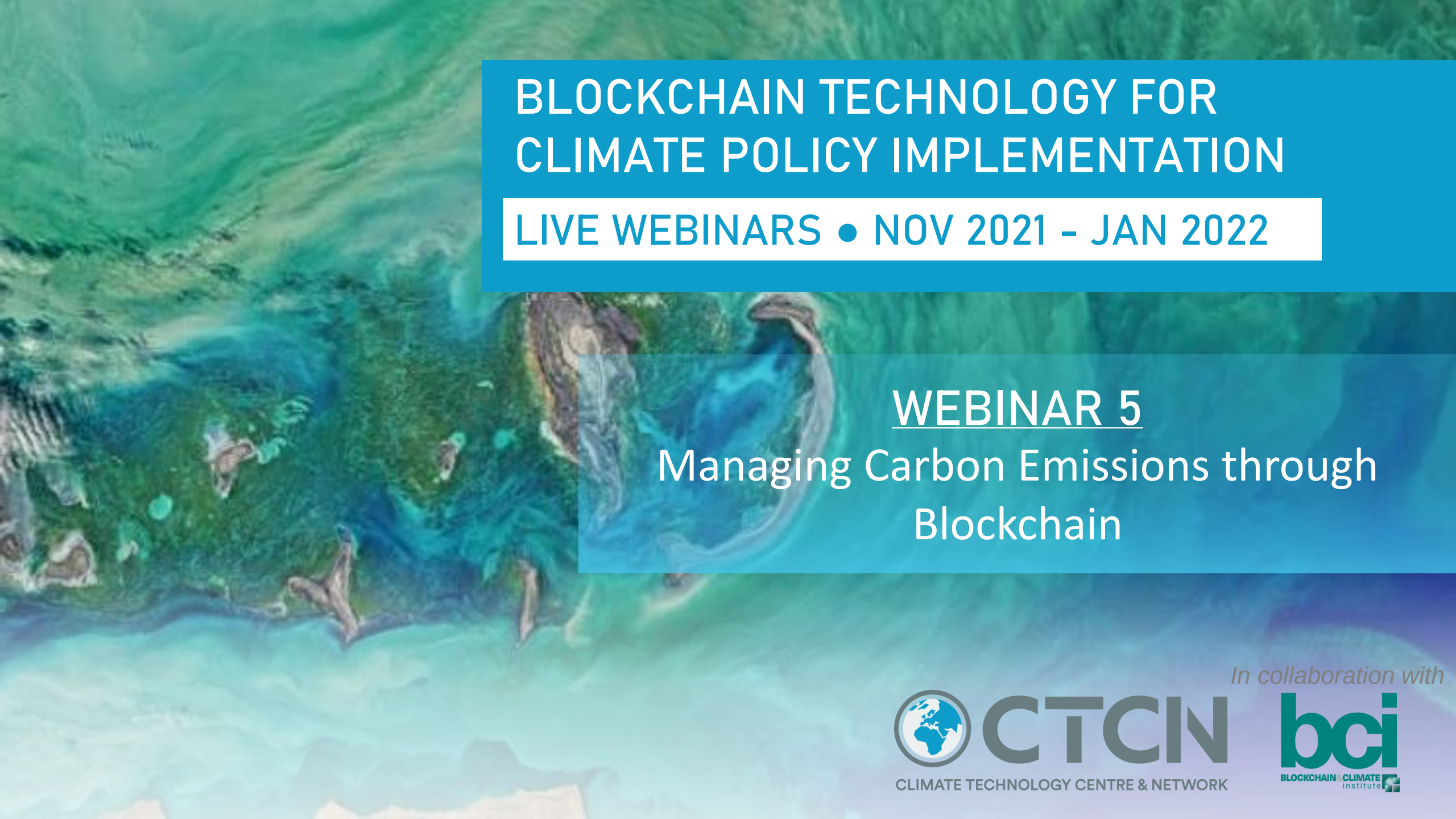

BLOCKCHAIN TECHNOLOGY FOR CLIMATE POLICY IMPLEMENTATION

LIVE WEBINARS • NOV 2021 - JAN 2022

WEBINAR 5

Managing Carbon Emissions through Blockchain

In collaboration with

CTCN
CLIMATE TECHNOLOGY CENTRE & NETWORK

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What does the Paris Agreement say about carbon markets?

Article 6 has four operative paragraphs:

- **Article 6.2** provides an accounting framework for international cooperation, such as linking the emissions-trading schemes of two or more countries (for example, linking the European Union cap-and-trade program with emissions-reduction transfers from Switzerland). It also allows for the international transfer of carbon credits between countries (Internationally Transferred Mitigation Outcomes).
- **Article 6.3** then reaffirms that use of ITMOs is voluntary and must be “authorised by participating parties”.
- **Article 6.4** establishes a central UN mechanism to trade credits from emissions reductions generated through specific projects. For example, country A could pay for country B to build a wind farm instead of a coal plant. Emissions are reduced, country B benefits from the clean energy and country A gets credit for the reductions.
- **Article 6.8** establishes a work program for non-market approaches, such as applying taxes to discourage emissions.

