COOPERATIVE APPROACHES UNDER ARTICLE 6.2 OF THE PARIS AGREEMENT

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1 ARTICLE 6 OF THE PARIS AGREEMENT

ARTICLE 6 of the Paris Agreement establishes guidelines for voluntary cooperative approaches between Parties to reduce emissions and fulfil countries' Nationally Determined Contributions (NDCs). These cooperative approaches include both carbon markets (Articles 6.2 and 6.4) and non-market-based cooperation (Article 6.8).

The Kyoto Protocol first introduced market mechanisms as tools for emission reduction in the late 1990s. The idea was that the use of carbon-market instruments would lead to an increase in investments in mitigation and low-carbon technologies. Three mechanisms were created under this protocol: the Emission Trading System (ETS), the Clean Development Mechanism (CDM), and Joint Implementation (JI). By the end of the first Kyoto commitment period, the market was deemed ineffective because developed countries largely outsourced their emission-reduction obligations through cheap and often questionable CDM credits, which undermined real domestic mitigation efforts. A surplus

of emission-reduction units, which were excessively cheap, weakened incentives for actual emission cuts. There were other flaws in the system, such as transparency issues, additionality standards, risk of carbon leakage, and corruption, which worked to reduce its environmental integrity.[1]

At COP17, the Durban Climate Conference, where a post-Kyoto global climate agreement was the main focus, Parties also discussed a series of new market mechanisms. The European Union (EU) was one of the primary proponents of these mechanisms. Other countries, such as the US, Japan and Australia, sought to use offset credits generated from markets outside the UNFCCC to meet their mitigation commitments.[2] The mechanisms discussed included a sectoral crediting mechanism, similar to the CDM, and a work programme was agreed upon to explore how bilateral or unilateral market mechanisms could be counted toward emissions-reduction targets. This may have reflected a broader intention to reduce the UN's role in decision-making and promote a more decentralized structure. Japan had already created its own framework for bilateral trade in offsets, known as the Joint Crediting Mechanism. Negotiations in successive COPs, however, remained difficult, as some parties were ideologically opposed to market-based approaches.[3]

After much debate until the very end, and quite unexpectedly to some observers,[4] market and non-market approaches were included under Article 6 of the Paris Agreement. Article 6 called for a new mechanism to build on the lessons learned from the Kyoto Protocol's mechanisms, to ensure higher environmental integrity, transparency and sustainable development benefits.

Here is what the various provisions of Article 6 include:

- Paragraph 6.1: Establishes that country Parties may voluntarily choose to cooperate in the implementation of their Nationally Determined Contributions. This could be interpreted to include several ways in which countries can choose to cooperate.

- Paragraphs 6.2 and 6.3: These parts discuss the transfer of 'mitigation outcomes' between countries based on the guidance and accounting process established through the COP process, but without the specific need to generate the 'mitigation outcomes' using a mechanism or standard established by the COP.
- Paragraphs 6.4 to 6.7: Establish a mechanism where 'mitigation outcomes' are generated under an UN-defined system, similar to the Clean Development Mechanism. Neither the Paris Agreement nor the Kyoto Protocol includes any reference to the word 'market'. Due to ideological opposition to markets, terms like 'credits' or 'allowances' were avoided. Instead, among other reasons, the expression 'Internationally Transferred Mitigation Outcomes (ITMOs)' was introduced.[5]
- Paragraphs 6.8 and 6.9: Set down a framework for 'non-market'-based cooperative approaches.

It is important to note that Article 6 does not in itself create a carbon market. Rather, it provides a legal and procedural framework that enables countries to establish and participate in markets and other cooperative arrangements, subject to guidance adopted by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA).

2

ARTICLE 6.2

ARTICLE 6.2 enables two or more countries to sign agreements that permit them to generate and transfer emission-reduction units, known as Internationally Transferred Mitigation Outcomes (ITMOs), between themselves. These transfers can be made for any of the following purposes:

a. To the partnering country, which would count toward the partnering country's NDC targets.

b. Transfers to other market-based international mechanisms, such as the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA).

c. Transfers for 'other purposes', such as to non-state agencies or private companies, also called non-party stakeholders (NPS) by the United Nations Framework Convention on Climate Change (UNFCCC).

Article 6.2 allows for flexibility in cooperation between countries and non-country stakeholders; there are, however, specific rules and guidelines to ensure that such cooperation and the trade of 'mitigation outcomes' occur in a regulated and standardized manner.

WHAT IS AN INTERNATIONALLY TRANSFERRED MITIGATION OUTCOME (ITMO)?

An ITMO is an emission reduction or removal unit, measured in metric tonnes of carbon dioxide (tCO_2e), that is transferred from the country where it was generated through a mitigation activity to another country. An ITMO could also be designated in terms of non-GHG metrics, for example, units of renewable electricity generated (megawatt hour [MWh]).

It is considered an ITMO only when transferred internationally.

What is a Cooperative Approach?

Under Article 6.2 of the Paris Agreement, a cooperative approach refers to a framework where countries voluntarily transfer Internationally Transferred Mitigation Outcomes (ITMOs) to help meet their Nationally Determined Contributions (NDCs). While the definition and scope of a cooperative approach was debated during negotiations, no formal definition was adopted at COP29 in Baku. The term can be understood broadly as a mutually agreed on set of activities that facilitate emission reductions or removals, or as a structured arrangement for implementing and accounting for such reductions.

2.1 AUTHORIZATION

Authorization under Article 6.2 can be of three types:

1. Authorization of the cooperative approach
2. Authorization of the ITMOs
3. Authorization of entities

Article 6 of the Paris Agreement allows the use of ITMOs to achieve NDCs, provided they are authorized by participating parties. Authorization, in this context, refers to the official approval granted by national governments for the cooperative approach, the use of ITMOs, and the involvement of public and private entities in activities that generate mitigation outcomes. This authorization is important, as any permitted transfer of ITMOs requires a 'corresponding adjustment' to the host country's as well as the

WHAT IS A CORRESPONDING ADJUSTMENT?

For a transfer to occur between countries, the host country (the ITMO-transferring country) must make a corresponding adjustment (CA), meaning it will not use the emission reductions sold to other countries to meet its own NDC goal. Similarly, the ITMO-buying country must make a corresponding adjustment to reflect the purchase of ITMOs in its emission balance. This ensures that the emission reduction sold by the host country is not double-counted.

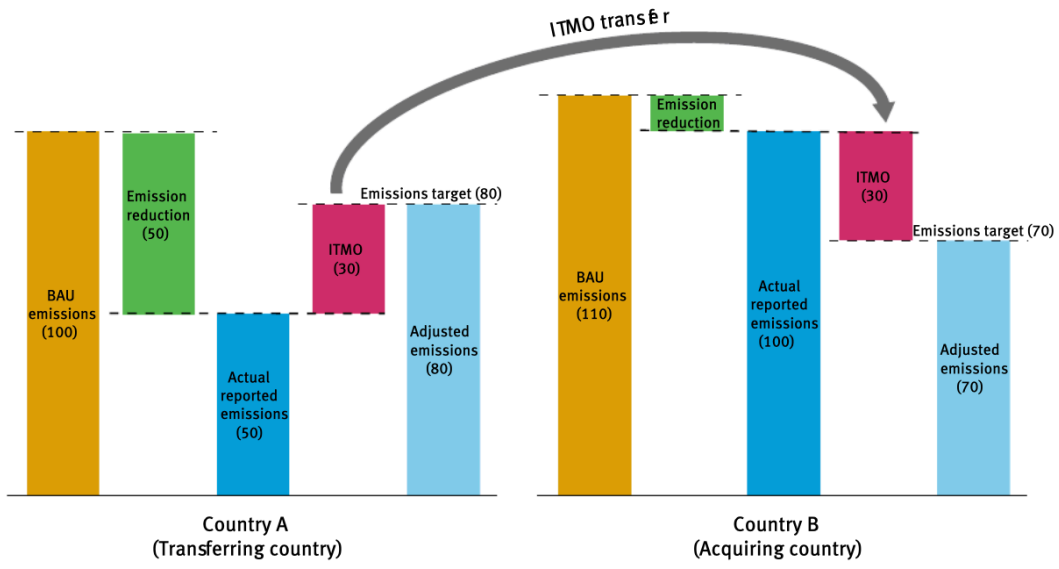
The corresponding adjustment does not impact the GHG inventory of the country, and such adjustments are not made to the inventory but to an 'emissions balance' (see *Graph 1: Illustration of a corresponding adjustment* and *Graph 2: Corresponding adjustment for an ITMO-buying country*).

