# UNIDO's technical cooperation on biomass energy applications

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# UNIDO's Energy Programme: Mandate

## Providing Integrated Energy Solutions and Services for Sustainable Industrial Agenda: Promoting GREEN INDUSTRY

THEMATIC FOCUS

- Renewable Energy for Productive Uses
- Industrial Energy Efficiency
- Low Carbon, Low Emissions Technologies

# Global forum activities

## IEA-UNIDO CCS roadmap (2011)


## Vienna Energy Forum (28-30 May 2013)

VIENNA ENERGY FORUM 2013
One year after Rio+20: the energy future we want

UNIDO UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

Federal Ministry for Foreign Affairs

IIASA International Institute for Applied Systems Analysis

# Renewable and Rural Energy Unit's Objectives

Promote **modern renewable energy (RE) technologies** for productive use

Increase the **competitiveness** of industries by improving their energy efficiency and reducing operation costs

**Reduce GHG emissions** of industries by minimizing their fossil fuel dependencies with RE technologies

Enhance **modern energy access** in rural areas to support productive activities and employment opportunities

# RRE's Services and Stakeholders

## Key services

- TC/Technology demonstration
- Energy Policy Support
- Capacity Building
- Global Forum Activities
- Information Dissemination





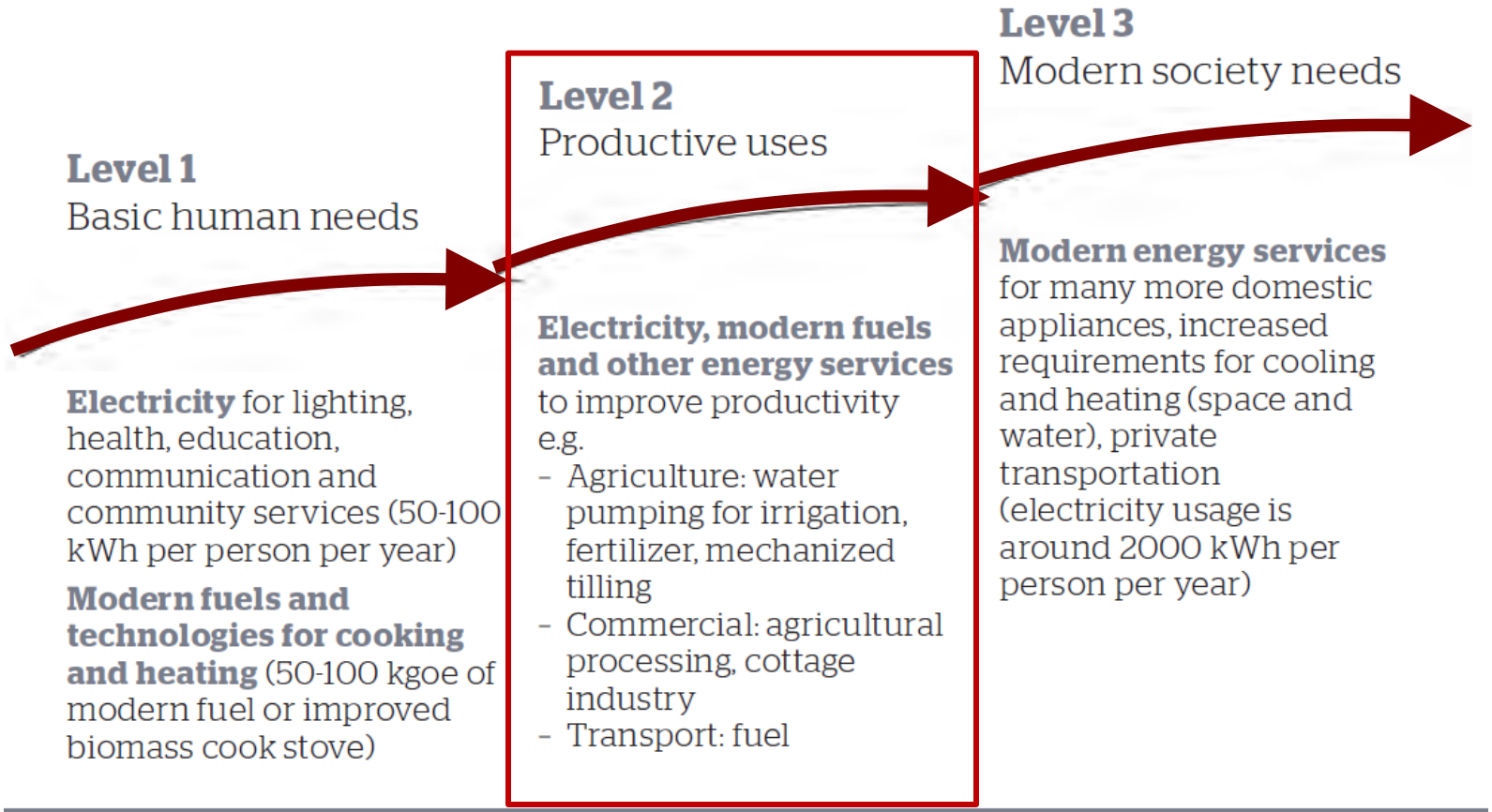



## Direct Stakeholders

- Governments
- Small & Medium Enterprises (SMEs) and Institutions involved in industrial production using renewable energy technologies
- Local communities

