Exploring the application of blockchain technology for Emissions Trading and climate-related Monitoring, Reporting and Verification systems in Mexico

"Understanding Blockchain and Distributed Ledger Technology"

Introductory Workshop, August 23rd 2018, Mexico City / Lima

Sven Braden, Independent Consultant

Blockchain Technology and the World Economy

2016

2015

2017

42 Financial Intermediates
start bc based collaboration

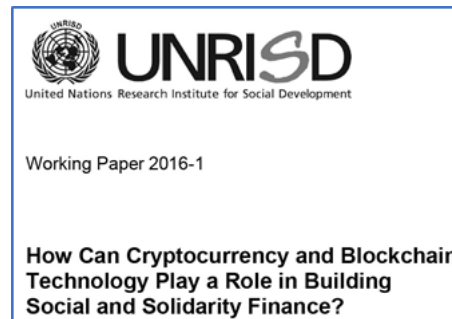**«By 2027 about 10% of World GDP will be stored on blockchains»**

On behalf of:

Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety

of the Federal Republic of Germany

giz Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

Blockchain Technology and the World's Challenges

2015

WFP World Food Programme
Fighting Hunger Worldwide
wfp.org

The **WFP is the first UN agency** to experiment with bc technology. The agency is using bc to distribute humanitarian aid to those in need. In 2017 a second bc project is launched to support Syrian refugees.

2016

UNRISD
United Nations Research Institute for Social Development

Working Paper 2016-1

How Can Cryptocurrency and Blockchain Technology Play a Role in Building Social and Solidarity Finance?

2017

unicef | stories of innovation

"UNICEF is funding blockchain projects to solve the worlds biggest problems"

3

Outline

1. Understanding Blockchain and Distributed Ledger Technology
2. Use cases supporting climate action
3. Presentations on key features of climate instruments in Mexico, namely

    - emissions trading registry
    - MRV System for climate policies
    - MRV System for climate finance

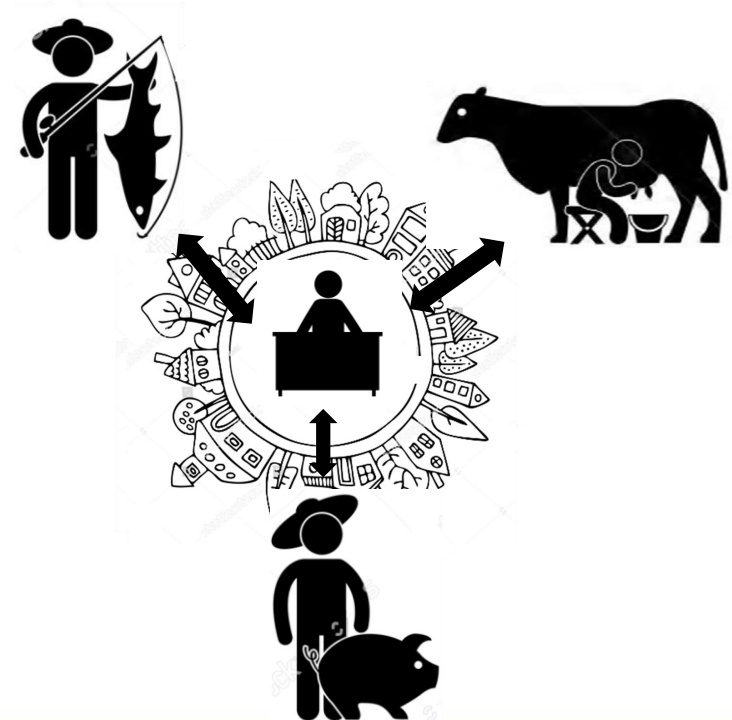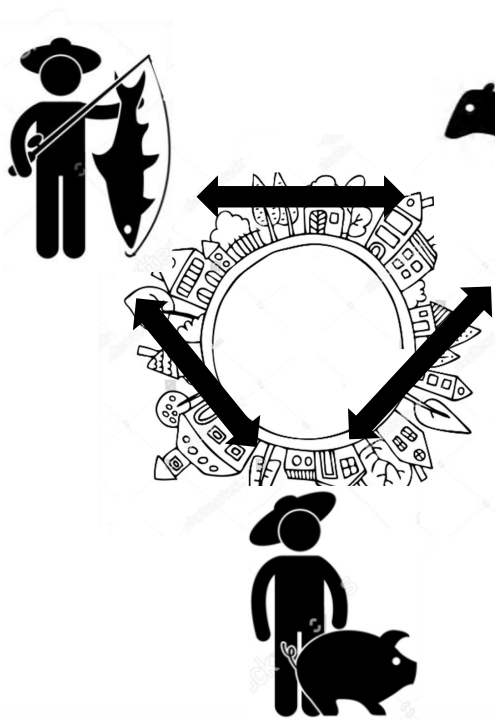4. Blockchain based climate instruments – Potentials and challenges