The UNFCCC has provided guidelines on how accounting should be done with regard to single-year or multi-year NDC targets, as well as for GHG metrics, non-GHG metrics, and policies and measures (Decision 2/CMA.3 Annex III.B).

Graph 1 illustrates how corresponding adjustments work in practice. Country A, the ITMO-transferring country, reduces its emissions from a business-as-usual (BAU) level of 100 units to 50 units. However, since it sells 30 units of these reductions as ITMOs, it must make a corresponding adjustment by adding those 30 units back into its emissions balance, thereby reporting 80 units instead of 50 against its NDC target. Country B, the ITMO-acquiring country, has actual reported emissions of 100 units. After purchasing 30 ITMOs, it adjusts its emissions balance downward to 70 units to reflect the imported mitigation outcomes. This accounting ensures the emission reduction is only counted once, by Country B, and not by both parties.

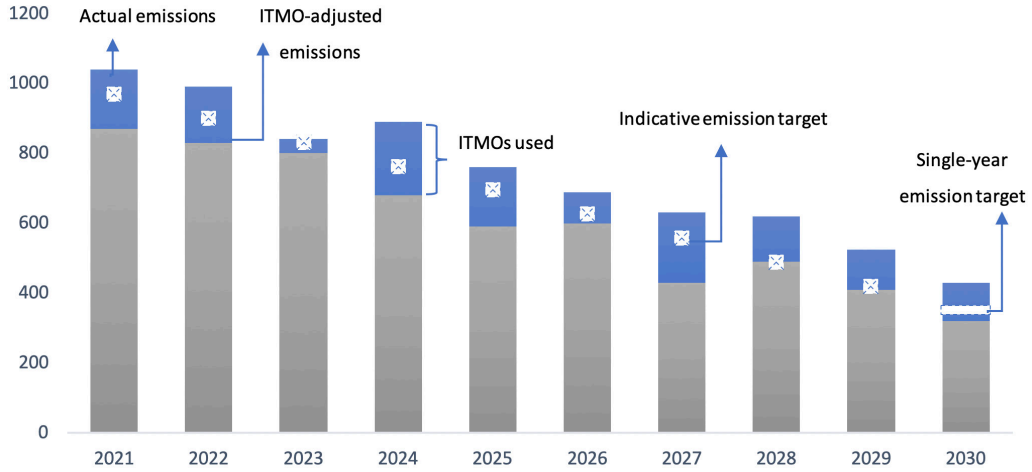
Graph 2 illustrates how corresponding adjustments are to be applied by a country with a single-year NDC target, such as an emissions-reduction commitment for the year 2030. In this case, the country is shown acquiring ITMOs each year from 2021 to 2030. The dots show the indicative emission target for each year based on the target for 2030. The acquired ITMOs are tracked annually (the blue blocks above each grey bar), and then a cumulative corresponding adjustment is made in 2030. This approach is the 'cumulative method' described in the UNFCCC guidance.

Graph 1: Illustration of a corresponding adjustment



Source: Broekhoff et al. (2017)[6]

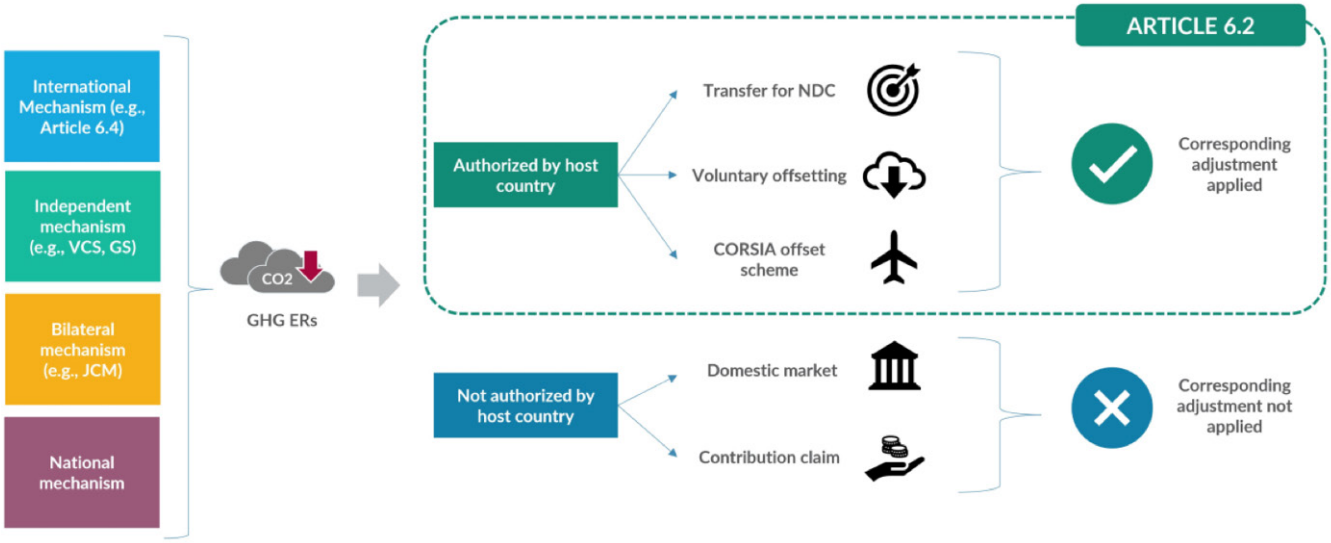
Graph 2: Corresponding adjustment for an ITMO-buying country (with a single-year NDC target)



Source: CSE

recipient country's emission target account. Figure 1 shows an example of the authorization for various uses of the ITMOs and where corresponding adjustments need to be applied.

Figure 1: Probable mechanism of sourcing, authorization and appropriation of emission-reduction units



Source: Ministry of Environment, Government of Cambodia

Authorization is a national prerogative of the host country (the country where the mitigation outcomes are generated), and the process of authorization has also been left to the countries to decide. However, under their reporting requirements (see section *Reporting mechanism*), countries are required to submit authorization information to the UNFCCC in a standardized format. This includes details such as the names of the parties involved, the date and duration of authorization, the uses covered by the authorization (e.g., for NDC or other purposes), the quantity of ITMOs, metric units and conversion factors, etc.

7. The authorisation referred to in paragraph 7 above is subject to the following restrictions:

   (a) We authorize only the use of the program's Emission Reductions or Removals, for which ART has issued or will issue ART Credits, that occur in the period from 1st January, 2022 to 31st December, 2022 and

   (b) We authorize only the use of a maximum of 8,732,929 tCO2e of the program's Emission Reductions or Removals, issued as offset credits by ART, for 2022.

