



UNIDO and IISc Collaboration

EGM on Biomass Gasification Technologies

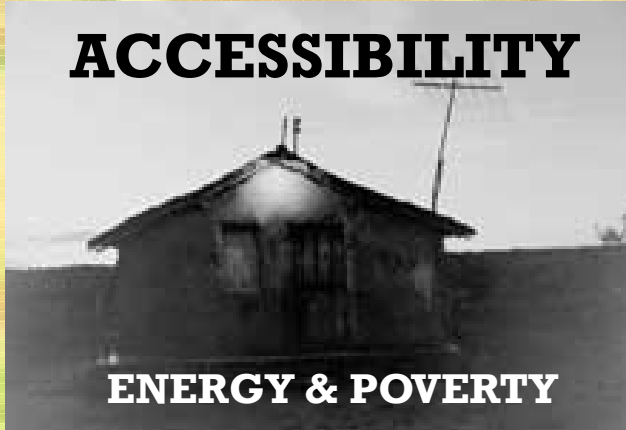
Bangalore, India

**14-16 December
2005**

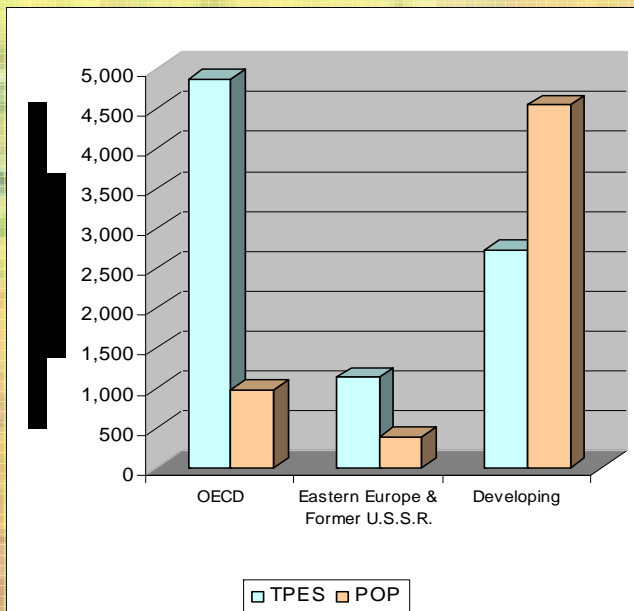


Key Issues in Energy Sector

ACCESSIBILITY



ENERGY & POVERTY



- **2 billion people, particularly in rural areas, are without energy services;**
- **Inefficient uses of energy resources and technologies;**
- **Energy and environmental issues are closely linked; and**
- **Clean energy technologies including renewable energy sources are critical**

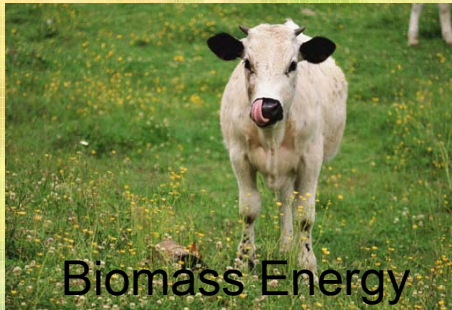


Renewable Energy Technologies (RET) and Millennium Development Goals



- **MDG 1 – Eradicate/reduce extreme poverty – i.e. through productive use activities such as RET based pumping water for drinking and irrigation.**
- **MDG 2 - Achieve universal primary education - i.e. RET based ICT systems, reducing time spent on gathering fuel and cooking etc.**
- **MDG 3 - Promote gender equality and empower women – i.e. RET based increased opportunities for women and girl child.**
- **MDG 7 - Ensuring environmental sustainability i.e. use of cleaner technologies & RET based on/off grid power generation.**

UNIDO, Renewable Energy and Productive Use



WHAT IS NEEDED?

A Programmatic Approach that is

- **Easy to replicate,**
- **Demonstrates the economic and technical viability of selected energy generation systems**
- **Based on locally available renewable sources; and**
- **Builds on linking energy services with productive use activities.**

Solar Energy



UNIDO's Activities and Experience

UNIDO's core mandate is to develop the productive capacity of developing countries in manufacturing through technology transfer and investment promotion.

