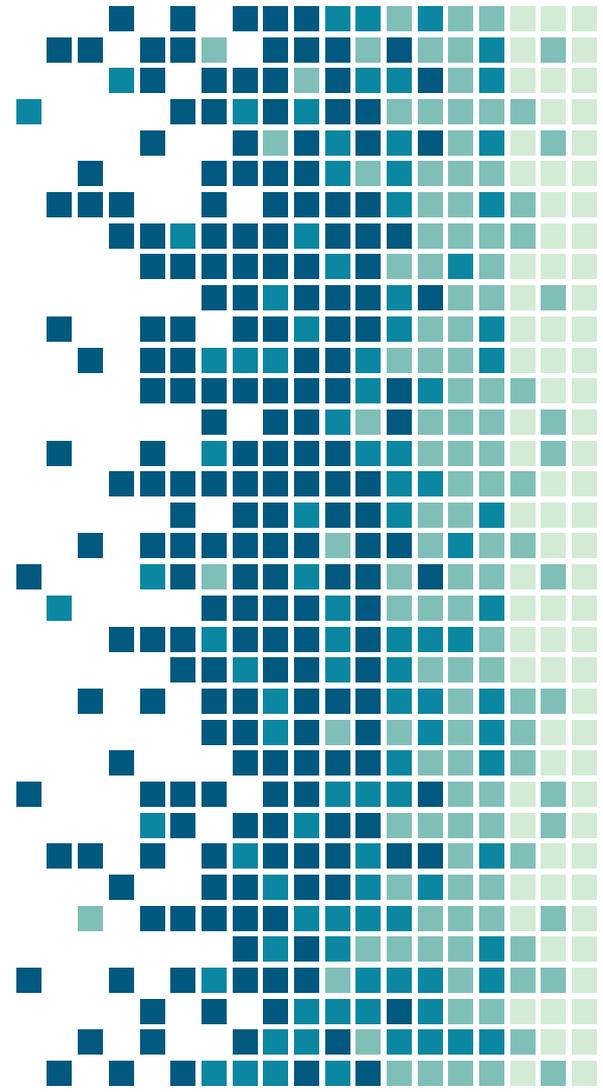


BLOCKCHAIN TECHNOLOGIES FOR ELECTRICITY TRADING REGULATION

Tamara Favaro, Ph.D.

Post-Doc Researcher in Public Law and Economics – University of Pisa

Research Fellow at UCL Centre for Blockchain Technologies – London



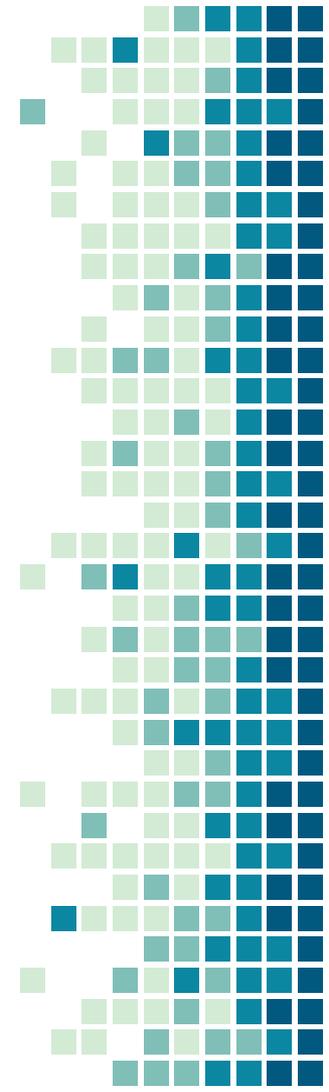
RESEARCH QUESTIONS

1. Why Blockchain for electricity trading?
2. How could Blockchain platforms affect electricity trading regulation?
3. What possible interactions between Blockchain Code and Conventional Law?