8. We hereby request ART to submit annual reports to us, no later than by 31 March of each year, on the use of the ART Credits' associated Emission Reductions or Removals by other countries or entities, including volumes cancelled for use by each country and entity.

9. We hereby declare that the Co-operative Republic of Guyana will not use the program's Emission Reductions or Removals to track progress towards, or for demonstrating achievement of, its NDC and that Co-operative Republic of Guyana will account for the use of the program's Emission Reductions or Removals by those relying on the Usage Authorization at paragraph 7 above through adjustments in the structured summary of Co-operative Republic of Guyana's biennial transparency reports, as referred to in paragraph 77, sub-paragraph (d), of the Annex to decision 18/CMA.1, and consistent with relevant future decisions by the CMA.

10. We hereby also declare that the Co-operative Republic of Guyana will report on the authorization and use of the program's Emission Reductions or Removals by other countries or entities in a transparent manner in the country's Biennial Transparency Report submitted under Article 13 of the Paris Agreement.

Extract from the authorization statement issued by Guyana

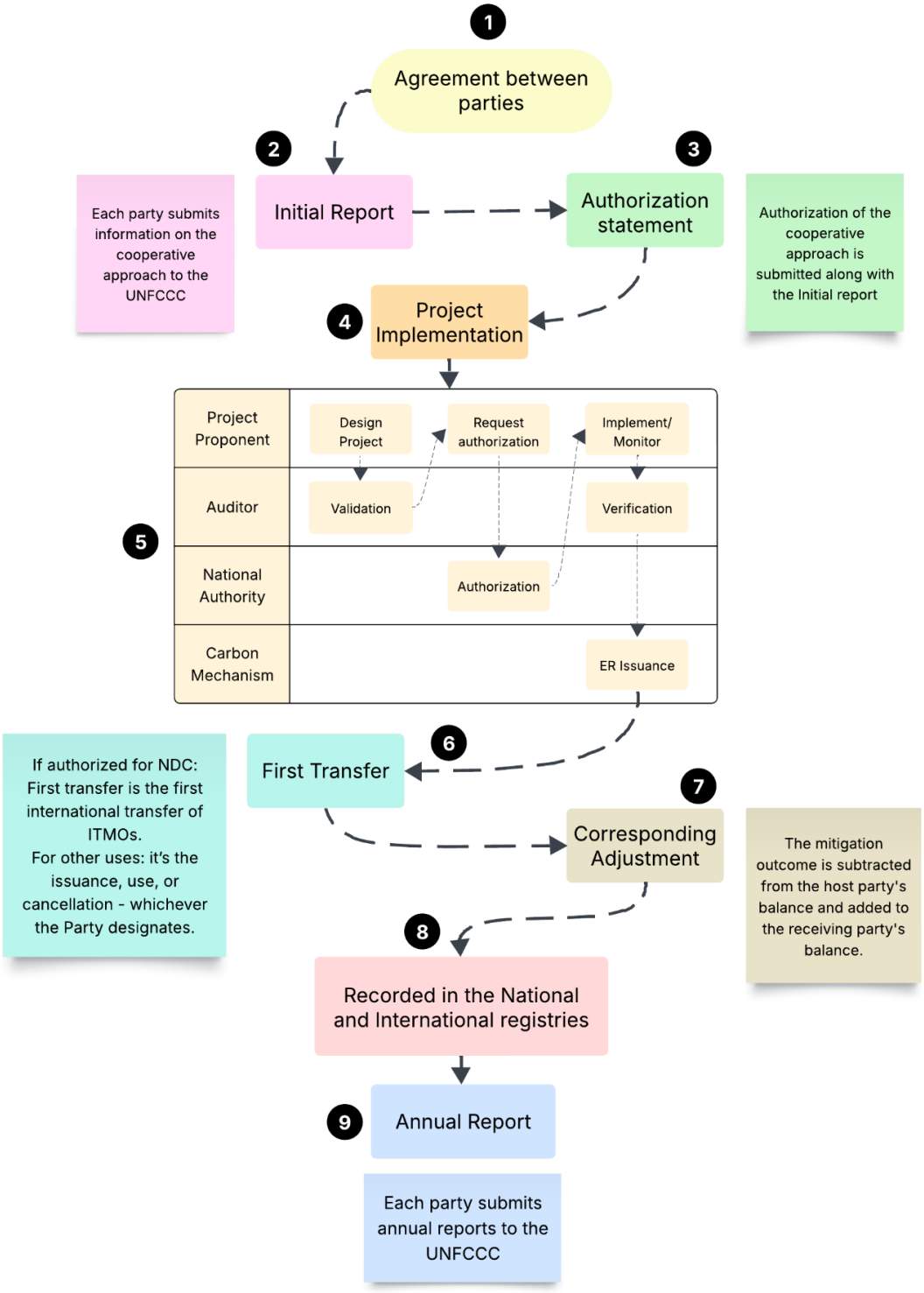
An example of an authorization is the one submitted by Guyana to the UNFCCC in January 2025. The submission authorizes offset credits issued by the Architecture for REDD+ Transactions (ART) registry for a REDD+ project in Guyana. It further clarifies that the credits may be used for an NDC (of a partnering country), International Mitigation Purposes (CORSIA-like programmes), or Other Purposes (such as use in the voluntary carbon market). The authorization has been granted for credits corresponding only to the year 2022, with a maximum of 8.7 million credits authorized.[7]

2.2 THE FRAMEWORK

Requirement checklist

- ✓ Participating country must be a party to the Paris Agreement
- ✓ It has prepared and communicated its NDC to the UNFCCC
- ✓ It has arrangements in place for authorizing the use of ITMOs
- ✓ It has provided the most recent national inventory report
- ✓ Its participation contributes to the implementation of its NDCs and LT-LEDS
- ✓ It issues authorization for the transfer and use of ITMOs

Figure 2: Indicative process flow of a cooperative approach



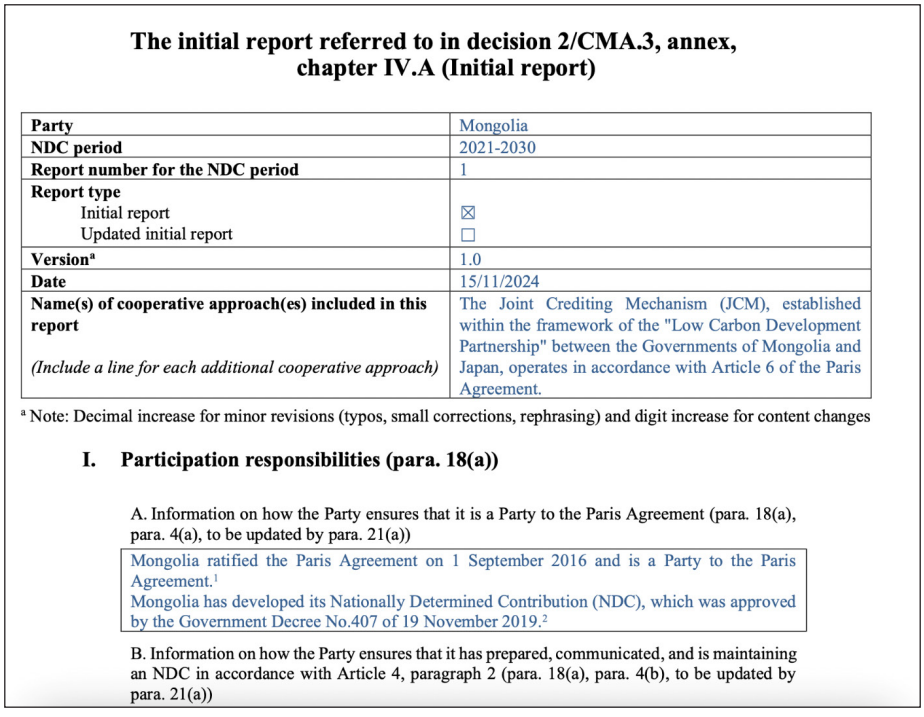
Source: CSE

2.2.1 Reporting mechanism

Parties participating in a cooperative approach are required to provide three kinds of reports/ information to the UNFCCC:

1. **Initial report**: The party would demonstrate that it fulfils the participation criteria, the details of the cooperative approach and other basic information. This is submitted before any transfers of ITMOs are authorized after countries sign agreements.

