

Blockchain for Sustainable Development: The most promising use cases



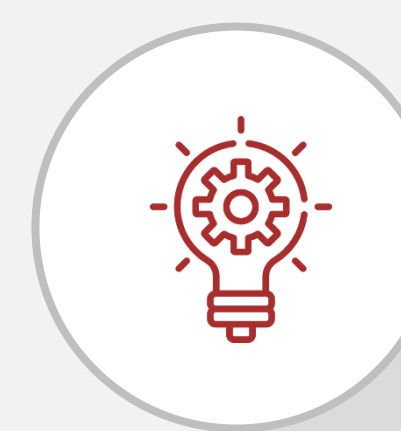
Supply Chains

- Added value**
 - Tamper proof certification information
 - Efficiency gains due to real-time traceability
 - Inclusion of the producer in the value chain/more information symmetries
- Towards the SDGs**
 - Increased income of producers
 - Increased responsibility of multinationals
 - Transparency in terms of externalities, e.g., overfishing, deforestation
- Challenges**
 - End point vulnerabilities regarding quality of data
 - Scalability of DLT platforms



Financial Services

- Added value**
 - Bypassing of trusted third parties and inclusion in global economy
 - Lower transaction costs and reduced settlement time
 - More efficient cash assistance
- Towards the SDGs**
 - Empower the unbanked, especially women
 - Alternative sources of liquidity for SMEs
 - Reduction of transaction fees for remittances below 3 per cent
- Challenges**
 - Cryptocurrencies circumvent current governance frameworks
 - Volatility of digital assets
 - Low smartphone/internet penetration
 - Consumer protection



Energy Markets

- Added value**
 - Increased resilience thanks to decentralized grids
 - Incentivization of renewables
 - Innovative financing models
- Towards the SDGs**
 - Energy access for remote communities
 - Inclusive peer-to-peer economy and new sources of revenue
 - Environmental friendly energy production
- Challenges**
 - Legacy regulation favouring centralized grid governance
 - Lack of interoperability and internet access



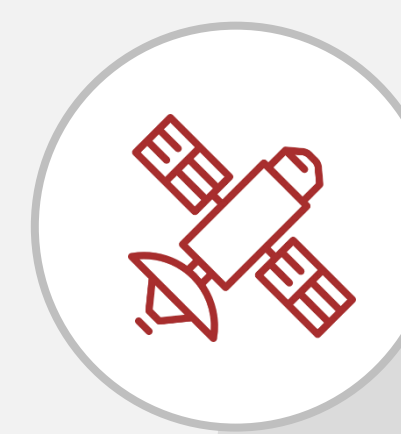
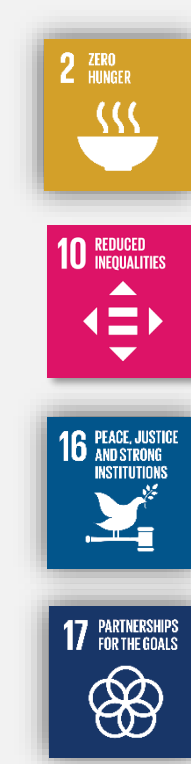
Education

- Added value**
 - Store education credentials securely and accessibly, preventing fraud
 - Bundling of education achievements
 - Capture lifelong learning activities
- Towards the SDGs**
 - Strengthen trust in educational institutions
 - Incentivize lifelong learning
 - Resilience of education credentials
- Challenges**
 - Dependence on secure and tamper proof digital identities
 - Buy in by respective institutions



Aid Delivery

- Added value**
 - Increased transparency
 - Disintermediating aid organizations
 - Self-executing social impact bonds
 - New charity crowdfunding models
- Towards the SDGs**
 - Aid effectiveness and efficiency
 - Mobilization of resources
- Challenges**
 - Last mile challenge: Barriers to adoption of crypto wallets
 - Limited scope of automatization due to limits to reliable impact monitoring data sources



Space Debris

- Added value**
 - Better space traffic management through Blockchain-based incentives
 - Multilateralization of space object registry
 - Digital UNOOSA treaty compliance
- Towards the SDGs**
 - Reduced operating cost through improved space traffic management
 - Inclusive global space governance for the benefit of emerging space nations
- Challenges**
 - Early stage concept: More maturity needed for insurance business models and incentive schemes
 - National interest vs. global governance



