Introducing Integrated Food Energy Systems and their challenges for small-scale bioenergy development

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Outline

- The background: FAO's work on bioenergy
- Introducing IFES
- Opportunities
- Challenges for the implementation of small-scale IFES
- Conclusions

The background: FAO's work on bioenergy

- For many years: Rural Energy, with an emphasis on biomass energy
- 2006 – 2008: Emphasis on liquid biofuels for transport, leading to SOFA 2008 report
- FAO's current work on bioenergy:
  - Address the risks and opportunities related to large-scale liquid biofuel production
  - Promote small-scale bioenergy development

Integrated Food Energy Systems (IFES)

- While the food versus energy issue remains highly controversial, food production and feedstock cultivation for bioenergy generation **are not necessarily mutually exclusive**.

- How?
  By **combining food and energy production simultaneously**;

- Mitigating risks to food security

- Addressing opportunities:
  - Liquid biofuels for transport: Include farmers via contract farming, work with cooperatives
  - Alternate concept for rural energy provision

Integrated Food Energy Systems (IFES)

- IFES is a farming system model designed to integrate, intensify, and thus increase the **simultaneous production of food and energy** through the sustainable use of biomass; achieved in two ways:

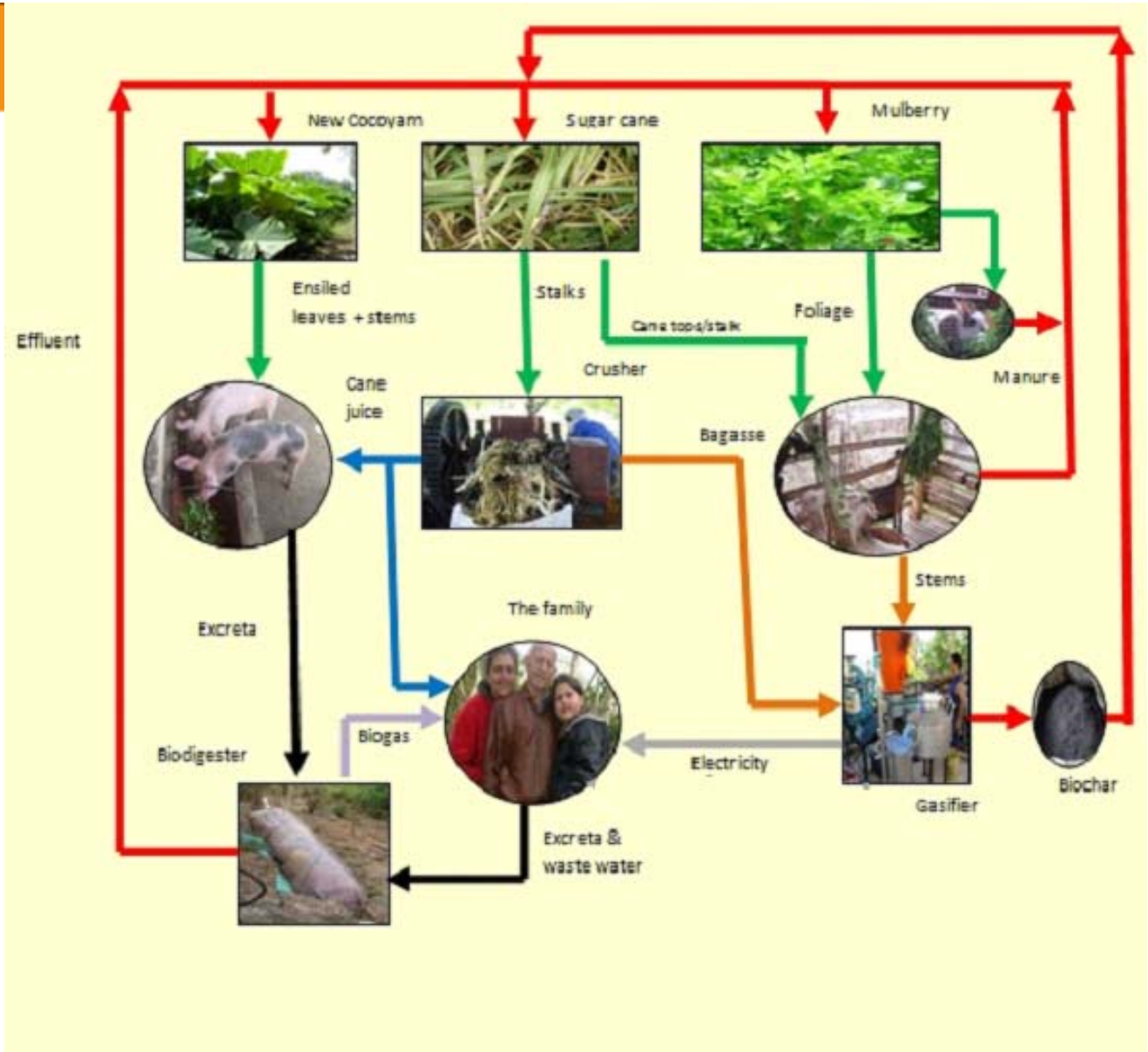
1. By combining the production of food and fuel feedstock on the same land (e.g. intercropping, agroforestry or agropastoral systems).

2. Or by using the by-products/residues of one production system as base for the other; i.e. **'Closed loop' or 'zero waste' systems**

1. Intercropping

Intercropping of Cassava and peanut

2. Closed-loop system



An example of an Integrated Food Energy Systems - La Finca Ecológica (UTA TOSOLY) en Socorro, Colombia. Source: http://www.utafoundation.org/TOSOLY_090909.htm

Benefits & Opportunities

- Efficient use of resources – "Zero waste" (Energy Efficiency)
- Mitigation of risks to food security
- Sustainable energy production off-grid
- Climate change adaptation and mitigation

Do these systems actually work in practice?

Challenges for the implementation of small-scale IFES

- the technological complexity of the system
- the lack of skilled staff a functioning technical support services
- the lack of awareness
- the lack of financial means to install and maintain the IFES system
- land tenure uncertainties

Conclusions

- IFES adresses **food security**, improves **energy efficiency** and contributes to the **adaptation to and mitigation of Climate Change.**

- Several challenges for implementation exist, especially on the small-scale in the developing world.

- FAO´s role: addressing the knowledge gap and to identify factors that lead to success or failure of small-scale IFES

  → Technical Consultation in June 2010

THANK YOU!

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