.

Sweden supported the development of the methodology AM0015 for bagasse-based cogeneration connected to an electricity grid, the first methodology to be submitted to the CDM Executive Board in 2003. This was used in three renewable energy projects in Brazil in 2004 and was subsequently widely used before becoming part of a consolidated methodology. Sweden has since been pushing consistently for high integrity and broadened scope under the CDM, for example by promoting programmatic approaches and consideration of SD impacts of carbon market activities. For instance, SEA's investment in small-scale projects with sustainable development impacts in LDCs spurred development of methodologies for water purification (later to become methodology AMS III.AV) and the switch from non-renewable biomass for thermal application (AMS-I.E.) (Green Stream 2018).

The Swedish programme has also focused on long term economic viability (well before “transformational” was a buzz word) of carbon offset projects, in line with the ethos that carbon markets provide a short-term solution but have the potential to create lasting impact. Given that activities cannot generate credits forever, the probability of continued existence after the last payment for credit delivery has been received became a core selection criterion as early as 2012.

### **Paris Agreement principles to consider in methodologies**

While there is no rulebook on market-based cooperation under Article 6 as yet, some principles are set by Article 6.1, requiring that voluntary cooperation deliver higher ambition in mitigation and adaptation action, and promote SD. The key overarching principles of market-based cooperation are to:

1. Deliver a contribution to host countries' NDC implementation.
2. Set Parties on a course of decreasing emission levels and increasing removal capacities while promoting SD.
3. Move beyond a zero-sum game that allows the acquiring Party to increase its flexibility (i.e., decrease the cost) while promoting transformational change.

Thus, a coalition of countries that has signed the San José Principles, including Sweden, is working towards an ambitious outcome of the Article 6 negotiations. A necessary, albeit not sufficient condition is to safeguard environmental integrity, meaning that at the very least emissions should not increase due to carbon markets. This includes the avoidance of double counting and double claiming of mitigation outcomes and the assurance that carbon finance is directed at investments that go beyond governments' (unconditional) mitigation pledges.

Under Article 6.2, Parties must regularly report on the environmental integrity of their cooperation and show that methodologies set reference levels below the business-as-usual scenario and consider relevant policies. More specific methodological principles are being negotiated for the Article 6.4 crediting mechanism. Several methodological principles from the Kyoto Protocol continue to be valid: transparency, conservativeness, consideration of uncertainty and leakage, and safeguards against reversals. However, negotiations have proven difficult when deciding on the guardrails to align methodologies with the PA and several principles are being discussed. Methodologies must:

1. Be consistent with the NDC of the host country and with long-term low GHG emission development strategies, if applicable.
2. Be consistent with PA long-term targets.

Applicability conditions	Additionality determination	Baseline scenario determination	Emissions reductions calculation	MRV approach
<ul style="list-style-type: none"> <li>• Outcomes do not differ between host countries with similar ambition and within the same host country.</li> <li>• Safeguards to avoid/minimise perverse incentives to increase production of goods / services and thereby absolute emission levels.</li> <li>• Clearly defined applicability conditions and definition of project types.</li> </ul>	<ul style="list-style-type: none"> <li>• Financial additionality (e.g., investment test)</li> <li>• Consideration of existing mitigation policies and other international commitments by the host country</li> <li>• Requiring check of activity-specific parameters</li> <li>• If there is a positive list: safeguards on their integrity and regular updates.</li> <li>• Consideration of host country NDC targets.</li> </ul>	<ul style="list-style-type: none"> <li>• A baseline setting approach that is at least below a projected BAU emissions pathway, or based on a performance-based approach, including derived from BAT.</li> <li>• Clear definition of the baseline scenario, considering current situation and existing/planned policies, including NDC targets (unconditional).</li> <li>• Provision of guidelines for the regular update and/or validation of the baseline to consider new policy developments.</li> </ul>	<ul style="list-style-type: none"> <li>• Conservativeness of the principles to define the project boundaries and emission sources.</li> <li>• Conservativeness of principles to estimate baseline and activity emissions and estimation of leakage.</li> <li>• Procedures to identify uncertainties in the calculations and to minimise them.</li> <li>• Provision of clear guidance on how to avoid potential double counting through unequivocal attribution of emission reductions to the activity.</li> </ul>	<ul style="list-style-type: none"> <li>• Comprehensiveness of the monitoring requirements.</li> <li>• Requirements for the definition of a robust reporting and verification framework with clear allocation of roles and responsibilities, and definition of relevant reporting procedures.</li> <li>• Requirements on tracking financial flows and technology transfer.</li> <li>• Monitoring and reporting requirements compatible with the ETF reporting requirements of the host country, including contribution to the achievement of the NDC targets.</li> </ul>

Source: Based on Michaelowa et al. (2020)

Figure 1: Framework to assess methodological alignment with Article 6 (simplified)

### 3. Contribute to reducing emissions in the host country and increase its ambition over time.

Reaching a common understanding on these principles is challenging given the heterogeneity of NDC targets. For instance, there is no common understanding of conditionalities, thus preventing clear identification of unconditional NDC targets. Existing ambition can be protected through the use of stringent crediting baselines and additionality testing, and can be increased by driving down the costs of low-carbon techniques. But ultimately, ambition is determined by the sum of the NDCs of the Parties or the mitigation targets of other regimes and actors that purchase carbon credits; it cannot be generated by Article 6 'on its own'.

In the context of SD, discussions in Article 6 negotiations remain superficial. It will be in the hands of the Supervisory Body and the host countries under Article 6.4, and of participating Parties in Article 6.2, to ensure the availability of methodologies to assess SD risks and benefits, and monitor key parameters.

Due to the challenges outlined, negotiations on rules for additionality testing and baseline setting remain far from agreement, increasing uncertainty for piloting actors. In a recent study commissioned by the SEA, experts from Perspectives, First Climate and Climate Focus developed a framework to assess existing (CDM) methodologies' compatibility with Article 6 principles (see Figure 1).

## Identified revision needs of CDM methodologies

Subsequently, the expert team led by Axel Michaelowa analysed a subset of CDM methodologies covering multiple sectors and key tools<sup>3</sup> regarding their alignment with the PA principles. This enabled revision needs for and ‘blind spots’ in CDM methodologies to be identified as follows:

Baseline setting must consider both existing policies and the future development of policies under the NDC as well as new developments that may arise over the lifetime of the activity from a technology, regulatory and economic perspective. An exclusion of policies that contribute to the

reduction of GHG emissions (known as E-policies) in developing countries can no longer be justified.

Approaches to set the baseline must move away from charting a business-as-usual (BAU) course of action and be based on projected but below-BAU emissions (e.g., based on NDC targets) and performance benchmarks, ideally derived from best available technologies.

