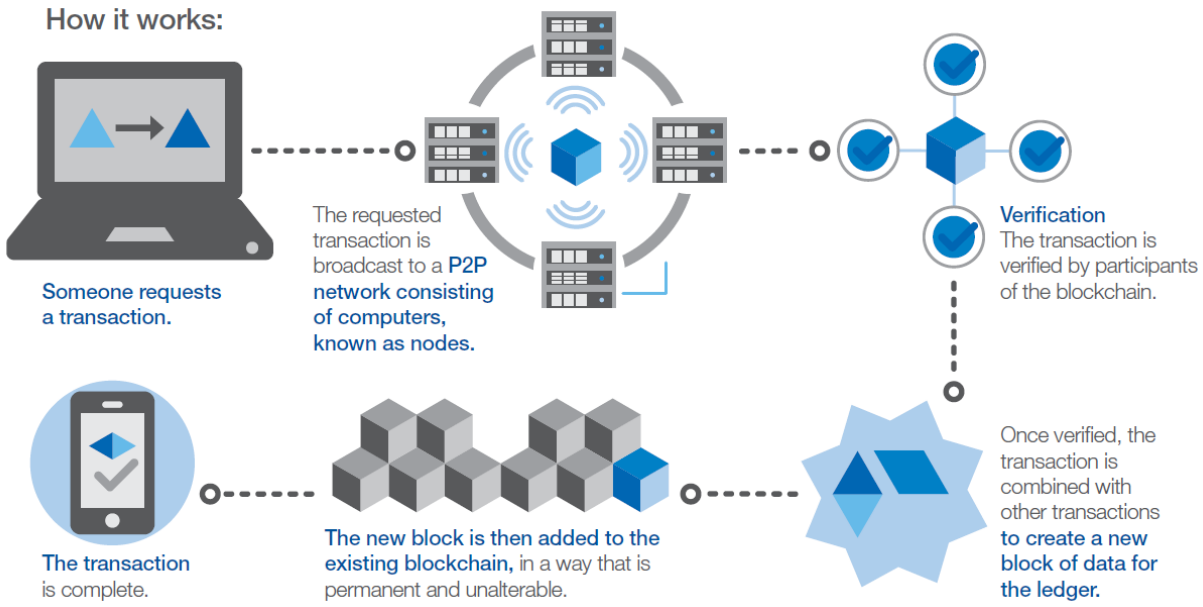
Blockchain in Carbon Market

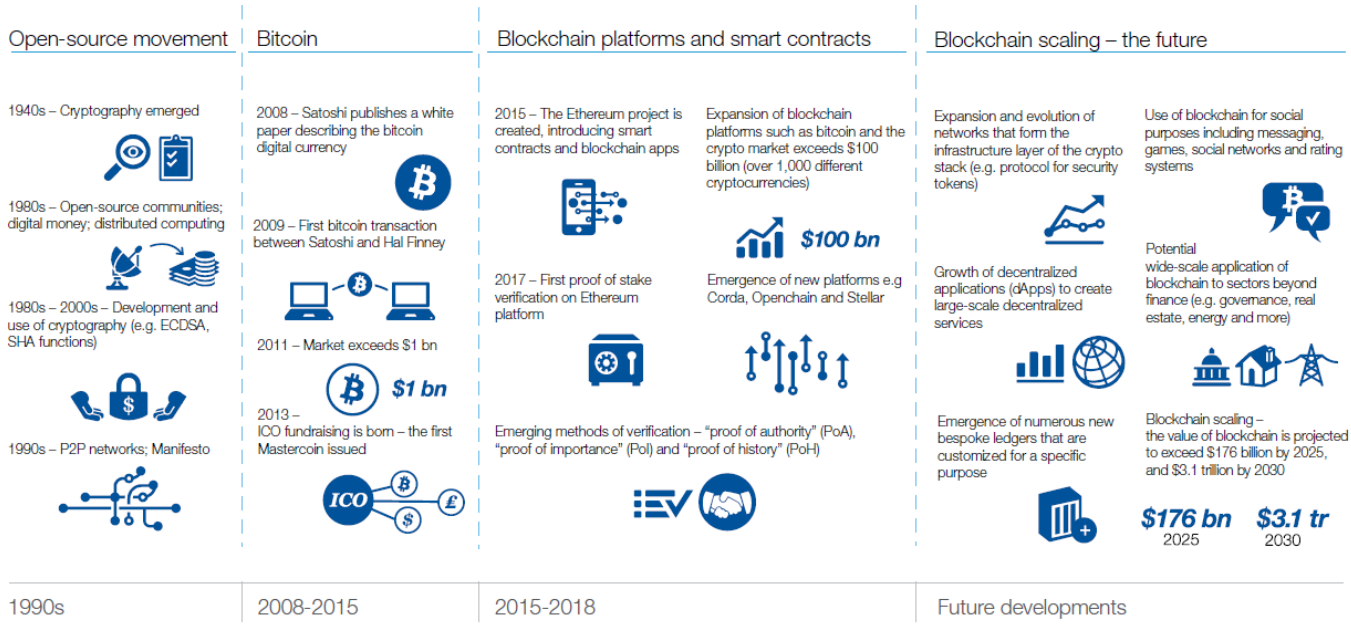
1. What is Blockchain?

