Kitakyushu Initiative (KI) for a Clean Environment

Fourth Meeting of the KI Network

25-26 June 2007, Kitakyushu, Japan

Integrating energy in urban planning and CDM opportunities in abating air pollution

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Outline

- About CEERD—cooperating with cities and municipalities
- The EIUP project—integrating energy in urban planning
- Calaca Biogas project—financing local energy-environment initiative through local sources of finance
- CDM and urban air pollution—partnerships enhancing synergies in urban air quality and Kyoto mechanisms

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About CEERD—mission statement

- To provide information and knowledge on current issues and developments in energy-environment affecting the Asia and Pacific region in the framework of consulting and research projects sponsored by international and national agencies and even the private sector
- To develop and manage technical assistance or economic cooperation projects bringing together technical expertise from Europe and within the Asian region; public and private stakeholders in energy and environment industries; and donor and international cooperation agencies

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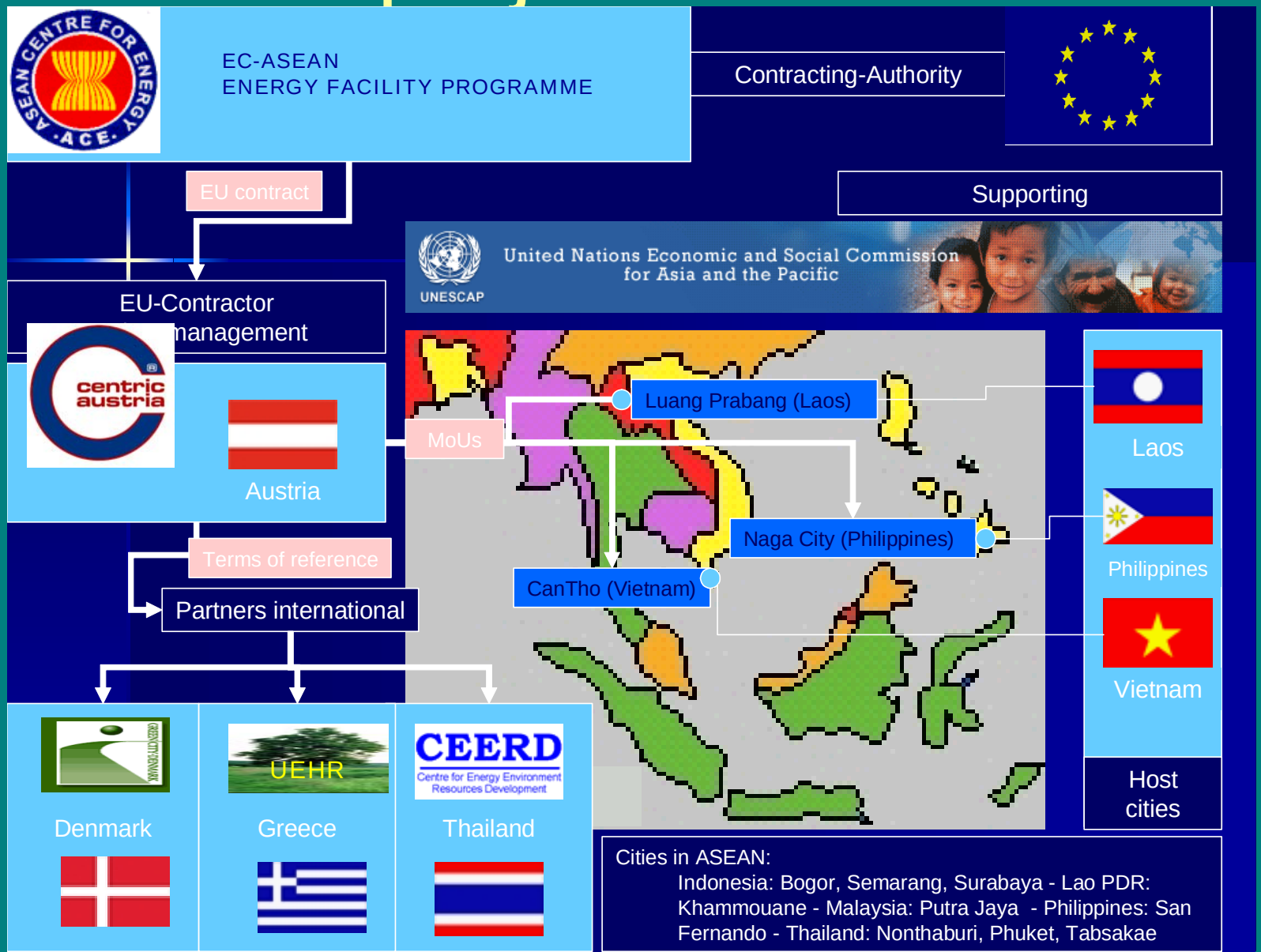
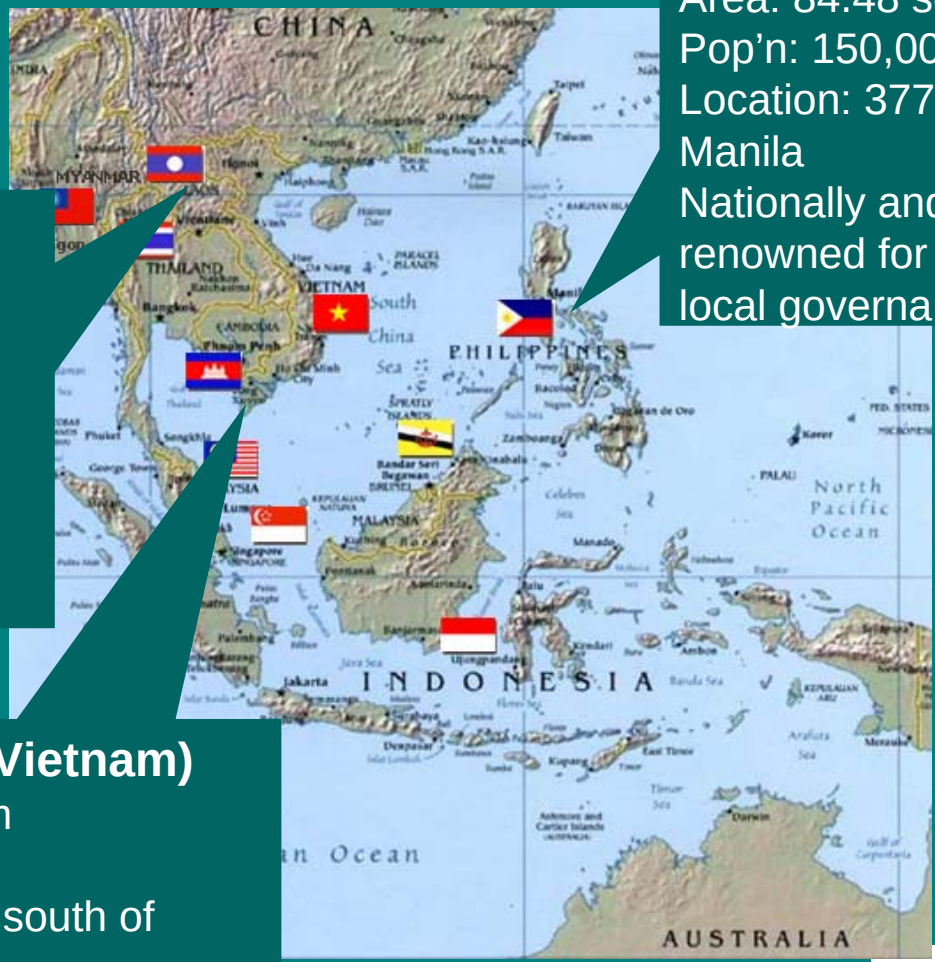
The EIUP project



EIUP—partner cities

Naga City (Philippines)
Area: 84.48 sq. km.
Pop'n: 150,000
Location: 377 km south of Manila
Nationally and internationally renowned for participative local governance

Luang Prabang City (Lao PDR)
Area: 780 sq km
Pop'n: 75,959
Location: 425 km north of Vientiane
Center of tourism development in Lao PDR



Can Tho City (Vietnam)
Area: 1,390 sq km
Pop'n: 1.127 mn
Location: 160 km south of HCMC
National Model for Sustainable City Development

