Blockchain for Agriculture

A solution looking for a problem?

Food and Agriculture Organization of the United Nations

Distributed Ledger Technologies (Blockchain) Ecosystem and Decentralization | 3-6 Sept 2018

Agriculture and the SDGs

SUSTAINABLE DEVELOPMENT GOALS

One in nine people on the planet still suffer from hunger

Every year, the world loses or waste about a third of the food it produces

Women make up almost half the agricultural labour force in developing countries, but they own less land and lack access to resources.
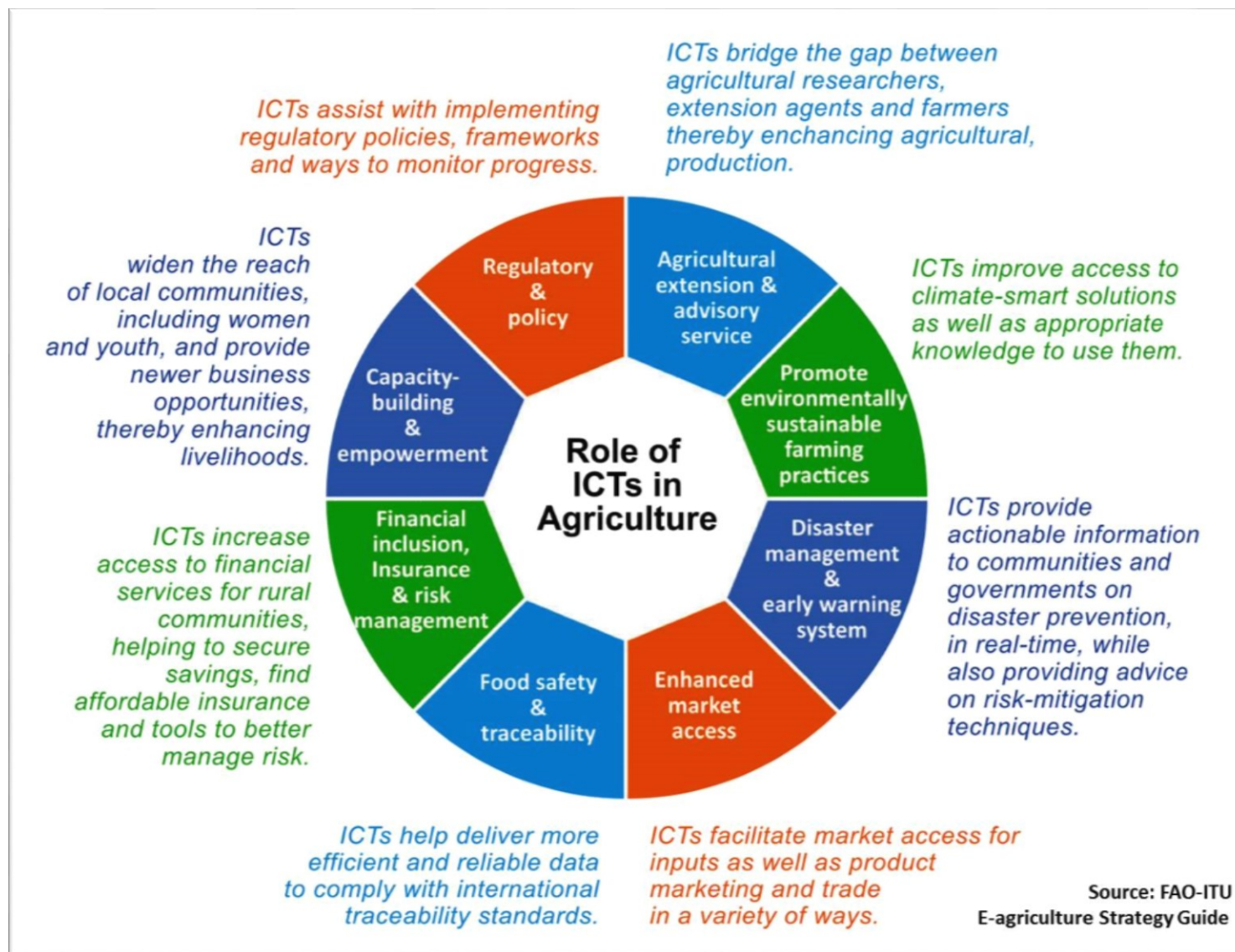
Average age of farmers is increasing

There is more than enough food produced today to feed everyone in the world, yet close to 800 million are chronically hungry.

A third of farmland is degraded, up to 75 percent of crop genetic diversity has been lost and 22 percent of animal breeds are at risk.

Role of ICT in agriculture

ICTs assist with implementing regulatory policies, frameworks and ways to monitor progress.

ICTs bridge the gap between agricultural researchers, extension agents and farmers thereby enchancing agricultural, production.