Understanding Blockchain and Distributed Ledger Technology
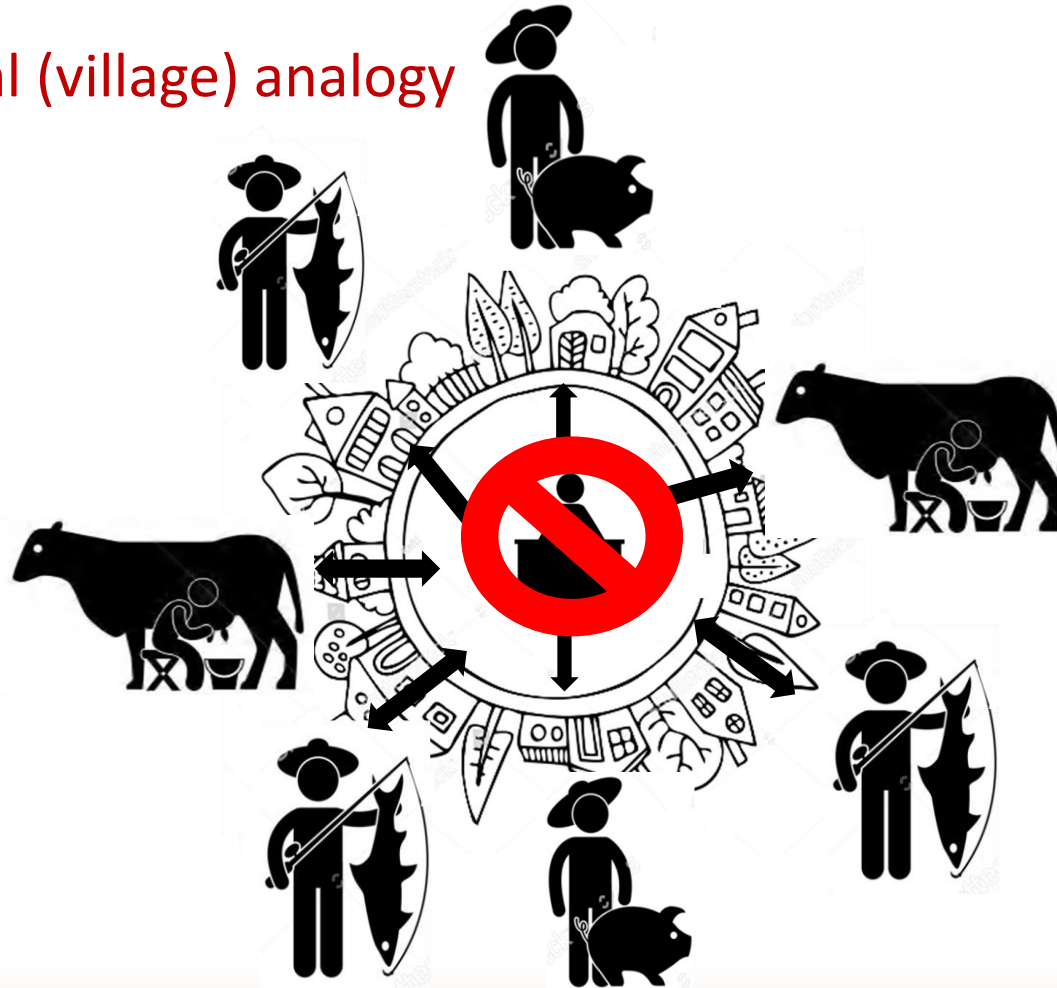# Part 1

