ARTICLE 6 SERIES

# ESTABLISHMENT OF REGISTRIES OR OTHER DIGITAL INFRASTRUCTURE – AN INTRODUCTION

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*The intention of each paper in this series is to provide policymakers with an introduction to a topic identified by SGT-MRV focal points as a priority for further training. Each paper follows a two-hour training session led by Gold Standard in 2025-6 and is supported by recommendations for further resources related to the topic. Links to further resources are available at the end of this paper.*

SUMMARY

- Registries are like an online bank account, but for carbon credits – they are created, transferred and retired within the registry.
- Having access to a registry is one of the requirements for countries to participate in Article 6.2
- There are different ways to meet this requirement, depending on the country's priorities
- Several efforts underway to enhance interoperability of registry systems

## BACKGROUND

Carbon credits are intangible assets, meaning that they do not exist in a physical form. Instead, they are created and tracked within registries – a form of digital infrastructure designed to enable the accurate identification of each individual carbon credit; to store information related to them and typically to display this publicly for transparency; and to securely support their transaction, holding and use by public or private entities. Registries are therefore a critical piece of infrastructure in the functioning of a carbon market.

Registries have always been used by crediting programmes involved in the certification of activities and the issuance of carbon credits. The Clean Development Mechanism (CDM) for instance operated a registry, as do independent crediting programmes such as Gold Standard and Verra, and as will the Paris Agreement Crediting Mechanism (PACM) adopted under Article 6.4 of the Paris Agreement. In the context of the Paris Agreement, governments have had increasing reason to introduce or recognise their own registry systems or other forms of related digital infrastructure, as is explored below.

## GOVERNMENTS AND REGISTRIES

There are three main drivers for governments to explore establishing, or having access to, a registry system in the context of carbon credit markets. These are:

- **Article 6 cooperation**: Any government cooperating under Article 6.2 must use a registry to track Internationally Transferred Mitigation Outcomes (ITMOs) that they have authorized, and actions related to these ITMOs. This may be a national registry, the international registry established by the United Nations Framework Convention on Climate Change (UNFCCC) secretariat or an alternative registry, such as an existing registry platform used by a crediting programme.

- **Tracking activities:** Some governments have implemented registries to track information on projects operating in their jurisdiction. In Benin and Tanzania, for example, projects are required to register with the relevant national authority and must be approved and included on the national registry. Meanwhile in South Africa, a registry is used to track the use of credits towards its carbon tax. As these registries exist to track information rather than to issue, transfer, and retire credits, they are sometimes referred to instead as 'registers'.

- **National crediting programmes:** Some governments, such as China, Japan, or Thailand, operate governmental crediting programmes, which require a registry for the issuance of credits.

| | Tracking of data | Accounts | Issuance, transfer and retirement functionality | Interoperability |
|---|---|---|---|---|
| **Article 6 cooperation** | | Required if ITMOs issued into registry as units which can be held and transferred | Governments can choose to allow issuance, transfer and retirement of ITMOs as units in registry or to track such activity in other registries | Beneficial if governments track activity in other registries, or if ITMOs as units may be transferred to other national registries |
| **Tracking activities** | | | | Beneficial if governments wish to track activity in crediting programme registries, as data can be pulled in real time. |
| **National crediting programmes** | | | | Dependent on circumstance of national crediting programme |

Figure 1 – Illustrative summary of functionality required for registries under different forms of carbon market engagement. Requirements may vary dependent on policy context

It is important to understand that the form of infrastructure needed for these three purposes is different. For cooperation under Article 6, a government needs access to a registry that can, at a minimum, perform a limited set of tracking functions as required under Decisions adopted within the UNFCCC. This is discussed further in the following section. For the tracking of carbon market activities within a country's jurisdiction, a government also only needs to be able to record and maintain a limited set of data fields on activities, which could be achieved through a simple platform. On the other hand, if a government operates a national crediting programme, it may need to manage or have access to more sophisticated registry infrastructure, with functionality for the issuance and labelling of credits, the opening and management of registry accounts by private entities and the secure transfer and retirement of credits. While all three examples can be considered 'registries', they therefore require very different functionality and levels of investment.

