

Analysis of the impact of enhanced use of renewable and advanced fossil fuel technologies for power generation in selected ASEAN countries and development of appropriate policies and institutional frameworks

ESMOPO
*(European – South-east Asian
Energy Modeling and Policy Analysis Project)*

Project description and status

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General information

- **Source of funding:** Co-financed by the European Commission through EC-ASEAN Energy Facility Program
- **Project duration:** August 2005-December 2006
- **Countries under consideration:** Indonesia, Philippines and Vietnam
- **Partners:**
 - Chalmers University of Technology (Project Co-ordinator),
 - Stockholm Environment Institute (SEI),
 - Department of Energy, Energy Policy and Planning Bureau (EPPB), Philippines,
 - Institute of Energy (IE), Vietnam,
 - Agency for the Assessment and Application of Technology (BPPT), Indonesia



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Background

Indonesia, VietNam & Philippines

- Developing countries with growing populations and economies
- Endowed with both renewable and fossil resources
- Per capita energy consumption is low and unmet demand potential is enormous
- Targets for high future economic growth
- Energy demand potential is very high. 9-15% annual growth in electricity demand.



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A comparison with the industrialised world

	Unit	Indonesia	Philippines	Vietnam	USA
Population	millions	239	81	83	290
Income per capita	US\$2004 (PPP)	3460	4890	2700	39710
Electricity consumption	kWh/capita	387	467	421	13000



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Background (contd.)

- Power generation capacity expansion potential is very large
- Choice of energy technologies is critical, if chosen appropriately, benefits include:
 - energy savings,
 - energy security,
 - efficient use of resources,
 - cost-effectiveness in energy supply,
 - job creation,
 - increase in export earnings,
 - improvement in local as well global environmental conditions.



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Project objectives

- identifying country-wise a set of appropriate power generation technologies (main focus on renewable and advanced fossil ones), that would bring socio-economic and environmental benefits at local and global levels.
- quantifying the implications of using these technologies in terms of energy savings, fuel substitution, investment and pollution avoided etc.



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Project Objectives (contd.)

- identifying the potential market in the ASEAN region for European energy technologies and financial institutions.
- developing appropriate institutional and policy framework
 - to enhance the use of these advanced technologies in the countries under consideration, and
 - to contribute to successful economic and technological cooperation between EU and ASEAN regions.
- other european-added values?



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Methodology

Details of modelling and scenarios

- Main focus on the power sector
- Scenarios:
 - Business as Usual Scenario: continuing current trends in population, economy, technology and human behaviour
 - Technology Scenario: enhanced use of advanced technologies (European technologies). Technologies include:
 - renewable sources: wind, PV/solar thermal, micro/mini hydro, and biomass.
 - fossil fuels: advanced gas combined cycle (GCC), coal super critical, Integrated Gasification Clean Coal(IGCC) as options for immediate and near future; for the longer term, natural-gas fuel cell and Integrated Gasification coal fuel cell.
- Time frame of the analysis: 2000-2030



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Earlier MARKAL capacity

The project is depending on the capacity in the target countries being developed as part of the Australian (ausaid) funded EPSAP project



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Expected outputs

- Improved country modelling framework, especially with respect to renewable and advanced technologies
- Country-specific appropriate renewable and advanced fossil technology portfolios for power generation
- Implications on system cost due to the penetration of renewable and advanced fossil technologies
- Outline of policy and institutional framework needed to enhance the penetration of renewable and advanced technologies



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Expected outputs (contd.)

- GHG emission mitigation potentials and costs
- Investment potentials associated with these technologies, in other words business potentials
- CDM project potentials



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Future of the project

We do see a number of highly interesting possibilities for a continuation of the project



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