

United Nations Conference on Trade and Development

**9<sup>th</sup> MULTI-YEAR EXPERT MEETING ON COMMODITIES AND DEVELOPMENT**

**12-13 October 2017, Geneva**

**Investing in sustainable energy access in the development of commodity value chains**

By

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The views expressed are those of the author and do not necessarily reflect the views of UNCTAD.

# Investing in sustainable energy access in the development of commodity value chains

Presentation by the Common Fund for Commodities

# The Common Fund for Commodities

- International financial institution
- Headquarters: Amsterdam, The Netherlands
- Secretariat established in 1989
- 101 member countries, 9 institutional members
- Technical competence in commodity sector:
  - 25 years of project experience
  - > 520 projects
  - Total cost over USD 770 million



**MAKING  
COMMODITIES  
WORK FOR  
EVERYONE**

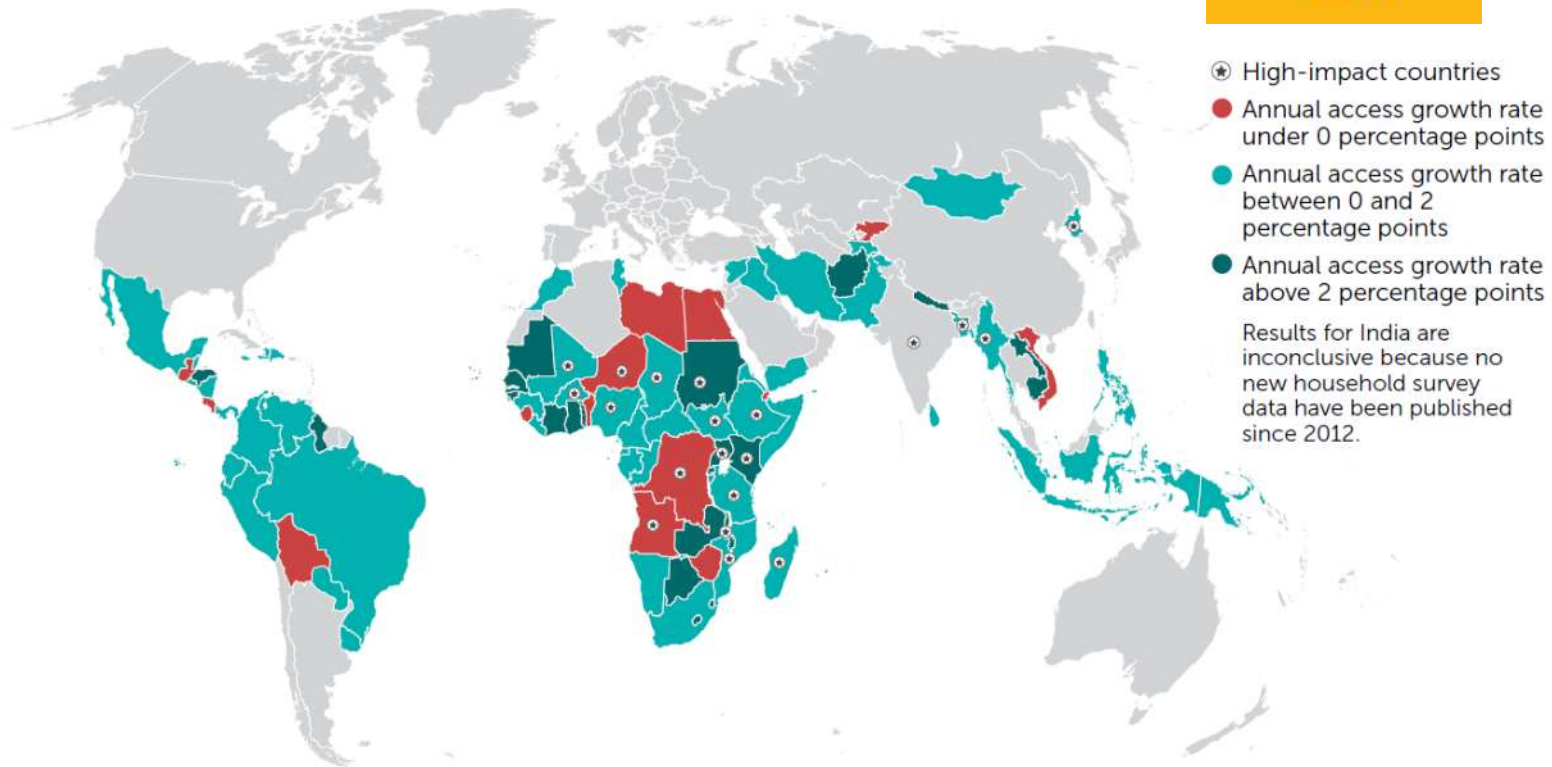
# Commodity dependence

- Countries with commodity endowment rely on commodities as instrument to participate in global trade
- Reliance on commodities makes countries vulnerable to market volatility, governance issues, environmental degradation, poor investment climate etc.
- To make countries less vulnerable need investment in diversification of production and trade
- Economic sustainability - re-circulating the resources generated from commodities to other sectors

# Energy access as key to unlock development



Figure 1: Speed of progress toward electrification goal 2012-14



- ★ High-impact countries
- Annual access growth rate under 0 percentage points
- Annual access growth rate between 0 and 2 percentage points
- Annual access growth rate above 2 percentage points

Results for India are inconclusive because no new household survey data have been published since 2012.