## REGISTRIES UNDER ARTICLE 6

As highlighted above, to participate in Article 6.2, a government must have access to a registry that can be used for the purpose of tracking ITMOs that they have authorised. This could be a national registry, the international registry under development by the UNFCCC or another registry to which the government has access.

Article 6.2 establishes fairly limited requirements for the registry system used by governments as part of their implementation of Article 6. These primarily exist in Decisions adopted at COP 26 (Decision 2/CMA.3, Section IV)  and COP 27 (Decision 6/CMA.4, Section I), which specify the information that registries must be able to record and track, as well as several other functions and requirements. Registries are not required to be interoperable (i.e., to have the ability to connect to other registries or digital platforms) but where they are, appropriate standards must be in place to ensure the consistency of data.

| REQUIRED FUNCTIONALITY | COMPOSITION OF ITMO UNIQUE IDENTIFIERS |
|---|---|
| Have accounts for ITMOs, as necessary | Identifier of cooperative approach |
| Record actions related to ITMOs, including authorisation, transfer, acquisition and use | Identifier of originating Party registry |
| Track and maintain records and accounts for ITMOs, including through unique identifiers | Identifier of first transferring Party |
| Provide access to authorised entities to record actions related to ITMOs | Serial number |
| Produce, maintain and compile records and data consistently with the agreed electronic format for annual information | Vintage of underlying mitigation outcome |

| INTEROPERABILITY |
|---|
| Where registries are interoperable, Parties must implement appropriate standards and procedures to mitigate risk to the consistency of data |

Figure 2 – Overview of registry-related requirements, as adopted by Parties in Decision 2/CMA.3

In practice, governments are able to meet these requirements through a variety of options, without making a large upfront and ongoing financial commitment to establishing and maintaining a national registry akin to registries managed by crediting programmes. This includes use of the international registry to be established by the UNFCCC, use of an open-source registry (such as that developed by UNDP), reliance on registries operated by crediting programmes to perform more complex functions related to units, or development of a simpler national platform. While some governments are implementing more complex registry systems, it is understood that at least one government participating in Article 6 intends to start with a system built on a commercial file-sharing platform.

Simpler solutions, or reliance on existing infrastructure, may be particularly applicable for governments intending to authorise ITMOs from a smaller number of activities, at least in the short term.

## RELEVANT INTERNATIONAL INITIATIVES

There are a number of international initiatives and options that could provide benefits for governments when considering the implementation of registries, in particular in the context of cooperation under Article 6. Each of these initiatives is intended either to reduce resource requirements for national governments in the establishment and maintenance of registry infrastructure, or to support interoperability between different registry systems.

### UNFCCC international registry

At COP26, the UNFCCC was mandated to establish an international registry, for governments that are using Article 6.2 but do not have their own registry or access to another registry[1]. In January 2026, the UNFCCC announced that it had appointed Trovio to build and maintain both this international registry and the registry that will be used by the PACM for the issuance and management of carbon credits.

The international registry will be designed to perform all functions that are required for governments using Article 6.2, including the tracking of ITMOs, the creation of unique identifiers and the tracking of actions related to ITMOs, such as their transfer and use. At COP29, Parties also asked the UNFCCC to introduce additional functionality to allow Parties to issue ITMOs as units, which could then be tracked on the international registry[2].

A government choosing to use the international registry – when established - would be able to comply with Article 6.2 tracking requirements without the need to invest resources to develop and maintain their own national registry.

[1] FCCC/PA/CMA/2021/10/Add.1
[2] cma2024_17a01E.pdf

### UNDP National Carbon Registry

In 2023, UNDP launched its National Carbon Registry, open-source software that can be adopted by governments to manage national data and processes related to carbon credits, including under Article 6.2. Governments are able to adopt the open-source code, and adapt this to fit their own needs and national contexts. The National Carbon Registry is also built as an interoperable digital system, allowing its integration with other national or international platforms and registries.

UNDP's National Carbon Registry provides governments an option to establish a national registry more efficiently and with reduced cost, through the use of open-source code. The open-source nature of the National Carbon Registry could also allow for greater harmonisation across national registries, if it is adopted by multiple governments. It should be noted that amendments to the code – and maintenance of the registry once operational – would involve additional costs.

