



Blockchain: Einsatz in Entwicklungsländern? Potentiale und Perspektiven



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What do we do?

Workshops, trainings, research projects,
Ethereum prototypes, startups

For whom?

Banking, insurance, energy, mobility, Industrie
4.0, internet of things

Upcoming

Workshop: Insurance and Blockchain (July 2017)

Workshop: Connecting IoT Hardware to
Ethereum (August 2017)

Ethereum Developer Course (September 2017)

Hyperledger Developer Course (September 2017)

Workshop: Energy and Blockchain (October 2017)

Contact

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In June 2017, three crypto currencies have a market capitalization that would let them rank in DAX30

- BTC price per unit \neq Gold price per ounce
- Better measurement: Market Capitalization
- BTC Market Cap.: Circulating Supply x Price
- BTC Market Capitalization: \$38.8 Billion
- Gold Market Capitalization: \$7.8 Trillion
- Gold value underestimated by factor 175!
- Market Cap. best solution?

| Category | Name | Market Capitalization (in bn. USD, as of May 30, 2017) |
|-----------------|---------------------------|---|
| DAX | SAP | 116.6 |
| DAX | Siemens | 107.3 |
| DAX | Bayer | 95.8 |
| DAX | Deutsche Telekom | 83.2 |
| DAX | Allianz | 78.5 |
| DAX | BASF | 77.3 |
| DAX | Daimler | 69.5 |
| DAX | BMW St | 55.4 |
| DAX | Fresenius | 41.2 |
| DAX | Continental | 39.9 |
| DAX | Deutsche Post | 39.1 |
| Crypto currency | Bitcoin | 38.8 |
| DAX | Adidas | 36.1 |
| DAX | Linde | 31.7 |
| DAX | Volkswagen Vz | 28.2 |
| DAX | Münchener Rück | 28.0 |
| DAX | Fresenius Medical Care St | 25.5 |
| DAX | Beiersdorf | 23.8 |
| DAX | Deutsche Bank | 22.7 |
| DAX | Infineon | 22.2 |
| DAX | Henkel Vz | 22.1 |
| Crypto currency | Ethereum | 21.5 |
| DAX | Deutsche Börse | 17.5 |
| DAX | E.ON | 16.5 |
| DAX | HeidelbergCement | 16.4 |
| DAX | Vonovia | 16.2 |
| DAX | ThyssenKrupp | 13.6 |
| DAX | Merck KGaA | 13.5 |
| DAX | Commerzbank | 11.8 |
| Crypto currency | Ripple | 11.5 |
| DAX | RWE St | 10.1 |
| DAX | ProSiebenSat.1 | 8.3 |
| DAX | Lufthansa | 8.0 |

Connect Ethereum to real IoT products!

Summer camp in Frankfurt; from August 28 to September 1, 2017



DAIMLER

nexusquared



UNDISCLOSED



Developing countries

Poverty

- **766 million** people living on less than **\$1.90 a day**
- **10%** of the world's population live in **poverty**

Weak institutions

- Corruption
- Low social trust
- Low education levels (poverty education trap)
- Social heterogeneity

Financial inclusion

- Focusing effect
- Financial friction
- Imperfect markets
- Inflation
- Speculation
- Volatility

Empowerment

- Social elites
- Power concentration
- Redistribution programs
- Social capital



1) World Bank Group (2016, October). Poverty and Shared Prosperity Report 2016 Taking on Inequality. Washington, DC World Bank.

Transferring value is possible, since a blockchain database has "built-in trust"

Technical features

„Built-in trust“

Transaction of value

- Network
- Ledger
- Blocks
- Nodes
- Wallets
- Transactions

- Miners (Bitcoin)
- Smart Contracts

- Immutable history of transactions
- Redundant storage of ledger
- Robustness of network

- Money
- Stocks
- Gold
- Identities
- Reputation
- Car rental access
- Energy
- Computing power

I. Decentralizing Trust

A blockchain can be used to shift “trust” from a central party hosting shared data to the protocol orchestrating the information consensus.

II. Validation and Security

A blockchain can be used to share chronologically ordered data in a way that every party can validate the full history of shared data without the risk of being tricked.

III. Privacy / Anonymity

The ability to share information while cryptographically controlling its visibility and association to the user.



