

NOV. 2019



BLOCKCHAIN BOND MARKET



BLACKCHAIN.
GURU

SUMMARY

Blockchain is being used by several institutions to issue bonds and other debt products. Institutions use DLT primarily for structuring, issuance and asset transfer. The bond-i, issued by the World Bank in partnership with Commonwealth Bank of Australia (ABC's) Digital Innovation Lab 5, used blockchain technology, and hence was the world's first publicly offered blockchain bond. The bond was issued to replace registry, issuing, clearing and custodian processes with smart contract automation on a private version of the Ethereum blockchain.

Using the blockchain technology has enabled institutions to save time and incur less costs of issuance. This helps these bodies to create and maintain a quick and transparent relationship between issuer and investor.

Blockchain offers efficiency opportunities in bond issuance and distribution in a number of ways, as outlined below

- Efficiency in settlement
- Immediacy of distribution
- Efficiency in reduced reconciliation
- Reduction in the number of actors

In this report, (i) we will compare costs for issuing bonds with and without blockchain. (ii) outline the innovation served through blockchain technology in the green bond market.

*Mass automation using DLT
will open the opportunity for
more investor side
automation and market
opportunity for issuance of
more, lower value bonds,
further reducing the unit
cost*



BLOCKCHAIN APPLICATION

How blockchain is currently applied to bonds

BBVA used a version of In February 2019 BBVA issued the world's first Green Bond using blockchain, for EUR 35 million, on behalf of MAPFRE

Hyperledger Fabric There are three main areas under which the Green bond and labelled bond applications of blockchain fall :

permissioned

- Structuring, issuance and distribution
- Transfer of ownership, payment and settlement
- Benchmarking and reporting

blockchain, accessible

The area in which the blockchain based bond market is most mature is structuring, registration, sales and distribution.

only to

authorised

counterparties

such as

investors,

for

issuance of

the first

Green

Bond over

blockchain

WORLD'S FIRST PUBLICLY OFFERED BLOCKCHAIN BOND

The bond-i, issued by the World Bank in partnership with Commonwealth Bank of Australia (CBA's) Digital Innovation Lab 5, used blockchain technology to replace registry, issuing, clearing and custodian processes with smart contract automation on a private version of the Ethereum blockchain.

WORLD'S FIRST BLOCKCHAIN GREEN BOND

In February 2019 BBVA issued the world's first Green Bond using blockchain, for EUR 35 million, on behalf of MAPFRE 8 using a fully automated blockchain platform that allows the client to structure the instrument directly. Like the World Bank, they used the technology primarily to "simplify the processes and streamline the negotiation time frames" with investors. In issuing this Green Bond, MAPFRE and BBVA still underwent the traditional third party validation process for Green Bonds, by DNV GL.

COMPARATIVE ANALYSIS

A comparative analysis of Green Bond costs with and without blockchain

GREEN BOND PROCESS (USD)	STANDARD PROCESS	WITH FULL BLOCKCHAIN AUTOMATION
Structuring, price setting, risk rating	1,000,000	20,000
Legal review	100,000	40,000
Investor whitelisting and matchmaking	500,000	n/a
Internal review and green classification	50,000	20,000
Third party validation and green benchmarking	50,000	5,000
Registration and listing	15,000	n/a (if sold on blockchain exchange)
Brokerage and sales	1,500,000	40,000
Payment and settlement	Opportunity cost: 84,000	0
Custodianship	350,000	2,000 (blockchain dependent)
Data gathering (full lifecycle)	1,200,000	350,000 (includes IoT devices)
Data aggregation (full lifecycle)	400,000	115,000
Reporting (full lifecycle)	1,200,000	100,000
Total	6,449,000	692,000