### Climate Action Data Trust

The Climate Action Data Trust (CAD Trust) is a global platform launched in 2023 to connect and aggregate data across national and private registry platforms globally, and to provide public access to data. By bringing together data across fragmented registry systems, the CAD Trust can improve public transparency, minimise the risk of double counting and ensure data integrity when information is spread across different registries.

The CAD Trust platform can be used by governments to track data on carbon market activities (and carbon credits) operating within their jurisdiction, registered across multiple crediting programmes. It may also, in the future, provide services for governments engaging in international cooperation, for instance ensuring synchronised data between the government's own registry and a registry operated by either a crediting programme or another national government.

### S&P Meta Registry®

The S&P Meta Registry® is a platform operated by S&P Global with the intention to connect environmental registries around the world with carbon markets and their participants. The Meta Registry can, for instance, allow entities to manage their credit holdings across multiple registries from one portal and to list these credits on different trading platforms. It is also intended to provide functionality for governments to track activities within their jurisdiction, and to manage their use of Article 6.2.

Like the CAD Trust, the S&P Meta Registry® can be used by governments to track data on carbon market activities (and carbon credits) operating within their jurisdiction, registered across multiple crediting programmes. It may also provide services and functionality that can be beneficial for governments engaged in Article 6.2.

**Article 6.2 Crediting Protocol**

The Article 6.2 Crediting Protocol is an initiative that was led by the Government of Singapore, Gold Standard and Verra from 2023-25, intended to guide and standardise how governments can work with crediting programmes under Article 6.2. The initiative concluded with a report published in November 2025, setting out guidance for governments and crediting programmes on the differentiated roles of national registries and crediting programme registries and the responsibilities of crediting programmes when managing projects authorised by a government under Article 6.2

The Article 6.2 Crediting Protocol can serve as a reference point for governments if considering the authorisation of carbon credits generated under an independent crediting programme. It provides practical guidance intended to help governments and crediting programmes to harmonise their approaches, and to avoid fragmentation as the use of Article 6.2 expands.

| | | |
|---|---|---|
| REGISTRY PLATFORMS | UNFCCC<br>International Registry | UNDP<br>National Carbon Registry |
| DATA REPOSITORIES | Climate Action Data Trust®<br>CAD Trust | S&P Global<br>Meta Registry |
| GUIDING PROTOCOL | Article 6.2 Crediting Protocol<br>NCCS Singapore · Strategy Group Prime Minister's Office · VERRA · Gold Standard | |

Figure 3 – Overview of selected existing international infrastructure or initiatives

**CONSIDERATIONS FOR GOVERNMENTS**

In the context of the Paris Agreement, there are reasons why governments will need to maintain or have access to a registry, in particular if cooperating under Article 6.2. At the same time, it is important for governments to consider the form of infrastructure that is proportionate to their needs, and how existing infrastructure could support them. The factors that governments may wish to consider include:

**1. Existing infrastructure**

Does infrastructure already exist that could deliver the outcomes that the government needs, without needing to commit additional resources? Governments cooperating under Article 6.2, for instance, may wish to use the UNFCCC's international registry or build from UNDP's National Carbon Registry. Meanwhile governments interested in tracking activities within their jurisdiction could consider how far existing infrastructure, such as the CAD Trust, could meet their needs. Governments can also consider the extent to which they can rely on the registries operated by crediting programmes. Crediting programme registries can provide transaction functionality and public data on activities and credits, which governments may not need to replicate in their own registry systems.

**2. Required functionality**

As highlighted above, different forms of engagement with carbon markets require different registry functionality. A government simply wishing to keep track of activities within their jurisdiction does not need to invest in the development and maintenance of a registry with functionality to support the issuance, holding and retirement of carbon credits. Governments should pursue a registry that is proportionate to their needs, recognising that this may mean that their registry solution is fairly simple.