OUTLINE

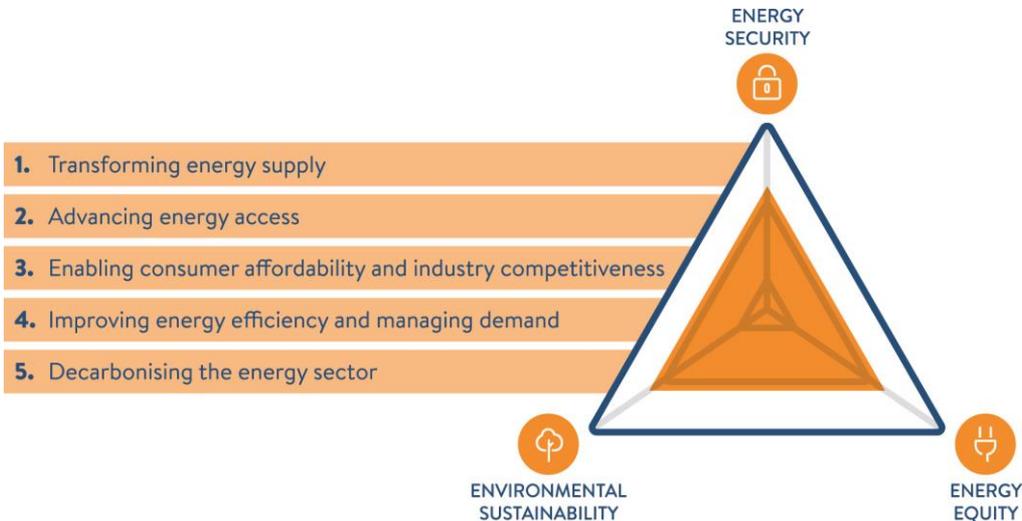
- Context
- Regulatory failures
- Analysis of research questions
- Possible Blockchain applications
- Conclusions



Analysis of the Context

Why do we (still) need to regulate the energy liberalized market?

- **Market failures** (e.g., information asymmetries)
- **Energy Trilemma**



Source: World Economic Council, 2016

“Clean Energy for All Europeans”:

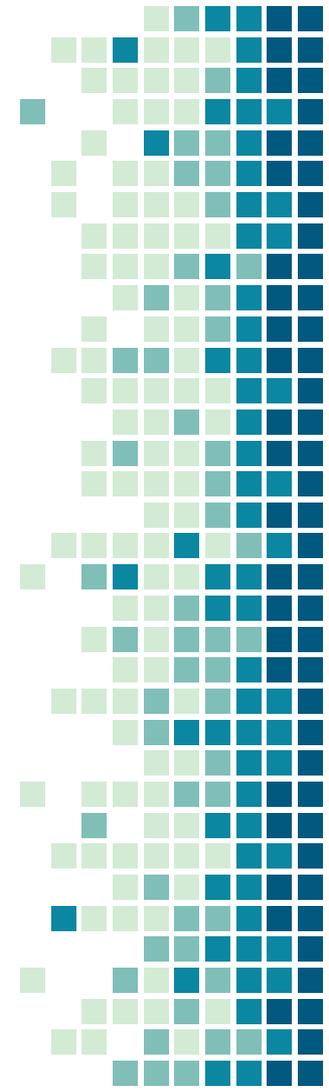
A new step in the liberalization process or a new legitimization of public interventionism?



2030 climate & energy framework

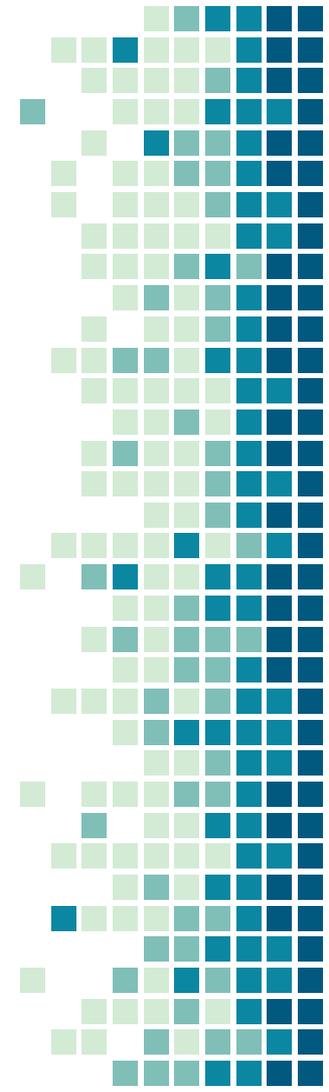
key targets

- At least 40% cuts in **greenhouse gas emissions** (from 1990 levels)
- At least 32% share for **renewable energy**
- At least 32.5% improvement in **energy efficiency**