Source: Global Tracking Framework (2017)

# Technology needs energy

- Juice manufacture project
- High efficiency, high added value
- Constrained mainly by energy access
- Grid not feasible, generator not economical
- Co-generation would be best



# Sustainable generation and storage of energy

- Sustainable vs renewable
- Any agriculture potential renewable source
- Energy as heat, gas or electricity
- Mineral commodities – important input to energy storage: lead, zinc, lithium

# Remote Area Power Supply pilots

- Tested in early 2000s
- High volume generating centre/grid charging gel batteries which are transported by motorbike 1/week to villages off-grid
- Sponsored by Lead and Zinc study group
- Suitable as emergency measure, not economical compared to solar
- Also tested with zinc-air fuel cells; potentially viable as solar storage but technology not ready



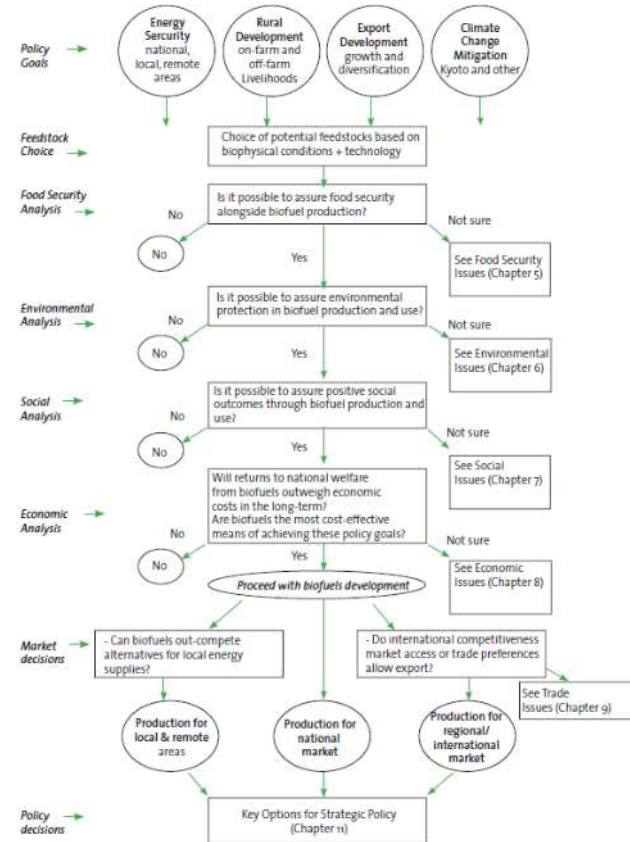
# Biofuels study

Biofuels: Strategic Choices for Commodity Dependent Developing Countries



Common Fund for Commodities

Decision tree for strategic national choices on biofuel development



# Biogas co-generation: Katani

- Sisal fibre production: 100,000 jobs
- Sisal fibre: 4% of leaf
- 25,000 MT fibre => 0.5mln MT waste
- Turn waste into energy feedstock
- 700kW potential in Katani
- 45-50 estates in Tanzania >500kW



# Katani project

- CFC financing USD1.5mln
- Technical services by UNIDO
- Collection, hydrolysis, digester, biogas storage and afterstorage built
- Pilot plant designed for 300 kW
- Power sisal production factory
- Supply local villages off-grid

# Learning from experience

- Technology modified to reduce water use
- Steel tanks require a lot of maintenance, lagoon storage for biogas preferred if land available
- Electrical generator a weak link
- Can install biogas pipes for nearby villages
- Finding investment/financing still challenging because need long term commitment