*Blockchain is a protocol
for **distributed ledgers**
that enables the
decentralized, secure,
direct, digital **transfer**
of values and assets.*

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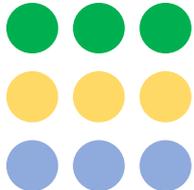
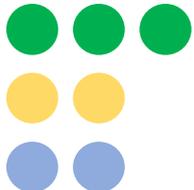
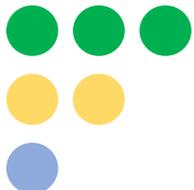
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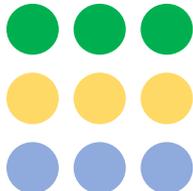
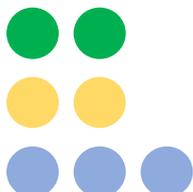
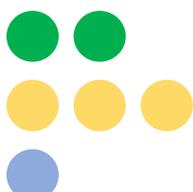
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Weak institutions

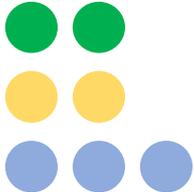
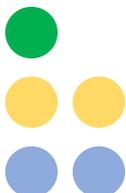
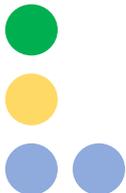
| Application | Evaluation | Barriers | Problems |
|---|--|---|---|
|  <p>Property registries support investments in housing, reduce household sizes and improve education</p> |  | <ul style="list-style-type: none"> - First time registration - Infrastructure | <ul style="list-style-type: none"> - Housing - Investments - Education |
|  <p>Secure legal identity documents reduce deception and is prerequisite for an inclusion of all people</p> |  | <ul style="list-style-type: none"> - Promotion - Identity verification | <ul style="list-style-type: none"> - Trust - Inclusion - Data |
|  <p>Budget tracking fights corruption, improves governance and serves as an information system</p> |  | <ul style="list-style-type: none"> - Conflict of interest | <ul style="list-style-type: none"> - Corruption - Governance - Information |

● Potential impact
 ● Implementation feasibility
 ● Expected adoption

Financial inclusion

| Application | Evaluation | Barriers | Problems |
|---|--|--|--|
|  <p>Shared microcredit ledger of banks reduces financial friction and information asymmetries</p> |  | <ul style="list-style-type: none"> - Cooperation - Legal uncertainties | <ul style="list-style-type: none"> - Friction - Asymmetries |
|  <p>Peer-to-peer bank services create independence of foreign capital, intermediaries and hence stability</p> |  | <ul style="list-style-type: none"> - Education level - Usability | <ul style="list-style-type: none"> - Dependence - Speculation |
|  <p>Crypto currencies can be used as local and international payment solutions and inflation protection</p> |  | <ul style="list-style-type: none"> - Illiquid exchanges - Infrastructure | <ul style="list-style-type: none"> - Economic exchange - Inflation |

● Potential impact
 ● Implementation feasibility
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| | Application | Evaluation | Barriers | Problems |
|-------------|---|--|--|--|
| Empowerment |  <p>Sharing economy can solve social heterogeneity, enhance bargaining power and increase capabilities</p> |  | <ul style="list-style-type: none"> - Underlying incentives - Knowledge | <ul style="list-style-type: none"> - Bargaining power - Capabilities |
| |  <p>Escrow mechanisms can limit the abuse of power by local elites and support the rights of people</p> |  | <ul style="list-style-type: none"> - Corruption - Peripheral areas | <ul style="list-style-type: none"> - Power abuse - Corruption |
| |  <p>Distributed governance can equip and encourage people to participate in their governance and rights</p> |  | <ul style="list-style-type: none"> - Legal concerns - Control | <ul style="list-style-type: none"> - Participation - Equality |

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Shared microcredit ledger

- A shared microcredit ledger where banks and other financial institution share their information can be implemented



Existing projects



Why blockchain?

Blockchain

- A inclusion of multiple financial institutions is possible which improves data quality and risk management
- Distributed structure allows an efficient collaboration

Impact channel

- Imperfect information and financial friction is addressed
- Information asymmetries and moral hazard is reduced

Barriers

- Cooperation of banks and legal uncertainties can be seen as risks and barriers

Peer-to-peer banking services

- People can directly interact with each other providing them with important saving and investing tools
- Underdeveloped region gain independence from an outside solution



Existing projects

 LendingClub

 BTCjam

zidisha

 Bitbond

Why blockchain?

