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# Quantifying Barriers to More Effective Private Sector Involvement in the Transition to Low Carbon Energy Systems

12<sup>th</sup> OERC Energy and Climate Change Symposium

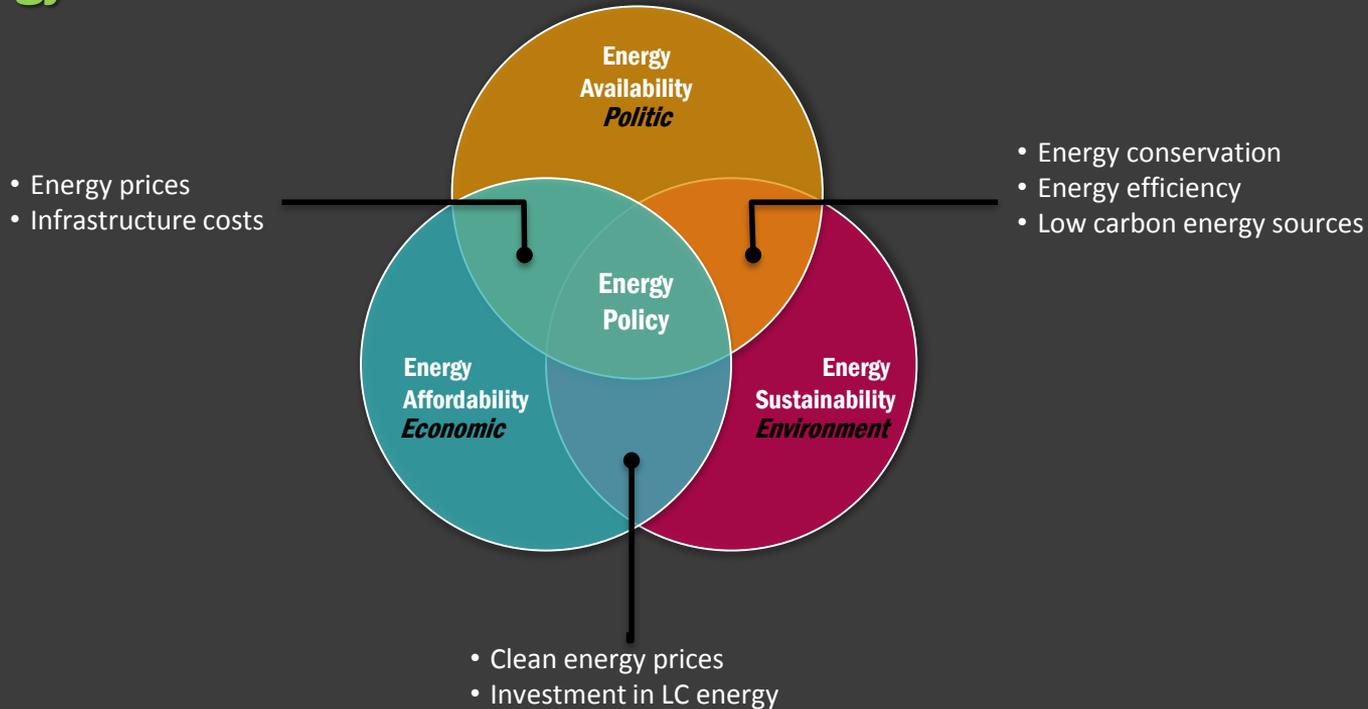
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# Energy challenges

## The Energy Trilemma



# Large scale shift in the energy system

## The global push

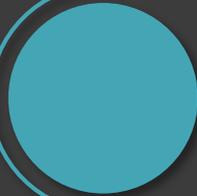
- The Paris Agreement, which was ratified on December 2015, for the first time brings all nations to limit global warming and foster the transition towards low carbon development under the NDCs framework.
- Goal: limit the global temperature increase to below 2°C (against the pre industrial level)
- 184 countries have ratified the agreement and energy targets have been integral to most of the submitted NDCs.

# Large scale shift in the energy system

## Domestic efforts

- **China**
  - CO2 emissions per unit of GDP is 33.8% lower than 2005 level
  - Share of non fossil fuels in primary energy consumption is 11.2%
  - Invested a total of US\$126.6 billion in RE in 2017
  - The new normal economy, which emphasizes on achieving better quality growth that is more economically and environmentally sustainable
- **New Zealand**
  - Electricity market reform to promote competition, reliable supply, and effective operation
  - Share of renewable energy in 2015 reached 80%
  - In 2014, New Zealand had second-highest contribution of renewable energy to TPES among IEA countries. and by far has the highest geothermal share in TPES