# Learning from experience



# Biogas co-generation from coffee waste

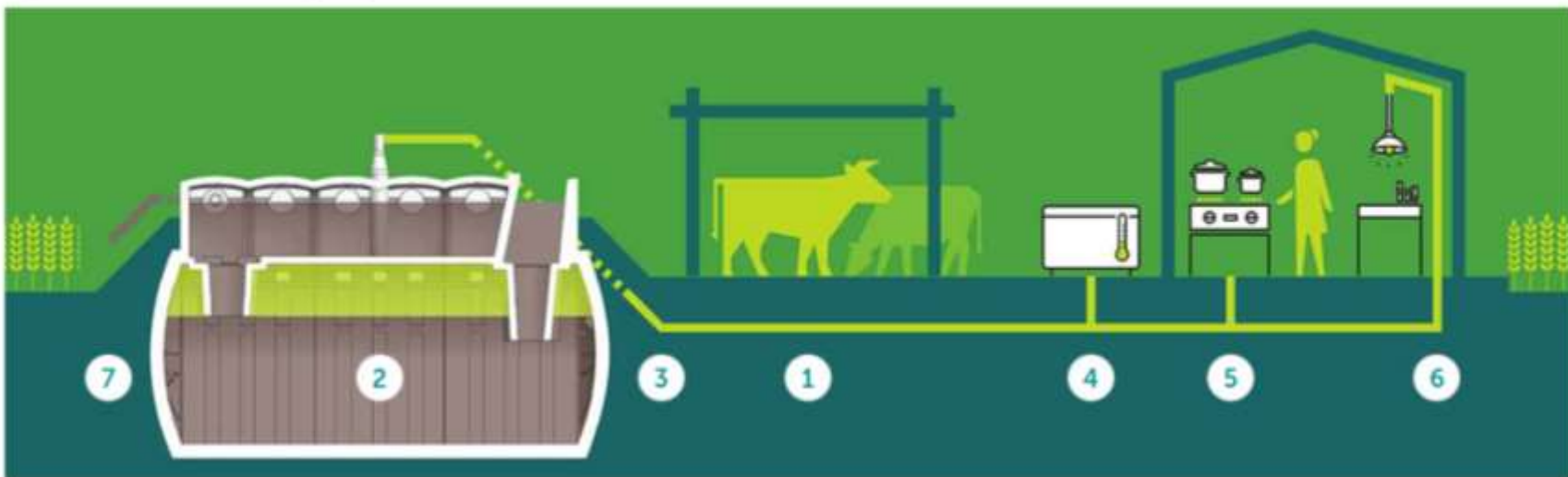
- Biodigester
- Small scale
- Cooking gas
- Replication proved difficult: economics, regulations



# Biogas for household use: SimGas

- A small scale solution without electricity conversion
- Off-grid farms with three or more cows
- Gas for cooking, gas lamp
- Slurry used as fertilizer
- USD250/year saving energy cost
- Biodigester, virtually maintenance free
- Installation cost recovered in 2 years

# SimGas biogas system



**1 Manure from livestock**  
Each day a farmer feeds the digester with manure from livestock and water.

**2 Anaerobic digestion**  
Inside the digester, micro-organisms work symbiotically to convert the manure into biogas and slurry through the process of anaerobic digestion.

**3 Piping**  
Biogas flows through piping from the digester to the farmer's house, where the pipe is connected to a cookstove and other biogas auxiliaries.

**4 Milk chiller**  
Biogas can be used to power off-grid milk chillers to keep milk fresh.

**5 Cook stove**  
Biogas stoves allow farmers to cook their meals using a clean fuel.

**6 Biogas lamp**  
Biogas can fuel gas lamps used for both task and ambient lighting.

**7 Organic fertilizer**  
Slurry that has been fully digested exits the system onto to the farmer's land where it is used as an organic fertilizer.

Source: SimGas



# Milk chilling with biogas

- Side application of biogas from waste
- Suitable for small-scale farm
- Use any source of heat via absorption cooling technology, well established
- Potentially investable, viability to be proven within real life commodity value chain



# What project investable

- Deriving value from commodity value chain
- Needs energy to operate the technology
- Can integrate energy generation into the value chain
- Economically viable e.g. by reducing energy costs, selling energy, reduction in carbon footprint, sustainability branding
- Clearly defined impact indicators linked to the SDG7

Open Call for Proposals – please apply by 30 Oct

# Thank you!

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**Powering commodity value chains with sustainable energy**

**Introduction**

Energy powers the world's economic engine and is essential to support the sustainable development and poverty eradication. Poor access to energy is hampering the progress of least developed countries and the poorest of these countries, such as health and education. It is essential to ensure that developing countries, a lack of reliable energy is often a limiting factor in the development of a competitive, sustainable sector. Such is the importance of energy for the Sustainable Development Goals (SDGs). The global energy transition to low-carbon growth, social equity and sustainable connectivity.

In recent decades, access to energy has improved for many parts of the world. Between 2000 and 2020, for example, the number of people with access to electricity increased by 1.7 billion. But as the global population continues to rise, so too does the demand for affordable energy. Worldwide, around 1.3 billion people still have no access to electricity, and a further 3 billion only have access to unreliable electricity services. Meanwhile, 7 billion people continue to rely on polluting sources, such as wood and charcoal, for cooking and heating. The challenge is to ensure the increased demand for electricity and other clean energy services can be met in a clean, secure, affordable and sustainable way.

**CFC** common fund for commodities **KIT** Royal Tropical Institute of the Netherlands

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