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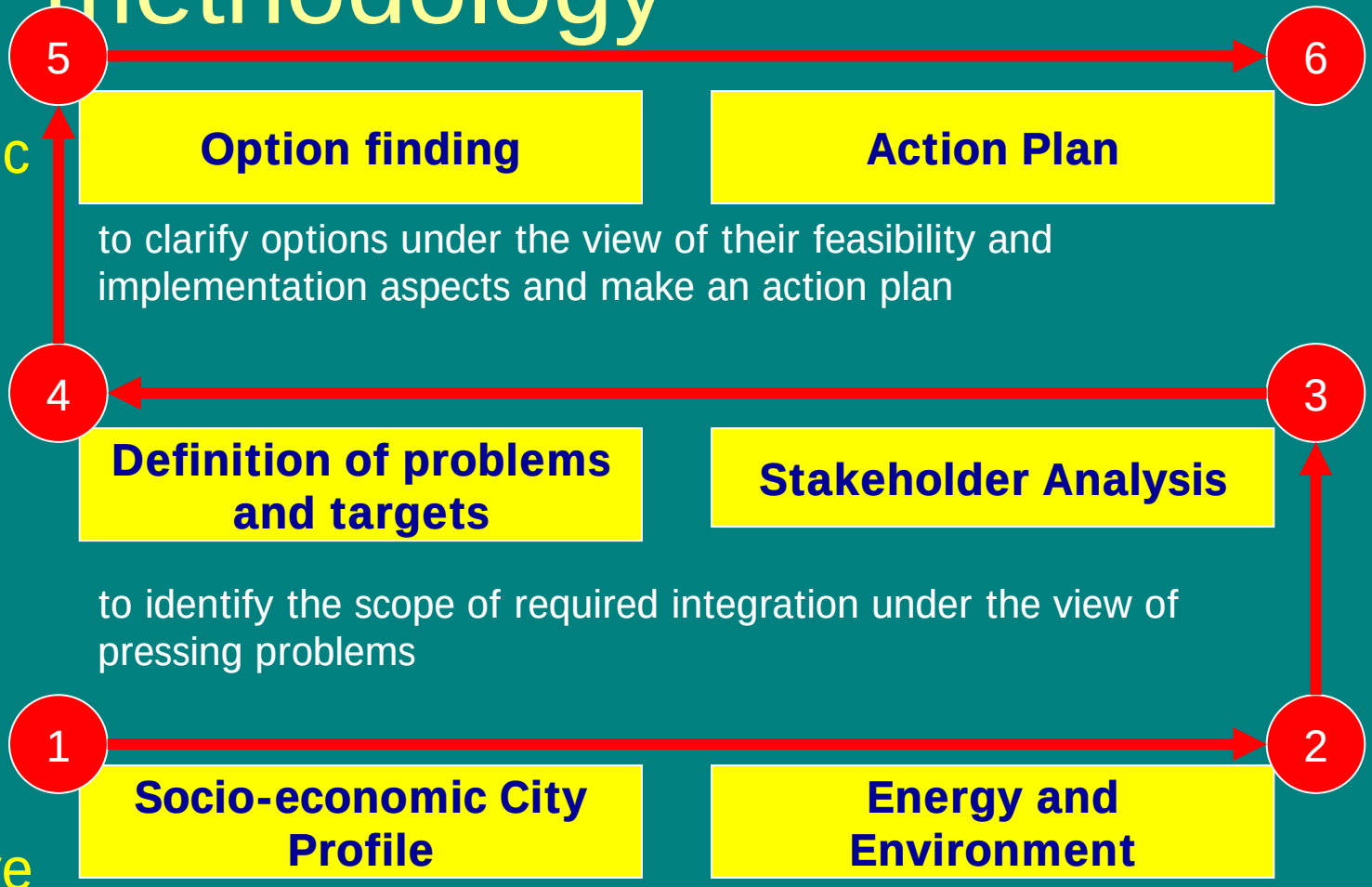
EIUP methodology



Synthetic Level

to clarify options under the view of their feasibility and implementation aspects and make an action plan

Analytic Level

to identify the scope of required integration under the view of pressing problems

Descriptive Level

to provide sufficient information about the existing situation in social, economic, environmental and energy-related aspects, from which the city starts its efforts of EIUP

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Key results—opportunities in energy and environment

- Potential for development of decentralized RES systems
- National government supports power supply companies to deal with service improvement
- Political support from the city government to energy efficiency and RES
- National legislation supports development of local energy resources through various fiscal and non-fiscal incentives
- Improvement of quality of energy supply
- Waste-to-energy project development and implementation

