



វិទ្យាស្ថានបណ្តុះបណ្តាល និង គ្រោងប្រជាជនដើម្បីអភិវឌ្ឍន៍កម្ពុជា  
CDRI – Cambodia's leading independent development policy research institute

# CDRI's Research Activities on Climate Change and Low Carbon Competitiveness

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# CDRI's Research Activities

1. Gender and Water Governance: Women's Role in Irrigation Management and Development in the Context of Climate Change, a Sida supported project (finished)
2. Climate Change and Water Governance in Cambodia, IDRC supported project (ongoing)
3. Adaptation Capacity of Rural People in the Main Agro-ecological zones in Cambodia, a Sida supported project (ongoing)
4. Low Carbon Competitiveness in Cambodia, A joint research project with ODI (ongoing)

# Low Carbon Competitiveness in Cambodia

**Impacts of Climate Change**   **Increasing Natural Resource Scarcity**   **International Climate Change Mitigation Policies**



## **Transform global trade patterns**

- These will inevitably create transformational shifts in prices and patterns of production and demand in future.
- Implications on sources of competitive advantages, growth, and opportunity

# Background

- Cambodia's growth strategy is built around the National Strategic Development Plan since 2006 (updating on a regular basis)
- Various sectoral strategies
- National Adaptation Programme of Action (NAPA) on Climate Change in 2006
- National Green Growth Roadmap in 2010

# Background (Cont)

This study focuses on the opportunities and risks facing low income countries in particular.

Cambodia Case study, Challenges, threats, Responses and Opportunities in 3 main sectors:

- Energy
- Manufacture
- Tourism

What impact will this have on developing countries like Cambodia?

How can Cambodia maintain their competitiveness, manage threats to their growth, and capitalise on new opportunities generated?



# Research Objectives

1. The purpose is to provide a practical approach to help policymakers adjust their economic policies to the new context, and identify and capitalize on new opportunities.
2. Promotes green growth and jobs.

This will be achieved through the implementation of a “Low Carbon Competitiveness Diagnostic”

# Energy

Table: Electricity Production of Cambodia, MW (2011)

| Year | Total Electricity Production | Coal | Hydro | Diesel | Wood & Biomass |
|------|------------------------------|------|-------|--------|----------------|
| 2010 | 360                          | 13   | 13    | 328    | 6              |
| 2011 | 569                          | 13   | 207   | 342    | 7              |

*Source: EAC (2012)*

1. Unreliable electricity– the biggest bottleneck for Cambodia's development with higher price
2. 2009 Cambodian national development strategy: improve supply of energy and reduce tariff, renewable sources: e.g. solar, wind, and possible use of nuclear power
3. Importing energy from Vietnam, Thailand, and Laos

# Energy

## Electricity Tariffs in Asean Countries, (US Cent/kWh)

| Country     | Residential | Commercial  | Industrial  |
|-------------|-------------|-------------|-------------|
| Brunei      | 3.82-19.11  | 3.82-15.29  | 3.82        |
| Cambodia    | 8.54-15.85  | 11.71-15.85 | 11.71-14.63 |
| Indonesia   | 4.60-14.74  | 5.93-12.19  | 5.38-10.14  |
| Lao PDR     | 3.34-9.59   | 8.80-10.36  | 6.23-7.34   |
| Malaysia    | 7.26-11.46  | 9.67-11.10  | 7.83-10.88  |
| Myanmar     | 3.09        | 6.17        | 6.17        |
| Philippines | 6.65-10.52  | --          | --          |
| Singapore   | 19.76       | 10.95-18.05 | 10.95-18.05 |
| Thailand    | 5.98-9.90   | 5.55-5.75   | 8.67-9.43   |
| Vietnam     | 2.91-9.17   | 4.38-15.49  | 2.30-8.32   |

*Source: ASEAN Center for Energy (2011)*



# Energy

## Value of Oil imports into Cambodia 2000-2011

| Year            | 2000  | 2001  | 2002  | 2003  | 2004  | 2005  | 2006  | 2007 | 2008  | 2009  | 2010  | 2011  |
|-----------------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|-------|-------|
| US\$<br>Billion | 0.339 | 0.372 | 0.385 | 0.451 | 0.649 | 0.841 | 1.123 | 0.44 | 0.421 | 0.414 | 0.466 | 0.647 |

*Source: IMF (2013<sup>i</sup>)*

1. Oil and gas reserve
2. Coal Deposit in Stung Treng, Preah Vihear and Kampong Thom provinces
3. Off-shore deposits of bituminous coal south of Kampot and Koh Kong provinces (Williamson, 2005)



# Renewable Energies in Cambodia

1. Production of biogas at the household level is currently being implemented under the National Biodigester Programme
2. Rice millers in Cambodia are now considering using their waste rice husks in order to produce electricity, with support from UNIDO,
3. Solar energy
4. Hydropower

# Energy

| Opportunities / threats   | Implications / responses   |
|---|--|
| High and rising energy prices and limited access to energy  | Investment in renewable and innovative ways to access electricity will improve competitiveness in the long term. |
| Growth in hydropower will increase the supply of energy, but could be affected by climate change. | Diversify energy generation base, invest in alternative sources of energy  |

# Energy

| Opportunities / threats   | Implications / responses   |
|---|--|
| Reforms to the ASEAN market system could help increase the number of countries Cambodia can import electricity from, thus decrease its price. | Invest in infrastructure to facilitate trade in electricity. Facilitates investment in larger energy generation plants yielding scale economies. |
| Biomass (i.e. biogas digesters, bioethanol or rice husks) could provide a competitive source of energy in rural areas.                        | Appropriate investment climate and regulatory framework needed e.g. feed in tariffs.   |

# Energy

| Opportunities / threats   | Implications / responses  |
|---|---|
| The introduction of feed-in-tariffs and other measures such as provisions in building codes could help incentivise investment in renewable energy technologies.                     | Need for appropriate regulation, incentives, awards, demonstration projects, and access to finance to cover upfront costs.            |
| Oil, gas and coal deposits could be a source of export revenues or import substitution, improving the country's balance of trade, should they prove to be commercially exploitable. | Strategic decisions faced, which will require analysis of long term and short term implications for energy costs and competitiveness. |

# Energy

| Opportunities / threats  | Implications / responses   |
|--|--|
| Fossil fuel deposits could undermine incentives for the development of renewable energy sources.   | Strategic decisions faced, which will require analysis of long term and short term implications for energy costs and competitiveness.  |
| Use of fuelwood, by both enterprises and households, could threaten Cambodian forests if not managed sustainably and could also pose a resource scarcity problem in the medium to long term for enterprises dependent on fuelwood as a source of energy. | Investment in alternative energy sources.<br><br>Sustainable forest management by communities and the private sector can help to provide more sustainable source of fuel wood. |



# Energy

| Opportunities / threats  | Implications / responses   |
|--|--|
| Access to finance through carbon market limited in the short term, but public climate finance could plug gaps. | Develop a strategy that optimises contribution from public sources of climate finance. |



**Thank You For Your Kind Attention!**

**Questions & Comments**