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Contribution by United Kingdom

to the CSTD 2020-2021 priority theme on "Harnessing blockchain for sustainable development: prospects and challenges"

FCDO input - use of blockchain for sustainable development

General insights from FCDO experimentation with blockchain for sustainable development

Potential
- Blockchain has suffered from excessive hype but there is still high potential for blockchain to add value and transform some digital systems.
- There is particularly high potential in developing countries where there is often a lack of institutions capable of playing the role of a centralised trusted intermediary.
- It is more useful to view blockchain, not as a single technology, but through the wider lens of new approaches to distributed digital systems.

Key Challenges
- Blockchain has not realised its potential for sustainable development within developing countries or within developed economies yet.
- A major challenge is that before you can successfully implement blockchain solutions you need to solve both governance and coordination problems. For example, getting agreement between multiple parties to engage and participate, integrating a solution into established organisational processes or agreeing standards and regulations.
- Blockchain can be used in lots of ways and those with experience of working on blockchain pilots have noted that the barriers and challenges faced are more to do with innovating in a large bureaucracy or how the tool can work with our data infrastructure etc, rather than about blockchain specifically. In many of the experiments with blockchain it is only one part of the tech stack in a larger innovation. Blockchain gets so much attention, but its potential is far more 'combinatorial' in the role it might play alongside data, AI and automation within a larger financial or logistics system.

International Action
- To succeed, blockchain and related distributed digital systems require leadership to solve governance and coordination issues but strong leadership by key players is hard because blockchain is not seen as a proven technology. There is an opportunity here for a first mover.

Examples of initiatives using blockchain for the SDGs, key challenges to uptake, and what the international community should be doing.

To date the FCDO Frontier Technologies programme (part of the Ideas2Impact programme) has supported two pilots using blockchain for the Sustainable Development Goals (in particular SDG 16: Promoting accountable and inclusive institutions at all levels):

1. *Tracking UK Aid payments on the Blockchain*

This pilot looked to test whether using Distributed Ledger Technology (DLT) and e-money could solve problems of transparency, speed, efficiency and mismanagement of aid funding across the financial supply chain.

The pilot was led by the fintech startup Disberse, and received funding and support from the Frontier Technologies Livestreaming Programme. Results of the pilot are due to be released on 3rd November 2020 as part of a learning launch. This launch includes a permanent domain that will store learning products, such as the 40-page learning report from the team.

Pilot Story - reflections on the pilot from the Frontier Technologies Hub.

Challenges and opportunities for Initiatives engaging with partners like the FCDO:

Blockchain - the hype and a hindrance?
- A blockchain focused project means that stakeholders are more interested in the underlying architecture than they normally would be. But this technical knowledge is not widespread, and there is often confusion arising from blockchain's association with cryptocurrencies, which makes engagement more difficult. The pilot began referring to "distributed ledger technology" (DLT) rather than blockchain and talking more about the service than the underlying technology.

"The question around blockchain has potentially been hindering more than helping... The discussion [with FCDO] has been a lot about underlying technology which you would never discuss if it wasn't for blockchain."

Numi Östlund

- There are questions about whether total decentralisation is inherently desirable in financial services for the aid sector (where trust is not much of an issue). The Beta version of the platform was a hybrid architecture which combined DLT as a base layer for data storage and transaction management, with another layer of more conventional service-oriented architecture to ensure service stability and meet regulatory requirements, including laws on data protection.

"In terms of what we were trying to do at the core level - cheaper, faster, more transparent - you can do that in a centralised way, with centralised databases."

Ben Joakim, CEO Disberse

The international community should be more specific in the types of DLT tech where it sees promise, and be clear on the benefits of centralised and decentralised transactions in different contexts. Blockchain should also be seen as a component in a potential tech solution, rather than a solution in and of itself.

Paradigm innovation and working with a B2B startup
- Large amount of internal traction was needed with donor organisations (such as FCDO, OCHA) because the solution involved changing working methods. Developing client relationships in the aid industry required a large investment of time and this made it more difficult for the private sector partner to sustain.
- Conversations speculated about future scenarios where first mover advantage might be converted into monopoly status.
- Assessing impact: it was hard to talk about impact for the solution because metrics were focused on improvements in business processes rather than the impact on communities

The international community should consider that blockchain often concerns back-end processes and shifting internal systems. This means that blockchain technology should be given more sustained or strategic support as compared with the quicker, more obvious impact of product innovation, for example.

FCDO staff capacity
- From the pilot team, it was understandable that there was limited knowledge of DLT, but the pilot was a way of introducing a range of stakeholders to the technology and a possible use case that could help their work.
- The scale of ambition for the project was difficult to grasp for individuals because it concerned systems-level change.

The international community should have clear leadership support for multiple units within the organisation to become involved from the beginning.

2. Blockchain for the Humanitarian Supply Chain

This pilot looked to test whether the use of a private permissioned blockchain platform could provide immutable proof of supplies passing between actors in the humanitarian supply chain. Following a detailed design process, German company Datarella created Track and Trust and iterated and developed it in close coordination with FCDO stakeholders. The pilot ended with a robust Proof of Technology that had tracked a live shipment of goods in a controlled environment.

Since FCDO provided support to the system, Datarella has received support from Block.IS, the European Commission, and the UK and European Space agencies to continue developing the platform in a way to enable scale as well as insight into the "last mile" of humanitarian supply chains using satellite-connected mesh networks to overcome connectivity problems in last-mile humanitarian aid delivery.

Pilot Story - reflections on the pilot from the Frontier Technologies Hub.

Challenges and opportunities for Initiatives engaging with partners like the FCDO:

Embrace and extoll human-centred design

- One of the most intriguing findings of the pilot was the feedback from the dashboard application concerning users' interaction with the blockchain. With so much emphasis on the security potential of the system, there was a trade-off on usability. Future designs considered the role of "operational transparency" as a way to convey the benefits of the blockchain, which kept the desired level of security while managing to keep the needs of users as central to platform design.
- Relatedly, a crucial element underpinning the success of Track and Trust was the initiative's emphasis on building and iterating a Blockchain platform with users and for users. It took time to build the platform right, in part because FCDO Humanitarian staff have numerous competing priorities and often must "drop everything" at short notice to respond to a crisis. Having the patience and taking the time to design and iterate a platform with end-users was of paramount importance to its success.

The international community should consider that if blockchain is to be advertised as increasing the security of a platform or service, making this more explicit through user experience can draw some advantages.

Find the incentive

- In order to engage potential partners, the benefits of blockchain have to be well communicated. A key assumption of the project was that humanitarian actors were aware enough of the benefits of blockchain to understand why it held potential for humanitarian supply chains.
- Humanitarian actors are busy. They are also used to functioning within fragmented and opaque systems for aid delivery. This means that, even if they may see potential in using blockchain technology, there may not be the immediate incentive to take part in what is another layer of administration or responsibility.
- The pilot was often delayed by humanitarian organizations who either did not have the time to experiment with a new platform or were not able to integrate into the existing operations of the supply chains they were working in.

"The real aspiration of the project was to show that organisations could agree to the same system… a big lesson was that scaling up is less a technical barrier, but is really about how can you get a group of disparate organisations to come to a level of agreement for a system not to be owned by anyone."

Daniel Lihou, FCDO Pioneer

The international community should consider that different types of DLT architectures have varying requirements of their users, and that it may generate questions surrounding governance and sustainability.

The international community should consider that shifting to a new platform or service that uses blockchain is often a coordination problem.