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Key results—stakeholder analysis

- Practically all sectors of local economy are the stakeholder of EIUP
- Common expectation of these sectors is to achieve an adequate, reliable, and low-cost energy supply
- Some sectors have potential for developing and investing in renewable energy sources and energy efficiency
- Role of general public and final consumers in policy development, implementation and monitoring, and increasing social acceptability of energy projects
- Lack of awareness and capacity on energy technologies, finance and regulation permeating most sectors

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Key results—problem analysis

1. Reliability of electricity supply	A
2. Lack of comprehensive policies and energy management	B
3. Insufficient use of alternative energy sources	B
4. Not all communities are connected to power supply	C
5. Insufficient use of alternative motor fuels	B
6. Insufficient extension of energy conservation audits	A

Legend:

A—problem with big pressure and urgent need for solution

B—problem of great importance that should be solved in the medium term

C—important but does not need urgent solution

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Key results—strategies and action plans

- Statement of EIUP policy
- Motto
- Vision
- Goals and corresponding action plans
  - Inclusion of “EIUP” in city development planning
  - Waste-to-energy project
  - Expansion of energy audits and conservation campaign
  - Local development of available renewable energy sources and applicable technologies

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EIUP—ingredients of success

- Partner cities' expectations of EIUP
- Political commitment (to environment-friendly initiatives)
  - Dedicated office in urban environmental management
  - Local initiatives and accomplishments
  - Active participation in international urban environmental networks
- Organization of local EIUP teams

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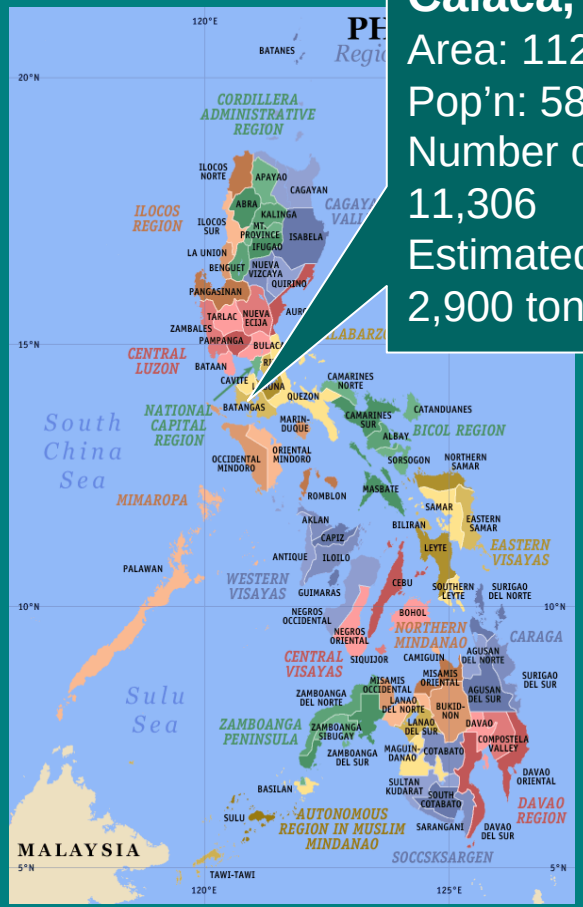
Calaca Biogas



Calaca, Batangas
Area: 112.71 sq km
Pop'n: 58,086
Number of households: 11,306
Estimated waste generation: 2,900 tons per year

- **Objective**: To build the capacity of the LGU of Calaca, Batangas to operate and maintain a biogas facility as a renewable energy alternative using biodegradable solid wastes.
- **Partners**: IRG – Philippines, ECN (Denmark), Centric Austria International

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Calaca Biogas—waste handling options