Additionality testing must be reconceptualised to better address the three ‘shades’ of what would happen otherwise: a) commercially viable (including incentives and potential investment barriers); (b) mandated by law; (c) necessary to achieve host country (unconditional) NDC targets. The CDM additionality test allows mitigation policies to be

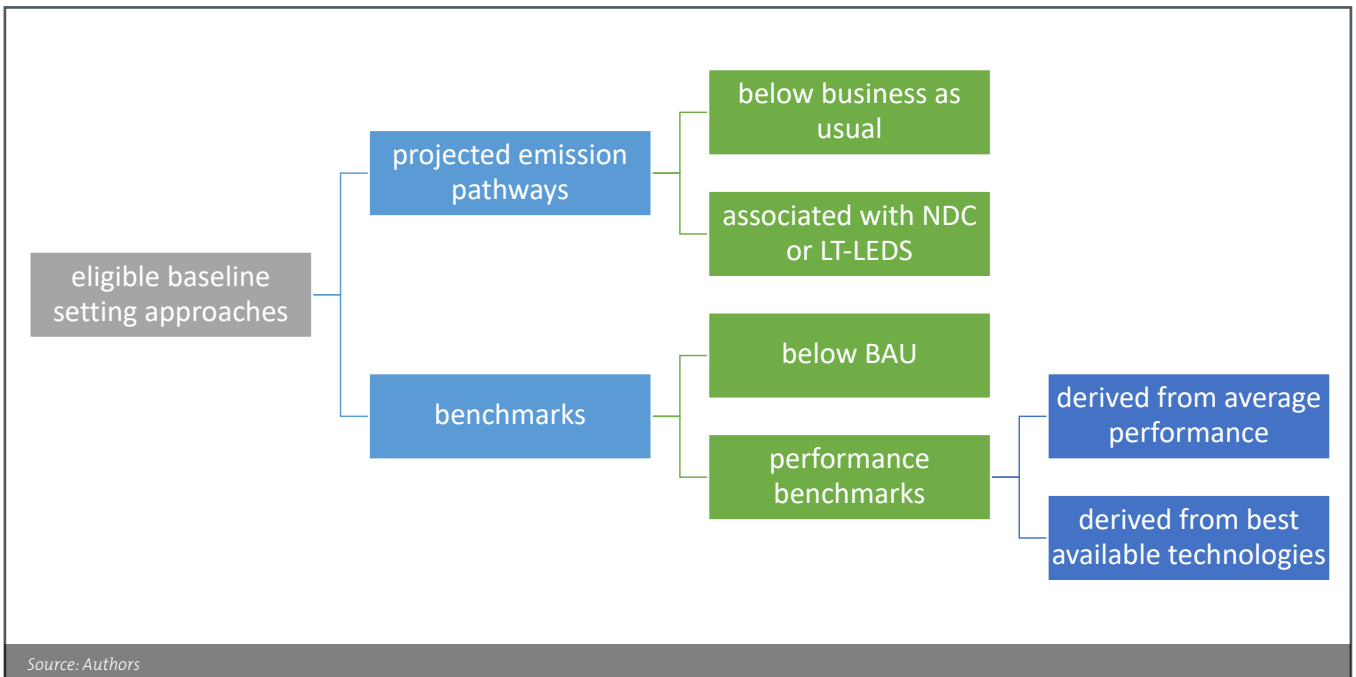


Figure 2: Eligible baseline setting approaches under Article 6

3 The following methodologies have been analysed: On-grid renewable energy methodology (ACM0002), Biomass methodologies (ACM0006 and ACM0018), Methane recovery methodologies (AMS-III.D, AMS-III.AO), Landfill gas methodology (ACM0001), Energy efficiency- energy demand methodologies (AMS-II.G. and AMS-I.E.), and Energy efficiency- industry methodologies (AMS-II.S. and AMS-II.N.). The following tools have been evaluated: Positive list (TOOL01), Additionality assessment (TOOL32), Tools for emission factor (TOOL07) and fraction of non-renewable biomass calculation (TOOL30).

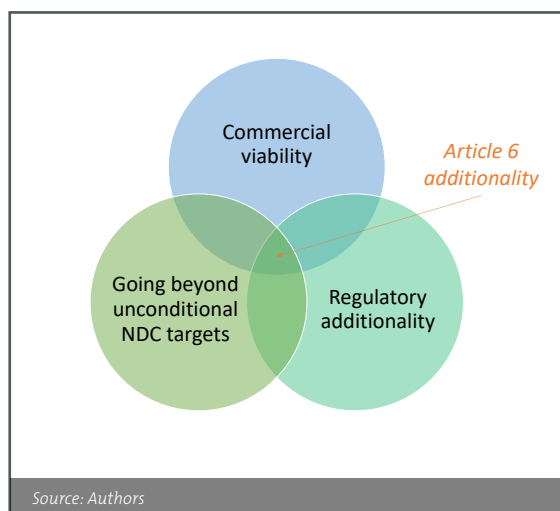


Figure 3: The three shades of additionality under the Paris Agreement

disregarded and does not consider NDC targets. Positive lists can still be used but a more frequent revision cycle is required to reflect changing market and technological contexts. It is necessary to link methodologies and tools with the host country's conditional and unconditional NDC targets to demonstrate additionality. This implies the consideration of the NDC update cycles and the need to enhance ambition continuously as mandated by the PA. However, it is important to strike a balance between enhancing ambition and ensuring sufficient investment security.

Overall, monitoring methodologies must provide inputs and parameters that are consistent with both the host country reporting commitments under the Enhanced Transparency Framework and the emission balances against which corresponding adjustments will be applied, and also be compatible with tracking systems to monitor NDC implementation. Furthermore, methodologies must keep track of technology transfers and financial flows as mandated by the PA.

Identification and tracking of the SD impacts and the contribution to host country SD priorities are generally lacking in CDM methodologies. Require-

ments on the monitoring of the SD contribution and of the potential negative impacts will have to be introduced in the revised methodologies or in specific methodological tools. Here, lessons can be learned from independent standards, such as the Gold Standard, used on the voluntary carbon market.

It must be stressed that the CDM was established prior to the PA, so these cross-cutting revision needs are a logical consequence of the regime change and not a shortcoming of the CDM. Apart from the general revision needs, only minor methodology/tool-specific revisions have been identified in the subset of methodologies evaluated.

## Filling the 'blind spots' of existing methodologies

Given the identified shortcomings, new methodologies and methodological tools must be developed. SEA and Perspectives hosted a workshop with carbon market experts in March 2021 that resulted in the following key recommendations:

A further important aspect is the regular update of key parameters and monitoring of the context of the activity. Investor security can be enhanced by introducing ex-ante defined conservative estimates of key parameters over time, so that the impact of updates on credit issuance is hedged. These two elements "dynamize" the application of carbon market methodologies and support delivery of transformational change.

## Key challenges and opportunities in Article 6 pilots from a Swedish perspective

As an early mover in the Article 6 market space, the SEA aims to use its position to set high standards and best practices that safeguard environ-

