ENR-Demos Workshop, Lusaka

SIGMA: Overview of main findings

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In this presentation

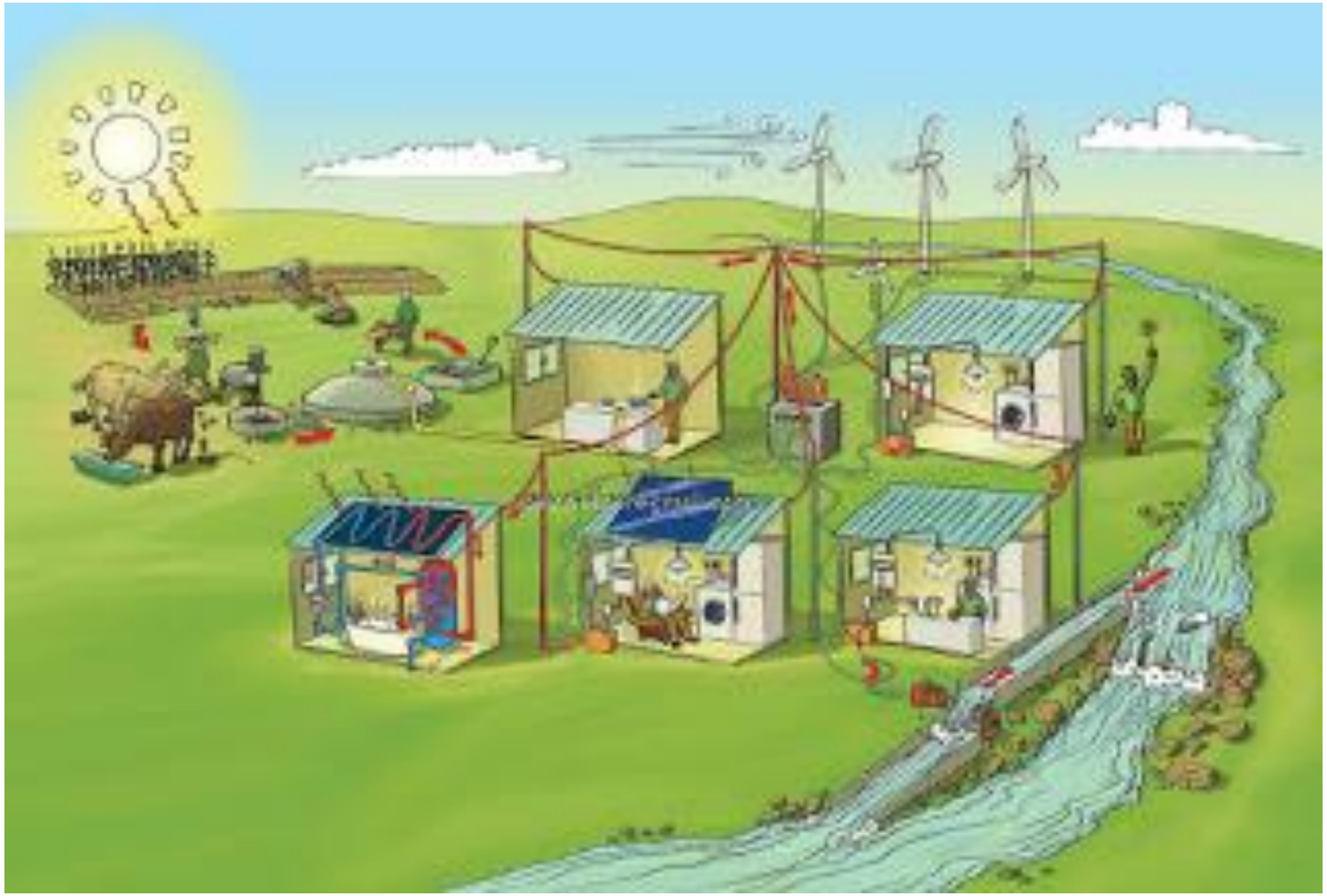
Overview

Main findings

Reflections on the future of mini-grids

Mini-grids

- Generates electricity locally and distributes via local mini-grids
- Houses, businesses and small-scale activities can be catered to
- More supply, less cost



Some examples from the case study countries

Project overview

SIGMA – Sustainability, Inclusiveness and Governance of Mini-grids in Africa

Started from March 2020; ending on 1st March 2024

Collaborative project

- UK teams – DMU, Surrey, Sussex, IDS, OU and Huddersfield
- International teams – ECREEE, ICEED (Nigeria), CFIA –ISS (Kenya), TaTeDo (Tanzania) and a consultant from Senegal

Activities undertaken

Extensive review of literature

– outcome presented in a webinar on 4th February 2022

Mini-grid database– led by ECREEE, data on mini-grids was compiled from available sources