Understanding Blockchain and Distributed Ledger Technology
A non-technical (village) analogy

Understanding Blockchain and Distributed Ledger Technology
A non-technical (village) analogy

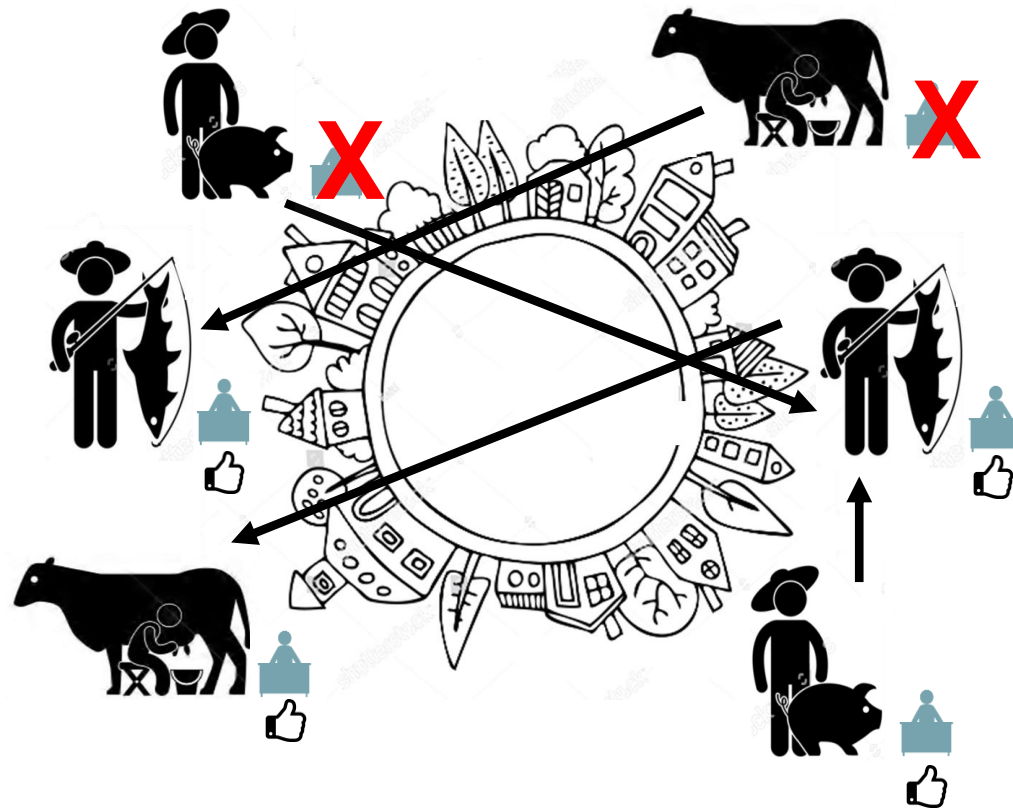# Understanding Blockchain and Distributed Ledger Technology
A non-technical (village) analogy
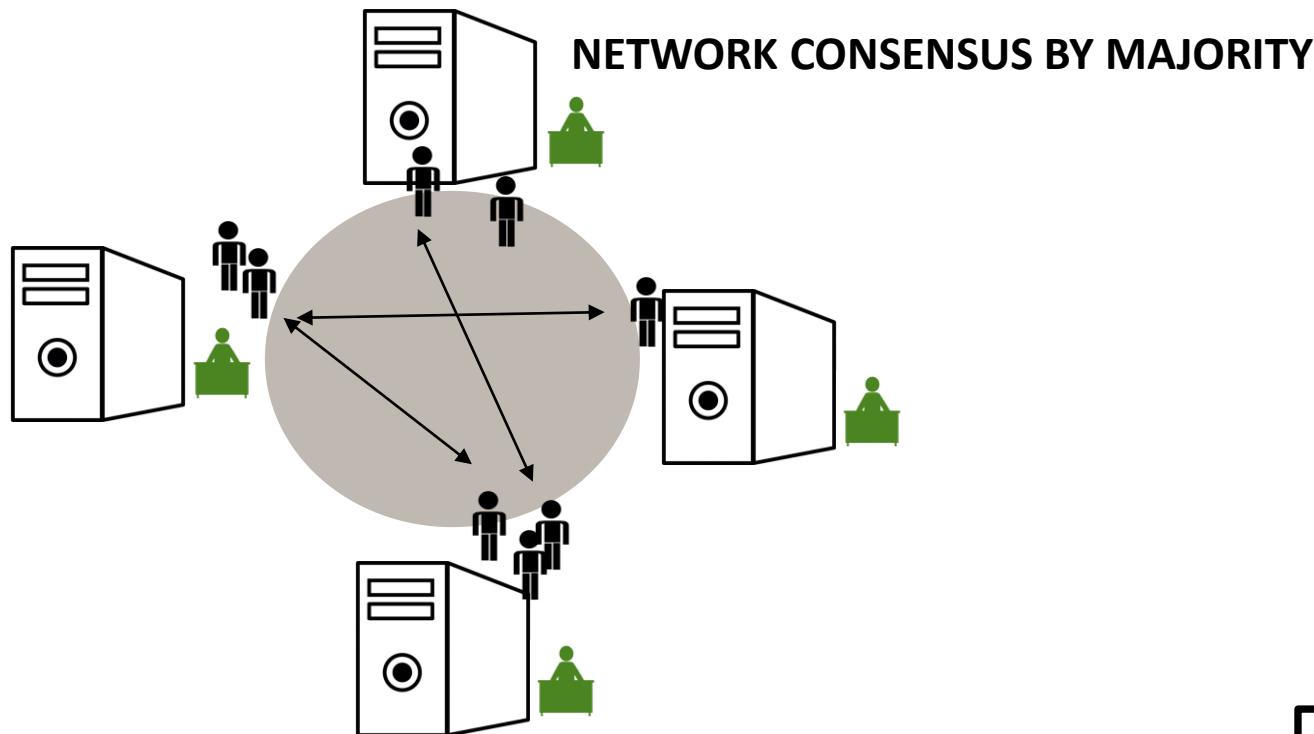
1. Registration Meeting