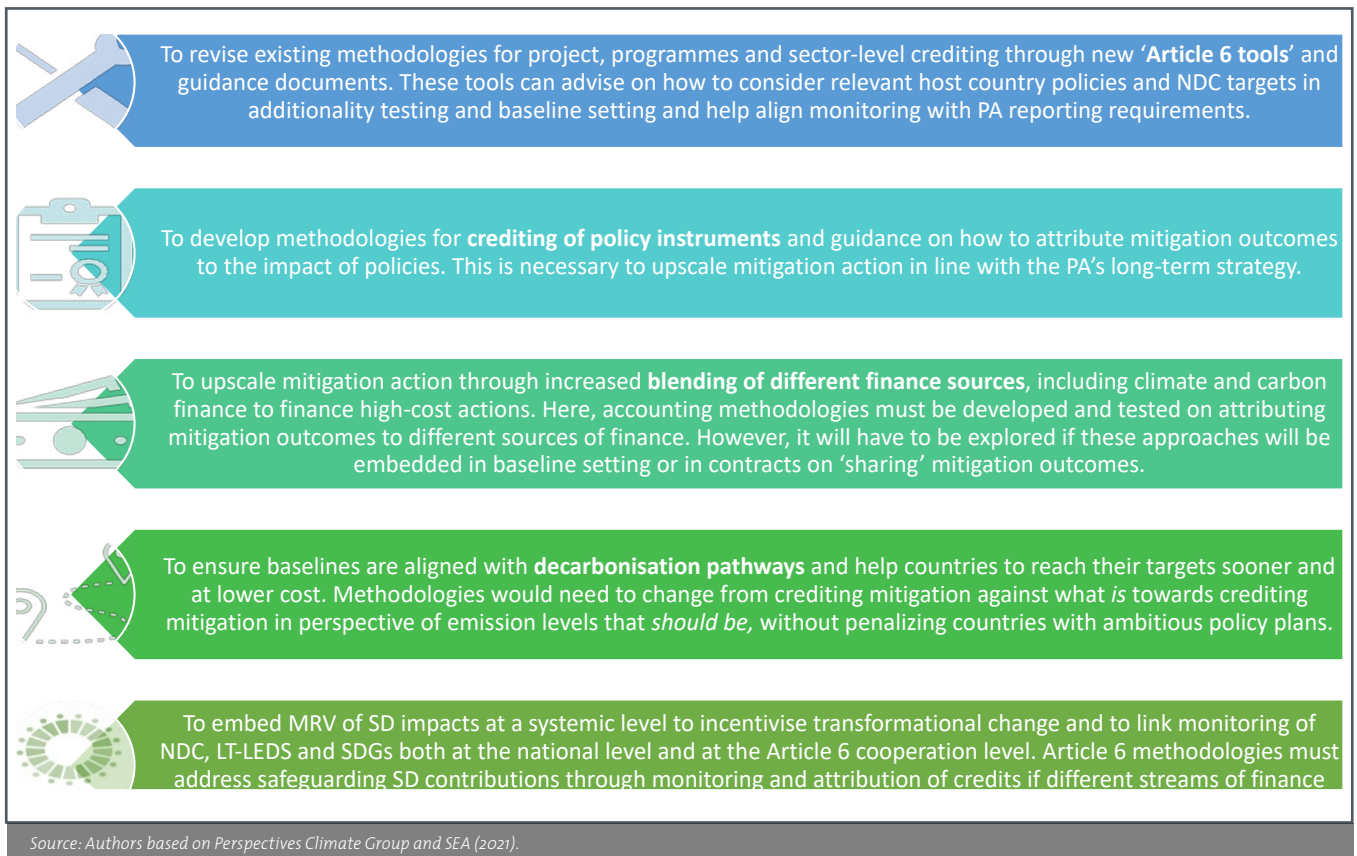


Figure 4: Key recommendations for Article 6 methodology development

mental integrity and sustainable development, as it did in the early days of CDM. The SEA currently sees the best option to do so in piloting bilateral cooperation under Article 6.2. It is from these efforts that we have drawn some initial lessons learned on methodological needs under Article 6.

Challenges exist on many fronts. Some of them we can handle ourselves, some can mainly be handled by our host country partners and some might not be entirely possible to solve until we have further internationally-agreed guidance. Nevertheless, through piloting and learning-by-doing, we are hopefully enabling the type of mitigation cooperation that is needed to deliver on the promises of the PA.

Most challenging, not surprisingly, is the need to align activities, baselines, and additionality justifications with the host country's current and planned policies as well as its development needs and goals. The NDC may be the central document, but it is not the only puzzle piece that needs to be incorporated into Article 6 activity design.

All actors need to gain from cooperation. We need to discuss directly with host countries how we as a buyer can help them increase ambition (especially for the unconditional component of the NDC), ensure environmental integrity and SD, and avoid over-selling. This is linked to how host countries decide what to authorize and what not. At the same time, we must balance this with investor security and risk mitigation for all actors involved.

Not all of these are necessarily methodological issues, but they are linked to them.

On the path towards methodologies and tools that describe how to practically incorporate national characteristics in activity design and balance all of the above-mentioned challenges, we find ourselves laying out a puzzle that has some pieces missing.

Under the PA, we would eventually like to see policy or sectoral crediting with transformational impact. However, in view of the real difficulties of designing and implementing vast economy-wide or sectoral activities, we might have to balance idealism with pragmatism during this early ramp-up period. In practice, this means that we are not closing the door to small and medium-sized activities which can help us bridge the gap and achieve some early wins. Those wins will be for the host country, the buyer country, the climate, and ideally for many other beneficiaries as well. We have therefore decided (while strictly adhering to environmental integrity) not to allow the perfect methodology and activity to stand in the way of the good methodology and project.



Source: UNFCCC / Qingdao-Energy Systems International / CDM 1135

*Review and revise: CDM methodologies can be adapted for Article 6 cooperation.*

### Further reading

Axel Michaelowa, Dario Brescia, Nikolaus Wohlgemuth, Hilda Galt, Aglaja Espelage, Lorena Moreno (2020): CDM method transformation: updating and transforming CDM methods for use in an Article 6 context, study commissioned by the Swedish Energy Agency, Perspectives Climate Group, Freiburg.

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Green Stream (2018): Lessons learned from the Swedish Programme for International Climate Change Mitigation, Final Report.

Perspectives Climate Group and Swedish Energy Agency (2021): Summary of the expert discussion on updating and transforming CDM methodologies for Article 6.

# Ready for Article 6.2 Reporting?

## Mutual learning program based on the JCM experience provides Article 6.2 reporting options

by Tomohiko Hattori, Chisa Umemiya, Kentaro Takahashi and Temuulen Murun, Institute for Global Environmental Strategies

Article 6 of the Paris Agreement is yet to be agreed among the Parties, but its draft documents imply future possible responsibilities for Parties participating in voluntary cooperation for the implementation of their NDCs. For Article 6 paragraph 2 of the Paris Agreement (Article 6.2), the latest draft guidance<sup>1</sup> stipulates those future possible responsibilities in terms of participation, corresponding adjustments, reporting, review, recording and tracking, and ambition in mitigation and adaptation actions.

As future possible ITMOs will be mitigation outcomes generated from 2021, it may be beneficial for participating Parties to cooperative approaches to consider preparation of the arrangements necessary to meet the responsibilities. Particularly,

thinking about comprehensive reporting through the three types of reporting (i.e. initial report, annual information, and regular information) can be a good starting point. By practically preparing for future possible reporting, participating Parties can enhance understanding on the draft guidance on Article 6.2 and its future implications for them.

