

# **APEC Workshop on Small Hydro and Renewable Grid Integration**

**Hanoi, 03-05 April 2013**



## **Current Status and Future Plans on Renewable Electricity Sources IN VIET NAM**

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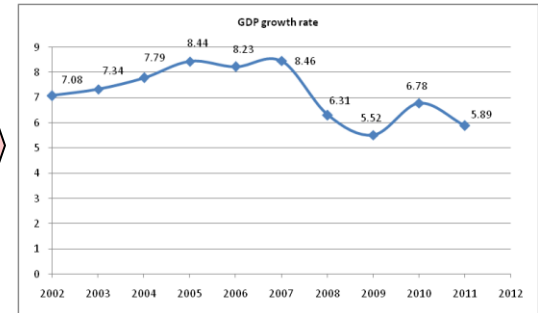
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# 1. Introduction: excellent fundament for RE development

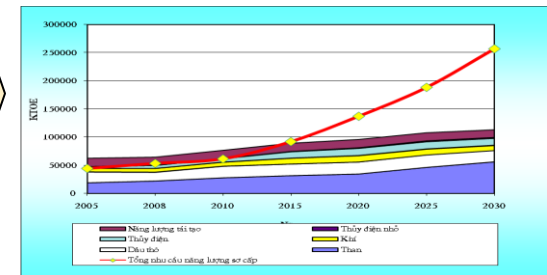
## FAST ECONOMIC GROWTH

- Average GDP growth during the past 10 years: **7.2%**
- GDP growth Forecasted for the next 10 years: **~7.0%**:
- Electricity demand increased fastly, driven by economic development, population & income growth



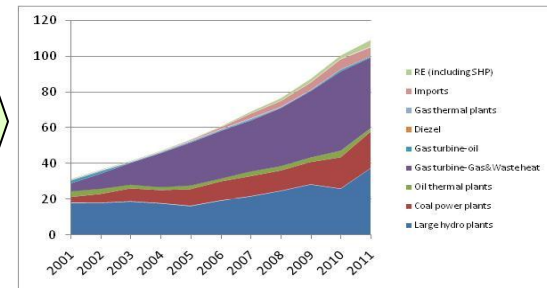
## ENERGY AND ELECTRICITY DEMAND

- During past 10 years: **Energy: 10%/year**  
**Electricity: 14.5%/year**
- Next 20 years: Electricity **increase 6 time**



## RENEWABLE ENERGY POLICY

- FIT for wind power: **7.8 UScents/kWh (2011)**
- Avoided cost for small hydro power: issued in 2009
- Existing (2011), shared by renewable electricity: **3.6%**;
- Gov. targets in sharing by renewable electricity:  
**in 2020: 4.5%; in 2030: 6% (power generation);**



## ABUNDANCE RE RESOURCE

Solar energy: 4-5kWh/m<sup>2</sup> day;

Wind energy: >6200MW (7m/s);

Biomass: >100,000 ton (>2000MW);

MSW: >320MW

Biogas: >100MW

Geothermal: 340MW

Tide, bio-fuels

Small Hydro:>7000MW



## 2. RE: Potential and current

### RE for Power (on and off grid)

#### Small Hydro



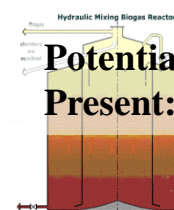
**Potential:** > 7.000 MW  
**Present:** >900 MW

#### Biomass



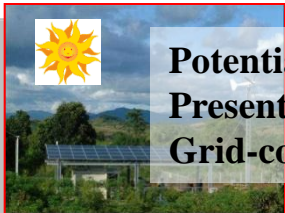
**Potential:** >2500 MW  
**Present:** 150 MW

#### Biogas



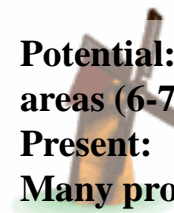
**Potential:** >100 MW  
**Present:** >0,5 MW