Some Critical Aspects

- Need to combine different legislation
- Market and regulatory failures
- Difficult coordination between contiguous policies



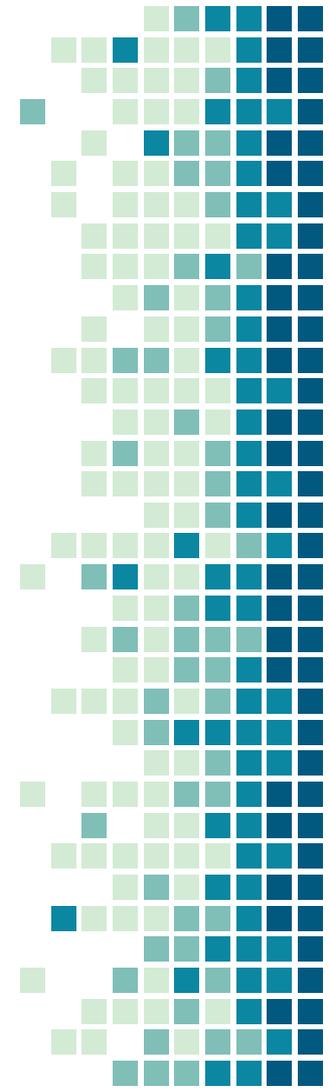
Public regulation *ex lege* creation of artificial markets

- Green and white certificates
- Carbon trading
- Guarantees of Origin



“Clean Energy for All Europeans”

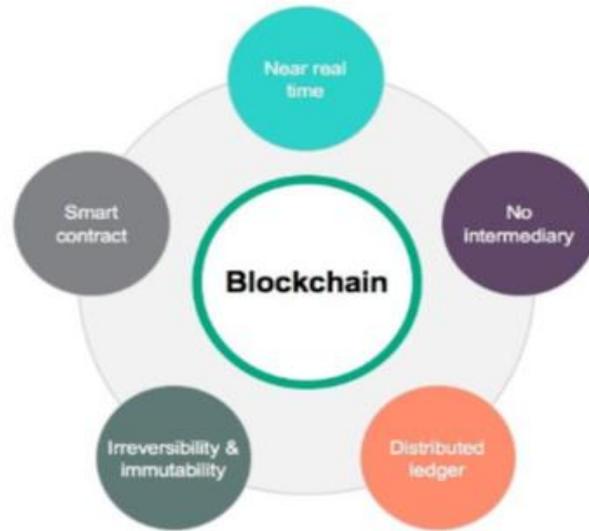
- Key objectives: the “Four D”
 - Decarbonisation, Digitalisation, Decentralisation, Democratisation
- Consumer at the core
 - Active consumers
 - Generate, store, consume and sell electricity
 - Non-discriminatory access to the market
 - Passive consumers
 - Only consume electricity
 - Access to price comparison tools
 - Wide choice of payment methods



First question: Why Blockchain?