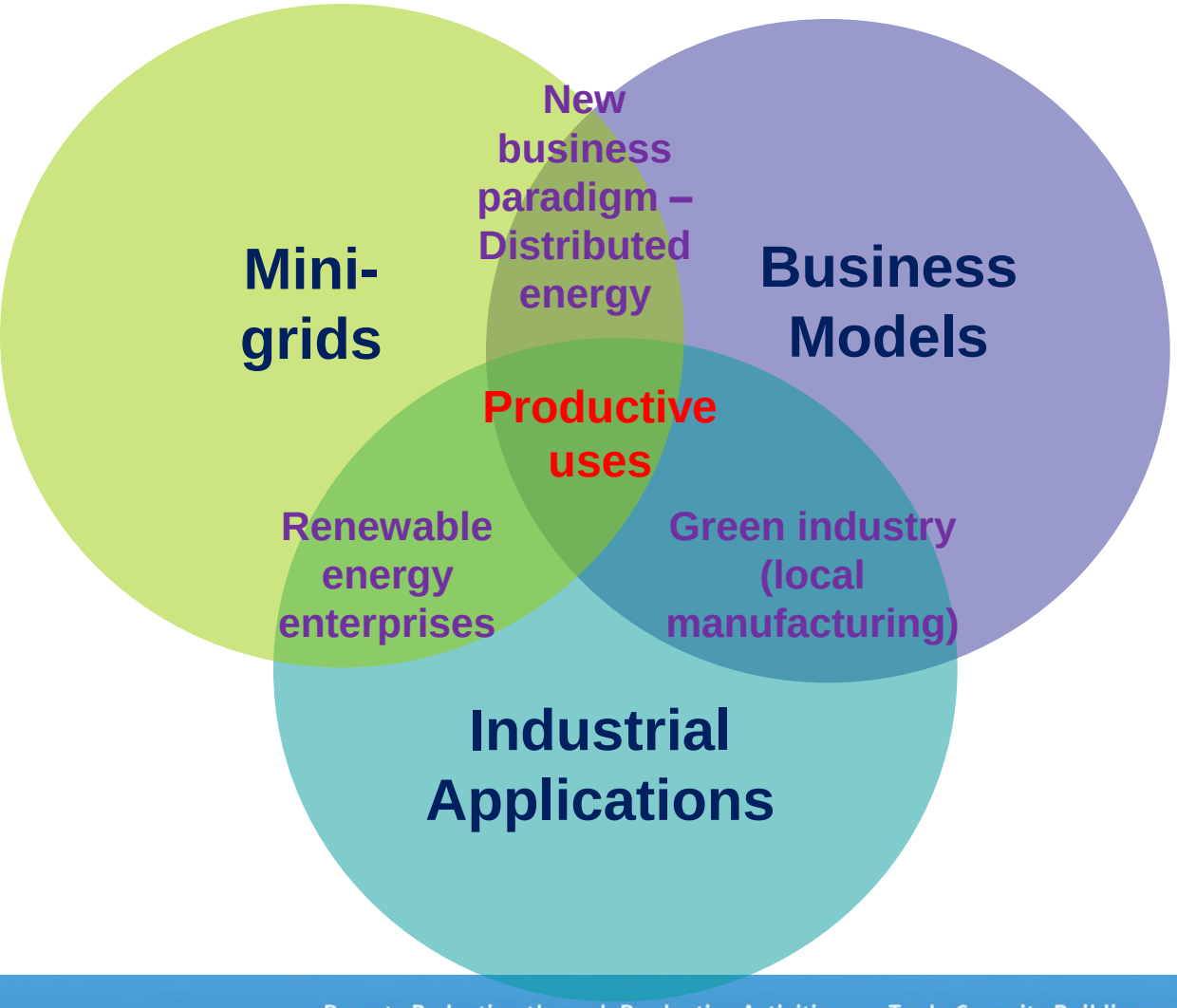
**Public–private partnership**

# Incremental Levels of Access to Energy




SOURCE: IEA Adapted from AGECC 2010 Report

# Strategic Outcomes




1. Create