   Initial reports from nine countries had been submitted to the UNFCCC centralized accounting and reporting platform (CARP) until May 2025. The countries include Switzerland, Ghana, Vanuatu, Thailand, Guyana, Suriname, Japan, Mongolia and Cambodia.



The initial report referred to in decision 2/CMA.3, annex, chapter IV.A (Initial report)

Party	Mongolia
NDC period	2021-2030
Report number for the NDC period	1
Report type Initial report Updated initial report	 ☒ ☐
Version[a]	1.0
Date	15/11/2024
Name(s) of cooperative approach(es) included in this report *(Include a line for each additional cooperative approach)*	The Joint Crediting Mechanism (JCM), established within the framework of the "Low Carbon Development Partnership" between the Governments of Mongolia and Japan, operates in accordance with Article 6 of the Paris Agreement.

[a] Note: Decimal increase for minor revisions (typos, small corrections, rephrasing) and digit increase for content changes

I. Participation responsibilities (para. 18(a))

A. Information on how the Party ensures that it is a Party to the Paris Agreement (para. 18(a), para. 4(a), to be updated by para. 21(a))

Mongolia ratified the Paris Agreement on 1 September 2016 and is a Party to the Paris Agreement.[1]
Mongolia has developed its Nationally Determined Contribution (NDC), which was approved by the Government Decree No.407 of 19 November 2019.[2]

B. Information on how the Party ensures that it has prepared, communicated, and is maintaining an NDC in accordance with Article 4, paragraph 2 (para. 18(a), para. 4(b), to be updated by para. 21(a))

The initial report submitted (January 29, 2025) to the UNFCCC by Mongolia

2. **Annual information**: To be shared on an annual basis in an agreed electronic format (AEF), information on the authorization of use of ITMOs, participating parties, authorized entities and other such information.

The first such annual information was submitted by Guyana in 2024, authorizing 16 million ITMOs for transfer. These ITMOs were generated from REDD+ activities, registered under the ART registry, and dated for the years 2021 and 2022, according to the information provided in the AEF. Guyana's cooperative approach, as submitted in the initial report, does not specify the other participating country, and so the AEF also does not mention a participating party that would receive the ITMO.

3. **Regular information**: As an annexe to the biennial transparency report (BTR), and to contain information on how the party meets the participation criteria, information on authorizations and corresponding adjustments. The reports must also provide details on each cooperative approach's contribution to GHG mitigation and baselines, and address uncertainties and potential leakage. Parties are required to submit annual data on anthropogenic emissions and ITMO transfers.

2.2.2 Registries

Registries are crucial for tracking and managing ITMO transactions. They work like databases used for recording activities and transactions of ITMOs, including authorization, transfer, acquisition, cancellation and utilization. The present framework considers the following registries:

1. **National registries**: Each participating party shall have its dedicated registry equipped with unique identifiers to record and manage ITMO transactions.
2. **International registry**: Where a party lacks a national registry, the secretariat will maintain an international registry within its Centralized Accounting and Reporting Platform (CARP).
3. **Mechanism registry**: It would track the issuance of 6.4 emission reductions (ERs) as per Article 6.4. The mechanism registry shall remain interconnected with the international registry to ensure coordination and interoperability of ITMOs and 6.4 ERs.

Registries would be important to prevent double-counting and promote transparency in carbon trading.

3

STATUS OF ARTICLE 6.2-BASED AGREEMENT BETWEEN COUNTRIES

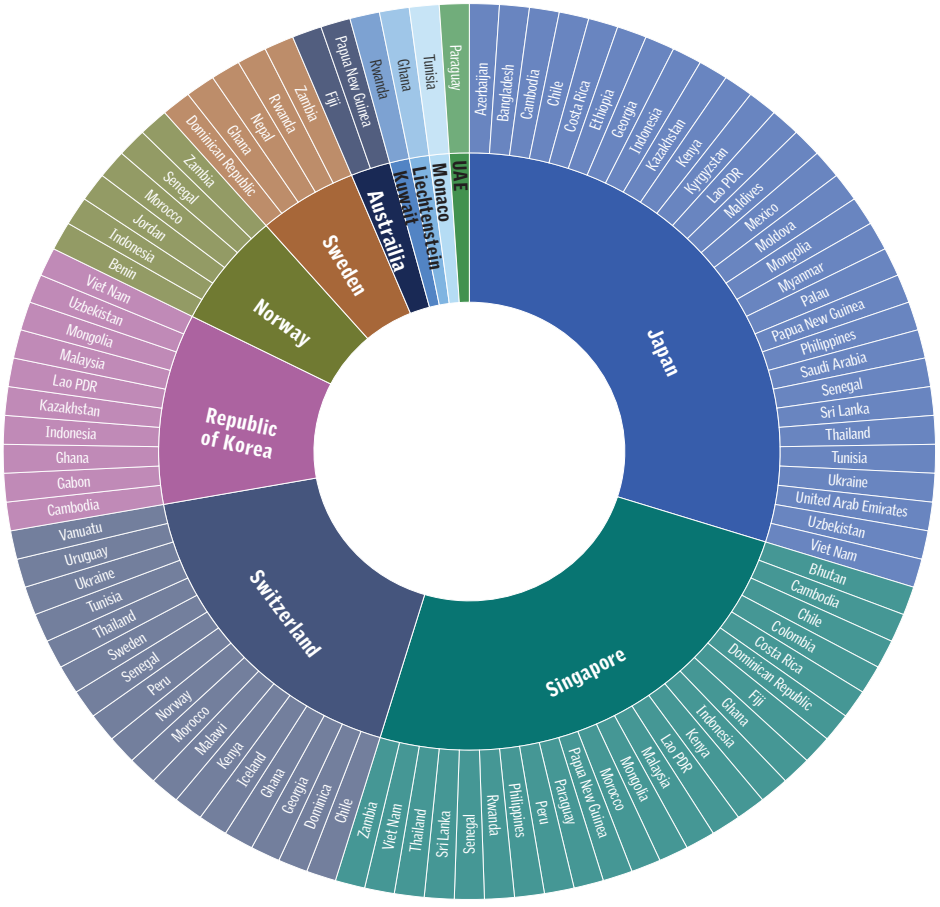
FIFTY-NINE countries have either signed or negotiated agreements and MoUs to establish a trading mechanism in line with Article 6; approximately 97 such deals have been worked out (see *Table 1: Top nine countries with Article 6-based agreements* and Graph 3: *Bilateral cooperation between countries*).