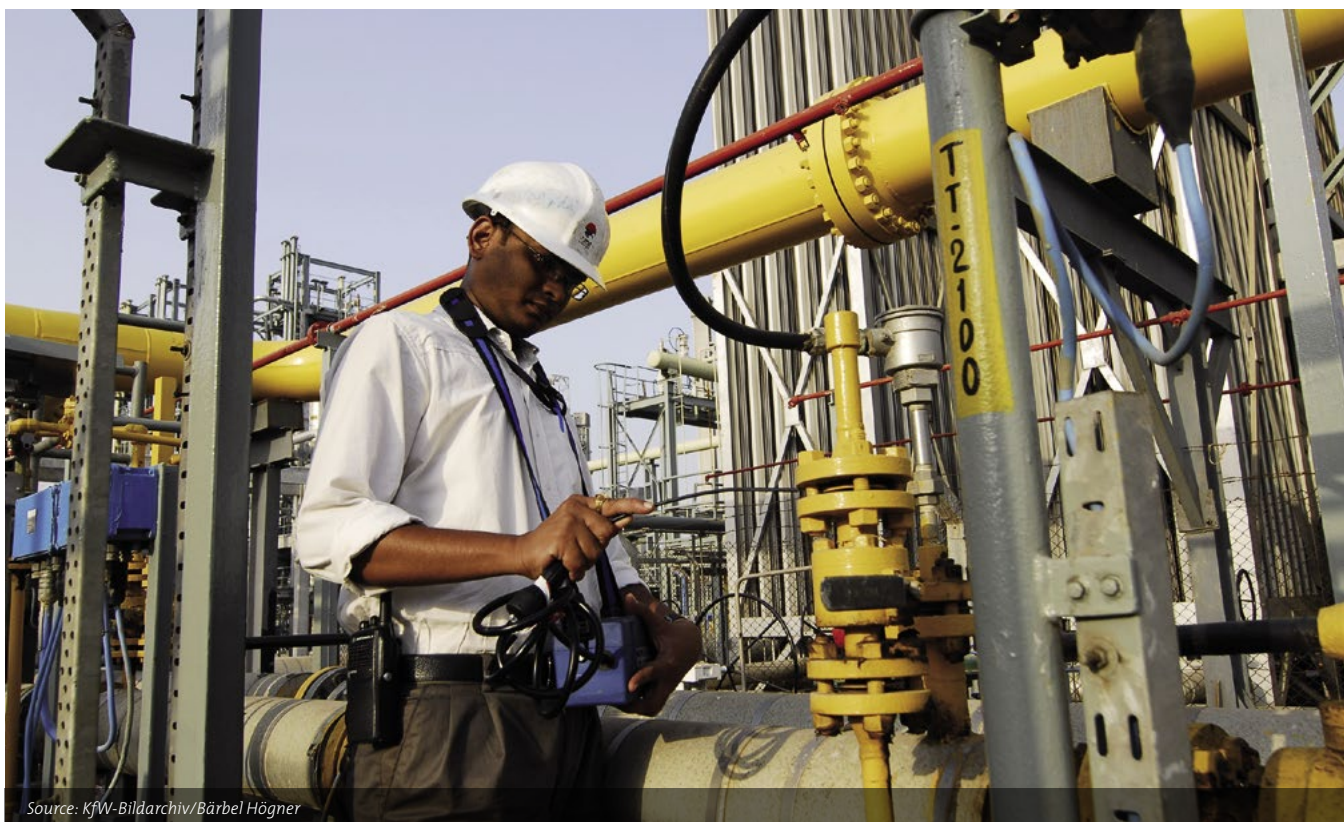
In 2020, the Institute for Global Environmental Strategies (IGES) in Japan<sup>2</sup> and the Thailand Greenhouse Gas Management Organization (TGO) implemented the Mutual Learning Program for Enhanced Transparency (MLP) with financial support from the Ministry of the Environment, Japan. In the MLP, participants from the two organisations engaged in drafting exercises on Article 6.2 reporting in accordance with the draft guidance.

### Box 1: Overview of the JCM

The JCM started as a project-based bilateral crediting mechanism when Japan and Mongolia signed a bilateral document in 2013. As of May 2021, the JCM has been implemented between Japan and its 17 partner countries (Bangladesh, Cambodia, Chile, Costa Rica, Ethiopia, Indonesia, Kenya, Lao PDR, Maldives, Mexico, Mongolia, Myanmar, Palau, Philippines, Saudi Arabia, Thailand, and Viet Nam).<sup>3</sup> The objective of the JCM is to facilitate diffusion of low carbon technologies, products, systems, services, and infrastructure, while implementing mitigation actions and contributing to the ultimate objective of the UNFCCC and the sustainable development of partner countries. According to Japan's NDC, the estimated emission reductions and removals from governmental JCM programs by 2030 are 50 to 100 million tCO<sub>2</sub>.

- 1 DRAFT TEXT on Matters relating to Article 6 of the Paris Agreement: Guidance on cooperative approaches referred to in Article 6, paragraph 2, of the Paris Agreement Version 3 of 15 December 00:50 hrs.
- 2 IGES Discussion Paper on the MLP on Article 6.2 reporting. <https://www.iges.or.jp/en/pub/understanding-article62-reporting-jcm/en>
- 3 The JCM website. <https://www.jcm.go.jp/>





Source: KfW-Bildarchiv/Bärbel Högner

*Inconsistency versus administrative efficiency: Achieving consistency in reporting information on cooperative mitigation actions.*

The Joint Crediting Mechanism (JCM) (see Box 1), a bilateral crediting scheme which Japan has implemented with its 17 partner countries, including Thailand, since 2013, was used as a reference in the drafting exercise.

For drafting the three types of reporting mentioned above, participants tried to make assumptions as appropriate when the required information did not yet exist, or when the requirements of the draft guidance were unclear. For example, participants could make assumptions on arrangements for authorisation, either taking into account the governance of the existing JCM scheme or as an independent process.

Deliverables from the drafting exercise were shared between the participants for further discussion on selected topics. This process resulted

in various discussion points with possible options for reporting or arrangement. Some of the discussion points were later presented for further discussion at the Asian Transparency Workshop<sup>4</sup> held in December 2020. In the following, we present the summary of the reporting options for the three types of reporting and their evaluations. Transparency and administrative efficiency were identified as key in the ex-post evaluation of the discussion on the deliverables.

## Timing of submission of initial report: earlier than 2024?

In the draft Article 6.2 guidance, the timing of submission of an initial report is described as:

<sup>4</sup> Information on Asian Transparency Workshop.  
<https://www.iges.or.jp/en/events/20201214>



Source: Boulder rooftop PV by D. Schroeder/NREL (<https://fflic.kr/p/VMWMHC>) / Flickr / CC BY-NC-ND 2.0 (<https://creativecommons.org/licenses/by-nc-nd/2.0/>)

*Powered by nature: solar PV is a common JCM project type.*

“Each participating Party shall submit an [initial report] no later than the time of providing or receiving authorization or initial first transfer of ITMOs [...] and where practical, in conjunction with the next due biennial transparency report...” (Authors’ emphasis) (paragraph 18). This is ambiguous with reference to two different timings of reporting which are connected with “and where practical”. There is room for further clarification on whether the timing of submission of an initial report can be chosen from these two different timings at each Party’s discretion, or whether the timing should be whichever comes earlier. Supposing that a Party needs to submit an initial report once and that “the time of providing or receiving authorization or initial first transfer of ITMOs” is before 2024 (here we refer to as “early

submission”) and “the next due biennial transparency report (BTR)” is submitted in 2024 (“submission in 2024”), the two possible options can be evaluated.

Early submission of an initial report can enhance transparency as a Party reports information required for an initial report (e.g. the Party’s fulfilment of participation requirements) before than after providing or receiving authorisation or an initial first transfer of ITMOs. On the other hand, with early submission, the content could be less detailed due to less time being available for preparing an initial report. Administrative overburden can also be avoided through early submission, in countries where the same responsible agencies/persons prepare both Article 6.2 report-

ing and BTRs. If this earlier timing of submission is mandatory, the infrastructure (e.g. centralized accounting and reporting platform) should be operationalised as soon as possible, as highlighted in the EU's submission to informal technical expert dialogue in May.

Submission of an initial report in 2024 (i.e. in conjunction with first BTR) will allow reporting on mitigation actions towards NDCs in BTRs to be more comprehensive by reporting on cooperative approaches in an initial report at the same time as reporting on domestic measures in BTRs. For this reason, in contrast to early submission, reporters may see it as easier and more efficient to prepare an initial report at the same timing as the first BTR. Also, this option would give a Party more time to coordinate with its partner countries on the content of an initial report and to establish infrastructure and arrangements (e.g. for tracking ITMOs). Submission in 2024 may be more realistic due to the limited time available to agree on relevant rules even if Article 6 is agreed at COP26.