#### Solar energy



**Potential:** 4-5kWh/m<sup>2</sup>  
**Present:** 4 MW  
**Grid-connected:** 0.18MW

#### Wind energy



**Potential:** 8% of total national areas (6-7 m/s)  
**Present:** 55 MW  
**Many projects (F/S):** ~ 3000MW

#### Geothermal



**Potential:** 340 MW  
**Present:** 0 MW

#### M.Solid wastes

**Potential:** >320 MW  
**Present:** 2,4 MW

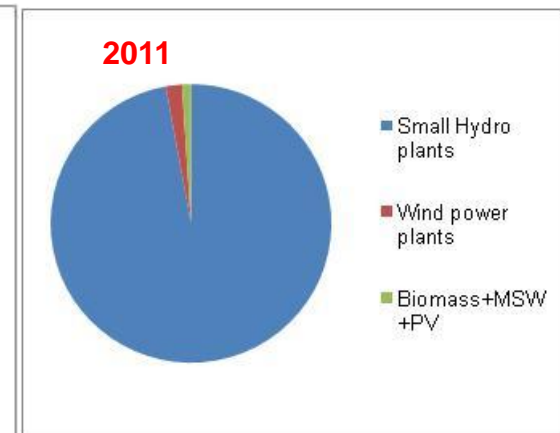
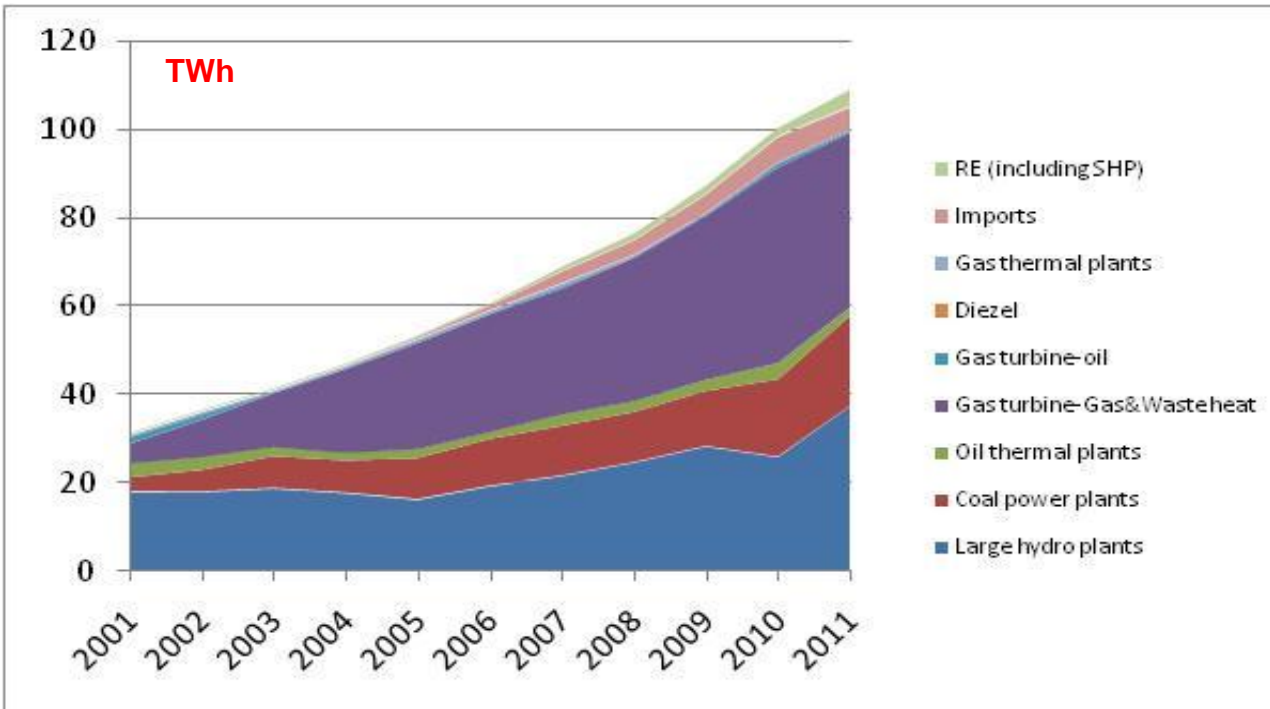
#### Ocean energy

**Potential of tidal power:** 100-200 MW  
**Present:** 0 MW

## 2. RE: potential and current

### Small hydro power and electricity generation from RE (grid-connected)

- Total national electricity generation mix: 108.725 TWh
- Total electricity generation from RE: 3.65 TWh, accounts for 3.6% only. Dominated by electricity from small hydro-power (97% of total RE).
- Electricity generation and development trend of renewable electricity during past 10 years from 2001 to 2011: Wind Power just emerged from 22/08/2009, and municipal solid waste from 2005.