Blockchain

- Many people can interact directly with each other without the need of a central authority
- Smart contracts help to coordinate interactions

Impact channel

- Domestic economies gain independence from foreign capital and international institutions
- Speculation therefore can be reduced

Barriers

- People have to understand the process and need to gain knowledge about the products (education)

Crypto currencies

- Crypto currencies can easily be used by most people
- Although several solutions exist, adoption is only slowly growing



Existing projects



Why blockchain?

Blockchain

- Remittance can be reduced
- Transactions time is decreased
- All people can use it without identity proof

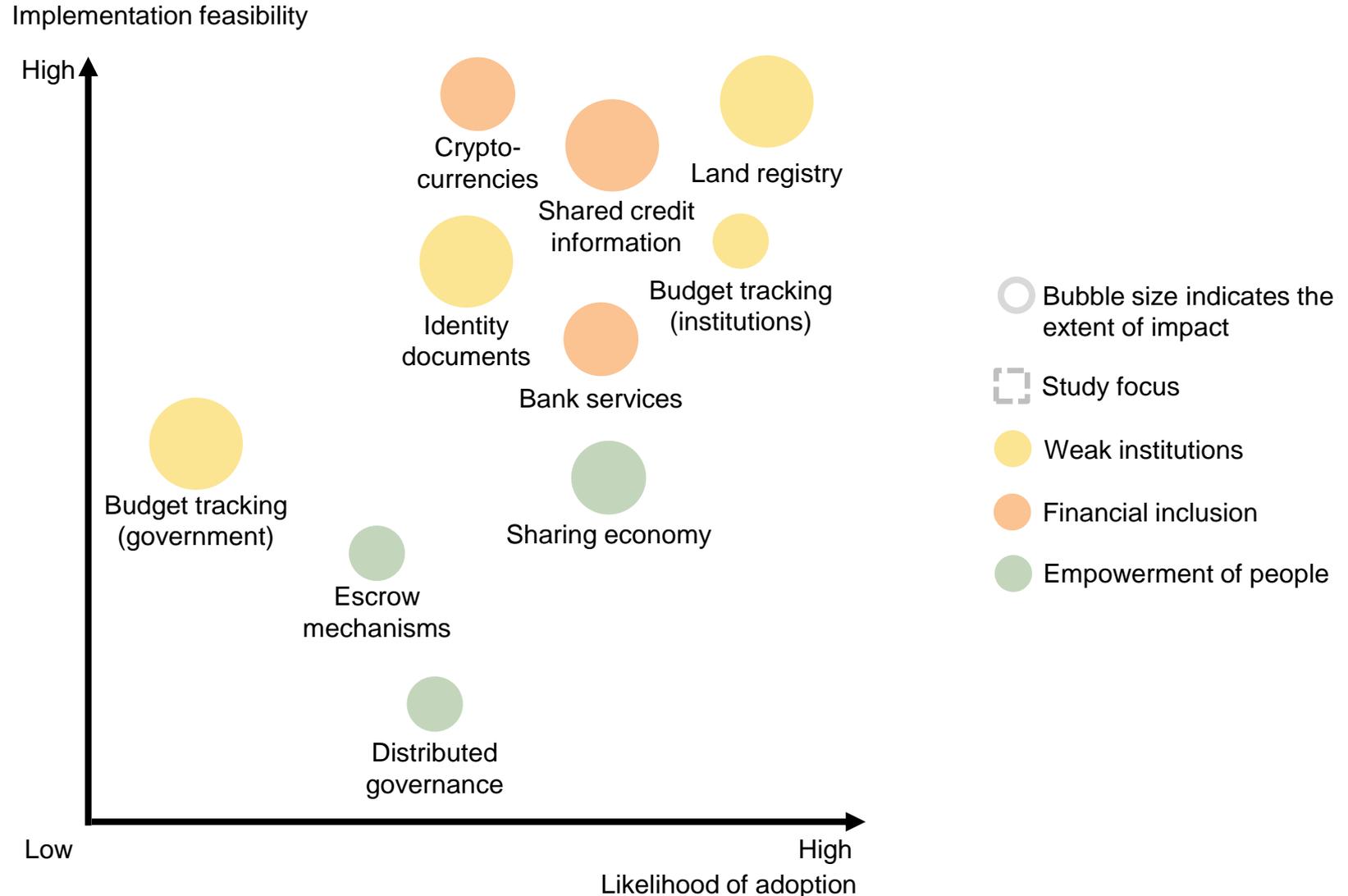
Impact channel

- Economic exchange in the domestic economy and with family members abroad is advanced
- People can protect themselves from unstable currencies and inflation

