## ADB's Renewable Energy Development Programs

田军

Asian Development Bank 18 February 2010, Tokyo

### Developing Asia

#### Issue:

- Rapid economic growth rapid growth in fossil energy use
  - Rapid growth in GHG emissions

#### Advantages:

- Abundant resources of renewable energy
- Huge rooms for improvement from low level
- Comparatively lower cost for improvement

#### Disadvantages:

- Weak technological capability
- Low affordability to expensive technologies

### Concerns of Developing Countries

- Development is top priority for poverty reduction
- Adequate energy supply is essential
- Challenges:
  - Environmental degradation
  - Vulnerability to fluctuations in international markets
  - Limit to continued use of cheap and abundant fossil energy
  - Affordability of using new technologies and renewable energy

### Role of ADB

■ BRIDGES between developing and developed countries, public and private sectors

■ CATALYST leveraging commercial resources with low cost financing

■ PARTNERS of both developing and developed countries, governments and companies

## Renewable Energy: An integrated part of ADB's CC Programs

Financing Mobilizing Catalyzing Maximizing Concessional **Private** Market **Mechanisms** Resources Capital **Core Elements** Advancing Energy Efficiency and Use of Low-Carbon Energy Sources **Mitigation Enabling Sustainable Transport Policies and Applying Efficient Systems Promoting Improved Urban Sanitation and Reduction of Fugitive Methane Emissions Promoting Sustainable Land Use and Forestry Core Elements** Addressing Vulnerability Risks in National Development Strategies and Actions Adaptation **Increasing Climate Resilience of Vulnerable Sectors Climate Proofing Projects Addressing Social Dimensions** 



# Renewable Energy: One of the three pillars of ADB Energy Policy

- Promoting energy efficiency and renewable energy
- Maximizing access to energy for all
- Promoting energy sector reforms, capacity building, and governance

### Clean Energy Program

#### Objectives

Increase regional EE in energy, transport, & urban sectors

Adopt renewable energy sources

Improve access to energy for the poor

#### **INITIATIVES**

**Energy Efficiency Initiative** 

**Energy for All Initiative** 

Other Cross-Cutting Subprograms

#### **FUNDS & PARTNERSHIPS**

Clean Energy Financing Partnership Facility

Climate Change Fund
Asia Pacific Carbon Fund
Future Carbon Fund

## Expanding ADB's Clean Energy Investment

Target: \$1 billion 2008, \$2 billion 2013

**Priority DMCs:** 

PRC, IND, INO, PAK, PHI, VIE (RETA 6436)

AFG, BAN, CAM, LAO, MON, UZB (RETA 6392)

Focus: smaller DMCs, eg. CAM, LAO

### Clean Energy Project Examples

- IND: National power grid development program (replace thermal power with renewable)
- PRC: Zhangbei wind farm (100MW)
- IND: Gujarat Paguthan Wind Financing Facility
- BAN: Public-Private Infrastructure Development Facility (solar projects)
- IND: Uttarakhand Power Sector Investment Program
- VIE: Renewable Energy for Remote Island and Mountainous Communes (wind + diesel hybrid)

### Ongoing ADB projects (sample)

Country	Project Type
Indonesia	Geothermal power
India	Wind power
Lao, PDR	Small hydropower
Bangladesh	Waste composting
China, PR	Geothermal space heating
Pakistan	Hydropower
Thailand	Biomass power
Uzbekistan	Small hydropower

## Biomass Power Generation Project, Thailand

Treetop – Left to decay



**Biomass Power Generation** 

## Efficient Utilization of Agricultural Wastes Project, Henan, PRC



Anaerobic Lagoon

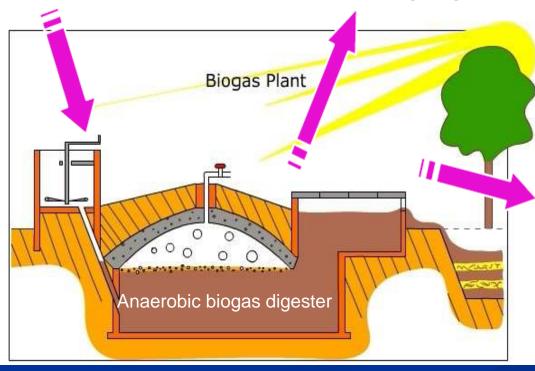
**Anaerobic Digester** 



## Household Level Biogas Project, Vietnam

Biogas plants transform traditional manure management; reducing CH<sub>4</sub> emissions