# Transition to low carbon energy system



**Huge investment needed**

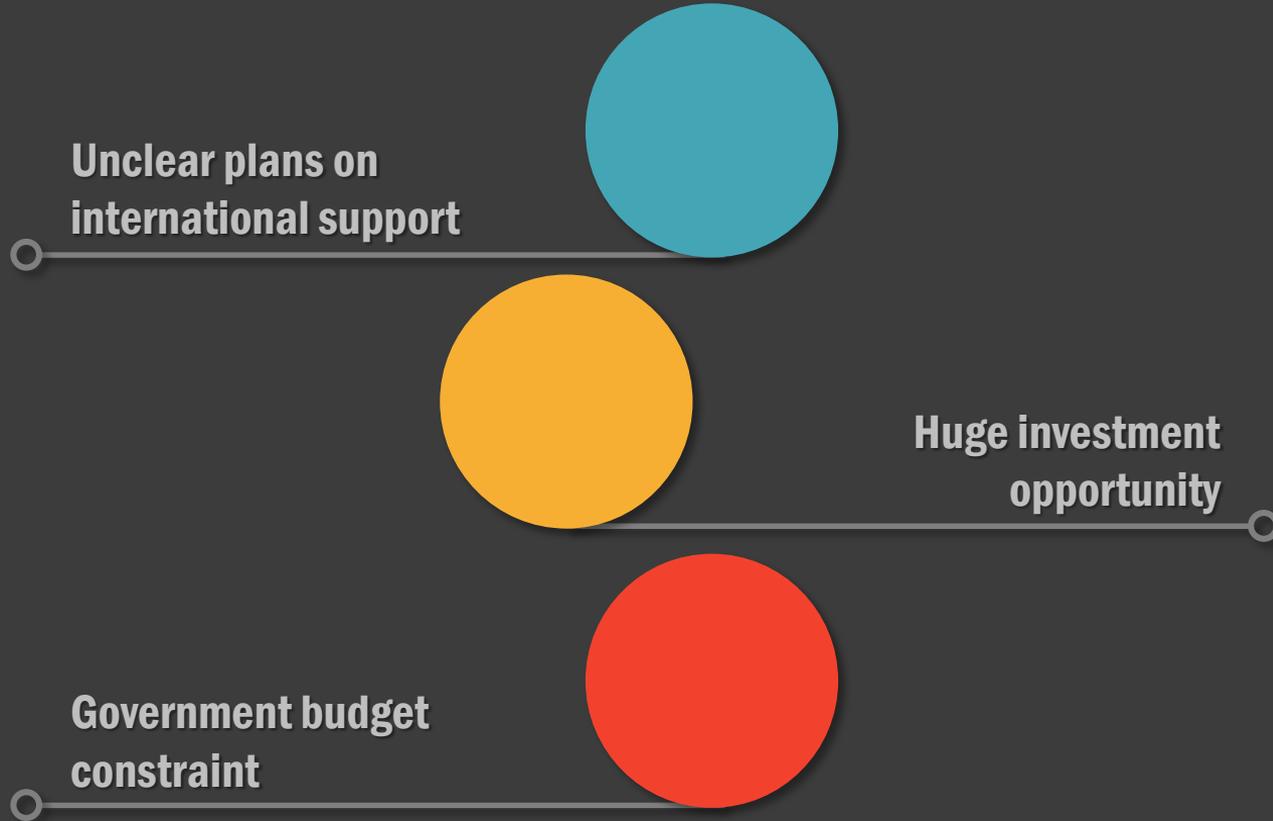


**Governments are cash strapped**



**Private finance mobilization**

# Private finance mobilisation



# Research objective

**Quantify barriers to more effective private sector involvement in the transition to low carbon energy sector**

**Measure the direct effect and interaction of variables that influence low carbon investment**

# Research objectives



## ● Policy

- Energy policies and targets
- Energy market structure
- Investment facilitation

## ● Market

- Demand for financing and low carbon energy
- Price signal
- Investment risks
- Market regulations

## ● Barriers

- Commitments to low carbon investment
- Access to finance
- Risk perceptions
- Capacity to assess risks

# Research objective

**Hypothetically, private capital mobilisation is largely depend on the regulatory environment in which these investors operate. However, reducing regulatory barriers per se would not generate any significant investment improvement, unless it is accompanied by improving other investment enhancing determinants (e.g. risk return profile) so that capital can flow effectively.**

# Preliminary data analysis results

- For ASEAN countries, the barriers to invest in low carbon energy are largely barriers to enter the market, such as: market monopoly, investment risks, risk sharing mechanisms, etc
- Pricing signal seems to be important to encourage investment in ASEAN (energy tax, subsidy, volatile price)
- However, for OECD countries pricing signals are not really pronounced as barriers.
- For project developers, investment obstacles are including complex application procedure, currency risks, investment costs, FDI restriction, etc

# Acknowledgment



[www.eria.org](http://www.eria.org)

# Thank you



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