Framework for mini-grid performance and sustainability analysis –

- DEA framework
- Indicator based framework

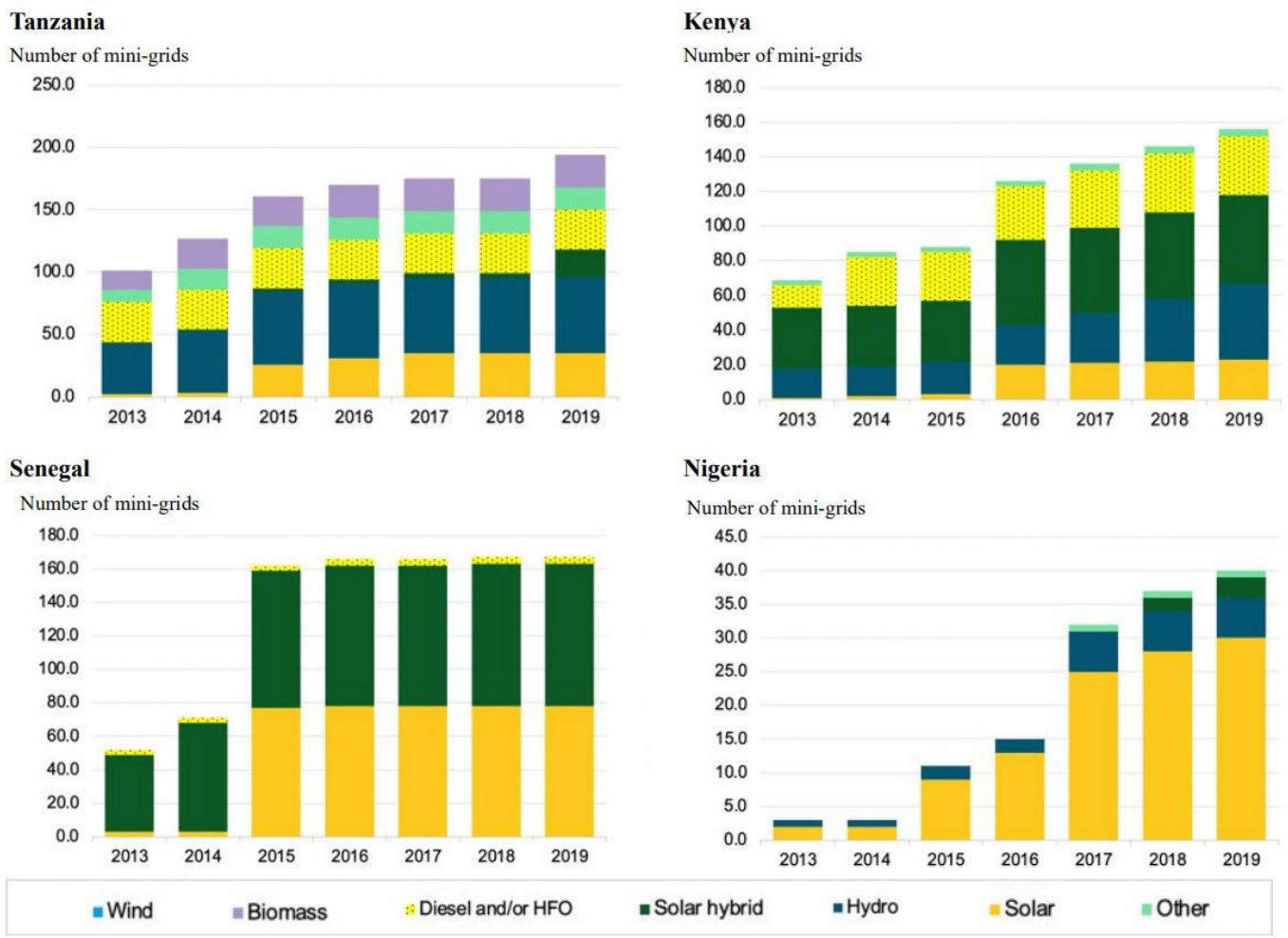
Fieldwork in Nigeria, Kenya, Tanzania and Senegal – stakeholder interviews, visits to mini-grids

Analysis of country cases

Collaboration, networking and capacity building

Dissemination

Mini-grids in SIGMA project countries



Business models

Nigeria

- Private sector dominates, with strong REA support
- Commercial viability of isolated mini-grids remains a challenge
- Productive use with agri-business linkage

Kenya

- Mainly public sector led with private sector providing engineering services
- High reliance on external financing
- Attempting alternative load stimulation options: anchor load, appliance financing, productive load