Barriers

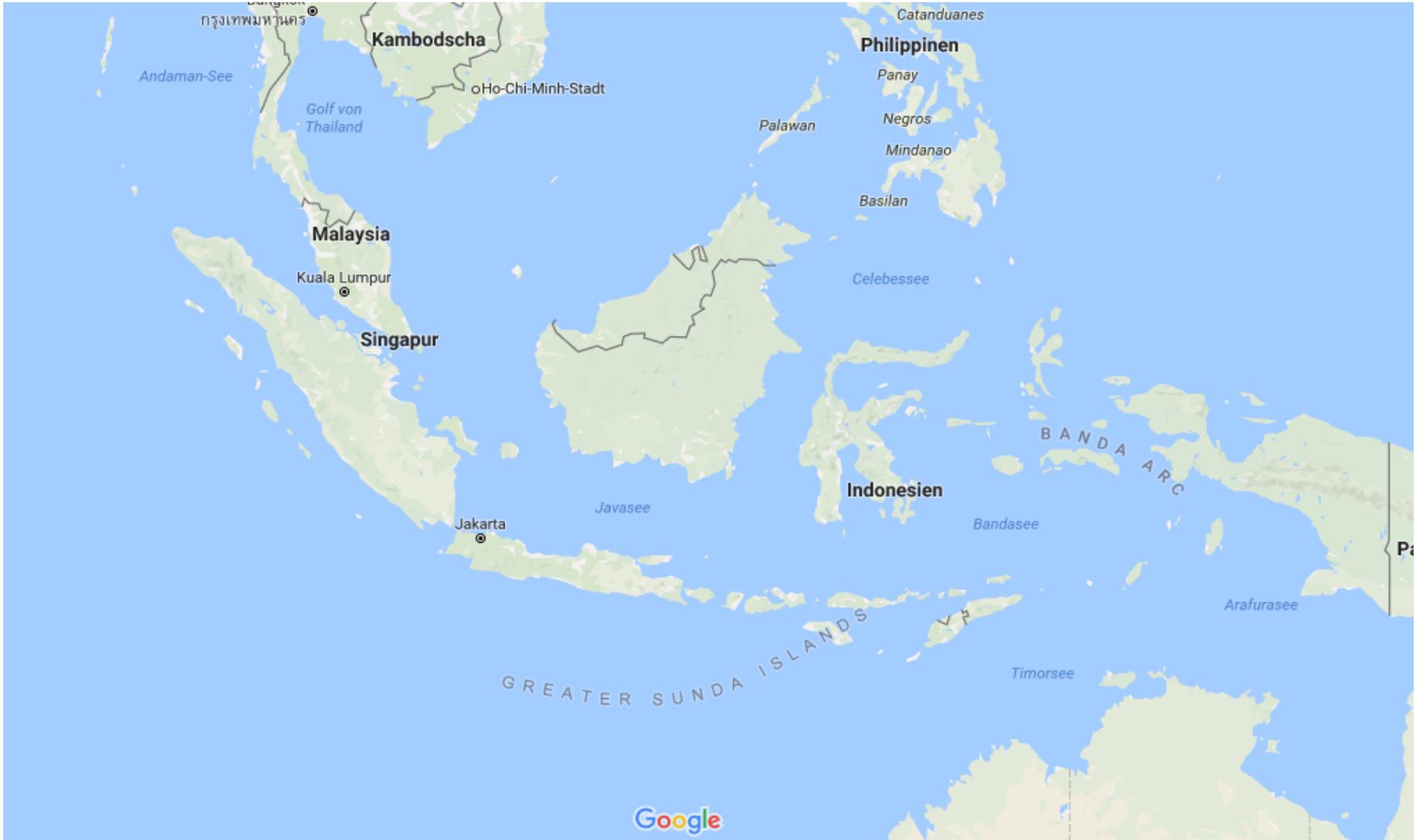
- Illiquid exchanges impede adoption of crypto currencies
- The infrastructure especially in rural areas is a barrier

