Harnessing Blockchain for Sustainable Development: Prospects and Challenges

Hanna Halaburda

(New York University)

What blockchain technologies can help with

- A well-designed blockchain can bring information from multiple sources into one place

- Time-stamping of documents

- Tracking the transfers of digitally encoded assets

- Having a ledger run by multiple parties who would need to agree on any changes makes corruption more difficult

Potential uses for harnessing sustainable development

- Improvements in supply chains and transportation networks efficiency
  - Access to food (SDG 2: Zero Hunger)
  - Access to water (SDG 6: Water and Sanitation for all)
  - Efficiency in tracing international aid (SDG 17: Partnerships for the goals)

- Improvement in creating and storing documents
  - Identity (SDG 16: Strong Institutions, SDG 1: No Poverty)
  - Education Certificates and Diplomas (SDG 4: Quality Education)

The last mile… and the first mile challenges

The FIRST mile

- Blockchain does not guarantee the quality of entered information
    - E.g., traces containers, not food
    - Needs elaborate and reliable sensors (could be expensive)
    - Reliable entity entering the information:
        - "In many countries, the poor do not have birth certificates…"
        - "UNICEF's Project Connect is a blockchain-based platform that sims to map every school in the world and their connectivity to help people understand what regions are lacking basic connectivity, then eliminate the digital divide" (SDG 10: Reduced Inequalities)

The LAST mile

- Blockchain does not dictate the use of the records
  - E.g. if property rights are not enforced (land registries)
  - "Secure money transfer among women so that they can have access and control over their own money, independent of the male members of their family" (SDG 5: Gender Equality)
    - Blockchain does not guarantee the woman's control over her account!

Blockchain **does not** solve the problem of bad or insufficient institutions

Between the first and the last mile

- Blockchain is a technology that enables, but does not guarantee properties as immutability or decentralization

- Blockchain is only as good as its incentives and its participants

- It makes corruption more difficult, but not impossible

- The overall cost of maintaining a blockchain ledger is higher than a centralized database

Good uses of blockchain

- When you **trust** the information entered

- When you **trust** that the records will be used appropriately

- But you **don't trust sufficiently** the entity who is *holding* the records (or there is no trusted entity to hold the records)