Digital Identity

- Added value**
 - Privacy and data minimization through self sovereign data management
 - Access to rights and public services
 - Reduction of identity fraud
- Towards the SDGs**
 - Empower individuals, and especially women, to access public services and lift themselves out of poverty
 - Prevention of human trafficking
- Challenges**
 - Digital literacy and internet access
 - Conflicting laws and regulations
 - Early stage: Low adoption and low governmental acceptance



E-Voting

- Added value**
 - Anonymous, verifiable and tamper-proof voting
 - Prevent false recording of votes
 - Lower costs of voting
- Towards the SDGs**
 - Contributes to stronger political institutions
 - Discourage or disable election fraud
- Challenges**
 - High cost of digital signature infrastructure roll out to all electorate
 - End point vulnerabilities
 - Early stage; better pilot with low-risk application like e-petitions



Public Registries

- Added value**
 - Safe storage and verification of ownership
 - Anti-corruption through decentralization
- Towards the SDGs**
 - Increase of trust in institutions through more transparency
 - Prevent the seizing of land that has always been a detriment to the poor
 - Enforcement of women's land rights
- Challenges**
 - Requires governmental bodies to relinquish some aspects of centralized control over registries
 - Data quality issues



Free Media

- Added value**
 - Novel financing models for journalism enabling independence through decentralization
 - New content publishing channels resilient to censorship
- Towards the SDGs**
 - Access to information
- Challenges**
 - Lawful takedown of content not feasible on immutable ledger
 - Early stage: Novel financing models need proof of concept



E-Health

- Added value**
 - Rights management: Patients control their own health data
 - Data marketplace rewards patients and enables research
 - Prevention of counterfeit drugs
- Towards the SDGs**
 - Availability of data for clinical research
 - Privacy for sensitive health data
 - Avoid health risks of counterfeit drugs
- Challenges**
 - Sensitive nature of health care data
 - Harmonization of data points is a key challenge for interoperability
 - Early stage: Potential for broad adoption untested



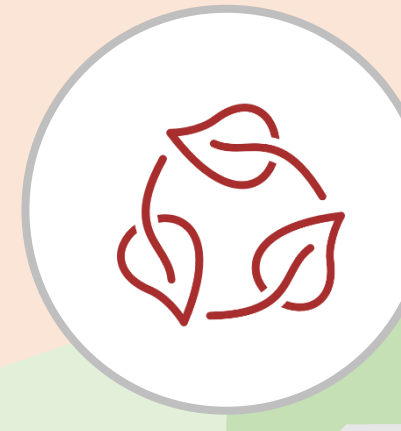
Alternative Governance

- Added value**
 - Prediction markets incentivizing evidence-based future-oriented policy making ("Futarchy")
- Towards the SDGs**
 - Better political outcomes
 - Inclusion of formerly excluded yet competent actors in governance decisions
- Challenges**
 - Requires governmental bodies to relinquish aspects of centralized control
 - Limitations to crowd intelligence
 - Early stage: Small scale low-stakes testing ground needed



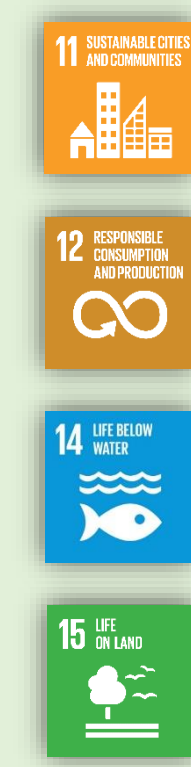
Climate Accountability

- Added value**
 - Reduce climate certification fraud
 - Administrative easing of international standard setting and enforcement
 - Supply chain traceability as enabler for e.g. carbon border tax
- Towards the SDGs**
 - Climate marketplace efficiency and international interoperability
 - Better targeting of incentives towards environmental friendly production/transportation methods
- Challenges**
 - Limits to measurement / limited data accuracy



Circular Economy

- Added value**
 - Product lifecycle traceability as enabler for financial incentives for circular economy
- Towards the SDGs**
 - Incentivizing sustainable waste management (in cities)
 - Support the reduction of maritime pollution through tokenizing the removal of debris and waste
- Challenges**
 - Early stage / requires high adoption rates or compulsory use to become effective



Water Governance

- Added value**
 - Sensor data based incentive disbursements
 - Automated enforcement of transboundary (multilateral) water treaties
- Towards the SDGs**
 - Compliance to multilateral water treaties
 - Efficiency gains through automatized water governance
- Challenges**
 - Limits to sensor data / fraud