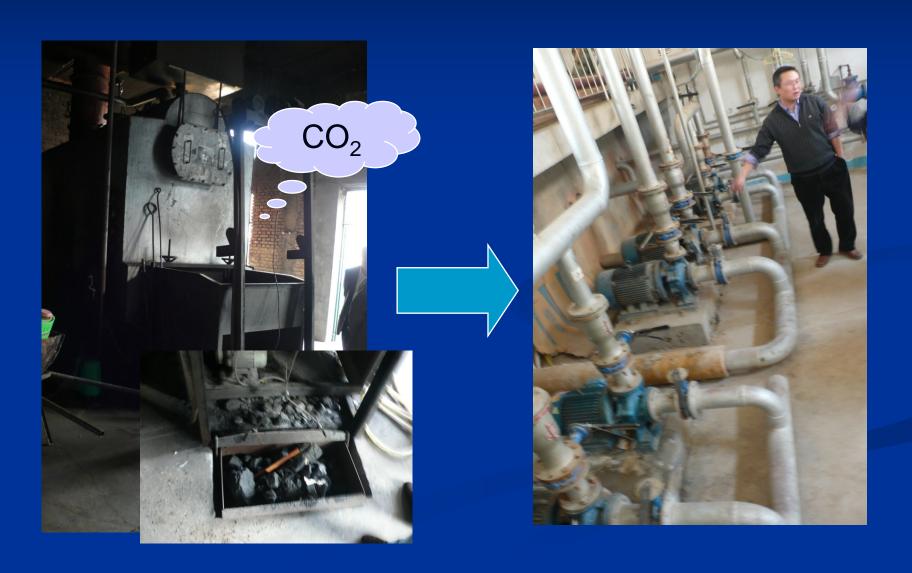
Biogas substitutes conventional domestic energy sources, reducing reliance on fossil fuel and firewood (CO<sub>2</sub>)



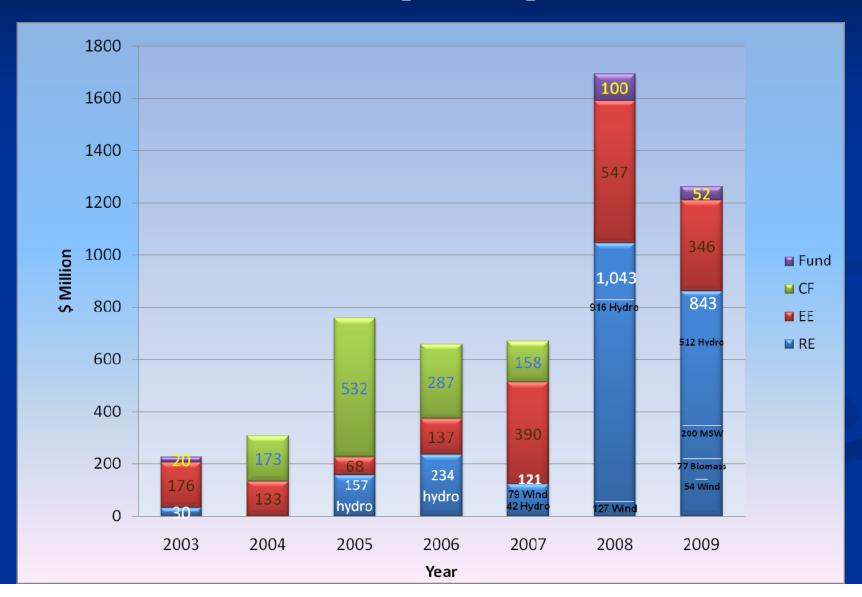
Bio-slurry can substitute chemical fertilizer, reducing N₂O emissions

Source: SNV

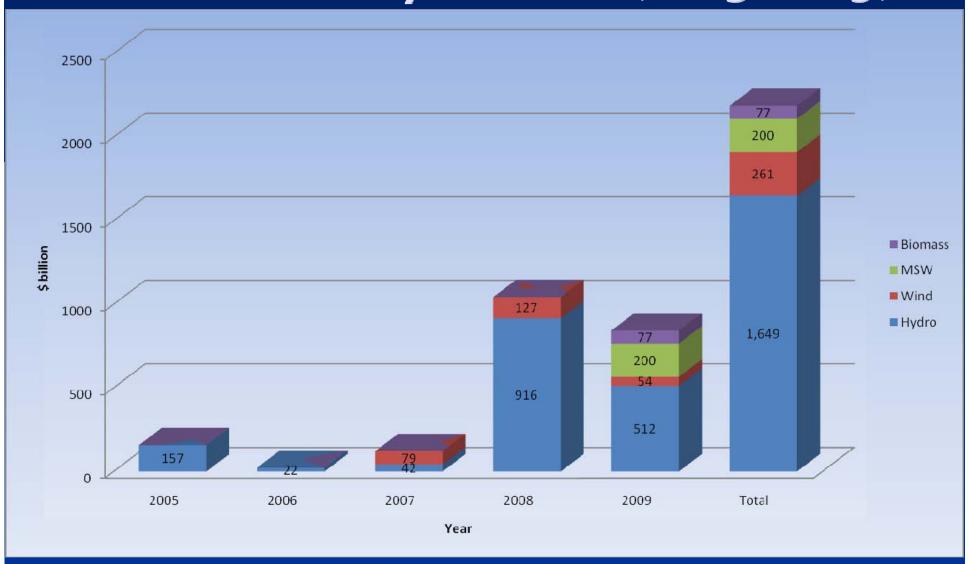
### Switching from Coal to Geothermal



## ADB's Clean Energy Investments (2003-2009)



## ADB's Renewable Energy Investments by Sources (2003-2009)



Summary of Clean Energy Investment (2003-2009)



### Selected ADB's CE Projects (2003-2008)



### THANK YOU

jtian@adb.org

