



**Ministry of
Technology and
Science**

TECHNOLOGY ASSEMENT ON ENERGY AND AGRICULTURE

MoTS – UNCTAD NATIONAL STEERING COMMITTEE MEETING

**PRESENTATION - BIOGAS TECHNOLOGY ASSESSMENT IN
ZAMBIA FINAL REPORT**

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Technology Assessment (TA) in the Energy Sector in Zambia

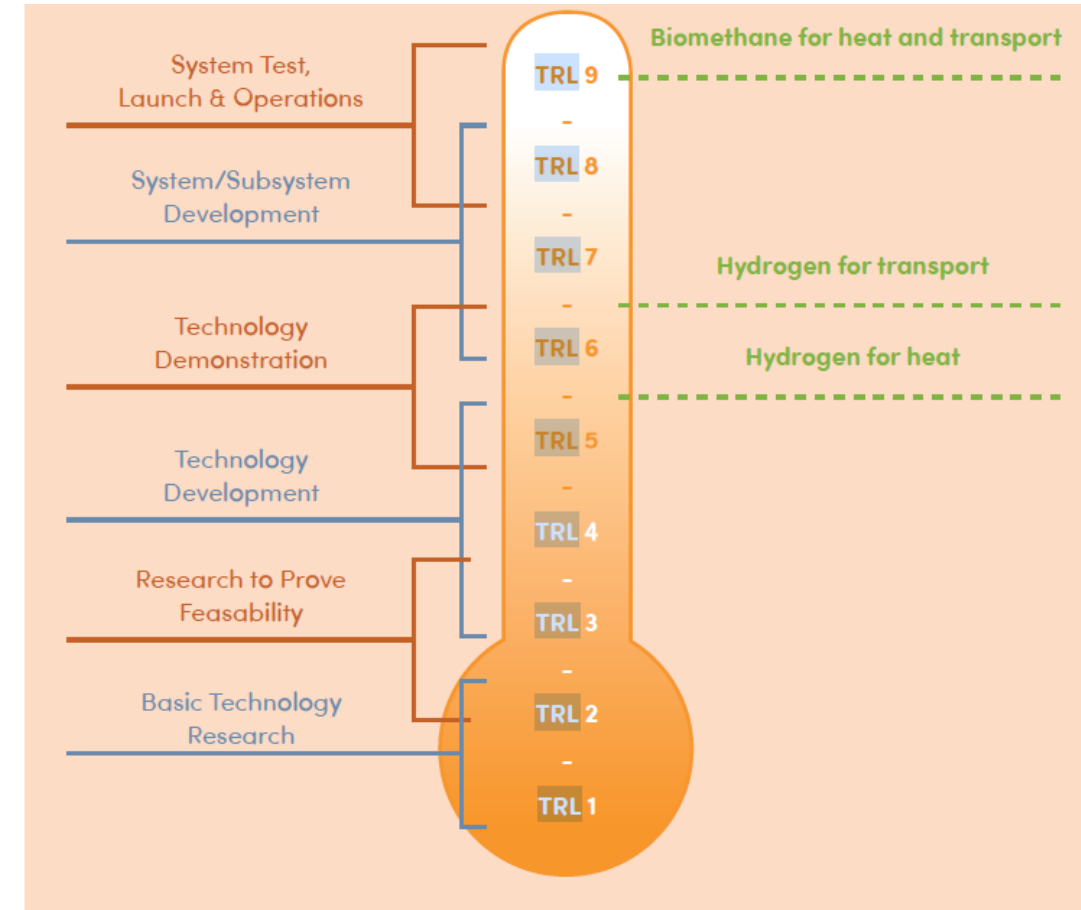
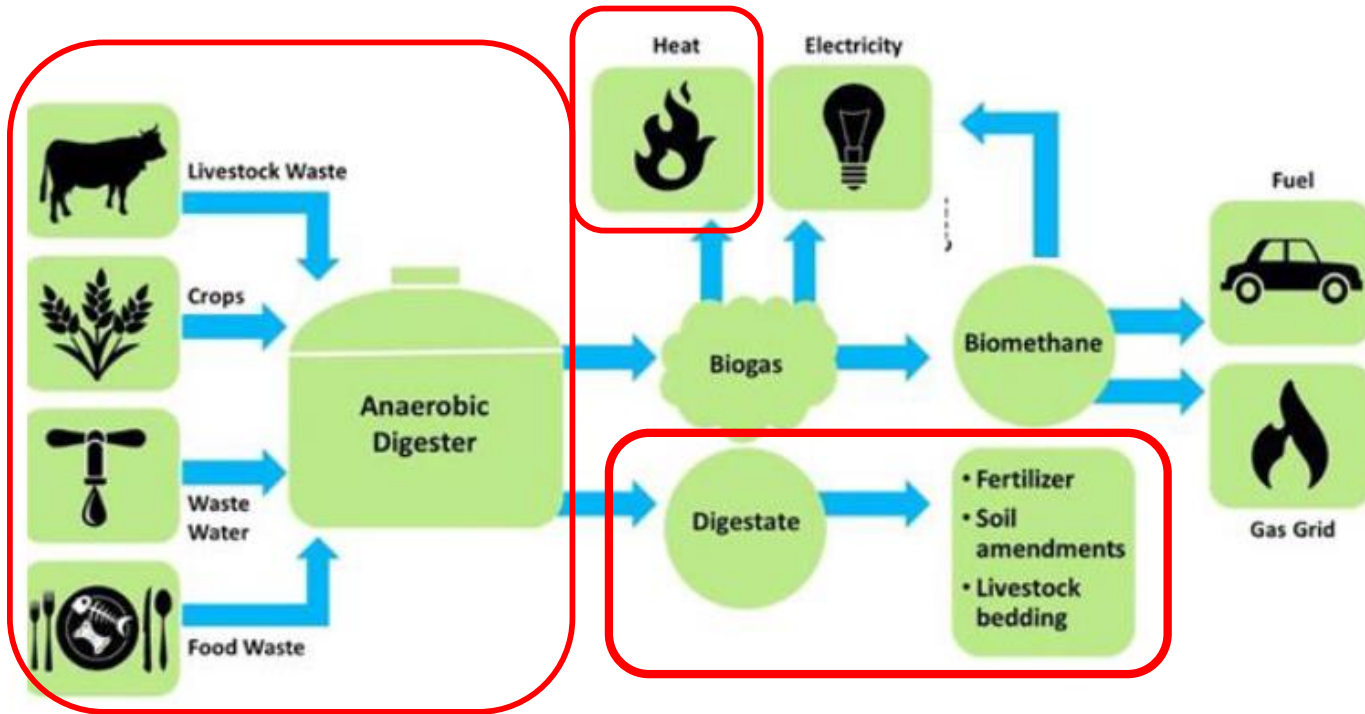
Objective