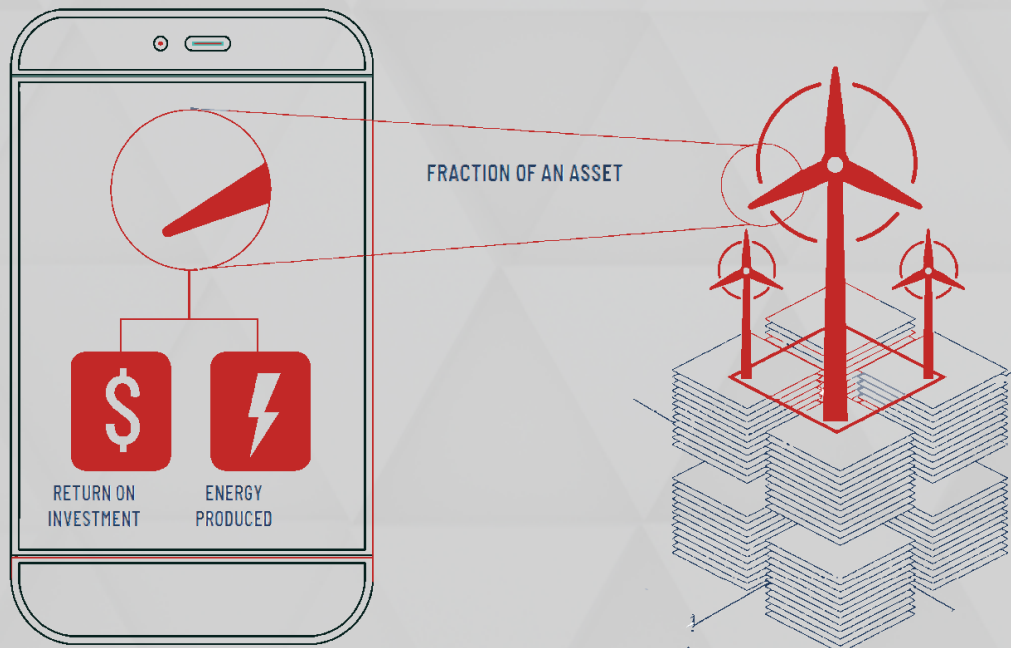
The table below provides the calculated price difference estimates for standard issuances versus a full blockchain automated issuance for a typical Green Bond with a value of 100 million USD and 20-year maturity.

Fractional asset ownership

Financial institutions are well positioned to drive this action within their existing sustainable investment portfolios and must take responsibility for doing so

Fractionalising the asset/bonds is the biggest innovation opportunity for asset ownership. This eliminates the need for an ETF (Exchange Traded Fund), where an investor can own a bond or an asset - divided into many small pieces. Combined with automatic reporting will enable the small investors to stay up-to-date with the real-time progress of their investments. With the help of this innovation, green asset ownership will be accessible (and transparent) to everyone and where savings can find purposeful deployment opportunities.

Despite multiple barriers and the evolving nature of the technology, the components needed to move to the next stage are in place. Financial institutions are well-positioned to drive this action within their existing sustainable investment portfolios and must take responsibility for doing so