business development opportunities through increasing access to energy through mini-grids;

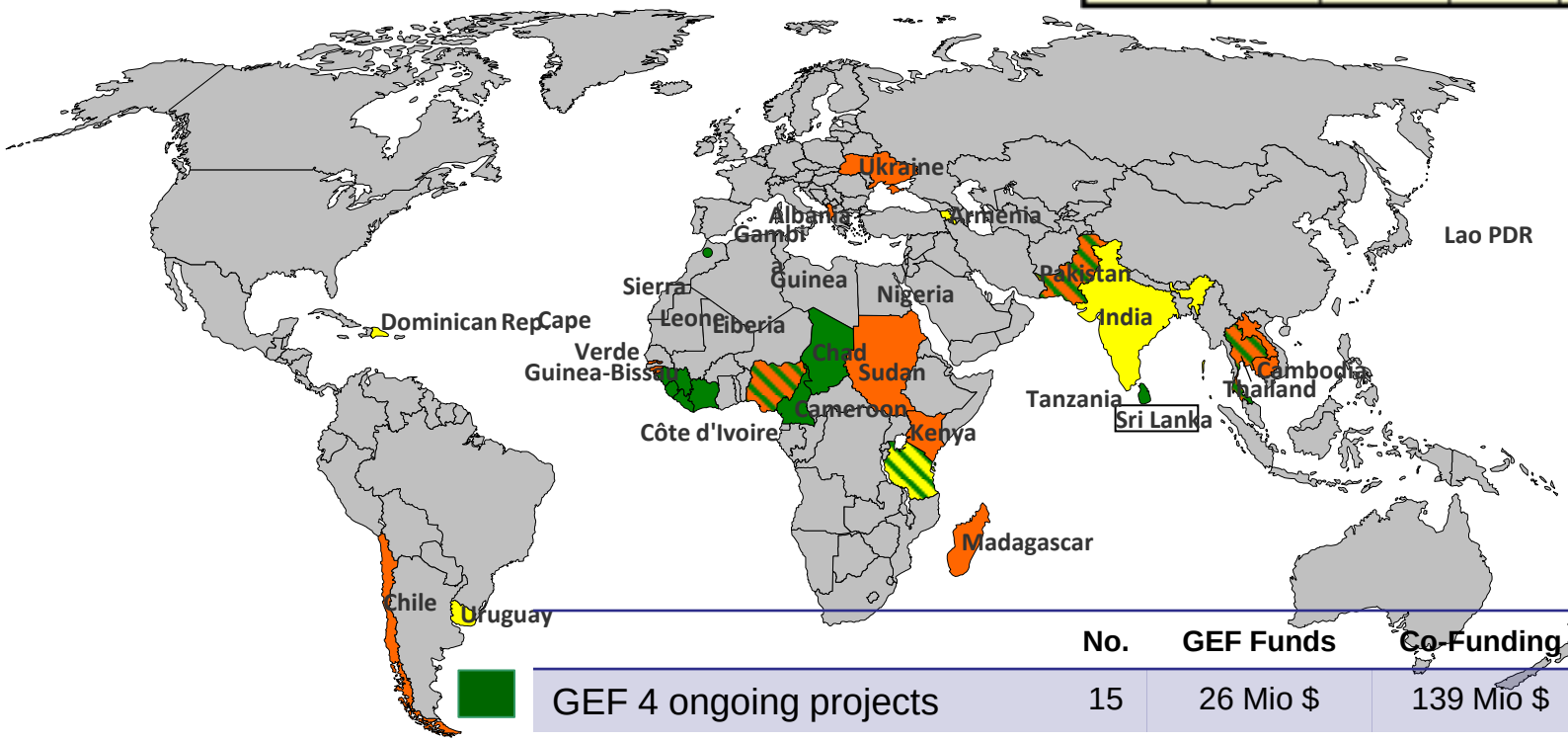
2. Mainstream the use of renewable energy in industry (SMEs);