Why use Blockchain?

- There is total traceability and trust with blockchain technology
- The data doesn't lie. Without traceable data, companies would have to rely on other more costly methods to understand the trustworthiness of their investment projects
- No risk of double-counting
- Ability to produce real-time quantifiable results
- Ability to turn a blockchain native token into an investment vehicle that generates profit, aids adoption and accelerates impact (incentive)

Carbon Market Challenges and Blockchain

One of the many challenges of carbon markets is double-counting, a risk that blockchain can eliminate due to its immutability.

Specifically, it can:

- Follow a unit along the supply chain and provide accurate tracking. A mitigation concept project could register environmental units for use, sale or compliance etc.
- Blockchain allows users to track the time, date and ownership of electronic assets throughout the supply chain. With DLT, an asset owner can transfer or sell those assets, or add more information to them so that a documentation chain is credited.

Effective Data Management:

- Tracked data can have the following attributes; details of the legal entity involved, deforestation impacts, gender impacts, testing, measurements, and certification protocols used and much more.

Carbon Accounting

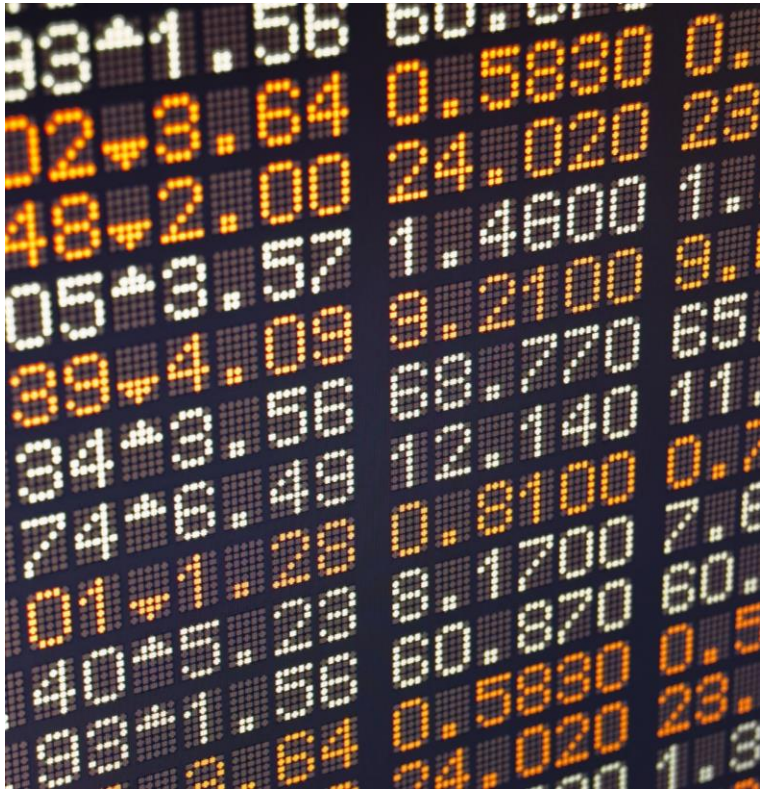
What is Carbon Accounting?

It is a process that an entity uses to quantify its GHG emissions. The data collected relates to, for example, the deforestation resulting directly from the activities of a corporation or indirectly.

On a Blockchain? With smart contracts, a system can collect reported information for carbon accounting on an industry-wide basis. An authorised actor can register via a smart contract and anchor it on the blockchain. Tracking could take place at an organisation level or aggregate at the state level.

Auditors, regulators, and other relevant actors could be given read-only real-time access for accounting purposes. Approving authorised persons to certify documents or approve an origination is still required.

How is data entering the system? Where the data introduced in a tokenised form is incorrect, “garbage out issues” may be experienced. New technologies, such as the Internet of Things (IoT) can enable smart meters and automate part of the origination process if the problem of trusting the information is addressed first.



Tokenized Carbon Assets (e.g. ITMO)
Actifs carbone tokenisés

Étape de mesure
L'activité est mesurée à l'aide de l'IA ou de l'IdO et entre dans la *blockchain*

Measurement Stage
Activity is measured with the help of AI or IoT and enters the Blockchain

Activity Data

Donnée de l'activité

Plateforme *blockchain*

Blockchain Platform

Demonstration Stage
The Blockchain will work like at "accounting system and will do all the data management (avoiding double counting, ownership proving etc)

Verification Stage
The appropriate entity will have special permission to directly access the blockchain, examine and verify mitigation performance

Étape de démonstration
La *blockchain* fonctionnera comme un « système de comptabilité et se chargera de la gestion des données (éviter le double comptage, preuve de propriété, etc.)

Releasing Payment upon verified results automatically using smart contracts.