## Expected mitigation: also ready to report the methodology for calculation?

Another reporting item for an initial report is “expected mitigation” from a cooperative approach (paragraph 18 (f) of the draft Article 6.2 guidance). In the MLP, we found this item could cause different interpretations on the scope of information. One Party might report only the amount of expected mitigation outcomes while another might report a qualitative description of how to calculate that amount additionally. Even the expected mitigation outcomes could be reported differently depending on their scope (i.e. only existing projects or including projections). An acquiring Party could report the total expected mitigation outcomes in various partner countries without a breakdown, while a transferring

Party will only report on expected mitigation outcomes generated in and transferred from the country. Thus, each participating Party could have different methodologies and scopes to estimate expected mitigation.



Source: Photo by IISD/ENB/Kiara Worth ([enb.iisd.org/climate/cop25/enb/19dec.html](http://enb.iisd.org/climate/cop25/enb/19dec.html))

*Outstanding governance: Parties failed to close the Art. 6 rulebook in Madrid.*

In the draft Article 6.2 guidance, there is currently no requirement to report on the methodology for expected mitigation, but by reporting it countries will be able to enhance the transparency of an initial report. Coordination between Parties will be necessary, however, to ensure consistency in the methodology used.

## Arrangements for authorization: “governance” and “levels” are key aspects

One of the participation responsibilities for cooperative approaches is to have “arrangements in place for authorizing the use of ITMOs towards NDCs pursuant to Article 6, paragraph 3 [...]”

(paragraph 4.(c) of the draft guidance), which is to be reported ex-ante in an initial report and in regular information for any updates. In the MLP, taking the JCM as an example, we found authorisation could be considered based on perspectives of “governance” and “level”.

In terms of governance, there could be two possible options of authorisation. First, participants discussed a bilateral arrangement using the Joint Committee (JC), an existing decision body of the JCM. Importantly, the bilateral arrangement will ensure consistency on the subject (e.g. project or transfer) of authorisation. By building on the existing annual meeting of the JC in accordance with relevant JCM rules of procedures, administrative efficiency can also be ensured. Domestic consensus in each country can be established as the JC already includes members from each country’s relevant ministries and agencies.

Alternatively, authorisation could be arranged as a unilateral process within each government. If a Party participates in multiple cooperative approaches (not limited to the JCM), unilateral arrangement may be more efficient by authorising projects or transfers for those approaches simultaneously. It would also be more appropriate if, as a transferring Party, a partner country needs careful domestic-level discussion for authorization. Since the current processes for project approval and credit issuance under the JCM are decided by the JC, the relationship, including timing and arrangements, between the JC and each country’s authorisation body should be considered.

For the issue of “level” of authorisation, we identified three options (i.e. scheme level, project level, and transfer level) in the MLP. First, scheme-level authorisation is the simplest arrangement as a one-time authorisation, but regulation of transfers of ITMOs may be an issue for a partner country. A well designed set of rules with criteria for project approval would be necessary to minimize the issue. Unilateral authorisation as mentioned

above seems appropriate for scheme-level authorisation which is expected to be a high-level decision.

Project-level authorisation would be in line with the existing project approval process under the JC. From the project developers’ perspective, this option would ensure creation of ITMOs from their projects at an early stage.

Authorisation per transfer of mitigation outcomes is the most stringent supervision level. Although it is aligned with the existing credit issuance process under the JC and a partner country would be able to carefully assess the transfer of mitigation outcomes, project developers would feel uncertain regarding the creation of ITMOs ahead of project approval.

## JCM credits issued by partner countries: should we report only once the credits that are internationally transferred?

One of the unique characteristics of the JCM is that mitigation outcomes from JCM projects are issued in the form of credits and allocated to the Japanese government, its partner countries’ governments, and project participants from both countries. The share of credits depends on countries and projects, but only those issued to the Japanese government and Japanese project participants will be subject to reporting as ITMOs. On the other hand, reporting of credits issued by partner countries as non-ITMOs will be optional although they will also be subject to reporting if they are subsequently internationally transferred with relevant rules in place.

Evaluation of the possible options is simple. Voluntary reporting of credits issued and not



Source: Tokyo by stringparts (<https://flic.kr/p/bX5nmE>)/Flickr/CC BY 2.0 (<https://creativecommons.org/licenses/by/2.0/>)

*Joint effort: Japan intends to reduce its GHG emissions to 46% below 2013 levels. It considers making use of Art. 6.2 for achieving NDC compliance.*

transferred by partner countries could enhance transparency, but it is not required as they are not ITMOs unless they are internationally transferred.

If partner countries wish to report their credits, consideration as to how to report these credits may be necessary as they may not fit an electronic format for annual information and annual information reports as part of regular information, which are used to report ITMOs.

## Quantity of ITMOs applied for corresponding adjustments: can we track vintage years of ITMOs?

Application of corresponding adjustments is to be reported in an annual information report as part of BTRs, based on a Party's emissions and removals from its NDC coverage (for tCO<sub>2</sub> eq metrics) and the quantity of ITMOs it first transferred or

used. We discussed in the MLP that the annual quantity of ITMOs applied for corresponding adjustments could be different depending on the definition of “year” (i.e. “vintage” or “first transfer”). For example, when mitigation outcomes generated (known as “vintage”) between 2022 and 2023 are first transferred in 2024, the ITMOs based on the “vintage” year would be reported respectively for 2022 and 2023. On the other hand, ITMOs based on the “first transfer” year would be the cumulative ITMOs first transferred in 2024. This difference would be reflected in the application of corresponding adjustments, resulting in a different annual emissions balance. If ITMOs are to be reported based on the “first transfer” year, it is important to consider how to deal with the mitigation outcomes generated in the NDC implementation period (e.g., before 2030) but first transferred after the that period (e.g., in 2032). In the case of the JCM, there are usually gaps between the years of mitigation outcomes generation and first transfer.

ITMOs based on the vintage year would allow corresponding adjustments to reflect actual annual reductions affecting annual emissions and removals, thus enhancing transparency. In addition, this option would avoid the issue of those mitigation outcomes which are first transferred after the NDC implementation period (e.g. 2032).

In contrast, if corresponding adjustments are applied with ITMOs based on the year of first transfer, it is likely that the impact of a cooperative approach on actual annual emissions is not reflected in the annual emissions balance. To enable the use of ITMOs generated during an NDC implementation period and first transferred after the period for achievement of the NDC target, a buffer period will be necessary.

For consistency and comparability of reporting on corresponding adjustments, guidance on whether ITMOs should be counted by vintage year or first transfer year may be needed.

## Common information on a cooperative approach: should we mutually agree?

The draft Article 6.2 guidance contains requirements to report on a cooperative approach in an initial report (paragraph 18 (f)) and to provide regular information (paragraph 22). Particularly, the regular information should contain each cooperative approach’s information on its contribution to mitigation and sustainable development objectives, environmental integrity, and measurement of mitigation outcomes. Here, what is expected of Parties participating in the same cooperative approach is to report consistent information. Therefore, we discussed consistency of reported information and the administrative implications in the MLP.

The ideal way to report consistent information among multiple Parties is to report mutually agreed information, which could be prepared as an annex to the BTR. However, a considerable issue would be the administrative cost of coordination among the Parties. In the case of the JCM, this implies that Japan should somehow coordinate with its 17 partner countries.