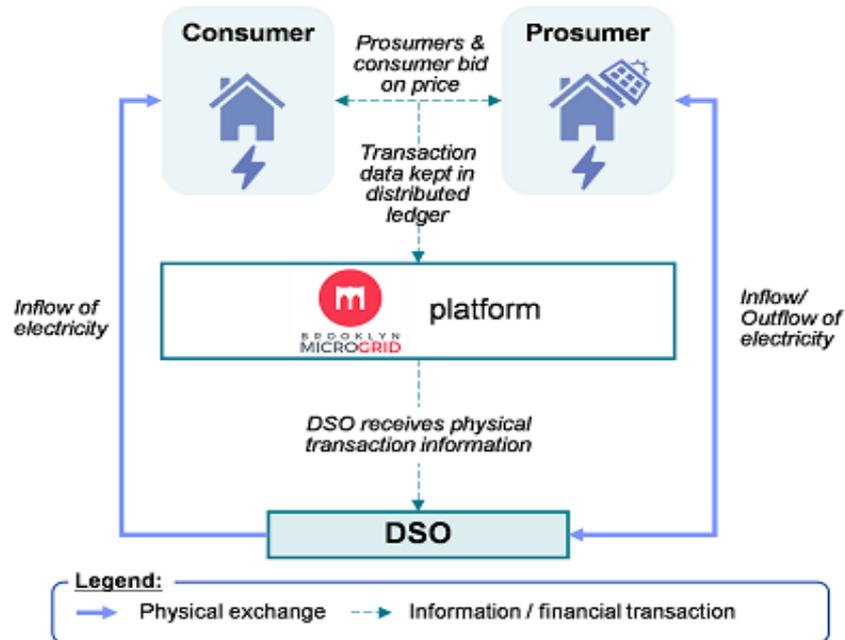
Two fundamental concepts

- **Blockchain:** a public, immutable, transparent distributed ledger
- **Smart contract:** a line of code that automatically execute a specific function once certain conditions are met, normally following the "if... then..." statement



Peer to Peer trading

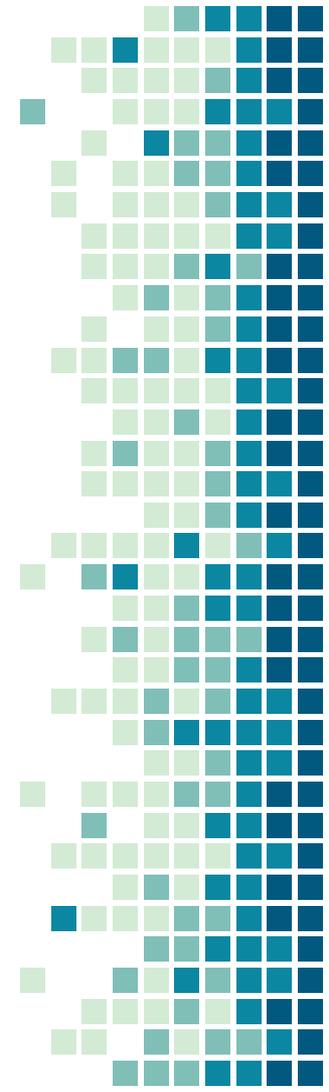
Mechanism of peer-to-peer retail platform



Source: Emerton.co

European Parliament resolution of 3 October 2018 on distributed ledger technologies and blockchains

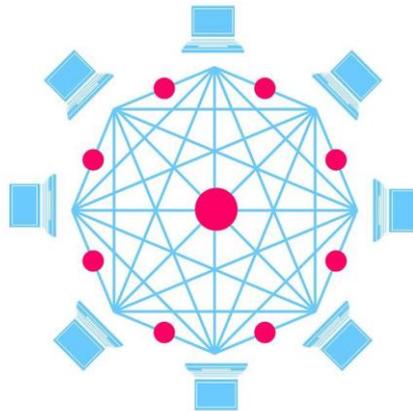
«DLT can transform and **democratise** the energy markets by allowing households to produce environment-friendly energy and exchange it on a **peer-to-peer** basis (...); DLT can support the production and consumption of **green energy** and could improve the efficiency of energy exchanges (...); DLT can create **alternatives to state-sponsored renewable investment schemes** (...); DLT improves **energy reporting** and enables accurate tracking of renewable or carbon certificates (...); DLT can support the **electrification of poor rural communities** through alternative payment and donation mechanisms (...); DLT can bring **new opportunities to the circular economy** by incentivising recycling and enabling real-time trust and reputation systems (...)"



Blockchain: is it always a good idea?

Decentralization is not a panacea:
also transparency has negative effects.

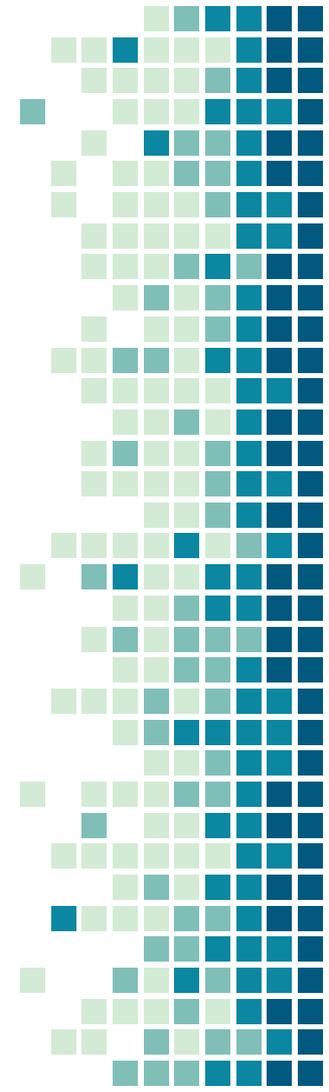
The concrete opportunity to use a BLOCKCHAIN platform for the PER PEER TO PEER TRADING must be critically evaluated, on a case-by-case analysis



Second Research Question

How could Technology, in the form of Blockchain, affect Market Regulation?

