



From Ideas to Action: Clean Energy Solutions for Asia to Address Climate Change

*Orestes Anastasia, US Agency for International Development
USAID Regional Development Mission for Asia*
and

*Peter du Pont, PhD, Chief of Party,
ECO-Asia Clean Development and Climate Program*

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Overview

1. Regional approach to clean energy
2. ***From Ideas to Action***: regional analysis of clean energy options
3. Overview of new regional program on clean energy



Regional Challenges Require A *Regional* Approach

- **Common Energy Challenges for Asia's Developing Economies ...**
 - ♦ Increasing energy demand
 - ♦ Associated urban air pollution
 - ♦ Energy security concerns
 - ♦ Climate change increasing in importance
- **... Are Most Effectively Tackled with a Regional Response**
 - ♦ Harmonization of energy standards and labeling
 - ♦ Benchmarking clean energy practices and performance
 - ♦ Catalyze change by sharing and replicating innovation
 - ♦ Leverage resources of organizations and donors with regional initiatives



USAID-funded review of clean energy priorities in Asia



Objectives

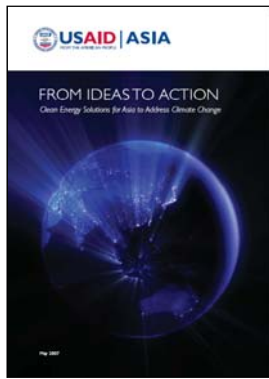
- Identify clean energy priorities – technologies, sectors, and initiatives
- Identify opportunities for regional action

Methodology

- organized “listening tours” with 220 key energy stakeholders in the 6 countries
- researched and prepared more than 300 profiles on clean energy institutions, policies, programs
- prepared in-depth country reports on the clean energy opportunities in the 6 countries



Comparative Evaluation of Fuel Options



Supply-Side Energy

- Coal (CCT and carbon storage)
- Petroleum
- Natural Gas (incl. methane capture)
- Renewables (biomass, wind, solar, small hydro, geothermal, biofuels)
- Nuclear

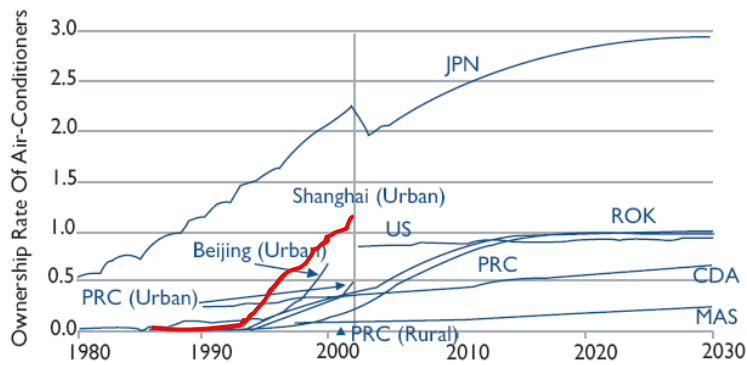
Energy Efficiency

- Power generation and transmission efficiency
- End-use efficiency (buildings, appliances, lighting, industry, transport, etc.)



DEMAND DRIVERS

Economic growth and increased incomes are leading to large increases in energy demand



