

Emerging STI developments with implications for SDGs : two cases from Africa

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Kenya's M-Kopa Brings power to Rural Africa

- Solar energy products that are both **accessible** and **affordable** to off-grid African homes
 - **Pay-as-you-go** model (spinoff from the famous M-PESA);
 - Founded in Nairobi, Kenya in 2011, launched in 2012
- **M-Kopa IV Solar System:**
 - 8-Watt Solar Panel
 - Control Unit
 - 2 LED bulbs
 - Rechargeable Radio
 - Rechargeable Flashlight
 - To **purchase** the system:
 - Deposit of 3,500 KES (~\$**35** USD)
 - Daily payment of 50 KES (~\$**0.43** USD) for a year
 - Total: 21,750 KES (~\$**192** USD) to own system



SDG friendly Attributes

- The product is very **low-risk**
 - "It's not a question of making them invest in some...different way to make money and taking all those risks. This is just saying, 'stop spending money on kerosene everyday and repurpose your spend for something better.'"
 - Also provides **instruction & education**
 - Call centers and customer service field agents throughout target consumer nations.
 - Over 1000 full-time staff members and 1,500 sales agents throughout East Africa.
 - Saves **money** while providing clean, **efficient** energy
 - **\$375 million** USD over the next 4 years
 - **62.5 million** hrs of kerosene-free lighting/month
 - **380,000** tonnes of CO2 emission reduced over the next 4 years
 - **500** systems/day
 - Hopes to sell **1 million** systems by 2018.
- * Now, Provides access to solar power technology to over 500,000 homes throughout nations like Kenya, Tanzania, Uganda and Ghana.

Pay-as-you-go model:

- Popularized by **mobile phones**
- Allows consumers to **acquire** and **purchase** a product while paying **small** amounts of money incrementally as needed
- **Without** having to make the full payment upfront
- Advantages:
 - No need for **credit** score
 - **No long-term** contract
 - Make **small, incremental** payments
 - **Pay-to-own**
- The **pay-as-you-go, pay-to-own** model allows for low-income families to afford light & electricity
- Benefits:
 - Allows for **microfinancing** & **budgeting**
 - Allows for payment to those **not creditworthy** or **not using banks**
- Mobile banking can introduce rural homeowners to a **billing relationship**

- Endorsed by US and East African Gov't
 - In a 2015 summit, President Obama recently praised the vibrant technology scene in Kenya
 - Kenyan President Uhuru Kenyatta has also praised the system for providing solar lighting to rural neighborhoods
- Backed by generous endowment
 - Acquired \$19 million USD in funding from Generation Investment Management
 - Secured \$80 million USD of committed financing from a lending syndicate led by Stanbic Bank.
- Awarded many accolades and recognitions
 - 2017 MIT's 50 Smartest Companies List
 - 2017 Global Cleantech 100
 - 2015 Zayed Future Energy Prize
 - 2013 FT/IFC Award for Technology in Sustainable Finance



Case 2

A new small-scale farming in Africa:
Syneco culture in Burkina Faso

Data as not new oil but new Soil:

Sony Experiment of Syneco-culture in Burkina Faso (synecology = community ecology)

- Sony experimented a small-scale farming, namely synecoculture, in semi-arid tropic in Burkina Faso.
- Synecoculture is based on highly biodiverse mixed polyculture of crops, including underutilized and neglected species,
- 3 NO = no-till, no-fertilizer, and no-chemical practices (but utilizes insects in soil)
- But identify best, optimal variety of plan by data and IT science
- Neither mono culture by mass production nor mechanization but labor intensive farming with higher productivity
- on the basis of general relationship between environmental condition, biodiversity, and productivity.
- These results are important in recovering biodiversity in both environment and food products lost by excessive exploitation of conventional agriculture.
- Could be expected to support sustainable food production, especially in arid tropics where desertification of arable land, poverty and malnutrition of smallholders form a vicious cycle upon conventional methodology.
- Bottleneck: financing need P-P-P

After 18 months of Synecoculture



Figure 1. Demonstration area of synecoculture after 18 months of installation (left, 7 Sep 2016, angle B). We have also preserved a control area in the neighboring land (right, 17



20 months after the installation of the synecoculture (left), at the beginning of the dry season. Other cultivation methods fade completely (right). Date: 2016/12/13, Angle: Z



20 months after the installation of synecoculture (back in the center), at the beginning of dry season. The synecoculture area remained green throughout the year with constant harvests. Date: 2016/12/13, Angle: Z

<https://youtu.be/-HIWs3qV6Zc>

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Synecological Farming for Mainstreaming Biodiversity in Smallholding Farms and Foods: Implication for Agriculture in India

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