Impact assessment of potential solutions



Two projects

Payment in developing and emerging countries



- Students: 40000
- Setting up a Tarumanagara Blockchain Center



UNTAR
Universitas Tarumanagara



P2D
UNIVERSITAS
TARUMANAGARA
JAKARTA

PENGUMUMAN CALON DEKAN

Ekonomi (FE), Hukum (FH), Teknik (FT), dan Kedokteran (FK)
Universitas Tarumanagara (Untar)
Periode 2017-2021.
(Klik disini)

 untarac.id  Untar Jakarta  @UntarJakarta  @untarjakarta

The UNTAR Coin is an Ethereum-based token currency that can be used within Tarumanagara campus as a means of payment.



An easy-to-use online exchange will provide the possibility to exchange Indonesian rupiahs (IDR) to UNTAR Coins (UTR) with a 1:1 exchange rate. In the same fashion UTR can be exchanged to IDR by simply sending the money to a smart contract.



Register: Maps an email address to a wallet



Transfer: Transfer of tokens between two wallets, can be used for payment or direct transfer



ExchangeIDR: This contract will use an oracle to determine payment of IDR and then pay the equivalent amount of UTR to the specified wallet.

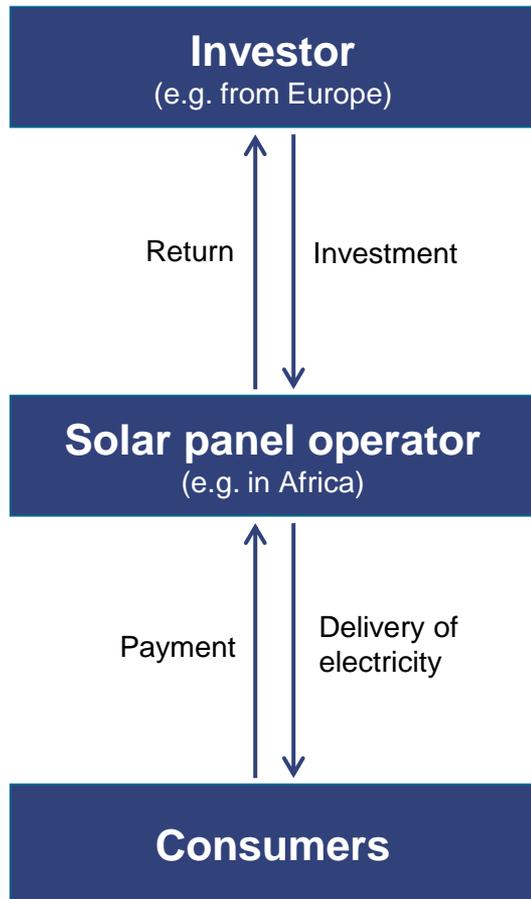


ExchangeUTR: This contract will exchange sent UTR to IDR by initiating a payment to the associated bank account in the according amount.