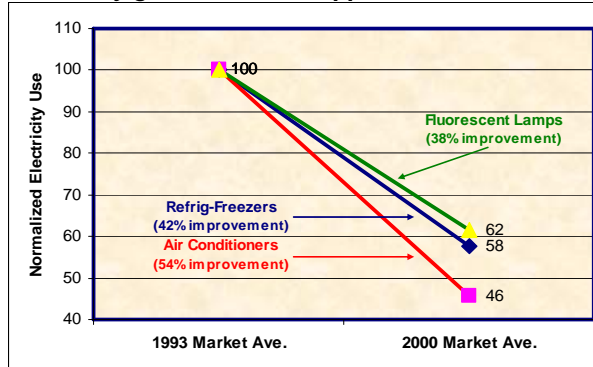
Source: APERC 2006



UNTAPPED EFFICIENCY

But regional experience shows significant potential for efficiency improvements

Efficiency gains in Korean appliances – 1993 to 2000



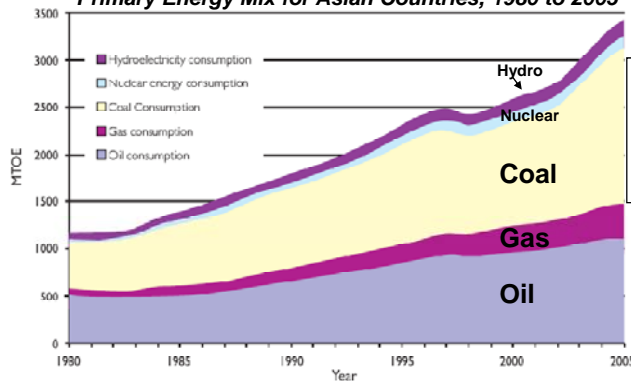
Source: Sun-Keun Lee, 2001



COAL RELIANCE

Coal is the “fuel of choice” for the next 15-20 years to meet demand

Primary Energy Mix for Asian Countries, 1980 to 2005



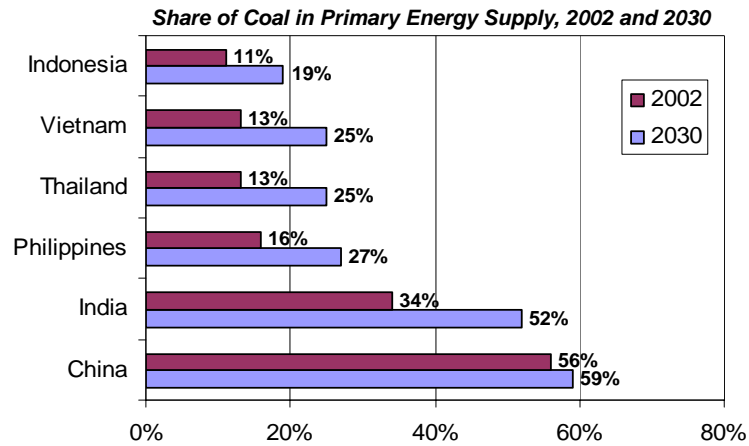
The share of primary energy from coal has risen from 43% in 1980, to 48% in 2005, and is projected to reach 51% in 2030.