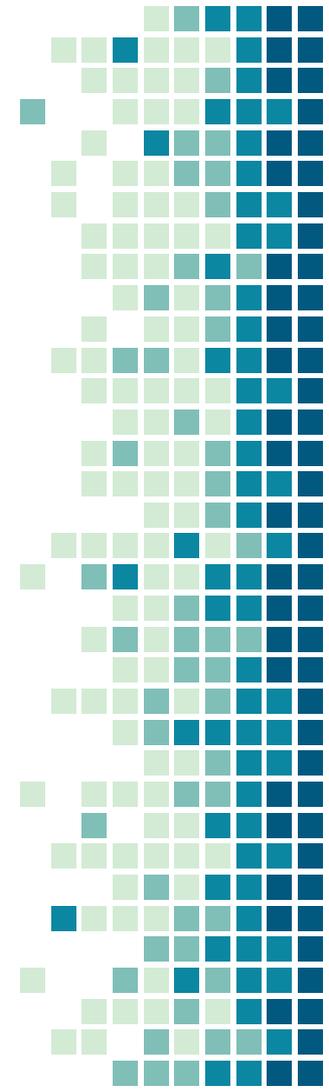
Could Blockchain represent a *new equilibrium* in the “State-Market pendulum”?



PRINCIPAL IDEA

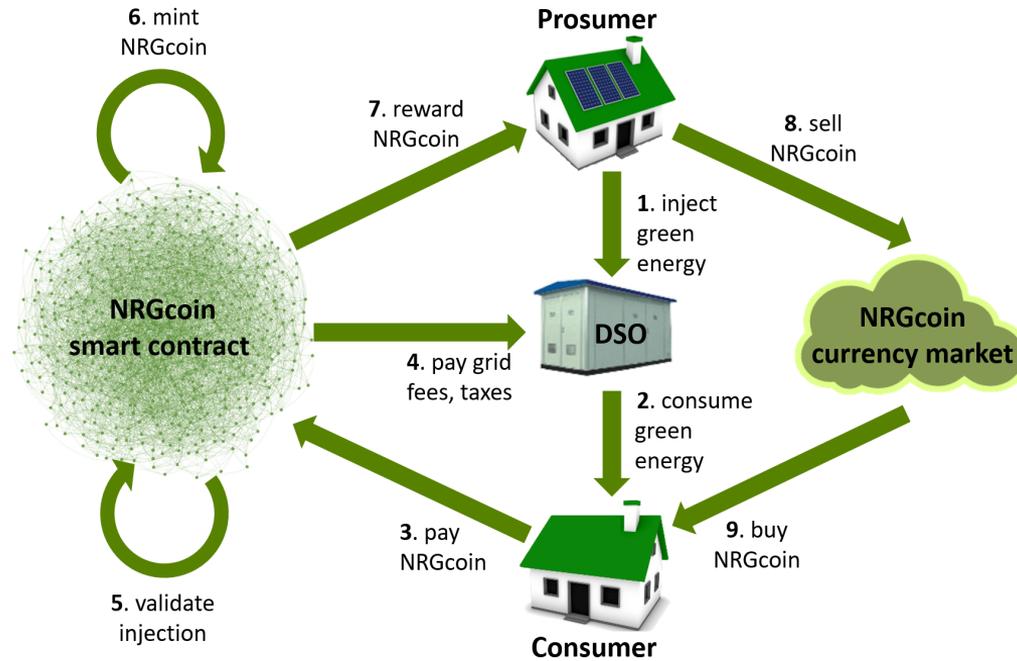
Maybe we can use the Blockchain not only to trace **already existing certificates** (like guarantees of origin and carbon emissions) but also to *replace the need* of this kind of certificates

- Peer-to-peer trading as a replacement of public subsidies
- Peer-to-peer trading as a replacement of carbon trading
- Peer-to-peer trading as a replacement of Guarantees of origin