Solar infrastructure in developing and emerging countries

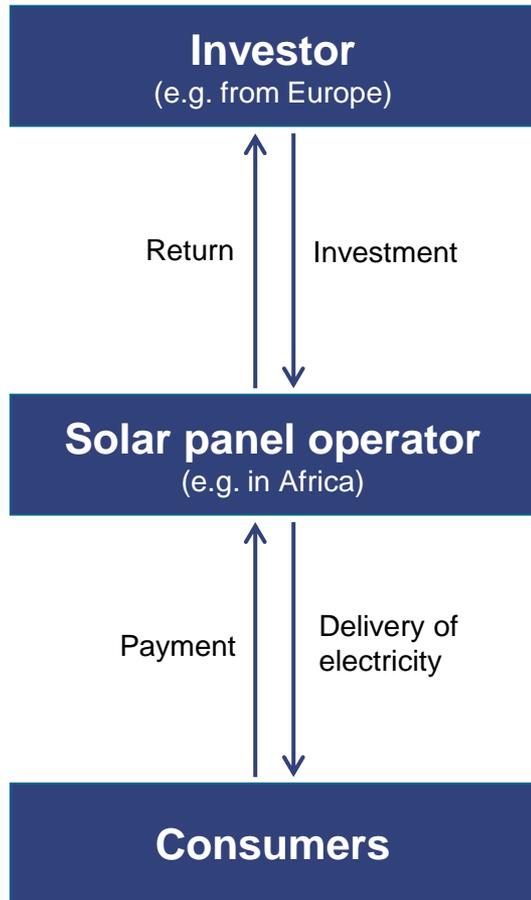
Current investment model

Currently, only large investments are possible