Table 1: Top nine countries with Article 6-based agreements (as of March 2025)

Country	Total agreements
Japan*	29
Singapore	24
Switzerland	17
South Korea	10
Norway	7
Sweden	6
Ghana	5
Indonesia	4
Senegal	4

* Japan-initiated bilateral agreements are called Joint Crediting Mechanism through which it seeks carbon credits from countries in which it supports the adoption of low-carbon technologies and facilitates implementation of emission reduction activities. Japan has had JCM agreements with countries since 2013, even before the Paris Agreement.

Graph 3: Bilateral cooperation between countries



Source: CSE

3.1 TYPES OF PROJECTS IN PIPELINE

Table 2: Announced projects (as of March 2025)

Title	Host country	Type	Sub-type	Buying country
Chile Electric Mobility	Chile	Transport	Electric vehicles	Switzerland
Green Finance for E-Mobility	Dominica	Transport	Electric vehicles	Switzerland
Transformative Cookstove Activity in Rural Ghana	Ghana	Household and community	Stoves	Switzerland
Promotion of Climate-smart Agriculture Practices for Sustainable Rice Cultivation	Ghana	Agriculture	Rice emissions	Switzerland
Integrated waste recycling and composting for methane reduction in Ghana	Ghana	Waste management	Composting	Switzerland
Green AC market transformation programme	Ghana	Industrial/Commercial		Switzerland
Ghana's Transitional National Clean Energy Access Program	Ghana	Renewable energy	Solar PV	Switzerland
Building Pathways to Electric Cooking (BPTEC)	Ghana	Household and community	Stoves	Switzerland
Electric bicycle manufacturing and distribution for gig economy workers and commuters	Ghana	Transport	Electric vehicles	Switzerland
Reducing Charcoal Consumption through Improved Cookstoves (RCCTIC)	Ghana	Household and community	Stoves	Switzerland
Sustainable Artisanal Palm Oil Processing Programme (SAPP)	Ghana	Waste management	Palm oil waste	Switzerland
Roof-mounted solar with energy storage	Ghana	Renewable energy	Solar PV	Sweden
Electric motorcycles	Ghana	Transport	Electric vehicles	Sweden
Solar park	Ghana	Renewable energy	Solar PV	Sweden
Malawi Dairy Biogas Programme	Malawi	Agriculture	Domestic manure	Switzerland
Solar Rooftop 500	Morocco	Renewable energy	Solar PV	Switzerland
Tuki Wasi ('Clean Homes'), Improved Cook Stoves in Rural Areas	Peru	Household and community	Stoves	Switzerland
Battery Energy Storage and Renewable Energy Programme	Senegal	Renewable energy		Switzerland
EcoCar Solaire	Senegal	Transport	Electric vehicles	Switzerland
Sustainable Waste Management Program in Senegal	Senegal	Waste management	Integrated solid waste management	Switzerland
Mass Car Electrification Senegal	Senegal	Transport	Electric vehicles	Switzerland
Bangkok E-Bus Programme	Thailand	Transport	Electric vehicles	Switzerland
Uruguay Electric Mobility	Uruguay	Transport	Electric vehicles	Switzerland
Construction of a landfill gas power plant begins in Uzbekistan, which can help South Korea earn carbon credits	Uzbekistan	Renewable energy	Landfill power	Republic of Korea
Electrification of Vanuatu's Inhabited Islands through Solar Power ITMO Program	Vanuatu	Renewable energy	Solar PV	Switzerland

Source: UNEP Copenhagen Climate Centre

4 CASE STUDIES

4.1 BUYER-COUNTRY FRAMEWORK

4.1.1 Switzerland

Under its NDC, Switzerland commits to halving its emissions by 2030 compared to 1990 levels. This target has been increased to a 65 per cent reduction by 2035 in the second phase of its NDC.[8] Both commitments are expected to be met in part through 'emission reductions realized abroad', i.e., via the transfer of ITMOs under Article 6. However, Switzerland does not specify how much of the target will be achieved through this mechanism or the use of ITMOs.

Switzerland has signed agreements with Peru, Ghana, Senegal, Georgia, Vanuatu, Dominica, Thailand, Ukraine, Morocco, Malawi, Uruguay, Chile and Tunisia. The country has also entered into MoUs with Sweden and the Netherlands and signed a declaration of intent for cooperation with Iceland, Norway and Kenya. The bilateral deals that Switzerland signs will serve as the legal basis for commercial transactions between parties buying and selling emission-reduction units.[9]

TECHNICAL EXPERT REVIEW UNDER ARTICLE 6

A review mechanism is established under the Article 6.2 framework, whereby a panel of technical experts assesses the information submitted by countries to the UNFCCC. This mechanism evaluates the consistency of the information provided for each cooperative approach outlined in the Initial Report and makes recommendations to countries based on these submissions.

The first review process began in 2024, and the first batch of review reports was published by the UNFCCC in May 2025.[10]

In Switzerland's case, the review found that some of the key pieces of information were either unclear or incomplete. For example, the country's report did not clearly describe the full process for authorizing the use of ITMOs towards achieving its NDCs, nor did it adequately explain the institutional arrangements in place for tracking ITMOs. The review also noted that Switzerland had not clearly articulated how its cooperative approaches contribute to the long-term goals of the Paris Agreement. Other than this, technical issues were raised asking Switzerland to explain further how the country defined its emissions targets, calculated its baselines, and quantified mitigation outcomes in its NDC.

Specifically, for cooperative approaches with countries like Ghana, Thailand and Vanuatu, the review questioned how environmental integrity was ensured, whether emissions baselines were conservative enough, and how risks such as leakage were being addressed—elements that were not sufficiently covered in the country's Initial Report. The review also identified gaps in explaining how these projects are designed to avoid negative environmental and social impacts, and how they align with Switzerland's own sustainable development objectives.

The review report includes Switzerland's responses to these issues and sets out recommendations from the expert team for improving transparency and consistency in future reports.

No capacity-building needs were identified for Switzerland.

To support Article 6-based activities, Klik Foundation, an entity established by Swiss fuel importers in 2012 to offset their emissions as mandated by Swiss law, is sourcing ITMOs from countries that have signed bilateral agreements with Switzerland. These ITMOs are then submitted to the Swiss government to contribute to the achievement of its climate targets.

Switzerland will use the Swiss Emission Trading Registry for the tracking of ITMOs—hence the registry would receive ITMOs transferred from outside the country. The ITMOs would then be used either for NDCs under the Swiss CO_2 legislation or could be used voluntarily for other purposes.

Switzerland submitted its initial report to the UNFCCC in 2023 but has not produced a dedicated regulatory framework for Article 6-based trading.

4.1.2 Singapore

Singapore's 2030 target under its NDC includes a commitment to peak its emissions at 65 $MtCO_2e$ by 2030. While the country pledged to achieve its NDCs primarily through domestic efforts, it expressed an intention to study how international cooperation under Article 6 could be utilized. Singapore's second NDC target for 2035 aims to peak emissions at 45–50 $MtCO_2e$. The country plans to use ITMOs to address the residual reduction requirements during this period.

Until March 2025, Singapore had signed two bilateral agreements with Ghana and Papua New Guinea. Two more agreements are under negotiation with Paraguay and Vietnam. Additionally, a memorandum of understanding has been signed with each of 17 other countries.

In its framework[11] for bilateral trade, Singapore lays out its plans, including:

- To use the standards and methodologies of independent voluntary carbon crediting programmes such as Verra, Gold Standard, American Carbon Registry and the Global Carbon

Council, instead of developing dedicated standards and methodologies for Article 6-based bilateral trade.