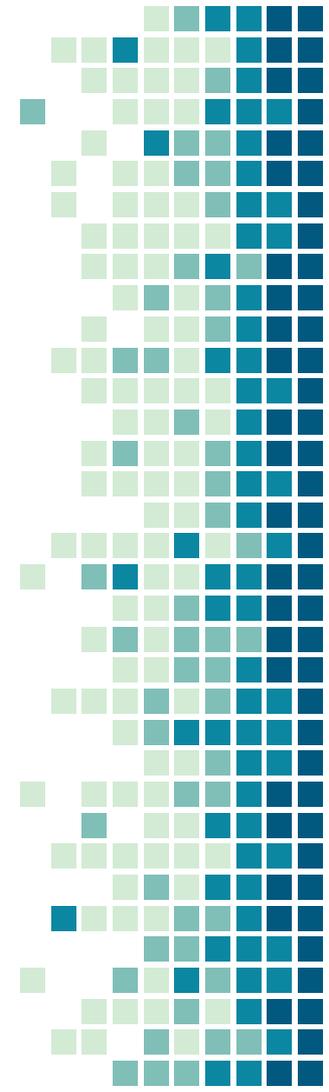


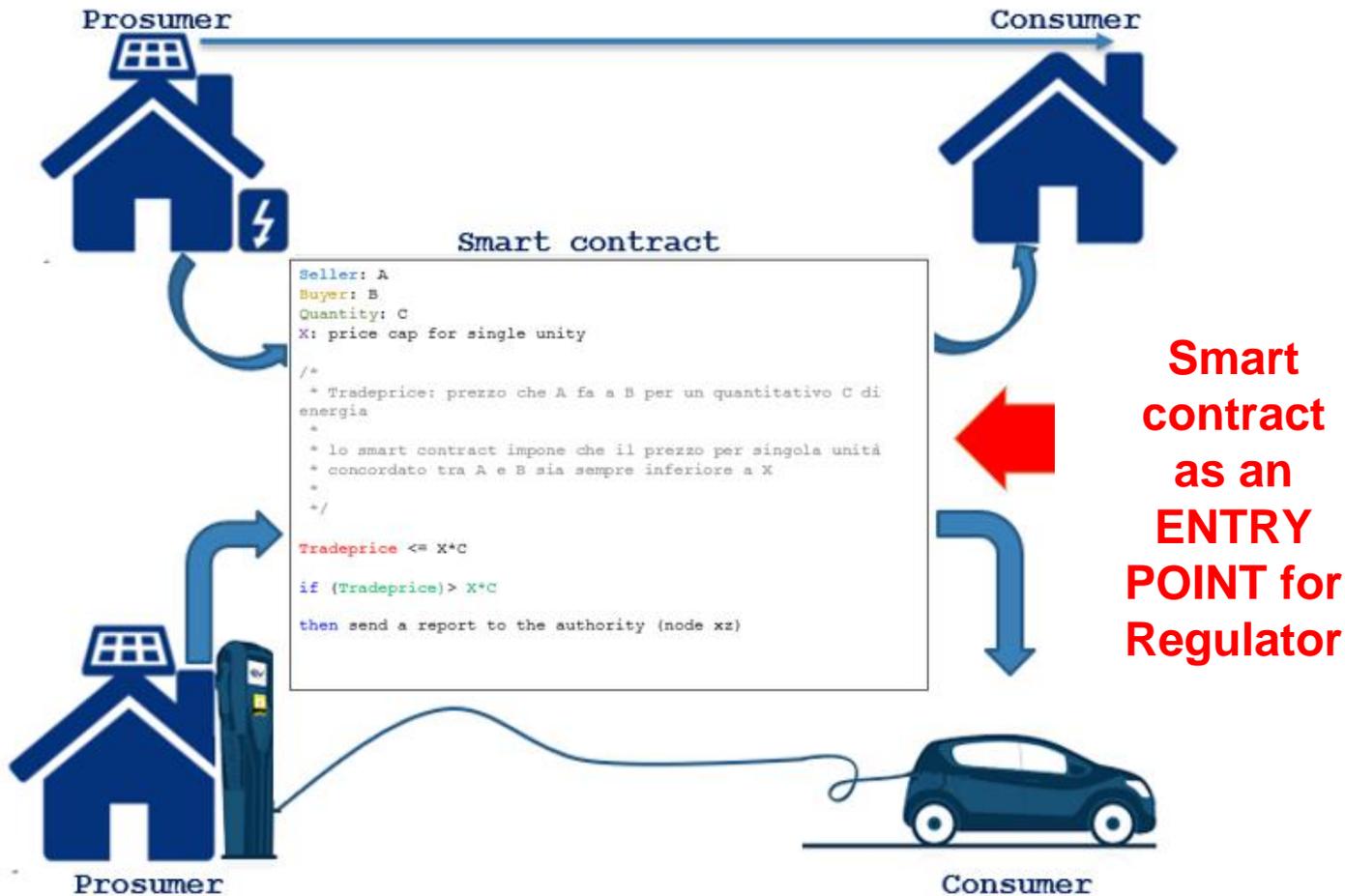
Blockchain and Circular Economy

NRG Coin & Hull Coin



Summing up, at least in theory, we can consider blockchain not only as a mean to allow better efficiency and transparency in energy transactions, but also as an instrument to achieve important social goals, like those underlying de-carbonization and fuel poverty





Possible interactions between Blockchain Code and Conventional Code

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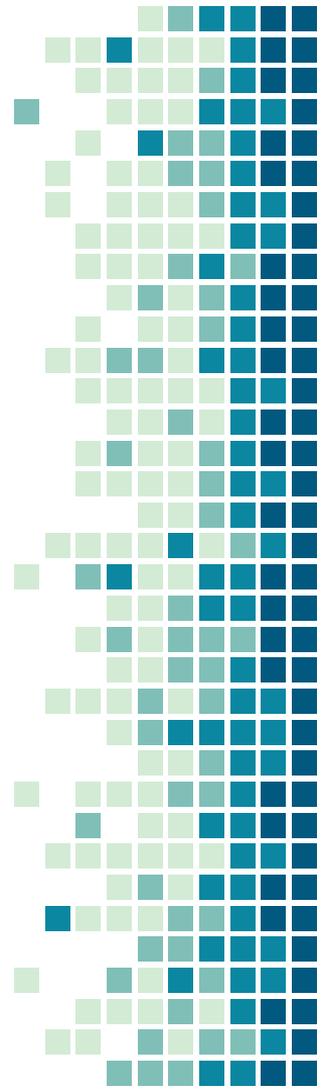
No. 2

Regulation by Blockchain: the Emerging Battle for
Supremacy between the Code *of* Law and Code *as* Law