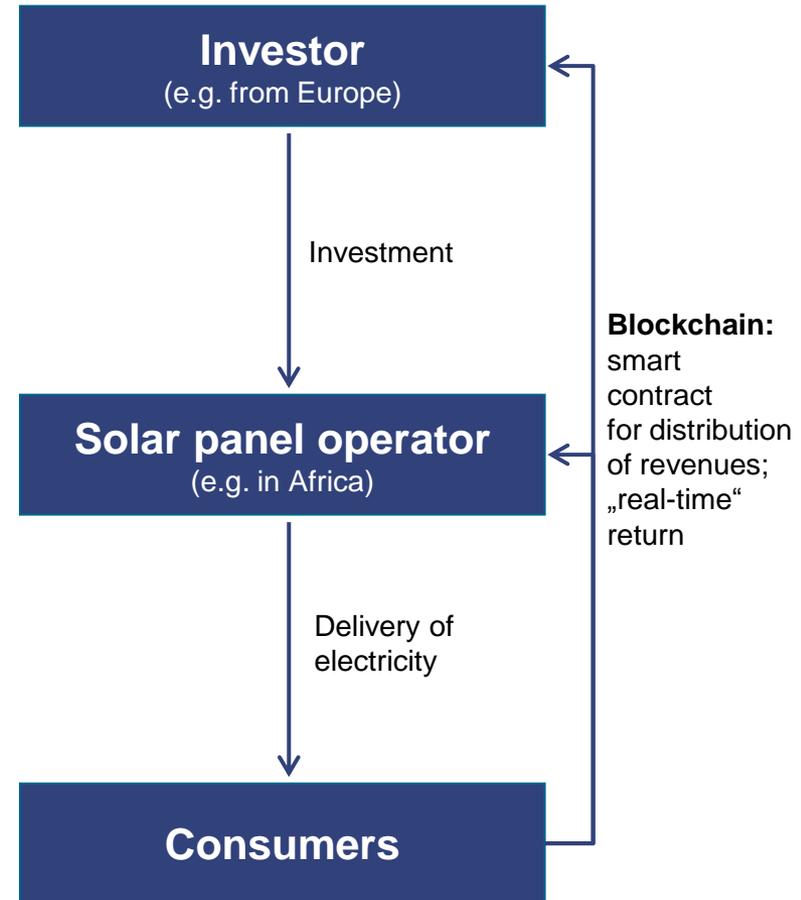
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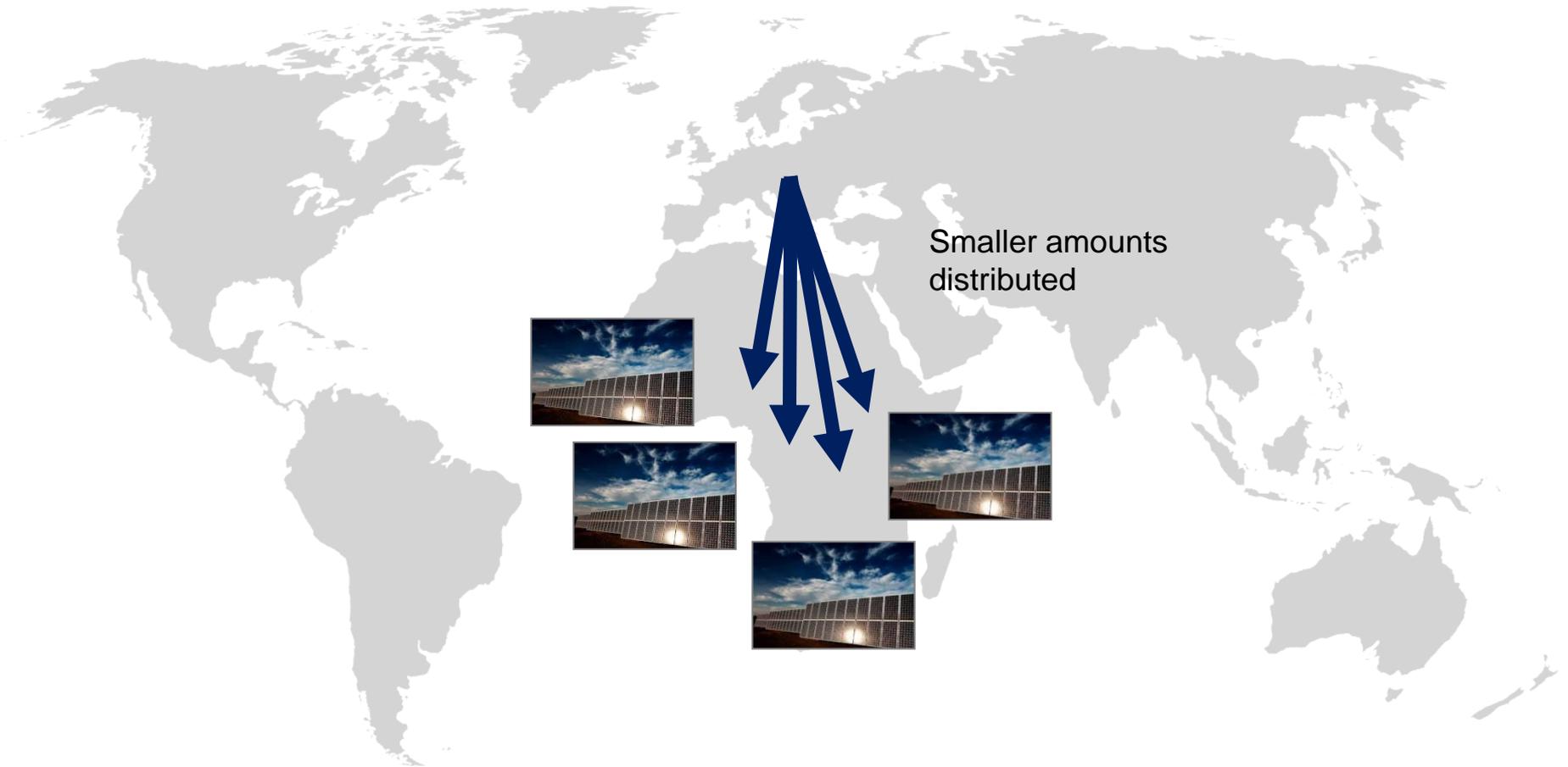
Blockchain-based model