In its approach to renewable energy technologies, UNIDO brings this expertise to the developing countries in terms of enhanced local manufacturing capacities for sustainable rural energy generation, and transmission systems

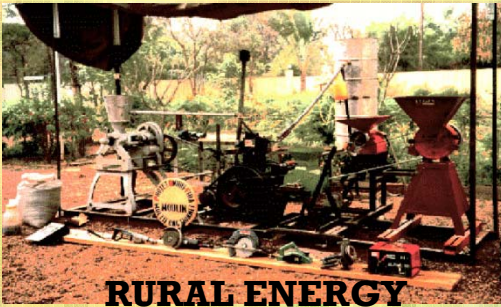
UNIDO and Focus Areas

UNIDO's involvement in the Sustainable Energy Issues

- Access to Energy Services
- Rural Energy for Productive Use,
- Renewable Energy Technologies,
- Energy Efficiency Issues
- Kyoto Protocol – Opportunities and Challenges



UNIDO Energy Programme – Focus Areas



RURAL ENERGY

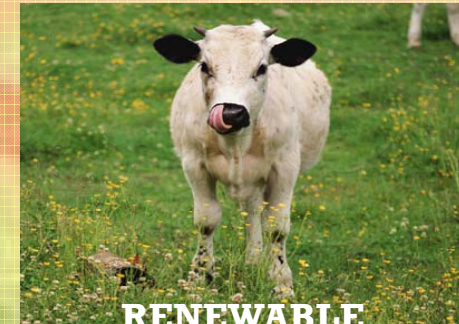
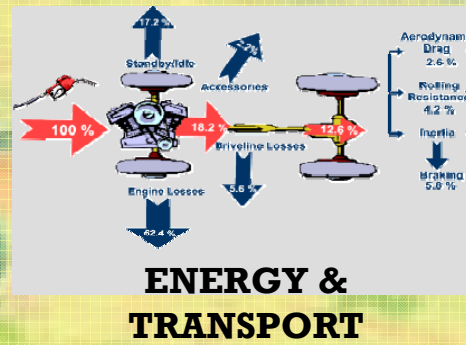
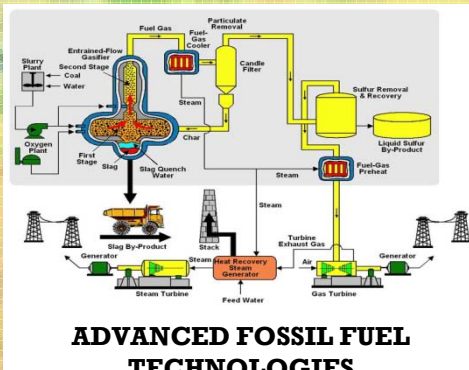


ACCESSIBILITY

ENERGY & POVERTY



ENERGY EFFICIENCY



RENEWABLE ENERGY

UNIDO's Response to Renewable Energy Issues

Three Key Elements in UNIDO's Approach

- **Facilitation of access to Information**
- **Technology Transfer**
- **Productive use and employment generation**

Through

- **Demonstration projects – social, technical and economic viability**
- **Creating sustainable local enterprises that can deliver energy services**
- **Identifying income generation activities**

UNIDO, Renewable Energy and Productive Use

In the process,

- **Investment costs of renewable energy technologies are reduced;**
- **Sustainability increased through better maintenance and operations;**
- **Local manufacturing capacities enhanced; and**
- **New jobs and income are created in the rural areas.**



UNIDO's INTERVENTIONS IN ENERGY PROJECTS

- 1. Disseminating cleaner technologies**
- 2. Biomass for industrial energy**
- 3. Developing wind turbine manufacturing**
- 4. Energy saving in the glass industry**
- 5. Biogas from distillery waste**
- 6. Energy system modeling and formulation of energy policies**
- 7. Energy auditing and management**
- 8. Application of solar energy in rural development**
- 9. Energy conservation in small-scale industries**
- 10. Rational use of energy saving technologies**
- 11. Renewable based mini grids linked with productive use activities**
- 12. Renewable based ICT systems for economic development**
- 13. Renewable energy entrepreneurship development programme**

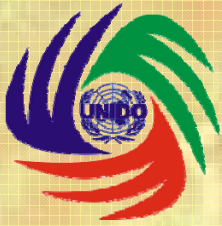


EGM on Biomass Gasification Technologies

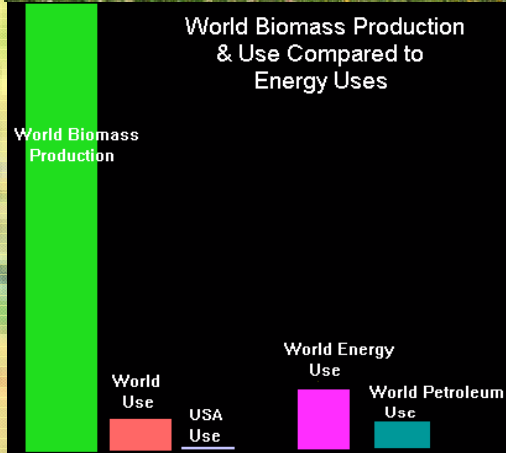
Present Focus on Biomass Gasification Technologies:

Why, Where, What and How?