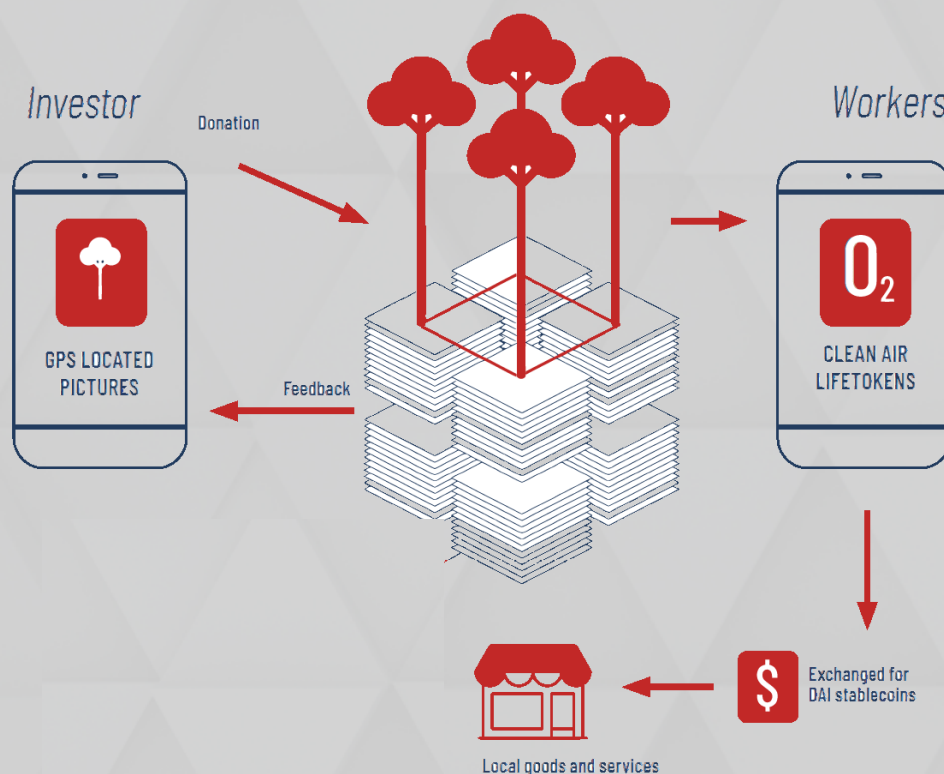
INNOVATING BOND MARKET

*“**Bonds as a Service**” - increasing accessibility to issuance through automation*

Bonds as a Service is likely to provide more, smaller issuers the opportunity to raise capital through bonds

Bonds as a Service is likely to provide more, smaller issuers with the opportunity to raise capital through bonds. Standardised bond issuance can be encoded by Bond automation through DLT and there are several companies, like blockchainbond.io, are working to come up with an automated bond issuance service that will allow bond structuring with standard software toolkit.

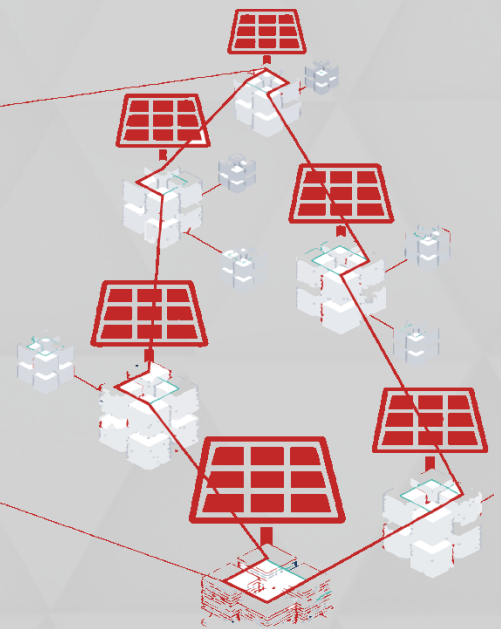
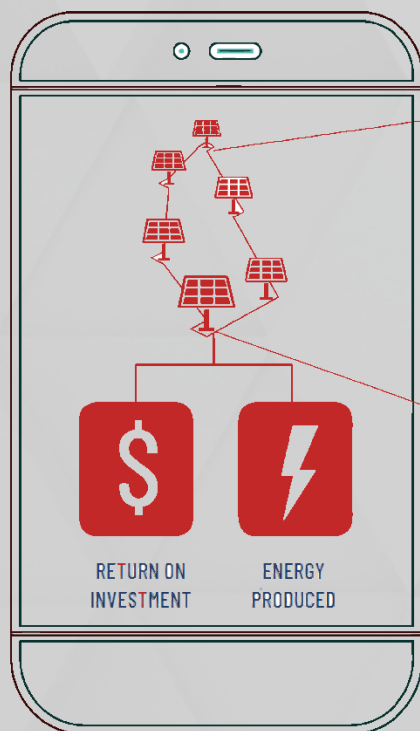
With combined automation, the slow-moving world of bonds will witness a large number of low value bonds being traded automatically.



Aggregation of investable assets

The fintech revolution is changing this situation rapidly, with financial technology such as MPESA paving the way for digitization of financial records in developing economies.