### 3. Strategy and policy for RE development in VN

Policies	Main contents related to RE
<p>National energy development strategy for period up to 2020, vision to 2050</p> <p>Decision No. 1855/Qd-TTg, dated 27/12/2007</p>	<p>+ Increasing share of RE to <u>5%</u> of total primary energy consumption in 2020, and about 11% in 2050.</p> <p>+ Completing rural-mountainous energy program,. <u>By 2020 about 100% households will access to electricity</u></p> <p><u>+ Consider to establish RE development fund</u></p>
<p>Decision No. 177/2007/QD-TTg dated 20/11/2007 approving “study on bio-energy development for period up to 2015, vision to</p>	<p>- 2015: production of ethanol and vegetable oil will reach 250 thousand tons, accounting for <u>1%</u> of whole country’s gasoline, oil demand;</p> <p>- 2025: production of ethanol and vegetable oil reaches 1.8 mill. Tons, accounting for <u>5%</u> of whole country’s gasoline, oil demand.</p>
<p>Circular No. 58/2008/TTLT- BTC- BTN&amp;MT, 04/7/2008 guiding on implementation of some articles of Decision No.130/2007/QD-TTg.</p>	<p>Stipulating on price subsidy for products of CDM projects, including:</p> <p><u>Subsidy/kWh = cost/kWh + reasonable profit /kWh – selling price/kWh – CDM selling price</u></p>
<p><b>Decision No. 37/2011/QD-TTg, dated 29/06/2011</b> by Prime Minister on wind power price subsidy mechanism</p>	<p>+ To purchase whole electricity via standard power purchase agreement (20 years).</p> <p>+ Grid connected electricity price subsidy: <b>purchase price is equal to 7.8 Uscents/kWh</b></p>
<p><b>Decision No. 1208/QD-TTg, ngày 21/07/2011</b> by Prime Minister approving National Power Development Plan VII</p>	<p>Priority given to development of RE for electricity production: reaches 4.5% of total electricity production in 2030, and 6% in 2030</p>