- The objective of this project is to **strengthen capacities of national STI policymakers and other stakeholders in selected developing countries in Africa in designing and implementing policies that support the learning, diffusion and adoption of technologies in the energy and agricultural sectors**

Intended outcomes

- **Shared understanding among** policy makers and other stakeholders of participating countries, of the implications for their STI policies of rapid technological changes in the energy and agriculture sectors;
- **Improved capacity** of policy makers to design and implement technological capabilities upgrading strategies and policies in the selected sector

Biogas Technology overview



Biogas: energy – agriculture nexus

Biogas TRLs

Beneficial Aspects of Biogas Technology

Renewable Energy Generation:

Biogas production from organic waste provides a renewable energy source that can replace fossil fuels for cooking, heating, electricity generation, and transportation, thereby reducing reliance on non-renewable energy sources and mitigating greenhouse gas emissions.

Waste Management: Biogas technology provides a sustainable solution for managing organic waste, such as agricultural residues, animal manure, and food waste. It helps divert organic waste, where it would otherwise generate methane and contribute to greenhouse gases. The sludge makes good organic fertilizer.

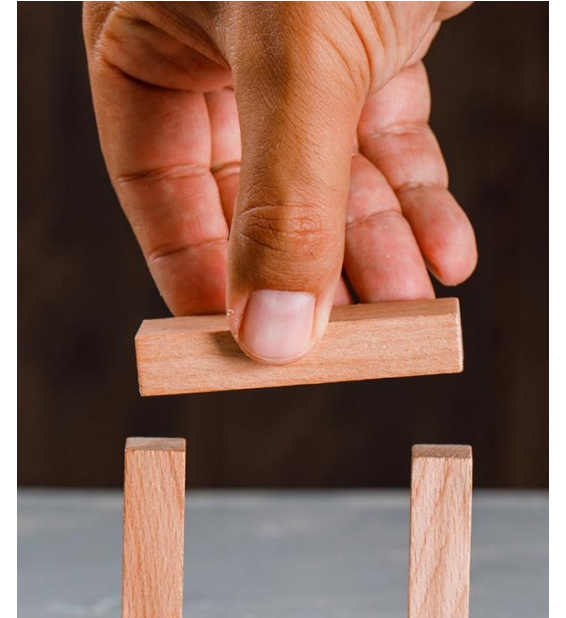
Methane Emission

Reduction: By capturing methane, a potent greenhouse gas emitted from organic waste decomposition, biogas technology helps mitigate climate change by reducing methane emissions into the atmosphere.

Biogas technology offers a multifaceted solution to energy, environmental, and socioeconomic challenges, making it a promising and sustainable energy source for the future.

Technology Assessment (TA) in the Energy Sector in Zambia

- Step 1: Governance and steering
 - **Identification of National Project Sponsor:** Relevant Ministry identified as the national project sponsor
 - **Preliminary Discussions with UNCTAD:** Initial consultations and discussions with UNCTAD on the national TA project
 - **Formation of Steering Committee and Expert Group:** Establishment of a steering committee and an expert group to oversee and implement the TA process.



Technology Assessment (TA) in the Energy Sector in Zambia

- Step 2: Priority setting
 - **Selection of Energy Technologies:** Expert group meeting to select energy technologies for assessment based on criteria
 - **Criteria for Technology Selection:** Criteria included resource availability, existing policy, practicality, and renewable nature of the technology
- Step 3: Framing project questions involved mapping of actors involved in of the technology
- Step 4: Setting project goals
- Step 5: Project implementation (Technology assessment report and implementation framework)



Structure of TA Report

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Accelerating Biogas adoption and “upscaling”: Policy recommendations

- 1. Educational and Training Programs:** clear that knowledge and attitudes towards biogas in the general population remains poor
- 2. Research and Development Incentives:** R&D initiatives to enhance the use and adoption of the technology in Zambia
- 3. Financial Support Mechanisms:** setting up and installation of biogas systems had a high upfront cost to which small scale farmers and the rural population could not afford

- 4. Policy Framework for Feedstock management:** addressing issues such as waste management, agricultural residues, and energy crops.
- 5. Grid Connection Policies:** Formulating policies that enable the integration of biogas systems into the national energy grid, allowing for the sale of excess biogas-generated electricity

Accelerating Biogas adoption: Summary of Recommendations

- 6. Community Engagement and Awareness:** Promote community engagement and awareness programs on the benefits of biogas technology
- 7. Quality Standards and certification:** establish quality standards and certification processes for biogas systems and components through relevant ministries and regulators
- 8. Incentives for Agricultural Sector:** encouraging integration of biogas systems in the agricultural process would lead to a higher adoption of biogas systems.

- 9. Capacity Building for Government Agencies:** government institutions may not be fully equipped with information related to biogas especially around the regulation and promotion of the technology
- 10. Inclusion of Women, Youth and Marginalized Groups:** create an inclusive and supportive environment for the adoption of biogas among women, youth, and marginalized groups, fostering sustainable development, gender equality, and social equity

Conclusion

Technology assessment can play a vital role in Zambia in guiding the development, implementation, and management of biogas energy projects, ensuring their sustainability, reliability, and contribution to energy security and environmental conservation



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