3. Support innovative business models to promote renewable energy in the business sector

# UNIDO RRE Projects Portfolio - Overview

- ✓ More than 30 bioenergy projects

| | GEF 3 | GEF 4 | GEF 5 | Other | TOTAL |
|---|---|---|---|---|---|
| No. of Project | 2 | 15 | 23 | 22 | 62 |




| | No. | GEF Funds | Co-Funding | Total Funding |
|---|---|---|---|---|
| GEF 4 ongoing projects | 15 | 26 Mio $ | 139 Mio $ | 165 Mio $ |
| GEF 5 PIFs approved | 8 | 24 Mio $ | 113 Mio $ | 137 Mio $ |
| GEF 5 PIFs under preparation | 14 | 28 Mio $ | 201 Mio $ | 229 Mio $ |

# Cuba: 500kW x 4 wood gasifier and heat production

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

- ✓ Objectives:
  - To demonstrate techno-economic feasibility of biomass gasification technology
- ✓ Strategy
  - South-south cooperation
  - Adaptation of existing technology to the local conditions
  - Local sustainable supply-demand chain

- GEF
- $5.3M grant/$10M co-fin

# Zambia: 500kW x 2 gasifier

## Renewable Energy-based Electricity Generation for Isolated Mini-grids

- ✓ Objectives:
  - To demonstrate techno-economic feasibility of biomass gasification technology in Zambia
  - To demonstrate the financial feasibility of the technology by linking it to the mining sector
- ✓ Strategy
  - Private Sector led initiative
  - South-south cooperation
  - Local supply-demand chain

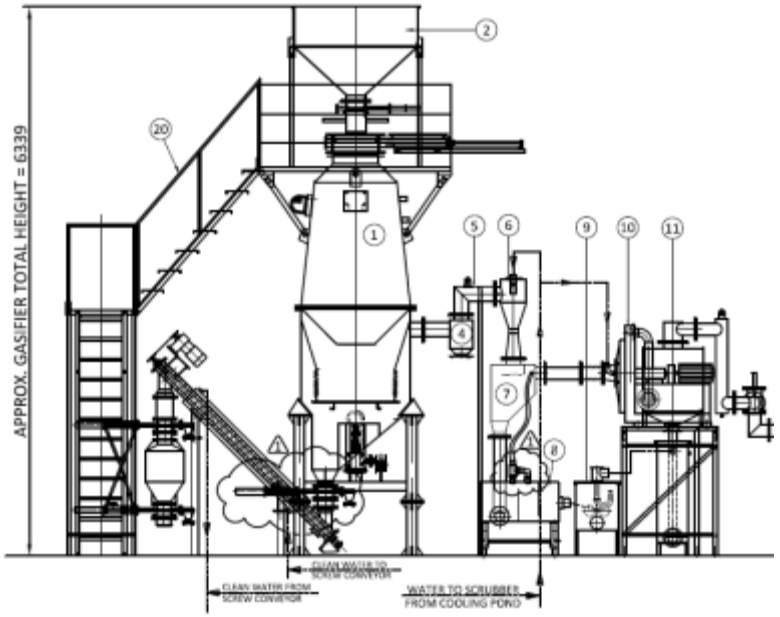
- GEF
- $3M grant/$4.5M co-fin

# Cambodia: 150kW rice husk based biomass gasifier

## Climate Change Related Technology Transfer for Cambodia: Using Agricultural Residue Biomass for Sustainable Energy Solutions

- ✓ **Objectives:**
  - To improve rural electricity in a community;
- ✓ **Strategy**
  - Electricity supply enterprise built on public-private partnership (PPP) for 400 ~700 households
- ✓ **Impacts**
  - Reduce $CO_2$ emissions by 928 tons per year
  - TT (local capacity built)