Technology Options

- Sorting
- Composting
- Anaerobic digestion

MSW Program

- Long-term plan
- IEC

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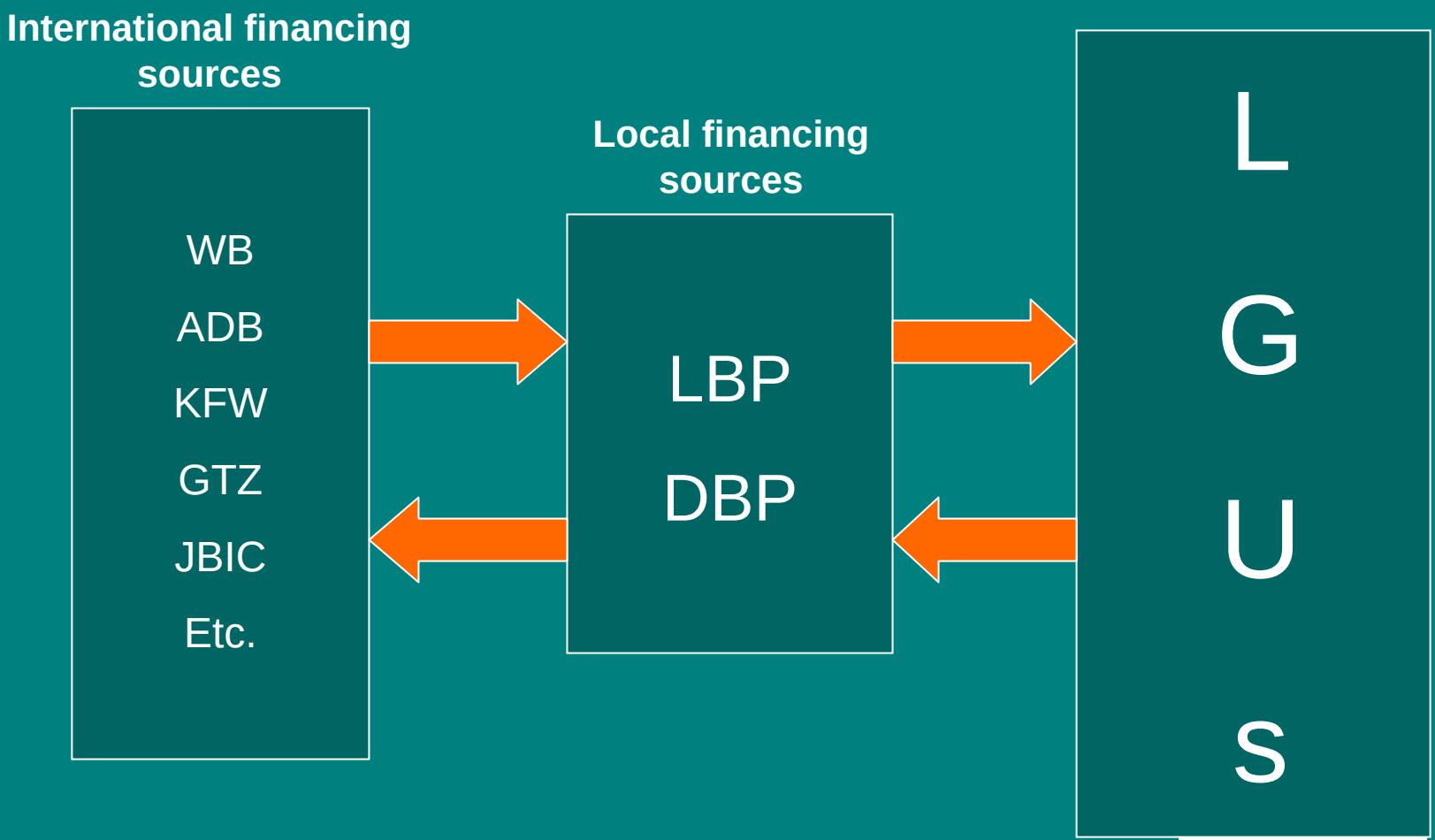
Calaca Biogas—financing sources



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CURB-AIR—background and objective

- Urban air pollution is a key concern for Asian cities
- Strong sectoral overlap in the sources of urban air pollution and CO_2
- Global carbon market offers opportunities for financing CO_2 emission reduction measures in developing countries through the CDM
- Synergies in reducing urban air pollution and CO_2 emissions
- Through CDM additional financial resources might be directed to urban air quality measures