**3. Cost**

One of the key reasons for pursuing proportionality and considering existing infrastructure is the cost associated with maintain a registry. As an illustration, the UNFCCC budgeted $1.9m for registry services in 2026 (when the development of a new registry is planned) and $795,455 in 2027, when work is likely to turn to maintenance[3]. Registries entail high upfront development costs, and ongoing maintenance costs that need to be met, in addition to resourcing within the relevant ministry or ministries.

[3] A6.4-INFO-GOV-024

**4. Interoperability**

Many governments engaging with carbon markets will be working with other countries (if they are cooperating under Article 6.2) as well as with crediting programmes, whether the PACM and/or independent crediting programmes. Where these relationships involve the exchange of either carbon credits or data across registries, there is significant benefit to registry systems being interoperable, allowing for the digital flow of information between registries. This interoperability needs to be planned for, requiring both technical capability and suitable governance arrangements.

**5. Market expectations**

The carbon market relies on private sector participants, whether as developers of projects, lenders, investors, traders or buyers of carbon credits. Certain private sector actors may have particular requirements or constraints when engaging with registries, which governments need to keep in mind. For instance, some entities may require registries to meet certain IT security standards; some lenders may seek the ability to assert a security interest over credits if a project developer defaults on payments, and some entities may face limitations on opening accounts across too many registries. These requirements should be kept in mind by governments, in particular if seeking to implement a transactional registry, whether for Article 6.2 or a national crediting programme.

**6. Sovereignty and control**

While governments have the ability to use existing infrastructure provided by other entities, there may be reasons that a government wishes to develop and oversee its own registry solution. This allows the government to control the input and management of data on the registry. A government may also wish to oversee its own registry in order to facilitate the collection of any fees or taxes associated with carbon credit activities, making the registration of activities or issuance of units conditional on payment of fees.

These considerations do not necessarily all point in the same direction. A government wishing to establish its own transactional Article 6 registry for reasons of national sovereignty and revenue collection may, for instance, find that this creates a barrier for market participants. Governments will therefore need to consider the right balance between these considerations, and also assess best practice examples internationally as the carbon market develops over the coming years.

## CONCLUSION

Registries are critical pieces of infrastructure in the carbon market. In the context of the Paris Agreement, there are multiple drivers that may require governments to either develop or have access to a registry. This includes cooperation under Article 6.2, implementation of a national crediting programme or a wish to track carbon market activities and credit issuances within their jurisdiction, as part of wider efforts to regulate the sector and/or track contributions to achievement of the country's NDC.

Registries can differ considerably in their functionality, from simple platforms to track data through to complex and interoperable digital infrastructure akin to platforms used in the financial sector. Governments should consider carefully which form of registry they need to achieve their policy objectives, considering cost, proportionality and the availability of existing infrastructure that could serve their needs. A government's registry solution also does not need to be static. For example, a government using Article 6.2 may choose to initially use the UNFCCC's international registry, then consider establishing its own national registry at a later stage if this is justified by the scale of its activity.

There are already several examples of registries used by governments in the Pacific Alliance, to meet different policy objectives. These examples can be referred to and learned from by other governments at an earlier stage in their policy development, as can other examples globally. Ultimately, the choice made by a government is an individual one – reflecting their capabilities, specific policy objectives, the degree to which they prioritise national ownership and other factors. However there are important considerations, as reflected in this paper, that all governments should take into account when making this choice.

**FURTHER READING**

- Overview of Tracking Requirements under Article 6.2. Article 6 Implementation Partnership (A6IP), 2024
- Article 6.2 Reference Manual for Accounting, Reporting and Review. UNFCCC, 2025
- A6IP Capacity Building Tools: Article 6 Introductory Guide: Tracking. Article 6 Implementation Partnership, 2025
- Procedure - Article 6.4 Mechanism Registry. UNFCCC, 2025.
- Registry Requirements for Article 6 Transactions: Options for Host Country Governments. Climate Focus, 2024.
- Technical Guidance for Safe, Efficient and Interoperable Carbon Markets Infrastructure. World Bank, 2025
- Unlocking the potential of carbon markets: Designing carbon registries for success. S&P Global, 2025
- Factsheet – Registries and Project Information. Gold Standard, 2025.