Note: This data includes all of Asia, not just developing Asia

Source: BP Statistics 2006



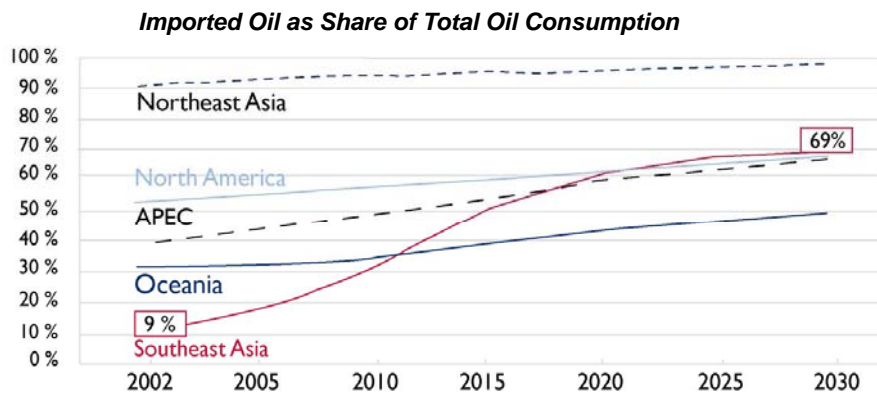
... and the Share of Coal is Increasing



Source: APERC, TERI



OIL AND ENERGY SECURITY Southeast Asia will import 70% of its oil by 2030



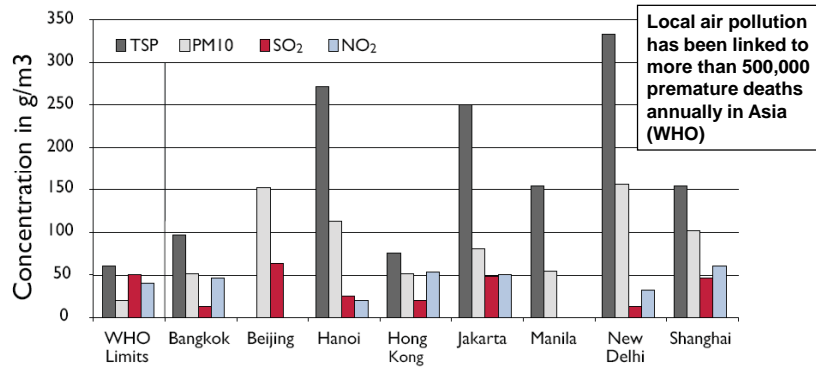
Source: APEC 2006



LOCAL AIR POLLUTION

Fossil Fuels Lead to High Particulate Levels

Criteria pollutant levels in Asian megacities

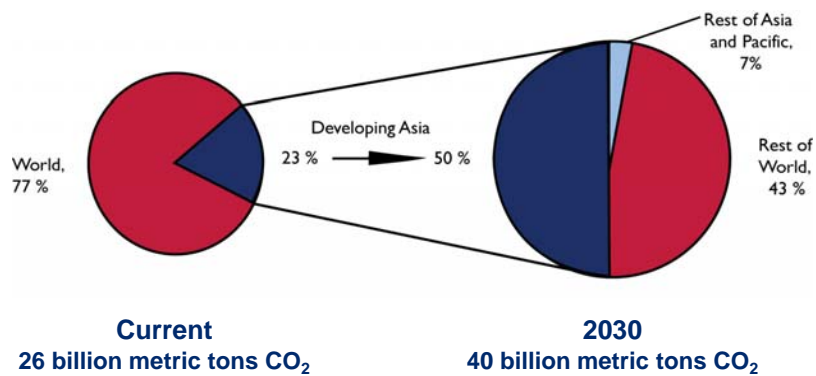


Source: Clean Air Asia, 2006; TSP = Total suspended particulates



INCREASING CO2 EMISSIONS

Developing Asia's CO2 Emissions Will Increase 4-Fold

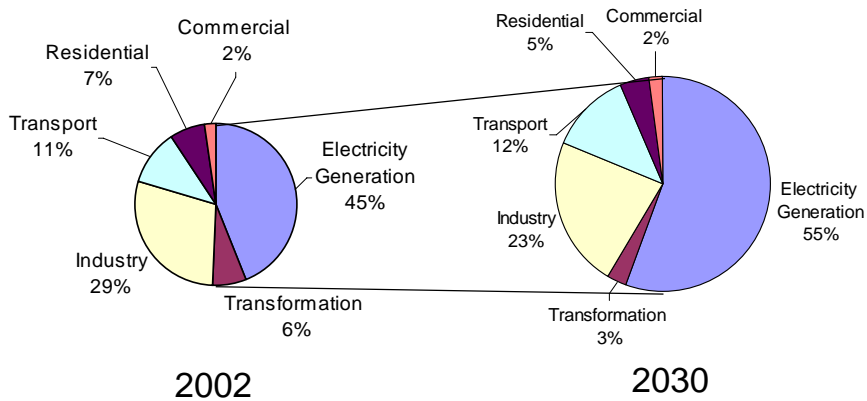


Source: APERC, TERI



ELECTRICITY IS MAJOR SOURCE More than half of CO₂ emissions from power plants

Projected CO₂ Emissions by Sector (2002 - 2030)



Source: APERC, TERI



What is the Answer? *There is no Single Silver Bullet*

Coal

- Expected nearly 4-fold increase in consumption by 2030, will lead to 13 billion metric tons of annual CO₂ by 2030

Petroleum

- Import dependency to increase drastically (exporters turn into importers; others will import 70-90% of their needs)

Natural Gas

- By 2030, countries will import between 40-75 percent of their needs.