Karen Yeung*

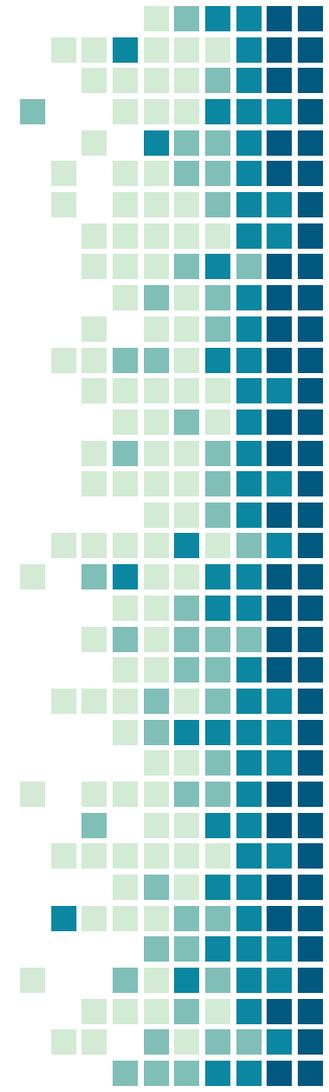
Table 1. Anticipated Form of Interaction between conventional law and blockchain code

Motives of blockchain participants vis-à-vis conventional law	Dynamic interaction (battle for supremacy?)
Hostile evasion	Cat and mouse
Supportive Alignment	The joys of (patriarchal) marriage
Alleviating Transactional Friction	Mutual suspicion and uneasy co-existence



Could P2P Trading also represent a form of
efficient, harmonic cooperation
between rule of code and rule of law?

Could Blockchain represent a new equilibrium
in the "State-Market pendulum"?



THANKS!

Any questions?