Réalisation du paiement après vérification automatique des résultats utilisant les *smart contracts.*

Étape de vérification
L'entité appropriée aura un droit spécial d'accéder directement la *blockchain*, d'examiner et vérifier les performances d'atténuation

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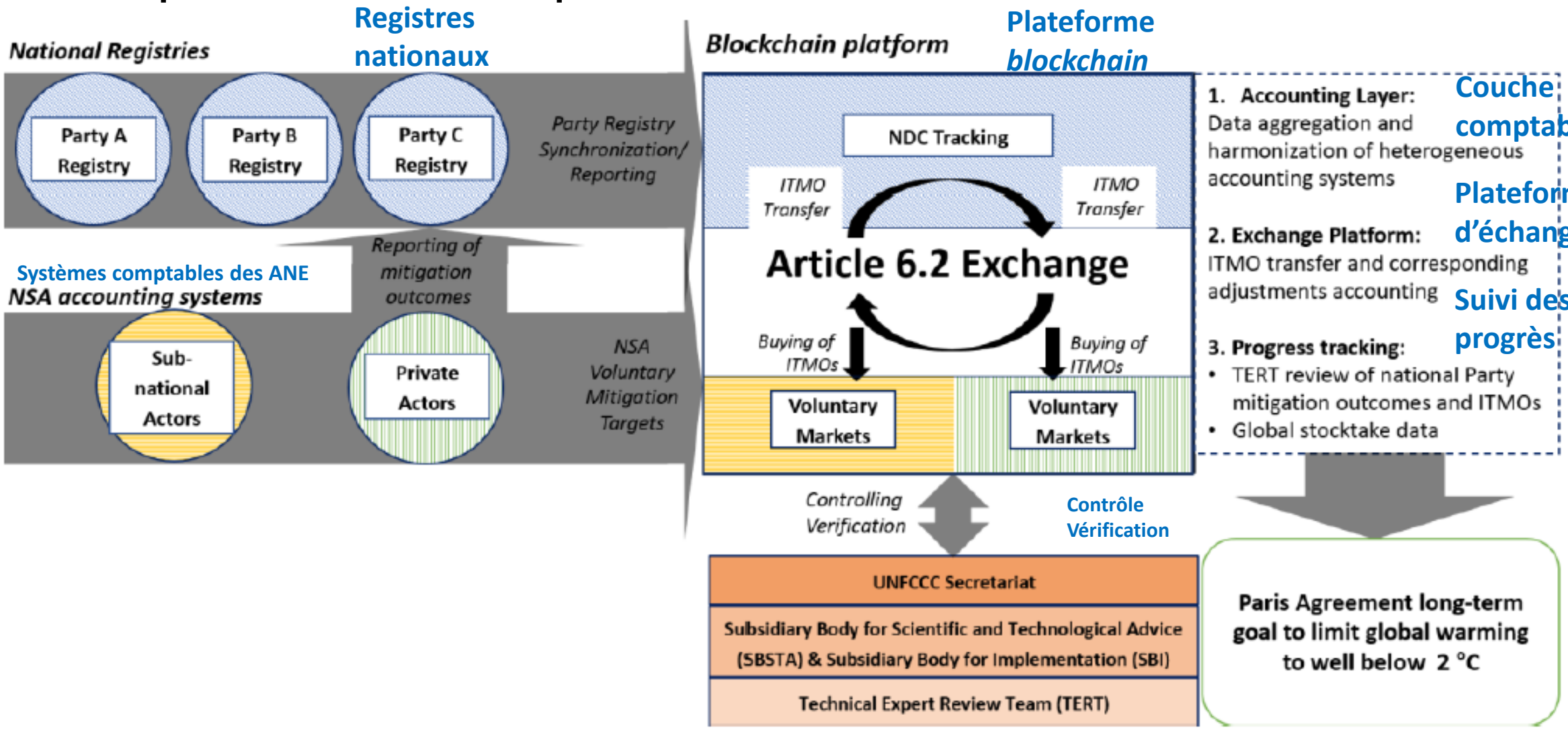
A DLT Architecture Design for an Article 6.2 Market Mechanism

Un concept d'architecture DEEP pour un mécanisme de marché de l'article 6.2



Source: Schletz, M. et al (2020)

Networked Carbon Markets

What do we mean by networked carbon markets?

By using blockchain, the aim is to connect numerous individual carbon markets to enable international transfers of mitigation outcomes.

- There are multiple levels where carbon trading or carbon accounting and tracking may occur, i.e. at a corporate level and single Emissions Trading System (ETS) level. The latter can be subnational, national, or regional, And will require credible systems to organise and administer their operations. These operations will allow the trading of emission units among organisations.

- Single ETSs can be networked under one software infrastructure. Although it is possible without a DLT, a DLT provides distributed Infrastructure, encrypted transactions, a global consensus and immutability, automation through SCs, tailored permissions and more.

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THANK YOU

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