Tanzania

- Private sector dominates
  Anchor load model prevails
- Businesses using anchor load models are financially viable but very small power plants are less viable
- Affordable financing remains an issue

Senegal

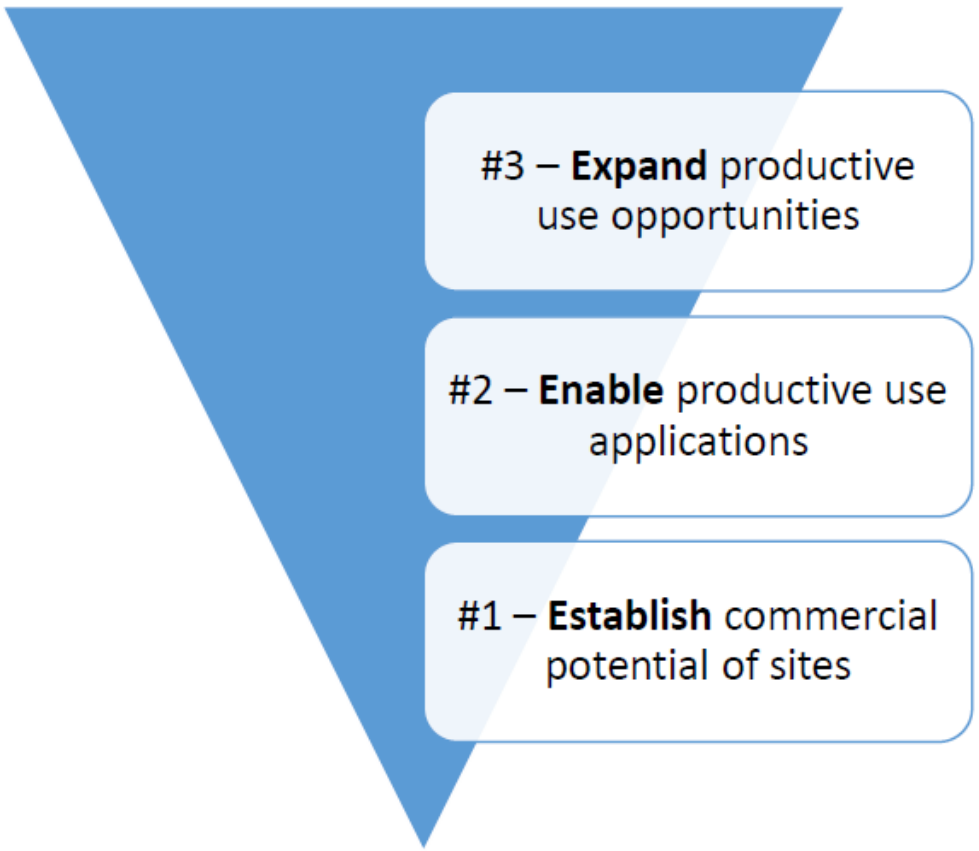
- Mainly public sector driven, with limited private participation
- DFIs played a significant role
- Tariff issues prevail

Beneficiaries

- Domestic users: Lighting, small appliances, entertainment and communication
- Productive use: small businesses, forward and backward linkages with agriculture
- Powering social institutions: schools, health centres, religious centres, and community centres

- Local communities are often excluded from decision-making
- Local knowledge of energy matters is a hindrance to community participation
- Opportunity for reframing the inclusiveness and sustainability agenda

Redefining inclusiveness



Increasing commercial viability

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Demand-side subsidies

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Increased affordability

Drivers and barriers to mini-grids in the region

- Drivers
  - Energy for All ambitions – SDG 7
  - Global climate change initiatives towards a low-carbon transition
  - Rapidly falling technology costs, particularly for solar PV
  - New opportunities to support sustainable development through mini-grids
- Barriers
  - Lack of technical skills and capabilities
  - Access to affordable finance by local developers
  - Cost recovery and tariff issues for remote locations
  - Local politics create financial risks
  - Regulation on participation is underdeveloped
  - Lack of alignment between national regulation and local needs

Institutional arrangements

Nigeria

- Mini-grid regulation offers a predictable environment
- The portfolio approach may unlock the larger investment potential

Kenya

- Strong regulatory environment – supported by act and regulations
- Lack of transparency, coordination issues and local politics are issues

Tanzania

- Comprehensive regulatory framework
- Suitable tariff policies

Senegal

- Early mover in this area with strong regulation and policies
- But attracted little private investment
- Complex overlapping structure

Insights from the project

Limited technical sustainability – short-term focus;

Long-term perspective missing;

Inclusiveness not well observed;

Wider socio-economic benefits have not reached all equally;

Business viability is hardly demonstrated;

User satisfaction remains questionable.

Thank you for your attention

Any queries?

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