According to Hartmann and Thomas (2019), blockchain is a digital record system that establishes transparent contract processes and facilitates secure and trusted business transactions.

´The transactions and data are stored without a centralized company such as a bank or government. This allows users to make transactions without the need of a third party, also known as peer-to-peer trading. The ledger is constantly updated with new blocks that cannot be changed and are publicly accessible´ (Sherry 2018).



Source: World Economic Forum 2018



Source: World Economic Forum 2018

Why Blockchain can be a solution for Carbon Market?

1.1 Current Carbon Market

There are many reasons why is needed a different Carbon Market approach.

According to Ryan Zurrer (2017), *´globally, carbon offset markets suffer from fragmented implementation, lack of cross-market exchange of value and quite often incorrect parameterization of the carbon ratio of given projects such that carbon credits granted and/or retired often do not actually reflect their true environmental effect, creating demand-supply imbalances. This has resulted in hyperinflation in carbon credits therefore not incentivizing the correct behavior in emitters or propagating trust in carbon credit markets generally´.*

Apart from that, how is determined the price of carbon credit and tax policy is not suitable. It depends on many variables and there are many externalities involved. Because of that, it is necessary a faster pricing mechanism and not be dependent on the politician's time (Zurrer 2017).

Also, it is needed a better determination in the value of the environmental effect. The current *´carbon credit markets suffer from lack of consensus on how to determine the correct value of the environmental effect of a given project known as the "carbon ratio". How does one compare the relative environmental impact of a MWh of wind power produced in Brazil to a 30ha forest planted in Germany to a ton of Co2 sequestered in the USA to a chemical plant in China reducing*

operations or being taken offline? Today, the answer is that there are different results across all of these jurisdictions thus creating a lack of actual exchangeable value between different carbon credit offset markets. Further, the relevant consultants that verify the work along the value stream often have misaligned financial incentives as they are selected and paid by the individual project that they must evaluate´ (Zurrer 2017).

Besides, it is needed a *´globally robust system of checks and balances to ensure that projects are appropriately parameterized based on an agreed upon global methodology for determining net environmental-effect, which has resulted in passive fraud in numerous instances across the industry along with too many instances of active fraud ´* (Greenfield 2019).

1.2 Blockchain as a solution

´Introducing a blockchain technology to the market's processes would boost transparency, security, efficiency, and integrity. It would also reduce costs, increase competitiveness, and improve equity for participants in the market´ (Thomas, 2019).

´Using smart contracts could create a more independent regulator. The regulator would be able to demonstrate transparency and consistency in credit issuing and purchasing. This would remove the uncomfortable conflict of interest that currently exists, whereby the regulator is currently in charge of both issuing and buying the credits.

Smart contracts would also create a more effective regulator, with access to real-time information about the performance of projects, rather than having to wait months or years for reporting. This would enable the regulator to more quickly identify non-compliance or suspicious activity in projects.

Smart contracts would also speed up processing times for project reporting and encourage more frequent reporting. This would benefit projects by cutting transaction costs and allowing credits to be issued more quickly, thereby improving cash flow.

At the scheme level, lower administrative burdens and improved project cash flow would reduce overall project costs. This would in turn lead to more projects, promote more competition in Emissions Reduction Fund auctions, and thus allow the government to save money when buying emissions reductions.

Smart contracts would let the government monitor its portfolio of contract projects more closely. This would allow faster reallocation of funds from poorly performing projects´ (Thomas, 2019).

In reference to the verifiers:

1. *´Sustainability projects are evaluated by a distributed network of 'verifiers' local to each project.*
2. *Local project verifiers propose project parameters based on an assessment to the broader network of verifiers. The proposed parameters are voted on and then submitted to the market's carbon credit minting algorithm*
3. *The minted carbon credit tokens are sold on the market by the project implementer to consumers looking to offset their emissions.*
4. *Consumers, having used their purchased carbon credit tokens to offset their emissions, retire those credit and the tokens are burned (destroyed).*
5. *All parties holding Carbon Tokens could commercialize their assets on an open exchange whereby Generators and Verifiers sell the Carbon Tokens to Consumers so that emissions can be offset. Carbon Tokens would be an ERC20 compatible token and thus would also be available for exchange within the Ethereum network* (Zurrer 2017).

References

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