Transparency and micro payments allow less risk and smaller scale

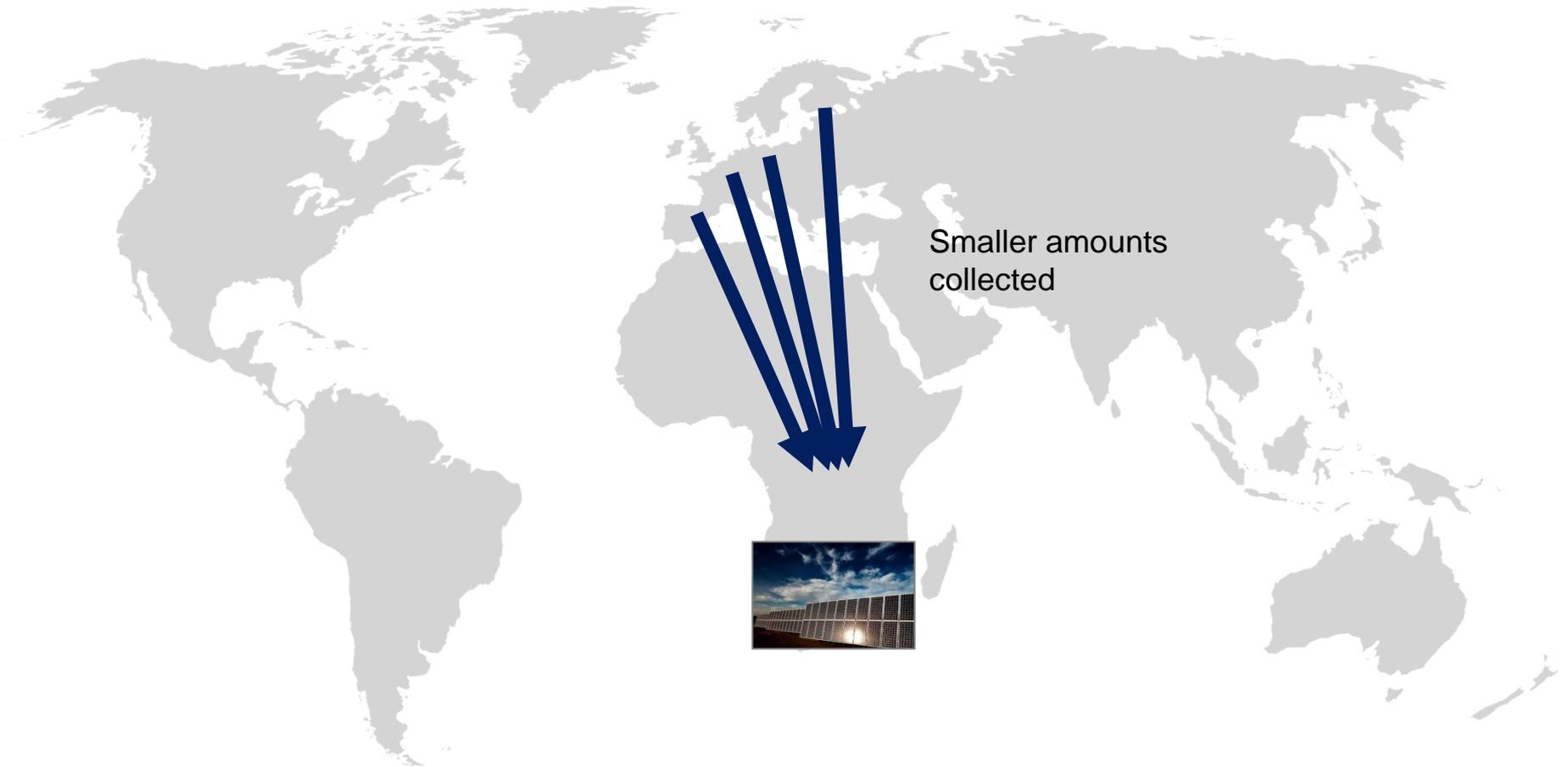




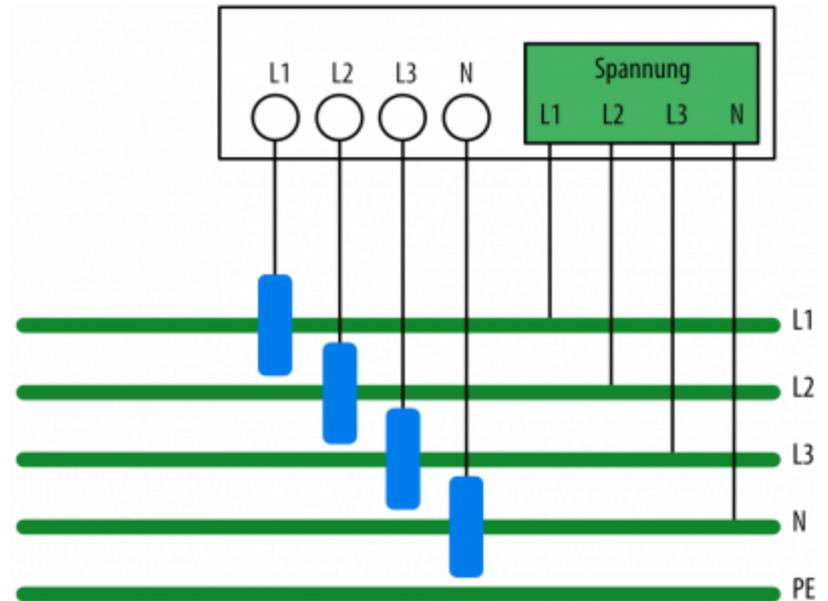
Blockchain-based investment model to distribute smaller amounts



Blockchain-based investment model to „collect“ larger amounts



Blockchain-based smart meter





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