

4th Working Session: Regional and International Cooperation

Rural Energy

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**REGIONAL LAC CONFERENCE ON RENEWABLE
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The problem

- 2 billion excluded from electricity, using coal and traditional biomass
- low per capita energy demand (1% of global consumption): little makes the difference
- technologies are available but focus is on supply without assistance
- extreme poverty is a limiting factor to access, slow penetration
- lacks a political-institutional and financing framework

Problem dimension

■ Economy

- ❖ **poverty (few can pay)**
- ❖ **high costs (US\$ 0,7 / kWh; 7 x urban)**
- ❖ **underdevelopment: electrification not enough**
- ❖ **difficult operation (underutilization, demand peaks, high losses, damages in lines)**

■ Social

- ❖ **migration to cities, where also lacks access to basic services e.g. water, health**

■ Environmental

- ❖ **occupational, local and global pollution**
- ❖ **resource deployment**

Rural energy options: *leapfrogging*

■ Electricity

- ◆ no supply ⇒ remote applications of NG combined cycle, PVs, wind, small hydros, modern biomass ⇒ small grids with batteries ⇒ connection to grid

■ Fuel

- ◆ woodfuel, charcoal, wastes ⇒ NG, LPG, process, biogas

■ Lighting

- ◆ oil and kerosene lamps ⇒ incandescent lamps ⇒ fluorescent and compacts ⇒ high efficiency lamps

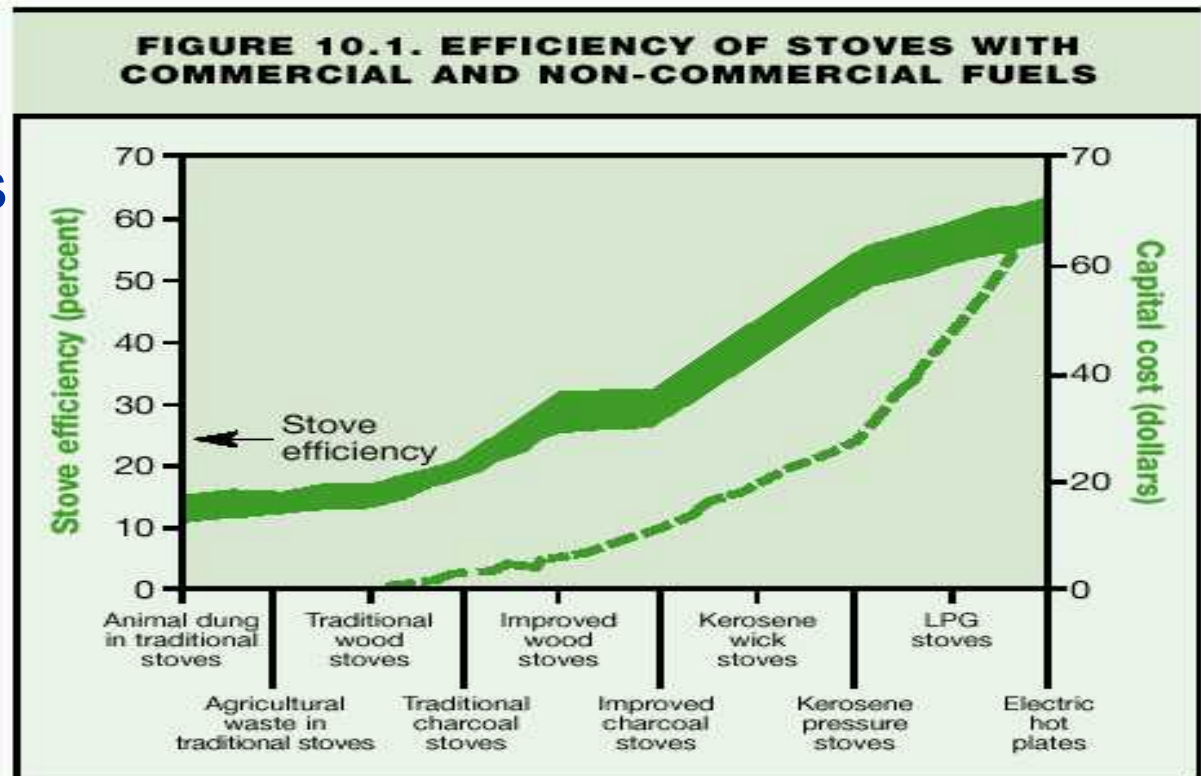
Leapfrogging

- Motive power

- ◆ humana and animal traction \Rightarrow internal combustion and electric engines \Rightarrow improved engines with biofuels \Rightarrow fuel cells

- Cooking

- ◆ primitive fires \Rightarrow improved woodstoves (LPG and biogas)



Source: Baldwin, 1987.

Proposals

- 1. O&M capacity building
 - ◆ simple and realistic technologies
 - ◆ development of local economy to cover costs
- 2. regulatory milestones - networking
 - ◆ support to decentralized electricity and fuels
 - ◆ South-South (technology transfer); North-South (access to technologies and financing) and South-North (export of energy e.g. alcohol and biodiesel) – trade barriers
- 3. shared experiences - networking
 - ◆ local decisions to technology leapfrogging
- 4. Financing
 - ◆ CCC for RE in Brazil
 - ◆ patient capital and financing to O&M
 - ◆ fossil fuels displacement by renewables

More:

- ◆ **UNDP, World Energy Assessment, Cap.10**

www.undp.org/seed/eap/activities/wea/drafts-frame.html

- ◆ **CENBIO**

www.cenbio.org.br

- ◆ **MME/ELETROBRÁS: LUZ NO CAMPO**

www.eletrobras.gov.br/programas/luz_no_campo