- **Historical Perspective**
- **Resource Availability**
- **Location and Relevance Context**
- **Complexities of Issues and Actors**
- **Linkages with Local Economy**
- **Commercialization Efforts**



EGM on Biomass Gasification Technologies



STRENGTH AREAS

- Relevant for On/Off-grid Applications
- Decentralized Resource Availability
- Strong Linkages with Local Economy
- Local Manufacturing of End-use Components
- Multi-focal benefits and win win activities

Employment Potential (direct and indirect) – could be in the range of 20-25 million world wide



EGM on Biomass Gasification Technologies

MAIN PROBLEM AREAS:

- **Lack of Awareness about Potential**
- **Low Credibility about Technology**
- **Few Manufacturing Facilities**
- **Commercialization at Infancy**
- **Absence of Strong Institutional Networking and Financial Support**
- **Absence of Policy Environment**



EGM on Biomass Gasification Technologies

Genesis of Present EGM

- Biomass agenda scattered in many departments, areas and agencies in Africa and Latin / Central America.
- Involvement of UN, WB, Multi/bi-lateral and National Agencies in renewable energy projects where biomass gasification is emerging as possible intervention.
- Although technology has reached maturity and commercialization stage, its penetration is still low in both regions.
- Funding is available, but coordinated and focused efforts are missing.
- Urgent need for close cooperation, exchange of information and networking with key stakeholders.



UNIDO's Possible Role

- **Building Capacity of Institutions**
- **Providing Platform for Sharing Best Practices and Information Dissemination**
- **Providing Clarity of Objectives and Alignment of Common Agenda**
- **Supporting Policy Advocacy**
- **Catalyzing Public-Private partnerships and Networking**
- **Showcasing Successes and Facilitating Innovations and Pilot Demonstrations**

Large Energy Projects Developed by UNIDO

CUBA

Generation and Delivery of Renewable Energy Based Modern Energy Services in Cuba; the Case of Isla de la Juventud

Size - \$ 16.4 million (GEF Grant - \$ 5.337 million)

Objectives:

- **Setting up of 4 Business Models on biomass harnessing, biomass power generation, wind energy and process sheet for industry**
- **Building of national manufacturing capacity in renewable energy sector**
- **Setting up of a national revolving fund for promotion of RETs**
- **Strengthening policy planning mechanism**

Large Energy Projects Developed by UNIDO

ZAMBIA

Renewable Energy Based Electricity Generation for Isolated Mini-Grids

Total Size: \$ 7.8 million (GEF Grant \$ 3 million)

Objectives:

- **Setting up of three Mini Grids based on solar, biomass and small hydro systems**
- **Building national manufacturing capacity on RETs**
- **Setting up of a national level financial mechanism**
- **Strengthening policy planning mechanisms**

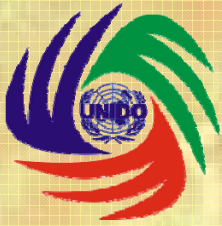
Collaborative Bio Energy Project in India

Industrial Applications of Biomass Energy Technologies in the Selected SMEs
(In Collaboration with IISc Bangalore)

Total Size: \$ 1.2 million

Objectives:

- **Demonstration Pilots in Energy Intensive SMEs**
- **Capacity Building and Training**
- **Strengthening of Policies and Networking of Institutions**
- **Setting up a Center of Excellence on Bio-energy Technologies**
- **Commercialization and Dissemination**



EGM on Biomass Gasification Technologies

STEPS FORWARD

- **Successful pilots and demo projects**
- **Information dissemination**
- **Reliable database needed for planning**
- **Networking and building partnerships**
- **Capacity building and training**
- **Single window approach required**
- **Advocacy support a must for level play field**
- **Commercialization linkages (addressing barriers)**
- **Curriculum in universities and engineering colleges**
- **Global / Regional coordination and networking**