2. **Validation Meeting**

👍 👍 👍 👍 👍 👍

NETWORK CONSENSUS

Understanding Blockchain and Distributed Ledger Technology
Part 2

Understanding Blockchain and Distributed Ledger Technology
Technical Fundamentals

NETWORK CONSENSUS BY MAJORITY

Transaction #1 B-D,
Transaction #2 F-H
Transaction #3 U-K
Transaction #8 I-W
(…)

Transaction #7 G-D,
Transaction #4 P-H
Transaction #9 Ü-K
Transaction #5 I-O
(…)

Transaction #23 B-D,
Transaction #10 S-H
Transaction #93 U-K
Transaction #81 I-D
(…)

Understanding Blockchain and Distributed Ledger Technology

Technical Fundamentals – <u>Bitcoin</u> Transactions

Understanding Blockchain and Distributed Ledger Technology

Technical Fundamentals – <u>Ethereum</u> Transactions

Understanding Blockchain and Distributed Ledger Technology

Core Difference between Bitcoin / Ethereum

Understanding Blockchain and Distributed Ledger Technology
Part 3

Understanding Blockchain and Distributed Ledger Technology

Hash Algorythm – the key ingredient of DLT

MEXICO D.F.

e95710f3443034a47c93dda8c12a4faa659eba5c3f3570fc4
ef7ae26f4bb323d

Nothing is decided until everything is decided

9f62f85d500c8d4682c2aa9f8a00d89658be956b3a680dfd
370eb1c9bb94e445

Nothing is decided until everything´s decided

3f9801bc00d0a466b42c006dbbbf312ce38d1cf515a999bb
09f9b556feeb5624

Understanding Blockchain and Distributed Ledger Technology

Hash Algorythm – the key ingredient of DLT

BLOCK 1

Transaction
USA to Japan
18 ITMOS

Transaction
Tuvalu to Monaco
12 ITMOS

Transaction
Switzerland to Mexico
31 ITMOS

B1-Hash:
9f62f85d500c8d4682c2aa9f8a00d89658be956b3a680dfd370eb1c9bb94e445

BLOCK 2

Transaction
Vietnam to Australia
20 ITMOS

Transaction
Chile to Norway
118 ITMOS

Transaction
Germany to Peru
20 ITMOS

B2-Hash:
b2c01c8a8a0d9a99f145f099a963021f010dc608a8e992bd1a2aec958b48f32d

B1-Hash:
9f62f85d500c8d4682c2aa9f8a00d89658be956b3a680dfd370eb1c9bb94e445

BLOCK 3

Transaction
Italy to Panama
27 ITMOS

Transaction
Costa Rica to Canada
2 ITMOS

Transaction
Indonesia to Egypt
13 ITMOS

B3-Hash:
74fbfe10624a99c4b7ff875bec15cb1b304c6c6f21d154c5fc59e5140024cee4

B2-Hash:
b2c01c8a8a0d9a99f145f099a963021f010dc608a8e992bd1a2aec958b48f32d

Blockchain Hashes do ensure:

- Immutability

- Trust

- Effective decentralisation by providing means to sync distributed data sets (relevant for the integration of smart contracts)

- Data security on a new level

- Sharing data, while retaining control. This in turn brings transparency and thus greater stakeholder inclusion.

To sum up….

On behalf of:

Federal Ministry
for the Environment, Nature Conservation
and Nuclear Safety

of the Federal Republic of Germany

Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

To sum up….

A Blockchain is a database / ledger system that maintains a continuously growing list of data records (f.e. transactions) and is based on the following **features**:

| SP	DC	SC	TD	AU
Shared „Publicly"	**Decentralized**	**Secure**	**Trusted**	**Automated**
Servers, or nodes, maintain the entries (blocks) and every node sees the trasaction data in the blocks when created	There is no cenral authority required to approve transactions and set rules – the blochchain based workflow is decentralized	The database is an immutable record. Posts to the ledgers cannot be revised or tampered with – not even by the operators of the database	Distributed nature of the network requires computer servers to reach a consensus, which allows for transactions to occur between unknown network participants.	The software which enables blockchain based operations prevents the entry of conflicting or double transactions into the data set. Transactions occur automatically.