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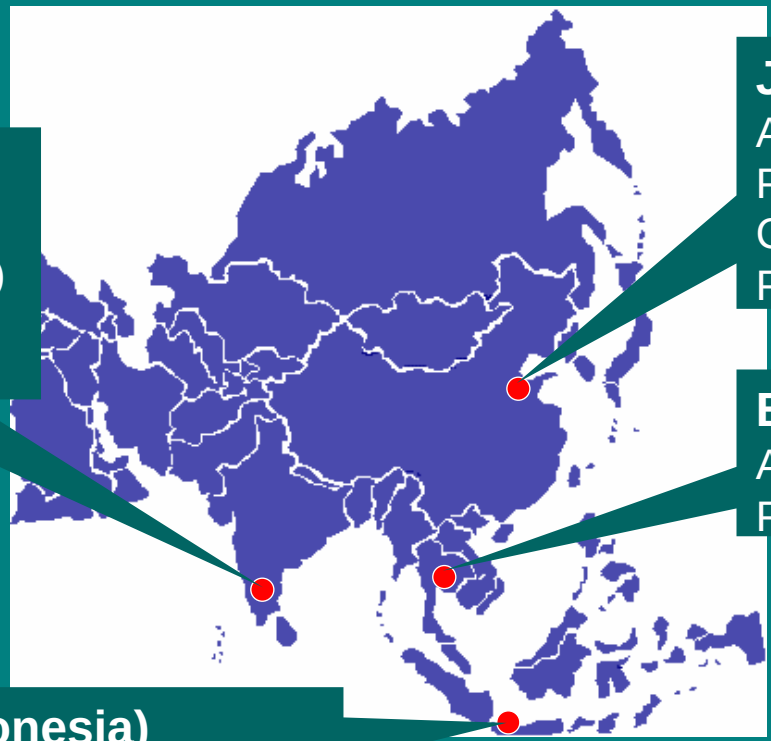
CURB-AIR—partner Cities



Bangalore (India)
Area: 696.17 km2
Pop'n: 5.28 m (2007)
Capital of State of Karnataka

Jinan (China)
Area: 8,177 km2
Pop'n: 5.9 m (2004)
Capital of Shandong Province

Bangkok (Thailand)
Area: 1,568 km2
Pop'n: 10 m (2007)

Jakarta (Indonesia)
Area: 661.52 km2
Pop'n: 8.792 (2004)

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CURB-AIR—partners

Supported by:

Coordinated by:

Partners:

AQ/CDM case studies*

- Bangalore
  - Ethanol Diesel Blend as fuel substitute in Karnataka State Road Transport Corp fleet
- Bangkok
  - Planning and implementation of bus reform and BRT
- Jakarta
  - Improvement of the TransJakarta BRT
- Jinan
  - Developing a BRT system in Jinan