- To allow the use of carbon credits for both Singapore's NDCs and voluntary use by companies.
- Project developers of mitigation activities under Singapore's bilateral agreement with a host country will have to surrender 30 per cent of the credits to the Singapore government, and the remaining credits could be sold or traded.
- Five per cent of the share of proceeds would go to the adaptation needs of the host country or the UNFCCC adaptation fund. Two per cent of the credits will be canceled to serve the Overall Mitigation in Global Emission (OMGE).

Singapore is also working with Verra and Gold Standard to develop an Article 6 crediting protocol.

4.2 HOST-COUNTRY FRAMEWORK

4.2.1 Ghana

The country of Ghana aims to mitigate 64 $MtCO_2e$ by 2030 (starting from 2021)—24 $MtCO_2e$ as an unconditional target and 39.4 $MtCO_2e$ as a conditional target. 64 $MtCO_2e$ represents 88 per cent of the total country emissions.

Ghana published its framework for Article 6-based trade in 2022, making it one of the first countries to do so. This framework specifies eligible mitigation activities, integrity requirements, the authorization process, functioning of the registry, and other important aspects of hosting projects. The framework states that the country will not authorize mitigation outcomes arising from its unconditional mitigation programmes under its NDCs, which will be part of the 'red list' in the Article 6.2 framework. The country has also created a whitelist of pre-authorized technologies that are considered automatically additional to Ghana's NDC baseline. Additionally, the framework establishes the 'Ghana Carbon Registry' as a national registry for tracking ITMOs.[12]

TECHNICAL EXPERT REVIEW UNDER ARTICLE 6

Ghana's submission was among those reviewed in the first cycle. The technical expert review flagged some issues and requested further information to improve the clarity and completeness of the Initial Report submitted by Ghana. For instance, it highlighted the lack of completeness in the description of the authorization process for the cooperative approach and the transfer of ITMOs, as well as the functionalities of its national registry. It also asked the country to clarify how its activities contribute to the long-term goals of the Paris Agreement and ensure that there is no net increase in global emissions. The review sought additional information from Ghana to demonstrate how environmental integrity is ensured in the cooperative approach, including the prevention of a net increase in global emissions and the quality of mitigation outcomes. Ghana's approach to applying corresponding adjustments was also flagged for inconsistency. The review report also asked Ghana how mitigation activities would be assessed against sustainable development criteria. The review includes clarifications received from Ghana and makes recommendations based on the clarifications received.

All voluntary carbon market (VCM) projects are required to obtain formal recognition under this framework.

As of March 2025, Ghana has signed three bilateral agreements with Switzerland, Sweden and Singapore. It is also negotiating an agreement with South Korea and has a letter of intent for cooperation with Liechtenstein. In 2023, the country submitted its initial report to UNFCCC, which included details on its cooperative approach with Switzerland and the mitigation activity 'Promotion of Climate-Smart Agriculture Practices for Sustainable Rice Cultivation in Ghana'.

4.2.2 Cambodia

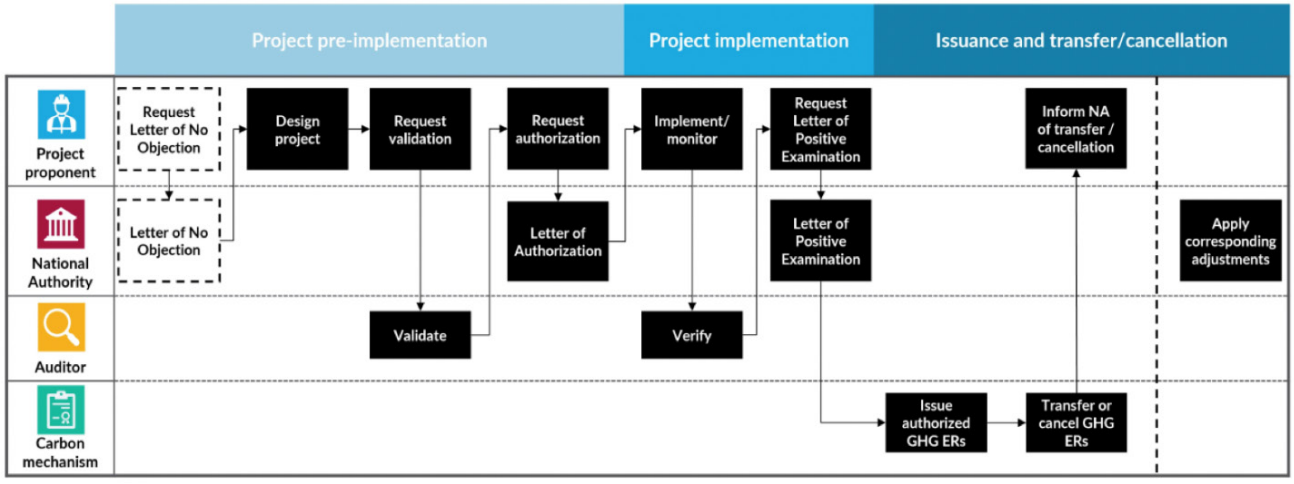
Cambodia is yet to sign a bilateral agreement but has signed MoUs with South Korea, Singapore and Japan for bilateral cooperation. Cambodia published its framework for the implementation of Article 6 in 2024.

Cambodia's framework[13] covers seven sectors, i.e., energy, waste, industry, transport, agriculture, buildings, and forestry and other land use (FOLU). It establishes a process for authorization and includes provisions for a national registry. Until the registry is developed, Cambodia will use the international registry or the registry infrastructure provided by carbon crediting mechanisms. Only mitigation outcomes from projects on Cambodia's 'positive list' of mitigation activities are eligible for Article 6 authorization. The framework also allows the use of credits from independent carbon crediting mechanisms.

Cambodia has adopted a phased approach to Article 6 implementation. The pilot phase, running until December 2025, will authorize only a limited number of projects. In the second phase, authorization criteria will be updated based on lessons learned, particularly regarding the impact of Article 6 participation on national mitigation targets.

The framework includes an appeals process for both the rejection and acceptance of authorization for mitigation activities (see *Figure 3: Process flow of project implementation in Cambodia*).

Figure 3: Process flow of project implementation in Cambodia



Source: Ministry of Environment, Government of Cambodia

4.3 CASE ONE: SWITZERLAND–GHANA COOPERATIVE AGREEMENT

Ghana signed a cooperation agreement with Switzerland in 2022.[14] This serves as a legal framework for the transfer of ITMOs. It provides information on the eligibility of mitigation outcomes, authorization, monitoring and reporting processes, and the registry. An important recognition the agreement makes is that the transaction under this approach would not count as support provided under Article 9 (climate finance), Article 10 (technology transfer) and Article 11 (capacity building) of the Paris Agreement.