Another option is to report information prepared domestically. While it may cause inconsistency or overlaps in the reported information, it will ensure administrative efficiency by keeping the preparation process domestic.

## Timing of reporting the use of ITMOs: at the end or in the middle of NDC implementation?

A Party acquiring ITMOs may acquire them from transferring countries throughout its NDC

implementation period. The Party can decide whether to use and when to report the use of these ITMOs for its NDC target. Supposing that the Party uses the ITMOs for its NDC target in 2030, it may report on the use along its NDC implementation period (e.g., 2020-2030) through annual information and regular information. Alternatively, the Party may hold on to and decide the use of the cumulatively acquired ITMOs until such time as it reports its emissions balance in its NDC target year in 2030.

Annual reporting on the use of ITMOs will align with the requirement to report “annual and cumulative quantity of ITMOs used towards its NDC” (paragraph 23 (d) of the draft guidance). In addition, a cooperative approach’s contribution to the progress towards the Party’s NDC can be demonstrated at an early stage.

On the other hand, for a single-year NDC, reporting the use of cumulative ITMOs for the NDC target year may be in line with the nature of the NDC as only the emissions balance in the target year is relevant to demonstrate achievement of the NDC.

## Conclusion

We believe the above discussion based on the MLP has some early and useful implications for those who work directly on Article 6 implementation and in international negotiation. We encourage participating Parties to cooperative approaches to start considering the future possible responsibilities and directions with a view to their existing/expected arrangements for schemes in which they participate as well as the existing institutional capacities in their respective countries. A practical viewpoint from each Party and/or scheme should be widely shared.

We also note that capacity building initiatives will be increasingly important to enhance understanding of Parties’ readiness to participate in

cooperative approaches. Particularly, our experience with the MLP showed that mutual learning enabled effective identification and sharing of possible options for reporting in practice.

Finally, we stress the importance of the balance between transparency and administrative efficiency in Article 6.2 reporting. We hope that the ongoing negotiations can consider these aspects to the extent possible, and provide clear guidance to facilitate operationalisation of Article 6.2.

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# Developing non-market Approaches

## Towards the operationalisation of Article 6.8 and 6.9 of the Paris Agreement

Axel Michaelowa,<sup>1</sup> Juliana Kessler,<sup>1</sup> Aglaja Espelage,<sup>1</sup> Anne-Kathrin Weber,<sup>1</sup> Karsten Karschunke<sup>2</sup>

<sup>1</sup> Perspectives Climate Research · <sup>2</sup> German Environment Agency (Umweltbundesamt)

Article 6.8 and 6.9 of the Paris Agreement (PA) recognise the importance of “non-market approaches” (NMAs) to assist Parties in implementing their Nationally Determined Contributions (NDCs). Whereas Article 6.8 stresses the importance of integrated, holistic and balanced NMAs, Article 6.9 establishes a framework to promote NMAs described in Article 6.8 to assist Parties in the implementation of their NDCs in the context of sustainable development.

Non-market approaches have often been overlooked in Article 6 negotiations and there is thus a lack of concrete definitions and examples. The research project “Development of guidance for non-market approaches in the Paris Agreement” commissioned by the German Environment Agency (UBA) and implemented by Perspectives Climate Research therefore aimed at elaborating concrete proposals for the operationalisation of Articles 6.8 and 6.9. The research project wants to draw increased attention among Article 6 negotiators, the research community and practitioners to the topic and put an emphasis on the question of what NMAs are rather than what they are not.

## The road to recognition of NMAs

NMAs can include all types of measures, instruments and interventions for mitigation that do not result in a transfer of mitigation outcomes. Adaptation, finance, technology transfer and capacity building may be covered as well. Consequently, NMAs are usually defined in opposition to carbon market mechanisms. They have a long history in negotiations conducted under the United Nations Framework Convention on Climate Change (UNFCCC). The topic first emerged at the 16th Conference of the Parties (COP16) in 2010 and from then on, NMAs were negotiated under the auspices of the Subsidiary Body of Scientific and Technological Advice (SBSTA).

In October 2013, a Joint Workshop on the Framework for Various Approaches (FVA), Non-Market-Based Approaches and the New Market-Based Mechanism took place in Bonn, covering negotiation items which would usually be discussed in parallel. It was at that workshop that the first concrete examples of NMAs such as Bolivia’s Joint Mitigation and Adaptation Mechanism (JMA) were introduced. Even though many Parties such



as Senegal, Brazil, Bolivia and the Environmental Integrity Group<sup>1</sup> (EIG) explicitly called for the integration of NMAs into the FVA, discussions continued in parallel until 2015. Negotiation efforts by a group of Parties sceptical of carbon markets finally resulted in Article 6 of the PA comprising both market-based and non-market-based possibilities for cooperation. While the integration of NMAs was initially a purely tactical move, other Parties soon recognised them as an opportunity to develop and implement approaches not addressed in other articles of the PA.

## Negotiating the operationalisation of Articles 6.8 and 6.9

Since the adoption of the PA, Parties to the Agreement have been negotiating the operationalisation of Article 6 under the auspices of the SBSTA, including Articles 6.8 and 6.9. The SBSTA was

tasked in the decision accompanying the Paris Agreement to “undertake a work programme under the framework for NMAs” with the objective to enhance linkages and create synergies between mitigation, adaptation, finance, technology transfer and capacity building, and to facilitate implementation and coordination of NMAs.

Even though the work programme for Article 6.8 was not adopted at COP24, Parties and some organisations submitted concrete proposals for NMAs.

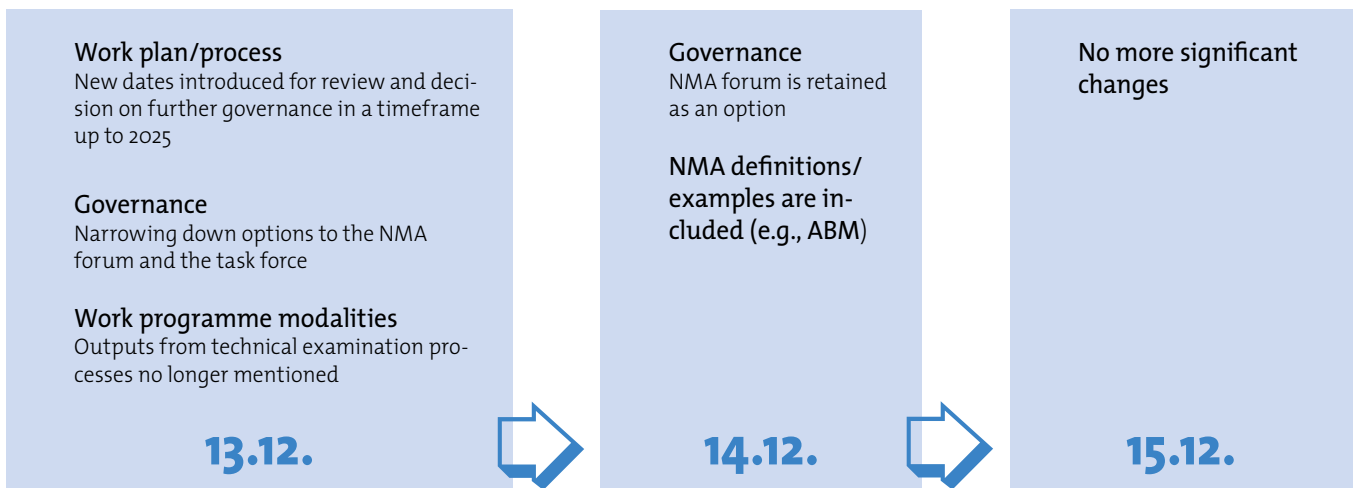
At COP25, negotiations on Article 6.8 became a ‘side stream’ which garnered much less attention than the negotiations on Articles 6.2 and 6.4. Over the course of the COP25 negotiations, six iterations of the negotiation text on Articles 6.8 and 6.9 were published, three iterations elaborated by the SBSTA and three proposals by the Chilean CMA Presidency (13-15 December). During the last two days of negotiations, the draft negotiation text underwent only few changes and no Party or