* In progress

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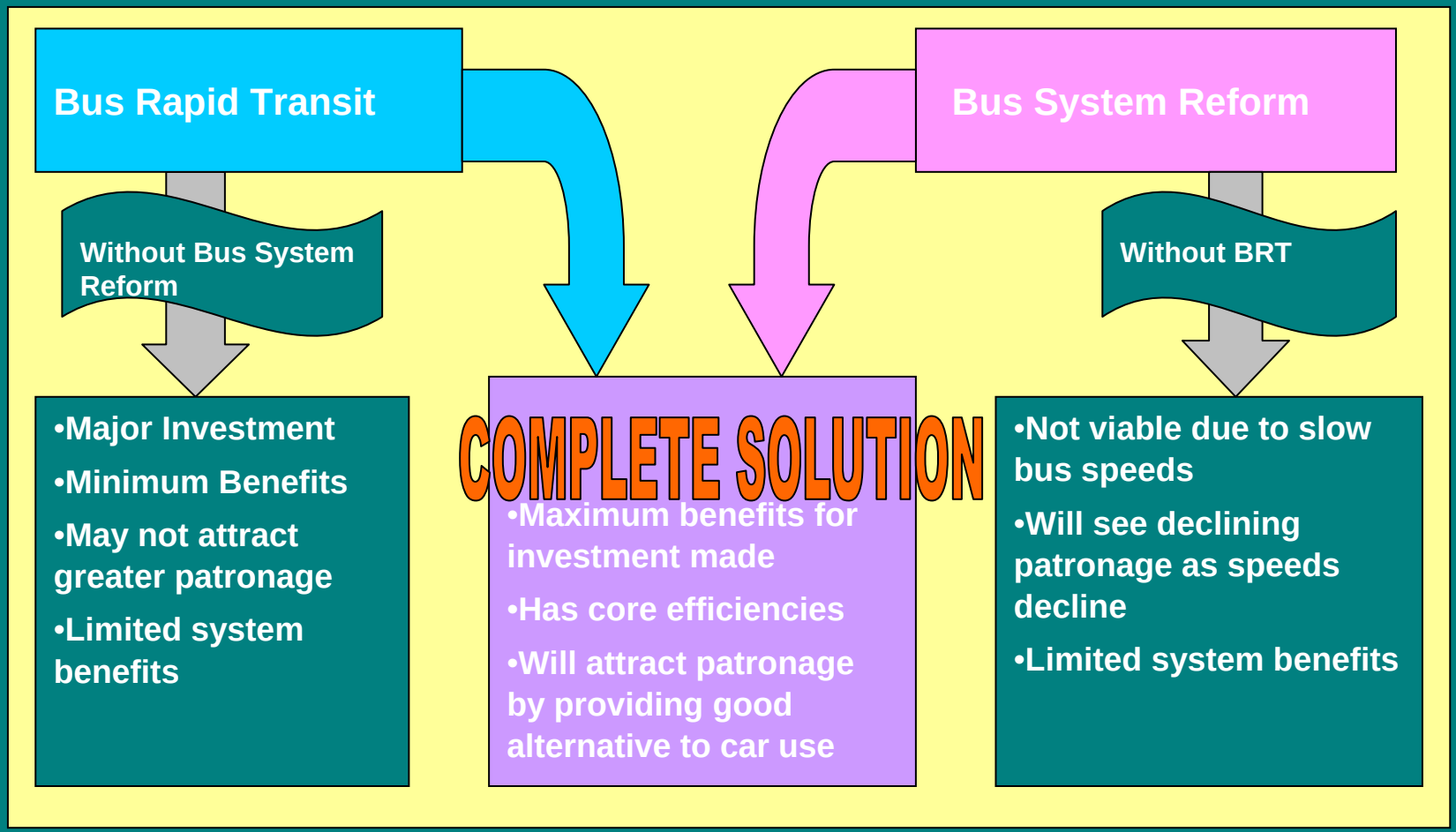
Bangkok BRT—part of bus system reform



Source: OTP

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Bangkok BRT—combining features of rail and bus systems

Rail Mass Transit

- **Current Coverage 43 km. (Elevated (BTS) 23 km. and Subway (MRTA) 20 km.)**
- **Provide safe, punctual convenience transpor**

But

- **High investment cost (about 1,400 MB./km. For elevated and 3,000 MB/km. for subway**

BRT

Bus System

- **Consists of 249 routes incorporating**
  - **238 lines of BMTA buses**
  - **11 lines of Micro buses**

But

- **Use the same right of way as road traffic thus cannot control travel time and service**

Source: BMA

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BRT CDM projects—GHG emission reduction impacts

- New buses: Units with less emissions per km
- Large buses: Units with less emissions per transported passenger
- Higher occupancy rate: more efficient transport
- Modal switch: from taxis, motor bikes or cars to buses
- Technology and/or fuel change: usage of bio-fuels, gas, or hybrids

Source: Gruetter (2007)

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Thank you!

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Appendix—CDM and BRT

CDM in transport—types of projects

- Projects reducing emissions per kilometer—fuel switch, technology vehicle change, behavioral change (supply side), infrastructure change
- Projects reducing emissions per unit transported (efficiency improvements)—mode switch, use of larger units, improved occupancy rates
- Projects reducing trips

Source: Gruetter (2007)

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CDM in transport—methodologies proposed so far

- Fuel switch
- Efficiency improvements (within a transport mode)
- Modal switch

Source: Dalkmann et. al. (2007)

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Bus Rapid Transit (BRT)

- "...a mass transit system using exclusive right of way lanes that mimic the rapidity and performance of metro systems but utilise bus technology rather than rail vehicle technology."

Source: Wright (2004)

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BRT—common features

- Exclusive right of way lanes
- Rapid boarding and alighting
- Free transfers between lines
- Pre-board fare collection and fare verification
- Enclosed stations that are safe and comfortable
- Clear route maps, signage, and real-time information displays
- Modal integration at stations and terminals
- Clean technologies
- Excellent marketing and customer service

Source: Wright (2004)

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BRT CDM projects

- TransMilenio Bogota, Colombia
- Pereira, Colombia
- Cali, Colombia
- Quito, Colombia
- Panama City
- Insurgentes, Mexico

Source: Gruetter (2007)

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