Existing Business Network – Example of Car Leasing Work Flow
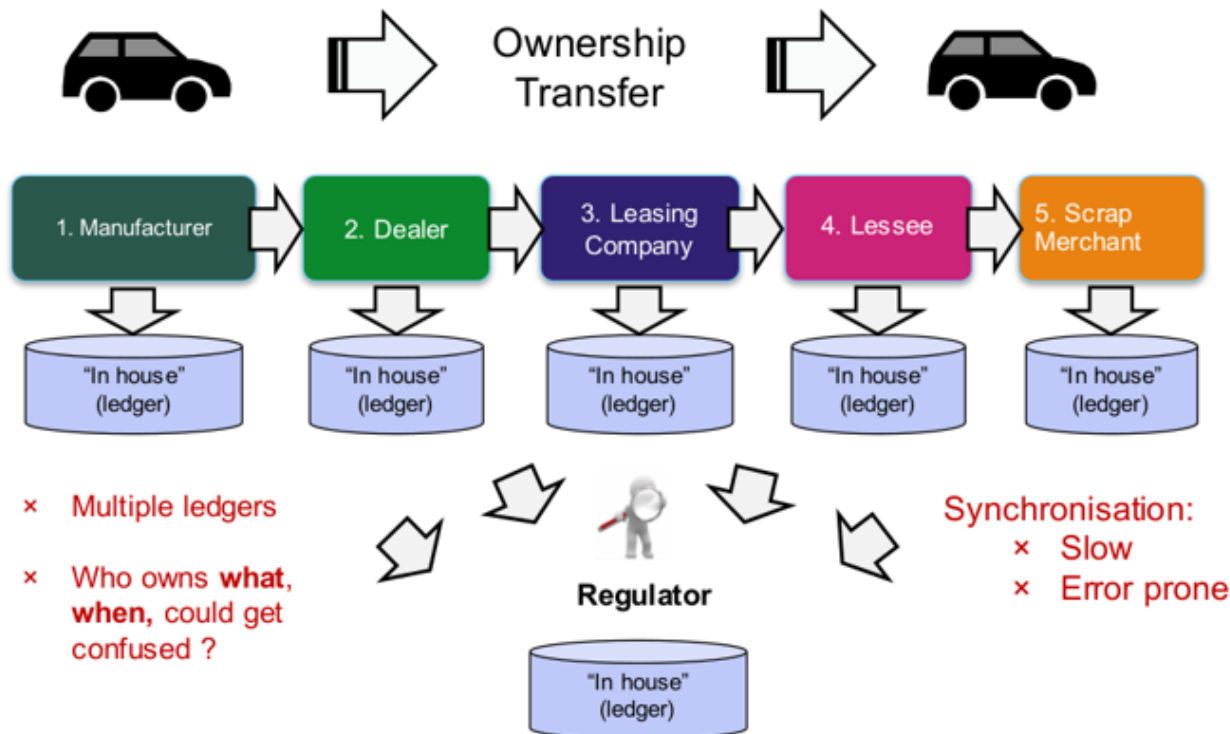
Business DLT Network – Example of Car Leasing Work Flow on a Blockchain
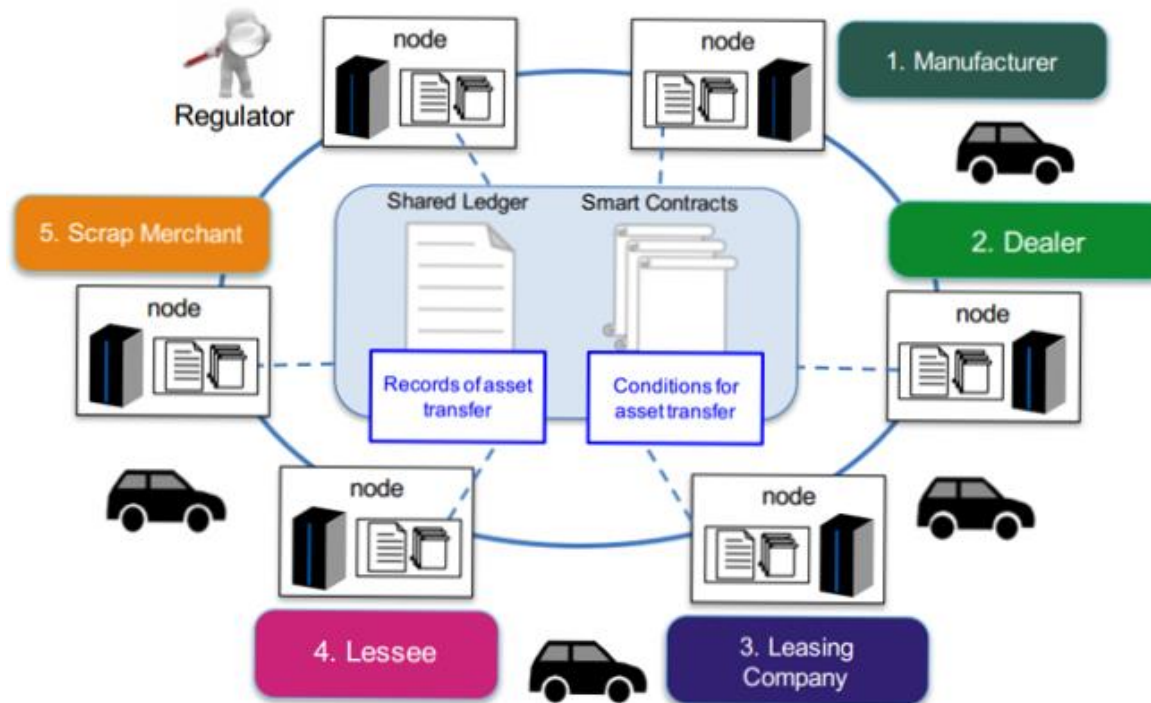
Muchas Gracias

Sven Braden

www.climateledger.org

sven.braden@climateledger.org

Member of CLIMATE LEDGER INITIATIVE