Figure 1: Submission of concrete NMA proposals at COP24

Adaptation Benefits Mechanism (ABM)	Results-based Finance (RBF)	Joint Mitigation and Adaptation Mechanism	Environmental Balance Index (EBI)
Incentivisation of private (and public) sector investment in adaptation by facilitating payments for delivery of adaptation benefits	Example of RBF for reducing emissions from deforestation and forest degradation (REDD+): Payments are conditional upon demonstrated and verified emission reductions from deforestation and forest degradation	Rejection of REDD+ as a carbon trading mechanism and intention to develop an alternative policy approach that focuses on the rights of communities and indigenous peoples	Rendering the well-being of ecosystems a key factor of the economy and its prosperity
Social, economic and environmental benefits of adaptation activities will be quantified, verified and issued as Adaptation Benefits (ABs)		Combination of mitigation and adaptation advances through sustainable forest management	EBI as an indicator that reflects the balance of production of services to ecosystems and consumption of ecosystem services

1 The EIG comprises Georgia, Liechtenstein, Mexico, Monaco, the Republic of Korea and Switzerland.

Figure 2: Evolution of the Presidency draft texts on NMAs at COP25



negotiation group expressed an unwillingness to accept the CMA Presidency's draft proposal.

Regarding the operationalisation of the framework for and the work programme on NMAs, the final iteration of the draft negotiation text from 15 December specifies that NMAs that are facilitated under the framework must be:

- International cooperation approaches: NMAs must involve more than one participating Party and be identified as an NMA by the participating Parties.
- Contributing to NDC implementation: NMAs have to contribute to the implementation of NDCs in a holistic, integrated and balanced manner in the fields of mitigation, adaptation, finance, technology development and transfer as well as capacity building, while promoting sustainable development and poverty eradication.
- Contributing to an ambition increase and the exploitation of synergies: NMAs must aim to increase ambition in mitigation and adaptation, enhance public and private sector participation and enable coordination across instruments and institutional arrangements.

On the implementation of the framework and the work programme, the text proposal of the COP25 presidency foresees the establishment of an NMA forum to govern

the NMA framework and implement the work programme. This forum will be requested to identify focus areas of the NMA work programme through submissions from Parties. In relation to the focus areas, workshops and meetings with stakeholders and experts will be held, supported by submissions from Parties and by technical papers from the UNFCCC Secretariat.

## Proposing concrete options for the design and operationalisation of the NMA work programme

Against the background that a wide range of NMAs can be promoted under the NMA framework and work programme, Michaelowa et al. (2021) propose a conceptual typology of potential forms of NMAs according to the two broad fields of approaches: approaches with a financing component and approaches focused on other means of implementation such as technology development and transfer as well as capacity building. The authors derive seven forms of NMAs (see Figure 4) and note that in the practical implementation of international cooperation, elements of various forms may be combined.

Figure 3: Relationship between the NMA framework, forum and work programme



Source: Authors

Based on this conceptual typology, specific criteria are derived for the selection of focus areas to identify concrete examples of innovative NMAs. The first criterion is that NMAs should be non-duplicative, meaning that only NMAs should be facilitated by the framework that are not addressed elsewhere in the UNFCCC system. In this way, further institutional fragmentation and the diversion of resources and attention is prevented. The second criterion stipulates that NMAs should

not be implementable through market mechanisms. According to the third criterion, the NMA framework should focus on innovative approaches in the areas that are currently not sufficiently addressed by work done under the UNFCCC. The final criterion promotes activities that are sidelined by international public climate finance.

These criteria aim to ensure that the work programme will be a meaningful process which helps

**Table 1: Overview of the different forms of NMAs****Approaches with a financing component**

- I.A: A mechanism that comprises a specific financial instrument
- I.B: A mechanism for the coordination of existing finance streams on a multi-country level
- I.C: A mechanism for the coordination of financial assistance from multiple countries to one country

**Approaches focused on technology development or transfer and capacity building**

- II.A: A mechanism for the coordination of mitigation/adaptation technology development and/or diffusion on the multilateral level
- II.B: A mechanism for the coordination of mitigation and adaptation policies across countries
- II.C: A mechanism for the coordination of capacity building across countries on multiple levels
- II.D: A mechanism for general information sharing on cross-boundary mitigation and adaptation actions

countries raise ambition in climate action and sustainable development and also focuses on the 'blind spots' identified in the current UNFCCC regime.

The focus areas identified in the Presidency draft text are too broad to match the criteria developed by the research team. Therefore, Michaelowa et al. (2021) propose to narrow the focus areas yet further, so that they can effectively guide the identification of NMAs. Regarding the focus area related to forests, an emphasis on deforestation-free supply chains is suggested. The focus area on social-ecological resilience could address the 'just transition' discussion in respect of mitigation or the protection of ecosystems and biodiversity, and climate-induced migration in relation to adaptation and disaster risk reduction. With respect to removals, the focus could be placed on the governance of emerging technologies and their sustainable development safeguards and contributions. In the field of energy efficiency, the harmonisation and/or improvement of energy efficiency standards and testing procedures as well as legal approaches to remove barriers for energy service companies could be addressed. For other