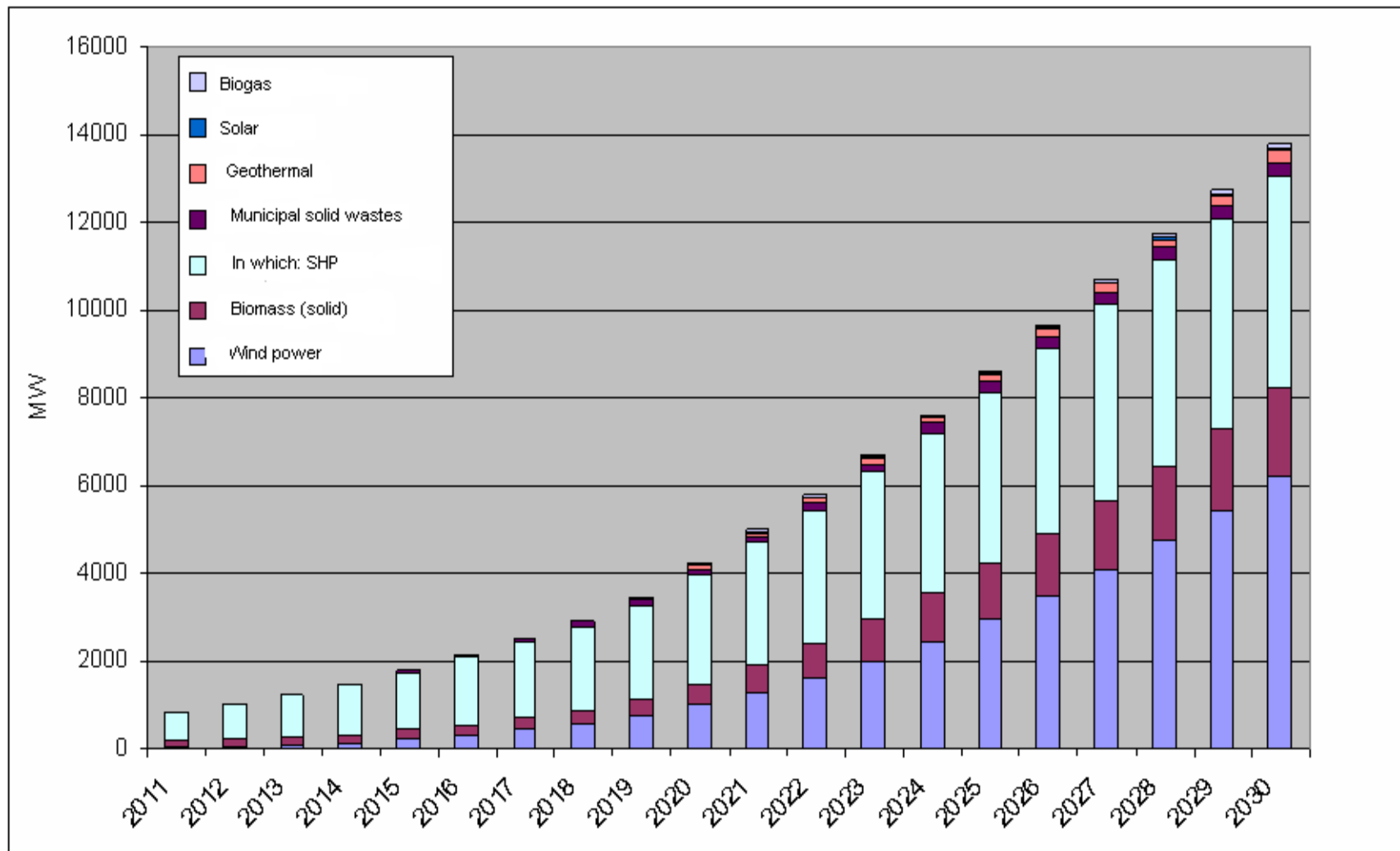


### 3. Strategy and policy for RE development in VN

Policies	Main contents related to RE promotion
<p><b>Decision No. 18/QD-BCT, dated 18/8/2008</b> on promulgation of avoided cost based tariffs schedule and standard power purchase agreement</p>	<ul style="list-style-type: none"> <li>+ Regulation on conditions, procedures for development, amendment and cancellation of electricity generation tariff applied for RE small power plants connected to the national power grid. Standard power purchase agreement.</li> <li>+ Applicable for organizations, individuals purchasing electricity from RE small power plants.</li> </ul>
<p><b>Decision No. 37/2011/QD-TTg, dated 29/06/2011</b> by Prime Minister on wind power price subsidy mechanism</p>	<ul style="list-style-type: none"> <li>+ To purchase whole electricity via standard power purchase agreement (20 years).</li> <li>+ Priority given to investment capital, tax, fees, land use</li> <li>+ Grid connected electricity price subsidy: <b>purchase price is equal to 7.8 Uscents/kWh</b></li> <li>+ Applied for CDM</li> </ul>
<p><b>Decision No. 1208/QD-TTg, ngày 21/07/2011</b> by Prime Minister approving National Power Development Plan VII</p>	<ul style="list-style-type: none"> <li>+ Priority given to development of RE for electricity production: reaches 4.5% of total electricity production in 2020, 6% in 2030</li> <li>- <b>Planned period: new installation of about 13,000MW from RE</b></li> <li>+ Electrification – by 2020 most households will have electricity: 600 thousand households will be supplied with electricity from RE</li> <li>+ Solutions of electricity price (ensuring cost recovery + reasonable profit).</li> </ul>

# 3. Strategy and policy for RE development in VN

## Grid connected RE projects (only calculating SHP with capacity ≤ 30MW)





# 3. Strategy and policy for RE development in VN

## Off- grid based on RE

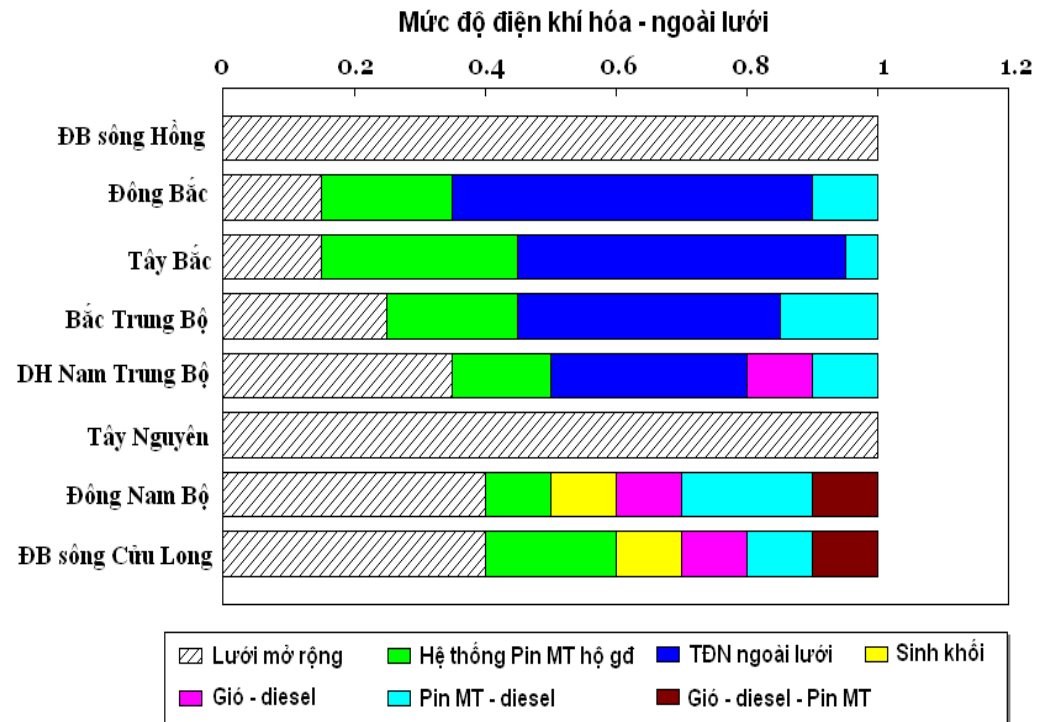
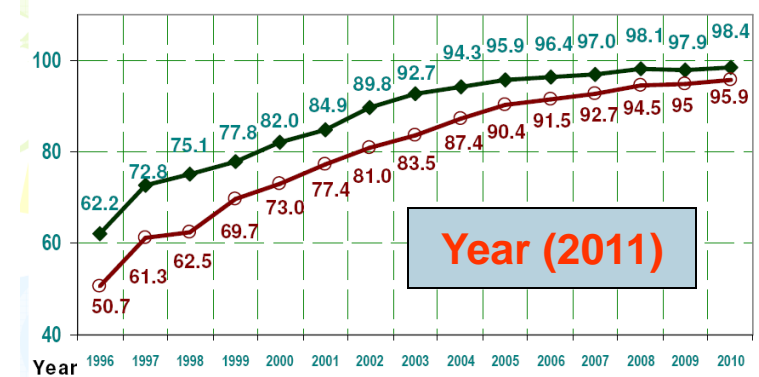
### RE electricity for off grid electrification

