

Microsoft Cloud Computing Research Centre

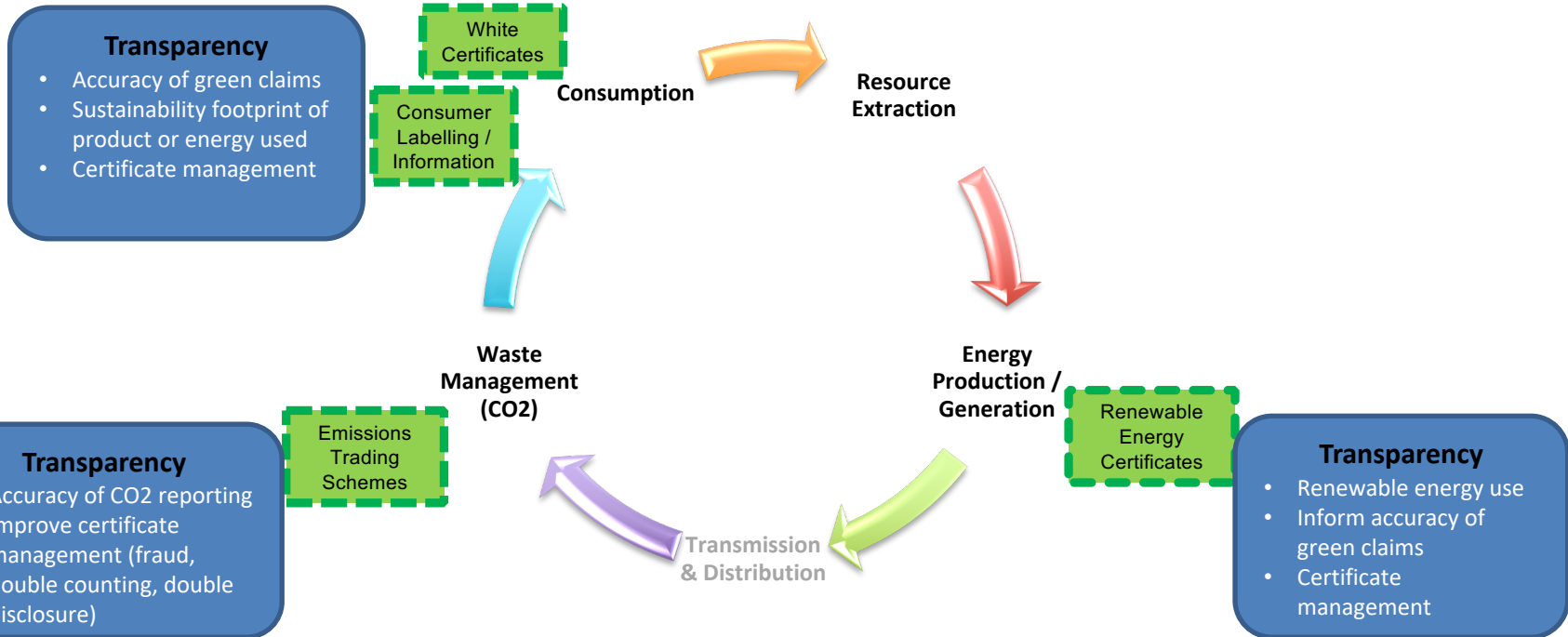
5th Annual Symposium, September 2018

Blockchain and Transparency for Sustainability in the Energy Value Chain

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Transparency in the Energy Value Chain – capturing reliable data via blockchain



Sharing data – legal and regulatory problems

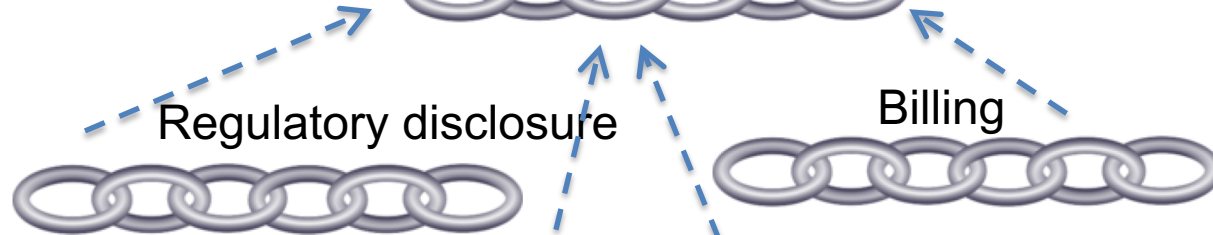
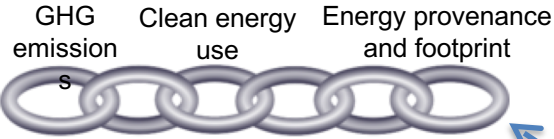
- Examples:
 - Primary data
 - Often only available to verification bodies (Kazakhstan, Brazil)
 - Regulator may receive only summaries
 - Disclosure limitations
 - Widely differing views on
 - What data can be shared within the regulatory system
 - What data can be made public
- Thus blockchain data storage doesn't solve the sharing problem