Nuclear

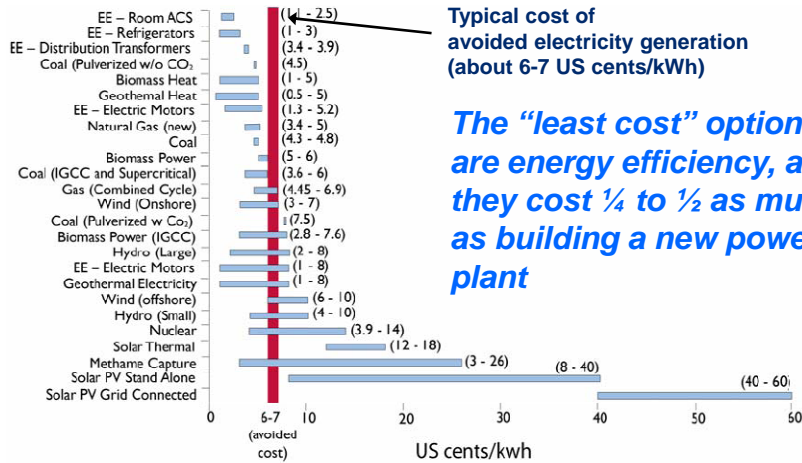
- Even with massive investment, nuclear projected to supply only approx. 4-8% of primary energy needs by 2030 (China, India, Thailand, and Vietnam)

Renewable Sources

- Even with major expansion, current estimates project renewables to account for 5-10% of future energy needs by 2030



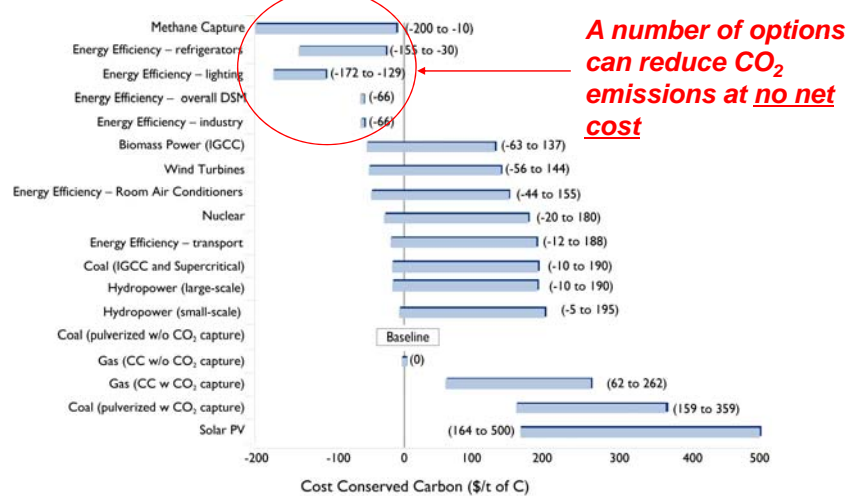
Estimated energy delivery costs by clean energy type