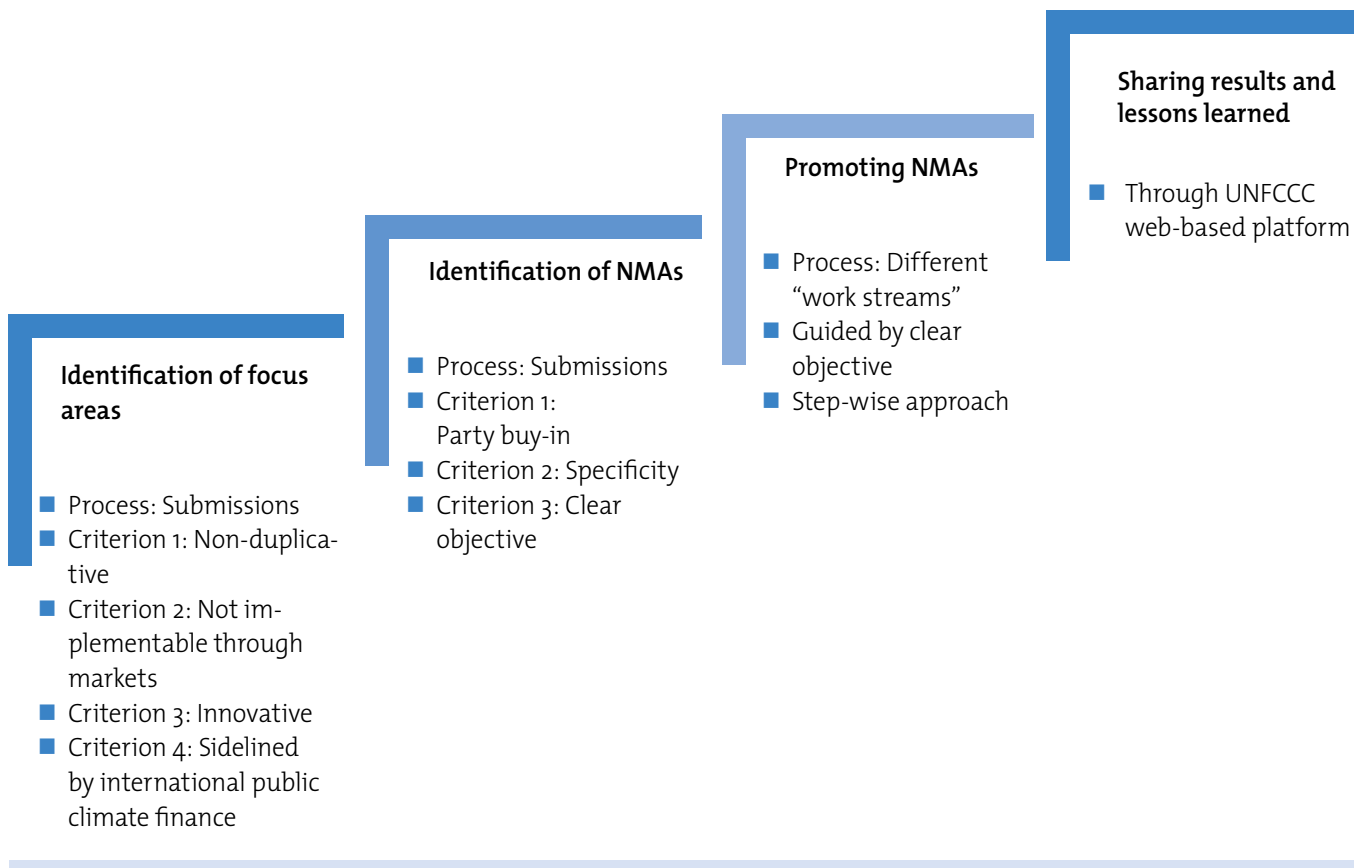
focus areas, capacity building should be treated as a crosscutting issue and means of implementation.

The focus areas should guide the selection of specific NMAs that are promoted through the work programme in the form of technical work, consultation meetings and information sharing. Michaelowa et al. (2021) propose a stepwise approach to implement the NMA work programme (see Figure 4). The most effective manner in which the stepwise approach could be implemented is in a rolling fashion which allows the submission of new focus areas during the selection process for focus areas from the preceding call for submissions.

## Identifying specific NMA proposals

Building on the narrowed down focus areas, specific NMAs can be identified to address issues which are not yet covered by other bodies and mechanisms. In the following, examples for concrete NMAs are provided.

Figure 4: Step-wise approach to implement the NMA work programme



NMAs can also be important instruments to scale up and mobilise finance and build capacities for countries to harness opportunities from carbon markets. Blending carbon and results-based climate finance could be brought forward by engaging with key climate finance institutions. Capacity building for host countries for NDC formulation and implementation strategies can lay the foundations for conscious and strategic engagement in both domestic and international carbon markets. Also, Article 6 negotiators have remarked that ‘climate finance contributions’ financed through voluntary carbon market standards could be promoted under the Article 6.8 work programme as they are de facto an NMA. In the context of any such activity, robust accounting is key to avoid double claiming of mitigation

outcomes and double claiming of carbon and climate finance.

## Key challenges and opportunities of the operationalisation of Articles 6.8 and 6.9

As mentioned, Articles 6.8 and 6.9 have not been at the centre of attention so far. In fact, the lack of concrete ideas and understanding of NMAs’ links to countries’ climate commitments pose a challenge for their relevance. Therefore, great attention will need to be paid to the design of NMAs, so that they can really enhance NDC implementation and ratcheting up of ambition. In this context,

**Table 2: Overview of specific NMA proposals****NMA type I.A**

The Adaptation Benefits Mechanism (ABM), currently in its pilot phase, aims to mobilise private sector finance for activities that prove generation of adaptation benefits. An ABM Executive Committee oversees the ABM, approves methodologies for assessment of benefits and registers activities (AfDB 2021). Another example could be the “Climate finance contribution claims” put forward by Gold Standard to mobilise finance for NDCs through the voluntary carbon market standard, instead of finance for offsetting (Leugers et al. 2018).

**NMA type II.A**

Müller et al. (2021) propose international bulk purchasing to mobilise economies of scale as an NMA based on the example of UJALA, a sector-wide activity that promotes efficient lighting technologies in India and drives down costs of implementation. Through UJALA, several hundred million LED lamps procured in large batches were distributed in less than five years, and the cost of these lamps fell strongly whenever a batch was ordered. Particularly for small island states, coordinated bulk procurement could significantly reduce technology costs.

**NMA type II.B**

The NMA proposed by Gogarty et al. (2020) aims at overcoming political and diplomatic barriers to conserve the vast blue carbon sink around Antarctica by granting Antarctic fishing states permission to account for blue carbon activities.

**NMA type II.C**

A regional or landscape-specific (e.g., deltaic regions) coastal zone adaptation technology roll-out initiative could aim at making specific generally applicable solutions widely available, e.g. effective ways of preventing/slowing down saline intrusion into aquifers.

**NMA type II.D**

An accelerator for diffusion of international energy efficiency standards could entail concerted capacity building missions of international standard experts to standard-setting bodies in developing countries and embedding of experts to reduce the time for implementing standards.

the NMA work programme should not duplicate efforts that have already been taken or are being taken in other fora under the UNFCCC.

Besides, the role of finance in non-market international cooperation should not be ignored as it otherwise risks becoming just another strand of ‘shallow’ workshops with limited relevance for concrete implementation. The NMA work

programme could therefore encourage the implementation of new or the replication of existing NMAs that comprise financing instruments. In addition, specific attention could be paid to those NMAs like the ABM that are designed to mobilise additional and innovative sources of finance, particularly in the context of mobilising private finance. In addition, an emphasis should be put on identifying opportunities for NMAs that lack

financing and on identifying barriers to implementation and the sharing of information on existing funding opportunities.

Most importantly, the framework will only come to life when concrete proposals are submitted by Parties and these actively engage in discussions and the selection of proposed NMAs. A good starting point for engagement could be the sharing of experiences from ongoing piloting activities that could potentially be scaled up in the context of the Article 6.8 work programme. In the end, the NMA work programme is a Party-driven process whose relevance will be decided by Parties' engagement.

If these challenges are overcome, then the operationalisation of Articles 6.8 and 6.9 can provide many opportunities. First of all, NMAs can enhance linkages and create synergies between existing activities taking place in the UNFCCC context. NMAs could address gaps in the PA architecture and thereby enhance ambition. There are various approaches for financing activities involving multiple countries both inside and outside climate policy that are developed and implemented independently from each other. The NMA work programme can play an important role in assessing existing approaches (also in terms of their potential as regards upscaling or replication) and making them more visible.

## Outlook for COP26

With a view to COP26 in Glasgow, coming to an agreement on the work programme for Article 6.8 is a necessary, yet unglamorous step in finalising the rulebook for Article 6, originally scheduled for COP24 in Katowice. At this point in time, the draft text regarding NMAs appears to be rather mature compared to the others, so if the crunch issues in the Article 6 negotiations are resolved, implementation of the work programme would start next year. We hope that many relevant and innovative proposals will be made by Parties to fill the 'empty shell' of NMAs with life. Given the great potential seen in accelerating the diffusion of effective mitigation and adaptation interventions, Article 6.8 – as the 'orphan' of Article 6 – may eventually become a healthy and promising child.

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