Aggregator Blockchains

Gateways and peering agreements control sharing and access

Permissionless

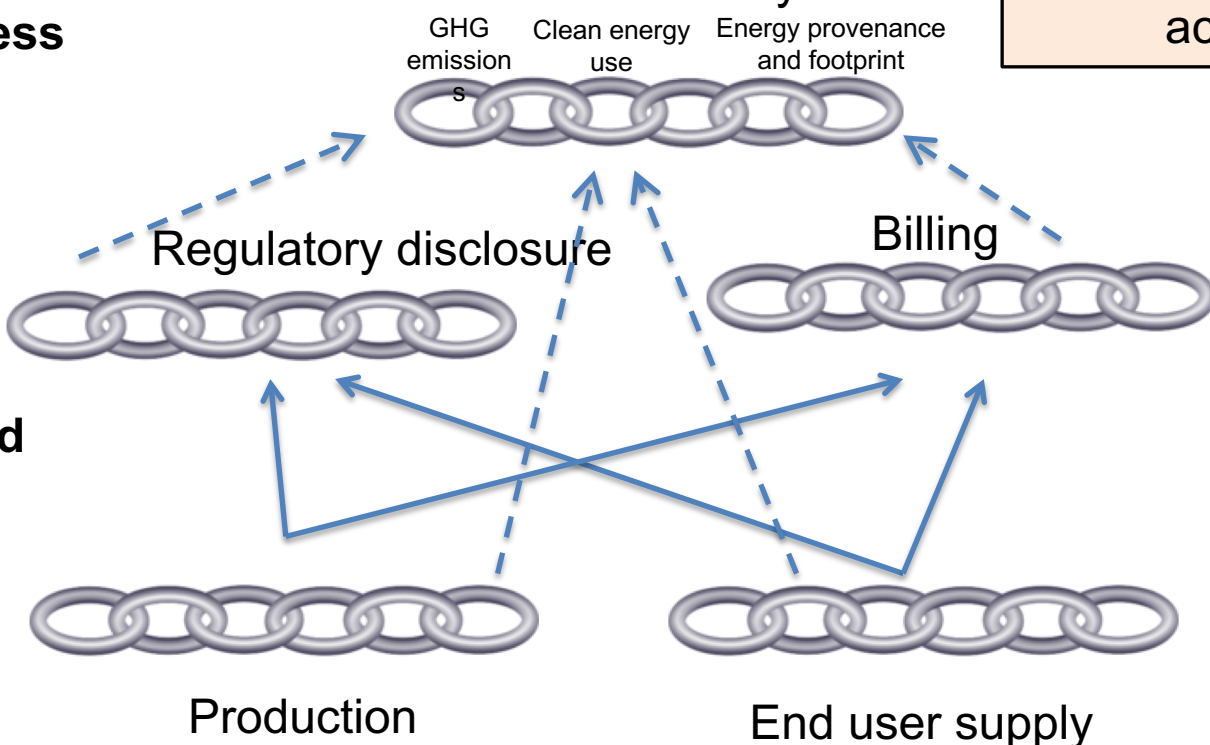
Sustainability



**Part
permissioned**



**Fully
permissioned**



Kazakhstan – ETS Reporting – Integration of Blockchain Into Existing Framework

International

Internal, controlled, fully permissioned, incorporating non-public information in accordance with peering agreements for monitoring, etc.



Permissionless (read only)
Collation of publicly available information across MBIs and countries



Transnational Organisation

NGO

Third Party Access

Third party access reflects possible access by NGOs or other accountability organisations to publicly available information.

Peering Agreement & Gateway

National

Internal, controlled, fully permissioned blockchain - certificates awarded, ownership, trades, emissions, compliance



Permissionless (read only) – Annual listing of companies awarded certificates and number of certificates issued to them

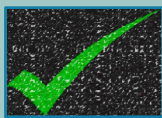


National Regulator

Peering Agreement & Gateway

Sub-national

Internal, controlled, fully permissioned blockchain



Verifier

Peering Agreement & Gateway

Internal, controlled, fully permissioned blockchain



Emitter

Key Points

- Blockchain is a good way to gather primary transparency information and share it widely. This can improve sustainability in the energy value chain.
- While the technology may provide innovative approaches to historic models, challenges are found at the technology - law interface. Regulatory schemes are all different, with lots of restrictions on what can be disclosed and who can see it. So a gradual approach is necessary.
- Blockchain makes solving these problems possible through differing permissions (i.e. fully open blockchains are not workable).
- Aggregator blockchains, connecting via gateways and peering agreements, enable existing regulatory restrictions to be maintained, whilst achieving the first stage towards transparency (i.e. making as much information as possible available, and on a global scale).

Paper available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3236753

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