Sources: Compiled from Sims et al, 2003; Sawin 2004; LBNL, 2005 and IEA, 2006

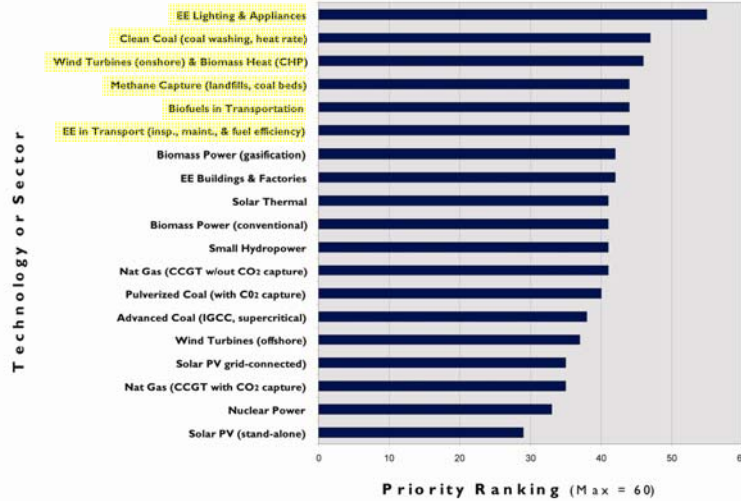


Costs of carbon reductions by clean energy option





Ranking of clean energy options *for regional cooperation*

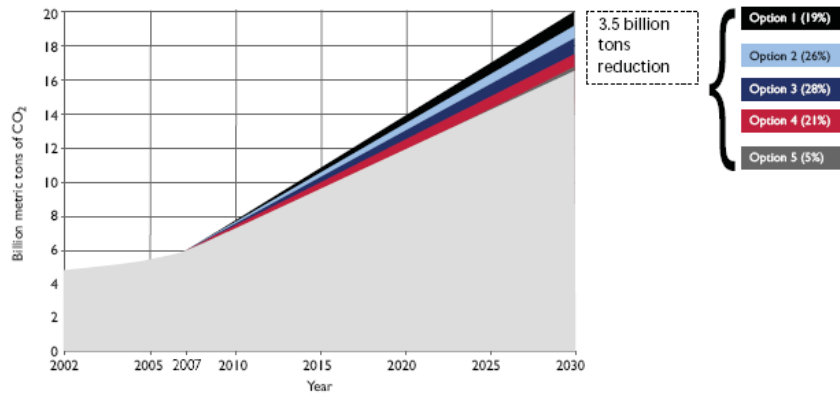


Top 6 priority clean energy technologies and sectors *for regional cooperation*

- **Energy-efficient lighting and appliances**
- **Clean coal technologies**
- **Renewable energy technologies**
(esp. onshore wind energy and biomass-fired electricity)
- **Energy-efficiency in the transport sector**
- **Biofuels for transportation**
- **Methane capture**



Implementing Just These Options Can Reduce Future Emissions from Asia's Developing Economies by 25%



USAID ECO-Asia Clean Development and Climate Program



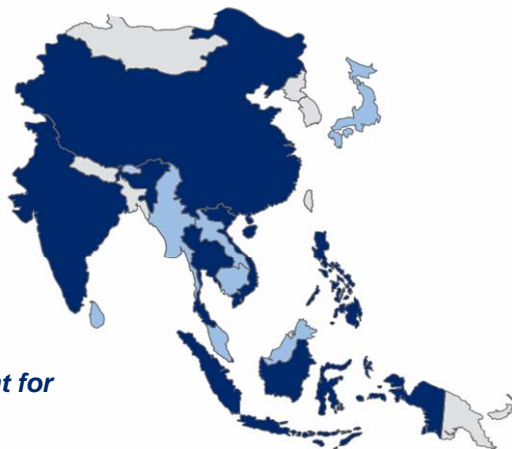
ECO-Asia Clean Development and Climate Program

- **Findings of the Regional Analysis**
 - ♦ A number of viable, low-cost options are ready for immediate implementation
 - ♦ Implementation often limited due to lack of awareness, or technical, institutional, and financial barriers
- **Program Objective**
 - ♦ Promote market transformation toward clean energy development in Asia
- **Activities**
 1. Increase policy and market incentives
 2. Mobilize and facilitate clean energy financing
 3. Share knowledge to accelerate deployment



ECO-Asia CDCP Geographic Coverage

China
India
Indonesia
Philippines
Thailand
Vietnam



These 6 countries account for 96% of the GDP of Asia's developing countries



Strategy of the ECO-Asia CDCP

Regional Actions ...

- Promote partnerships and improve cooperation
- Replicate best practices to scale up investments in clean energy technologies
- Leverage resources of key *regional partners* - ADB, ASEAN, APP, ASEAN, and APEC

... Anchored to National Commitments

- Ensure commitments and ownership at national level
- Address national clean energy needs and priorities
- Establish National Advisory Committees



Program Areas and Outcomes

Program Area	Activities	Expected Outcomes
Energy efficient lighting 	<ul style="list-style-type: none"> • Benchmarking of CFL programs and standards • Regional quality assurance program for CFLs 	<ul style="list-style-type: none"> • Improved quality and availability of energy-efficient lighting (CFLs)
Cleaner coal 	<ul style="list-style-type: none"> • Monitoring coal expansion plans and environmental regulations • Promote cleaner coal technologies and practices • Catalyze financing for cleaner coal technologies 	<ul style="list-style-type: none"> • Improved efficiency and environmental standards in coal power plants • Increased investments in more efficient coal power plants
Clean energy finance 	<ul style="list-style-type: none"> • Train financial institutions to evaluate energy-efficiency loan proposals • Assist in developing bankable clean energy loan proposals 	<ul style="list-style-type: none"> • Reduced barriers to lending for clean energy projects • Increased commercial lending for clean energy projects
Knowledge sharing and networks	<ul style="list-style-type: none"> • Establish clean energy knowledge portal for Asia region • Annual regional forum on clean energy policy and finance 	<ul style="list-style-type: none"> • Create learning culture through knowledge management • Communities of practice in the areas of clean coal and CFLs





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