Mitigation outcomes achieved from 2021 onwards would be eligible for transfer. The first set of activities agreed upon under this cooperative approach were non-utility scale solar systems, agriculture, clean cookstove distribution, and waste management projects. The first authorization provided under this cooperative approach was in 2022 itself, with Ghana authorizing UNDP Ghana for transfer of ITMOs from a project named 'Promotion of climate-smart agriculture practices for sustainable rice cultivation in Ghana' (see *Table 3: Key elements of the first authorization statement submitted by Ghana*). The authorization statement cannot be changed after thirty days of issuance.[15]

Table 3: Key elements of the first authorization statement submitted by Ghana

Authorization element	Notes
Date of the authorization statement	November 11, 2022
Authorized participant	UNDP Country Office, Ghana
ITMO uses authorized	ITMOs are authorized for use towards NDC, other international mitigation purposes and other purposes, including voluntary offsetting, as specified in the authorization statement by the Republic of Ghana and letter of authorization granted to the UNDP Country Office, Ghana
Definition of first transfer	The first transfer, triggering corresponding adjustments by the host Party, is defined by the recognition of the occurred international transfer of an ITMO under the Cooperation Agreement (Article 8)
Authorized crediting period	June 1, 2022–December 31, 2030
NDC period, which the ITMOs are authorized for use, as appropriate	2021–30
The total cumulative maximum amount of Mitigation Outcomes for which international transfer and use are authorized	1,125,655 tCO_2eq

Table 4: List of activities under the Ghana–Swiss bilateral agreement

S. no.	Activity participant	Activity name	Technology	Status	Expected quantity of ERs ($MtCO_2eq$)
1	UNDP	Promotion of climate-smart Agriculture Practices for Sustainable Rice Cultivation	AWD rice cultivation	Monitoring	1.1
2	Sistema Bio	Ghana Biogas Program	Biogas	Letter of Intent and under development	0
3	HomeBiogas	Biogas systems for farmers in Ghana	Biogas	Development of Mitigation Activity Idea Note (MAIN)	1.21
4	ACT Climate Solutions BV	Transformative Cookstove Activity in Rural Ghana	Biomass stoves	Examination Stage	3.2
5	Zuza Akyem Ltd	Transformative Biomass to Energy Impact	Biomass power plant	Development of Mitigation Activity Idea Note (MAIN)	0.56
6	CERTAIN GTS	African Sustainable Charcoal Initiative with MGS for Klik, Micro-Gasifier Stoves (MGS) (ASCIMGS-Klik)	Charcoal production	Letter of Intent and under development	0.66
7	UpEnergy	Reducing Charcoal Consumption Through Improved Cookstoves	Charcoal stoves	Validation	1.85
8	Jospong Group	Integrated waste recycling and composting for methane reduction in Ghana	Composting	Onboarding	1.48
9	WAHU	Electric bicycle manufacturing and distribution for gig economy workers and commuters in Ghana	Electric bike	Authorization	0.75
10	Aera/SolarTaxi	Electric buses programme in Ghana (former SolarTaxi)	Electric bus	Letter of Intent and under development	0.38
11	UpEnergy	Building Pathways to Electric Cooking in Ghana	Electric stoves	Validation	2.03
12	BURN	Distribution of electric cookstoves for households in Ghana	Electric stoves	Validation	0.46
13	GIZ Klik Foundation	Market transformation through the introduction of the green split of ACSs	HFC cooling	Validation stage	0.59
14	Klik Foundation	National Clean Energy Access Program	Solar PV	Validation stage	0.35
15	Solidaridad	Sustainable Artisanal Palm Oil Processing (SAPP)	Wastewater treatment	Development of Mitigation Activity Idea Note (MAIN)	5.94

Source: Carbon Market Office, Government of Ghana

Since the issuance of the first authorization statement, a number of activities are being considered under the cooperative approach, totaling over 20 million tonnes of CO_2e (see *Table 4: List of activities under the Ghana–Swiss bilateral agreement*).

One of the projects authorized between the countries is the 'Transformative Cookstove Activity in Rural Ghana'. The project plans to distribute 180,000 improved cookstoves in rural Ghana in three phases. These cookstoves are claimed to reduce biomass usage by 60 per cent.

The project is supported by the Klik Foundation's financing, which will ultimately receive the ITMOs from the project. The cookstoves will be provided to households at a subsidized price. The estimated annual ITMOs from the project is 403,896, which will cumulatively add up to 3.2 million over eight years. The project uses a methodology from the Gold Standard programme, which is applied in the voluntary carbon market. This methodology has also been approved by the Integrity Council for the Voluntary Carbon Market (ICVCM).

End-beneficiaries will still need to purchase the cookstoves, but at a reduced price. For beneficiaries who may not have the means to pay for the subsidized cookstove, a fund has been created to provide loans.

For a traditional firewood stove, the average monthly savings from fuel reduction is claimed to be 40.32 Ghanaian Cedi (approximately US $2.62 at the exchange rate as of March 2025). These savings are expected to help households recover their investment in about six months, making the total investment around 180 Ghanaian Cedi (US $11.72).

Envirofit Ghana will manufacture the cookstoves, which will be distributed with the help of local organizations. Envirofit is also the project developer, responsible for day-to-day operations, as well as the monitoring, reporting and verification processes. Other entities involved in the project include the Transformative Technology Access Fund, the microfinance institution responsible for disbursing loans to beneficiaries in need, and a village-level association called the VLSA, which will manage the loans and serve as collateral. In addition to Envirofit, another company called

Act Commodities will serve as the 'activity supervisor', the 'legal owner of the environmental attributes', and Klik's counterparty in the MOPA (Mitigation Outcome Purchase Agreement).

4.4 CASE TWO: VANUATU–SWITZERLAND COOPERATIVE AGREEMENT

The island country of Vanuatu has set a target of achieving 100 per cent electricity generation from renewable energy by 2030 as part of its NDC commitment. In 2023, the country submitted its initial report to the UNFCCC on Article 6, which included details of the Vanuatu–Switzerland Cooperative Approach for the electrification of Vanuatu's inhabited islands through solar power. The mitigation outcomes from this activity will be measured in tonnes of CO_2 equivalent (tCO_2e), based on the emissions avoided by replacing fossil fuel-based generators. The expected reduction in emissions is 97.2 $MtCO_2e$ by the end of 2030.

To facilitate capital investment in energy access, the Government of Vanuatu has established the National Green Energy Fund (NGEF). Revenues from ITMOs under the cooperative approach will be used to finance the NGEF, which will in turn provide subsidized equipment to institutional and individual buyers. The programme would primarily provide new electrification and to some extent also replace existing diesel generators. The legal ownership of ITMOs would be transferred from the end-beneficiaries of the activity to the government of Vanuatu through a loan agreement signed between the buyers and the NGEF. The projects is being developed by the UNDP. The ownership of the mitigation activity would lie with the NGEF. To assess the baseline, the project would use CDM methodology on electrification of rural communities using renewable energy.

Vanuatu also issued authorization for this cooperative approach, specifying that the ITMOs:

- shall represent mitigation from 2021 onwards;
- will not be used by the government of Vanuatu to demonstrate the achievement of its NDCs;
- would be recorded in Vanuatu's Carbon Registry.

4.5 CASE THREE: SINGAPORE–BHUTAN COOPERATIVE AGREEMENT

Singapore and Bhutan have signed an 'implementation agreement on carbon credits from a cooperative approach' based on Article 6 of the Paris Agreement. The implementation agreement states that the ITMOs may be used to offset up to 5 per cent of a company's taxable emissions under Singapore's domestic law or to meet binding mandates such as NDCs or CORSIA. Five per cent of the share of proceeds would go toward supporting adaptation measures in Bhutan, such as strengthening heat resilience in the country. In keeping with the overall Article 6 framework, 2 per cent of the correspondingly adjusted ITMOs would be cancelled upon transfer as OMGE.

No cooperative approach/mitigation activity has been announced under this framework as of March 2025.

Bhutan has issued a 'Positive List of Activities Eligible for Carbon Trading under Article 6'. This includes a list of nine activities (see *Table 5: Bhutan's list of positive activities eligible under Article 6 for carbon trading*).