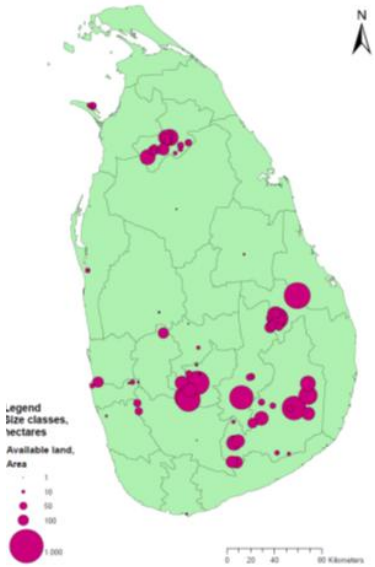
- GEF
- $1.7M grant/$4M co-fin

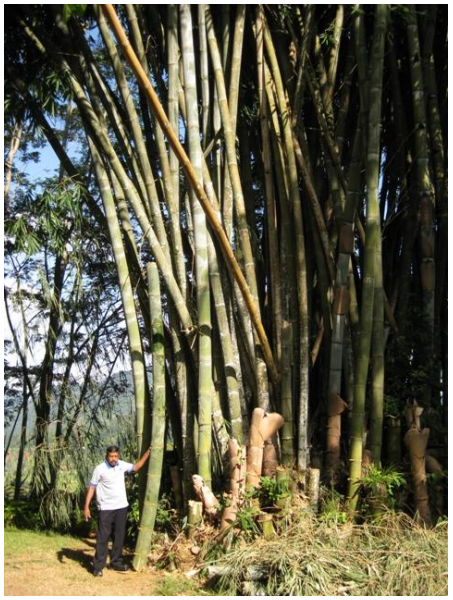


# Sri Lanka: Sustainable energy feed stock supply chain

## Bamboo processing for Sri Lanka

- 7 year project (2012-2019)
- GEF-4 TT
- $2.4M grant/$21M in-kind;





- ✓ Objectives:
  - To develop a bamboo supply chain and product industry in SRL
- ✓ Strategy
  - Energy feed stock supply chain within a whole bamboo value chain development;
  - South-south cooperation (IND/CHN)

# Lessons learned

- ✓ Sustainable use of biomass still a concern
- ✓ Right policy mix is essential
- ✓ Multidisciplinary training for energy and financial experts required
- ✓ Scaling up is possible using creative business models
- ✓ Affordable sustainability certification important
- ✓ Thermal applications of biomass should be promoted
- ✓ Agro industries potential to become energy enterprises

# UNIDO RRE's experience in the GEF portfolio

- ✓ As a GEF execution agency, comparative advantages in RE in productive use, RE for industry, technology demonstration;
- ✓ Medium and Full-Sized Projects in Climate Change Mitigation thematic area (below/above US$2M);
- ✓ 14 GEF Technology Transfer Pilot Projects Under the Poznan Strategic Program on-going at $52M GEF/$236M co-fin (3 cancelled), of which 4 UNIDO projects;
- ✓ Expected GEF grant/co-financing;
- ✓ Submission cycle/UNIDO GEF coordination team;
- ✓ Commitment by the government and partners;

# Technical cooperation on biomass energy and negative CO2 emission systems

- ✓ UNIDO needs to mobilize grant for TC
  - National donors;
  - International /regional funds (GEF, EU etc);
  - Private sectors involvement (CSR);
- ✓ Conceptualize TC to match thematic areas of donors
  - e.g. GEF-6 (2014-2018), Technology transfer, Integrated approach, policy
- ✓ Requirements by donors
  - Budgeting including co-financing
  - Potential risks assessment in the pilot activities (public awareness of new technology/CCS, sustainability, impacts)

# Example of GEF 6 Programming Directions: Climate Change Mitigation Strategy

- ✓ Promote innovation and Tech Transfer
  - Promote timely development, demonstration and financing of low carbon technologies and policies
  - Develop and demonstrate innovative policy packages
- ✓ Demonstrate systemic impacts of mitigation options
  - Promote integrated low carbon urban system
  - Promote conservation/enhancement C-stock in forest and other land use, and Climate Smart Agriculture
- ✓ Integrate findings of enabling activities into national planning processes and mitigation targets

# GEF 6 Programming Directions: Integrated approach to the global environmental commons in support of sustainable development

- ✓ Forests
  - Taking deforestation out of commodities supply chain
  - A new development path for the Amazon Basin
- ✓ Food security
  - Fostering sustainability and resilience of production systems in Africa
- ✓ Oceans and seas
  - Rebuilding global fisheries
- ✓ Sustainable cities
  - Harnessing local action for global commons

# Summary

1. UNIDO's on-the-ground TC activity;
2. Biomass energy for productive services and industrial application;
3. GHG reductions by minimizing their fossil fuel dependencies with RE technologies;
4. Public private partnership;
5. Selection of technology (tech-push & market-pull);
6. Sustainability of the project is important (business model, financing mechanism, ownership, duplication)
7. Sustainability of biomass energy feed stock needs to be guaranteed

# Thank you for your attention!


partner for prosperity

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