As well as major infrastructure and large projects such as forests, investment is needed to support growth in minor infrastructure like community irrigation systems, microgrids, land management and agricultural practices. Lack of transparency has presented reporting challenges for these types of projects, and they are fraught with inefficiencies. The fintech revolution is changing this situation rapidly, with financial technology such as MPESA paving the way for digitization of financial records in developing economies. Now banks and fintechs such as Eversend and hive online, are creating blockchain based value chain audit trails in developing economies at the lowest level, providing opportunities for full traceability of Use of Proceeds in projects across broad communities of primary producers, all the way to the ultimate beneficiary.



DEBT PRODUCTS

*Debt Products issued with blockchain (Aug
18-July 19)*

DATE	INSTRUMENT	VALUE	ORGANISATION	PROCESSES	BLOCKCHAIN
11/07/2019	Commercial Paper (CP)	USD 15m	YES Bank	issuance and redemption	R3 Corda
TBD	European Commercial Paper (ECP)	TBAging and closing	European Investment Bank, Euroclear, Banco Santander & EY	End-to-end blockchain solution for the issuance and settlement of European Commercial Paper	R3 Corda
18/04/2019	Covered Bond	EUR 100m	Société Générale	Issuance, directly offered as STO on public blockchain but Société Générale was sole investor	Ethereum (public)
Feb 2019	Structured Green Bond	UR 35m	Banco Bilbao Vizcaya Argentaria (BBVA)	Issuance Registration	Hyperledger Fabric (bid process) Ethereum testnet
2018	Various loan products	EUR 860m	BBVA	Issuance Registration	Hyperledger Fabric (bid process) Ethereum testnet
January 2019	Commercial Paper	€100,000	Continental, Commerzbank and Siemens	Structuring, Issuance, Payments and Settlements	R3 Corda
15/08/2018	fixed income issuance	Canadian Depository for Securities (CDS) \$250MM	Bank of Montreal (BMO) Capital Markets	validation	open source blockchain infrastructure with the goal of testing a next generation settlement system

Blockchain and adjacent technologies offer great opportunities for more efficient bond markets, however the opportunities offered for Green Bonds in increasing investor confidence, facilitating wider capital flows and reducing the cost of reporting are even more significant. Adoption of DLT will enable Green Bonds to reach and create new markets at both ends of the investment pipeline. Markets are immature and technology is still evolving, however the time is right, and the need is urgent, to progress to the next stage.

Giacomo Arcaro

He has 15 years' experience in growth hacking, digital strategy, startup and business development. He has advised over 150 startups and has 50 managed employees into a XII Century Church in Italy for the European biggest growth hacking company. He holds the title of 'Amazon Best Seller Author' and is been known to be one of the 'Most Influential Blockchain Evangelist' with +200 conferences all over the world.

Forbes

'The Most Influential Fintech Advisor'

WIRED

'European Best Growth Hacker'



Giovanni Casagrande

A known name in the world of cryptocurrency. He has been in the marketing industry for well over 20 years and have switched to the cryptocurrency industry in 2014. He's a writer, public speaker, investor and Marketing / Growth Hacking advisor in more than 100 successfully projects. His specialty was Economics in the University of Bologna and the knowledge, experience gathered from there has helped him to manage/help many businesses in the industry. 4 years ago he founded Black Marketing Guru, a successfully Growth Hacking startup in Italy.

Blockchain Life 2019

'Number 1 ICO Advisor Worldwide Award'

Humans of BlockChain

'An influential Personality in the Blockchain Space'



Eloisa Marchesoni

Known as the youngest and most influential Blockchain expert in the field. She is an Italian-American who first started out as a startupper in the AI and IT business, while still finishing her Economics and Management studies in Bocconi. Eloisa is a renowned author, public speaker, and biz-dev, catering startups and companies wanting to innovate. Currently being the Chapter Director of Bocconi University Startup Grind Chapter, she made valuable connections and became a part of some of the main blockchain associations around the world, namely The Blockchain Council and The NYC Women in Blockchain. She will be featured in the Forbes Italy 30 Under 30 most influential entrepreneurs in 2020.

IRISH TECH NEWS

'Number 1 token model architect for ICOs'



Startupitalia!

'Top 100 Fintech Leaders and Influencers in Italy'