ICTs widen the reach of local communities, including women and youth, and provide newer business opportunities, thereby enhancing livelihoods.

ICTs improve access to climate-smart solutions as well as appropriate knowledge to use them.

ICTs increase access to financial services for rural communities, helping to secure savings, find affordable insurance and tools to better manage risk.

ICTs provide actionable information to communities and governments on disaster prevention, in real-time, while also providing advice on risk-mitigation techniques.

ICTs help deliver more efficient and reliable data to comply with international traceability standards.

ICTs facilitate market access for inputs as well as product marketing and trade in a variety of ways.

Regulatory & policy

Agricultural extension & advisory service

Capacity-building & empowerment

Promote environmentally sustainable farming practices

Financial inclusion, Insurance & risk management

Disaster management & early warning system

Food safety & traceability

Enhanced market access

Role of ICTs in Agriculture

Source: FAO-ITU
E-agriculture Strategy Guide

Blockchain the panacea!

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My wife and I recently got married and decided that neither of us would change our last names. Some people disagree with this approach, commonly critiquing with "what will you do with your children's last names?? How will they know they're a family?!" My solution: the blockchain

8:20 AM - 13 Aug 2018

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876   9.5K   56K

Blockchain initiatives in the UN

Distribute food assistance to refugees

Stores education records of children on a distributed ledger

To increase the efficiency of aid transfers

To reduce the cost of remittances

Help empower women and girls

Addressing key building blocks

Leadership and Governance · Strategy and Investment · Services and Applications · Infrastructure · Standards and Interoperability · Content, Knowledge Management and Sharing · Legislation, Policy and Compliance · Workforce and Capacity Development

Identifying required e-agriculture components

Design With the User · Understand the Existing Ecosystem · Design for Scale · Build for Sustainability · Be Data Driven · Use Open Standards, Open Data, Open Source, and Open Innovation · Reuse and Improve · Address Privacy & Security · Be Collaborative

https://digitalprinciples.org/

- Infrastructure
- Interoperability
- Reliable Data
- Data sharing/ privacy
- Policies & Regulations

- Digital Literacy
- Gender-Digital Divide
- Data Analytics
- Capacity Development
- ROI
- KYC! [agriculture]

Can blockchain improve governance of land tenure?

Current land administration challenges:

- 70% of the world's population does not have access to affordable land administration services

- Land sector is ranked 3rd most corrupt

- Property often represents people's greatest assets – challenges with digital

- Recreating land records after war or natural disasters is a challenge

Blockchain for food safety & traceability

- Asia-Pacific is the fastest growing market for food traceability. [Globally $14.1B by 2020]

- Specialized food requirements – halal, organic, etc.,

- Quality maintenances as well as incentivize producers for quality products & respect geographic indicators etc.,

- Farm-to-fork traceability – discourage unethical practices (ex: IUU fisheries, forced labor)

Blockchain for agricultural insurance

- Agriculture insurance is complex

- Micro insurance/credits, credit ratings

  - Smart contracts, reliable Oracles (ex: weather stations)

- With ecosystem of sensors, IoTs and connected networks, the payout time could be greatly reduced

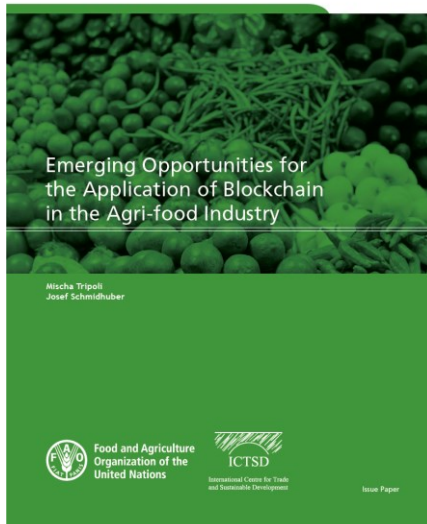- Will this lead to reduced cost of insurance for small-holder farmers?

Knowledge Products

http://www.fao.org/3/I8494EN/i8494en.pdf

http://www.fao.org/3/a-i6972e.pdf

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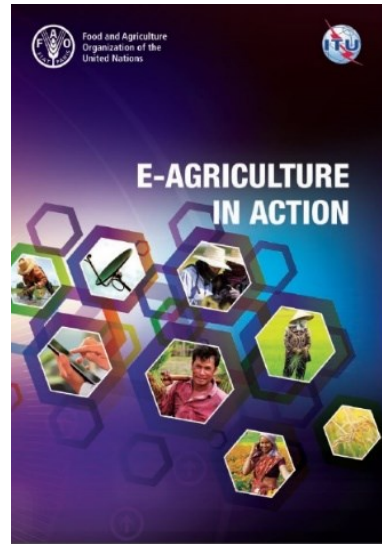
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Thank you

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