Table 5: Bhutan's list of positive activities eligible under Article 6 for carbon trading (as of February 2025)

S. no.	Positive list
1	Development of renewable energy projects
2	Development and installation of renewable and energy-efficient technology systems (e.g. energy efficient cookstoves, thermal and electrical efficient systems in buildings), and process improvement (in industry sectors)
3	Development of green infrastructure
4	Development of integrated waste management projects, such as waste-to-energy, material recovery facilities, sanitary landfill, waste water management and other activities
5	Development and promotion of low carbon transport (alternative fuel, electric and hydrogen-based) and related activities
6	Development and use of alternative fuels such as biofuels, and green hydrogen and derivatives
7	Mitigation projects related to agroforestry and sustainable agriculture
8	Mitigation projects related to afforestation, reforestation and restoration (wetlands and rangeland included) projects
9	Mitigation projects related to livestock management

Source: Ministry of Energy and natural Resources, Government of Bhutan

5 ISSUES AND CONCERNS

ONE OF the first transfers of ITMOs became controversial when Switzerland purchased ITMOs from an electric bus programme in Thailand, implemented under the Switzerland–Thailand bilateral arrangement on ITMO trade. An alliance of Swiss organizations raised concerns that the switch to electric buses in the region would likely have occurred even without the funding received through the ITMO transfer, calling into question the additionality of the project and, consequently, Switzerland's claim over the associated emission reductions. An investigation by Alliance Sud also highlighted issues of transparency and the poor quality of publicly available information.[16]

Another report by Swiss online news magazine *Republik*[17] highlighted further concerns related to the unintended economic consequences of the project, including a stock-market bubble driven by inflated expectations around the Thai company involved.

Small investors suffered significant losses, and questions were raised about Switzerland's due diligence and the broader risks.

Yet another allegation was levelled against the Thai bus manufacturer by the global trade union IndustriALL, which flagged labour law violations at the company.[18]

The timing is significant—a limited number of Article 6.2 bilateral initiatives are underway, even as investigations reveal deep flaws in the global voluntary offset market. Meanwhile, the finalization of carbon market rules at COP29 in Baku has further sharpened the focus on market integrity.

Integrity risks from voluntary carbon markets

One of the key issues with the Article 6.2 mechanism is the absence of guidance on where ITMOs can be sourced from, that is, what framework or process countries should follow to generate or issue these units. In other words, there are currently no restrictions preventing the use of carbon credits from a wide range of existing standards, including those from the voluntary carbon market (VCM), from being recognized as ITMOs and traded under Article 6.2. As a result, credits from existing VCM programmes are likely to be absorbed into the mechanism.

However, numerous reports, investigations and studies over the years have exposed deep-rooted issues in the VCM. A large volume of credits generated under this system have been criticized for lacking environmental integrity and has been referred to as 'hot air'. The Centre for Science and Environment's (CSE's) investigation on the voluntary carbon market in India, one of the largest sources of carbon credits, also uncovered serious flaws in the credibility and oversight of projects and the questionable integrity of resulting credits.[19] This raises a fundamental concern: how effective or credible can a new international mechanism be if it essentially repackages old problems in a new framework?

Review process: a safeguard with limitations

The Technical Expert Review (TER) process outlined under the Article 6.2 framework serves as an important safeguard. It functions as the backbone of the mechanism, giving a layer of transparency and oversight by requiring countries to submit detailed information on their cooperative approaches to the UNFCCC. This includes how ITMOs are generated, tracked and used, and how environmental integrity and sustainable development are ensured.

The first round of this review process highlights the value of this review mechanism. Discrepancies in the submissions that range from inconsistencies in reporting to unclear accounting processes were flagged by experts. In response, countries offered clarifications or updates, indicating that the process has the potential to promote a certain degree of scrutiny and course correction. But, the scope of the review is ultimately limited by one significant weakness: it lacks enforceability. If a country fails to comply with the reporting requirements or offers insufficient justification for issues raised, the only recourse is to flag the concern again in subsequent reviews. There are no binding consequences, or formal dispute resolution mechanisms to compel compliance or ensure corrective action.

The accountability challenges

This limitation also connects to a broader issue: accountability within countries participating in cooperative approaches. It is not only national governments that are involved; private actors, project developers and third-party verifiers would be involved in the process. Ensuring the accountability of these entities is important. Without strong domestic oversight frameworks and clear lines of responsibility, there is always a risk that low-quality or fraudulent credits could enter the system, and that discrepancies in emissions accounting might go unaddressed.

Countries need to be better equipped

Beyond the working of this mechanism itself, countries would ideally benefit from clearly identifying the objectives they aim to achieve through participation in carbon markets—whether to

secure large-scale finance, gain access to advanced technologies for industrial decarbonization, meet their NDC targets, or pursue other national priorities.

A well-laid-out plan should also account for strategically intended long-term benefits and the potential for co-benefits. To do this, countries must assess the actions required, associated costs and timelines for meeting their climate targets, and the trade-offs involved in trading ITMOs, particularly since these would be correspondingly adjusted.

Countries would need to develop strong institutional capacities to meet these needs. Without them, the opportunities from market participation diminish, while the associated risks increase.

High- versus low-cost mitigation options

Market mechanisms should support investments that help host countries access important technologies and resources. Emission reduction using low-cost and widely accessible technologies, such as cookstove distribution, should be counted by the developing countries to help meet their own mitigation goals. In contrast, carbon market projects should focus on technologies that would otherwise be out of reach for these countries.

Several projects currently in the pipeline (see *Table 2: Announced projects*) involve low-cost mitigation activities such as climate-smart agriculture, cookstove distribution and domestic manure management. When these low-cost benefits are transferred to wealthier countries, it places pressure on developing countries' NDCs, leaving them with more expensive mitigation actions to undertake on their own.

Moreover, such low-cost activities are unlikely to drive the structural transformation needed for long-term emission reductions in the host country.

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ANNEXURE

KEY REPORTING REQUIREMENTS

Initial Report

1. Demonstrate that the party fulfils the participation responsibilities.
2. Information on NDC—targets, target types, target year, single-year/multi-year, scope, coverage, etc.
3. The metric intended to be used for IMTOs—GHG metric or non-GHG metric, the method for applying the corresponding adjustment.
4. Quantify the Party's mitigation information in its NDC in tCO_2eq, including the sectors, sources, GHGs and time periods covered by the NDC, the reference level of emissions and removals for the relevant year or period, and the target level for its NDC; or, where this is not possible, provide the methodology for the quantification of the NDC in tCO_2eq.
5. A copy of the authorization, a description of the approach, its duration, the expected mitigation for each year of its duration, and the participating Parties involved and authorized entities.

Annual Information

1. Information on the authorization of ITMOs for use towards achievement of NDCs, and towards other international mitigation purposes, first transfer, transfer, acquisition, holdings, cancellation, voluntary cancellation, voluntary cancellation of ITMOs.
2. Information on the cooperative approach, authorized entities, year of mitigation, the sectors, and activity types.

Regular Information

1. Demonstrate that the party fulfils the participation responsibilities.
2. Update to the information provided in the initial report.
3. Information on authorization and authorization of use of ITMOs.
4. Information on the corresponding adjustment.

With carbon-offset markets facing a crisis of credibility, both governments and market actors are now looking to the UN-led carbon market to restore trust in market mechanisms. As countries engage with the UN-led carbon market under Article 6 of the Paris Agreement, bilateral trading under Article 6.2 is a key focus.

This report offers a grounded and critical look at the evolving landscape of these cooperative approaches, unpacking the rules, risks and realities of carbon trading under Article 6.2.

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