#### ❖ Status of electrification

- About 800 thousand households without electricity
- Power network expansion consideration
- Assessment of RE resources in 8 zones and provinces

#### ❖ RE resources for electrification

- Anticipated plan for supplying electricity to 800 thousand households without electricity
- Solar PV power systems: 18%
- SHP, mini system: 25%
- Biogas: 4%
- Wind + Diesel: 4%
- PV + Diesel: 9%
- Wind + PV + Diesel: 4%
- National power grid: 37%



# 4. Opportunities and challenges

## Investment opportunities

- **High energy and electricity demand in coming time – an opportunity for RE development**

- ❖ **By 2030, VN's energy demand will be increased 4 times compared to 2005. It is anticipated to import coal for electricity production (after 2015)**
- ❖ **By 2030 electricity demand of VN will increase nearly 7 times compared to 2010. At present, electricity must be imported from China to meet electricity shortage**

- **Vietnam has available RE resources, including wind, SHP, biomass, solar, geothermal ...**

- **Government and ministries paid attention on important of renewable energy and implementation RE projects**

- ❖ **Preparation of RE development strategy and master plan for VN: completed and submitted to the Government for approval**
- ❖ **Strategy on adaptation to climate change: has been promulgated  
RE is one of strategic tasks in reduction of green house gas emission**
- ❖ **Strategy on green growth: Being prepared  
Promotion of green industry/energy, low carbon technologies**

## 4. Opportunities and challenges

### SUBSIDIES ENERGY

- Energy price from conventional sources still subsidized (e.g. coal, electricity)
- Only considered internal cost (not yet considered external cost viable)

### TARIFF.....SETTING UP

- Selling price based on financing cost of buyer
- Environment and social benefits are not assessed

### LACK OF DATA AND PLANNING

- Lack of reliably data
- Lack of detailed assessment
- Lack of detailed planning in the short and long term

### BIG CONCERN OF RE INVESTORS

- Technology cost
- Based on seasonable production,
- Scattered owners

### B. Investment opportunities

# 5. Conclusions

## **Vietnam has potential for development of RE power and other RE**

- Grid connected wind power (including offshore/Semi-offshore –Bac Lieu wind power project)
- Off grid wind power/ mini projects (rural electrification – huge program of Vietnamese government with target 100% household access electricity in 2020)
- Other RE sources: biomass, biogas, municipal solid wastes, PV etc.

## **Legal framework for wind power development and renewable energies**

- Government goals for development of wind and renewable energy (PDP VII)
- National Strategic Program to Respond to Climate Change (2011) and Green Growth Strategy (2012)
- Renewable Energy/ Wind Power Development Planning on provincial and national level are being developed
- MoIT's program "Support to the development of renewable energy" is being implemented

**Vietnam is a leading country among ASEAN in terms of installed capacity of wind power.**



# Thank you



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