

# RURAL ELECTRIFICATION IN VIETNAM

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# RURAL ELECTRIFICATION IN VIETNAM

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1. Current situation
2. Plan for rural electrification development
3. Lesson learned
4. Renewable Energy target and Biogas Program for Vietnamese livestock sector 2007 - 2014

# 1. Current situation of RE in Vietnam

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Electrification rate:

- ❑ In 2005
  - District: 97.95%
  - Commune: 96.3%
  - Household: 88.91%
  
- ❑ In 2012
  - District: 100%
  - Commune: 99.36%
  - Household: 97.19%

# Rural Electrification Programs in Vietnam

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## ❖ ODA Programs

- Rural Electrification Project no.2 (REII)
- ✓ Total budget: US\$547.2 mil., of which US\$420 mil. is from WB fund.
- ✓ Project duration: 2005 - 2014
- Project of Renewable Energy, grid extension and rehabilitation for remote communes
- ✓ Total budget: US\$211.77, of which US\$151.58 mil. is from ADB fund.
- ✓ Project duration: 2009 – 2015



# Rural Electrification Programs in Vietnam

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## ❖ National budget funding Programs

- Project of electricity supply to un-electrified households in Bac Lieu. Total budget: about US\$4.5 million.
- Project of electricity supply to un-electrified households in Kien Giang. Total budget: about US\$10 mil.
- Project of electricity supply to un-electrified households in Soc Trang. Total budget: about US\$5 mil.
- Project of electricity supply to un-electrified households in Tra Vinh. Total budget: about US\$11 mil.
- Project of electricity supply to un-electrified households in Son La. Total budget: about US\$27.8 mil.
- In addition, EVN has been implementing some extension and rehabilitation projects on its own fund.

## 2. Plan for rural electrification to 2020

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- National target: by the year 2020, most of the rural households would be electrified.
- Estimation of total capital investment: about US\$1.5 bil.
- Number of households electrified: about 550,000 households.
- Financing mechanism: National budget is of 85% total investment, 15% is from local budget and EVN.



# Lesson learned from rural electrification in Vietnam

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- The determination of the government and provincial governments, district and commune with the active participation of local people under the motto: "the State and the people work together, the central and local work together".
- Mobilization of State budget in parallel with the local budget for development of the rural power grid.
- EVN's efforts in the implementation of the target of the Government.
- Government policy to encourage private sector to invest for rural electrification.
- The positive involvement of international credit organizations and donors

# Recommendation for ASEAN countries

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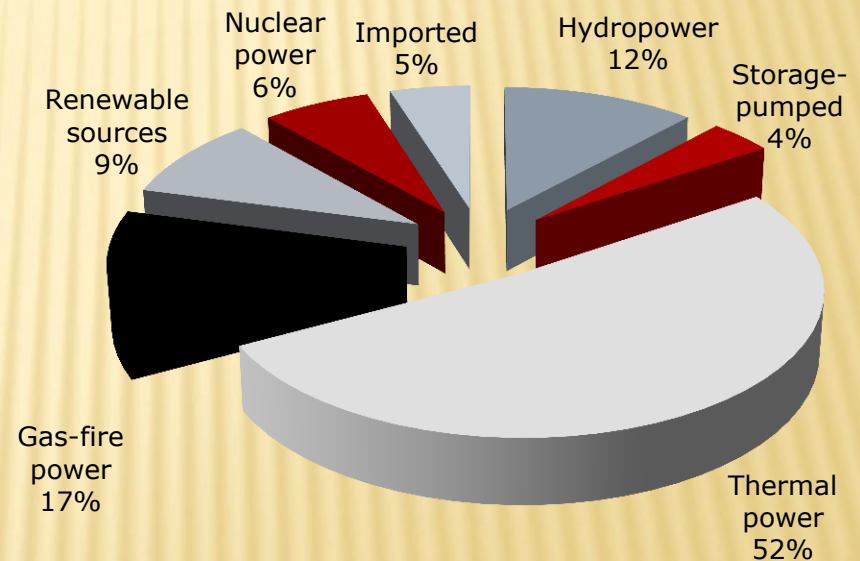
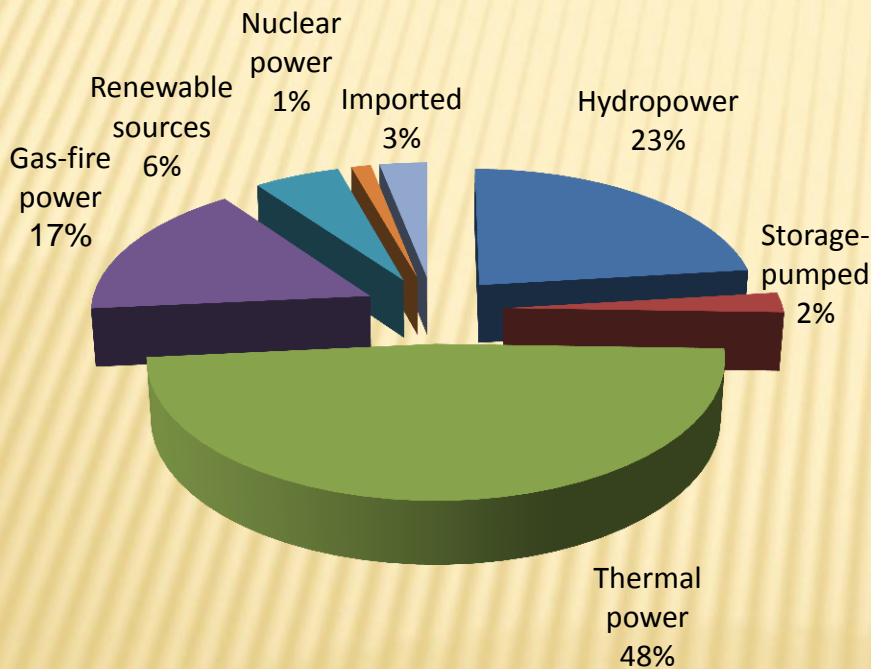
- Determination of the central and local government and support of the people.
- Identification of the priority criteria for the remote area of each priod development which will ensure the most efficient power supply.
- Reasonable mobilization of international organizations, businesses, organizations and individuals involvement in the rural electrification



# OBJECTIVES AND ORIENTATION FOR RE DEVELOPMENT

Increase the RE share in total installed capacity:

- 3.5 % in 2010; 4.5% in 2020; 6% in 2030

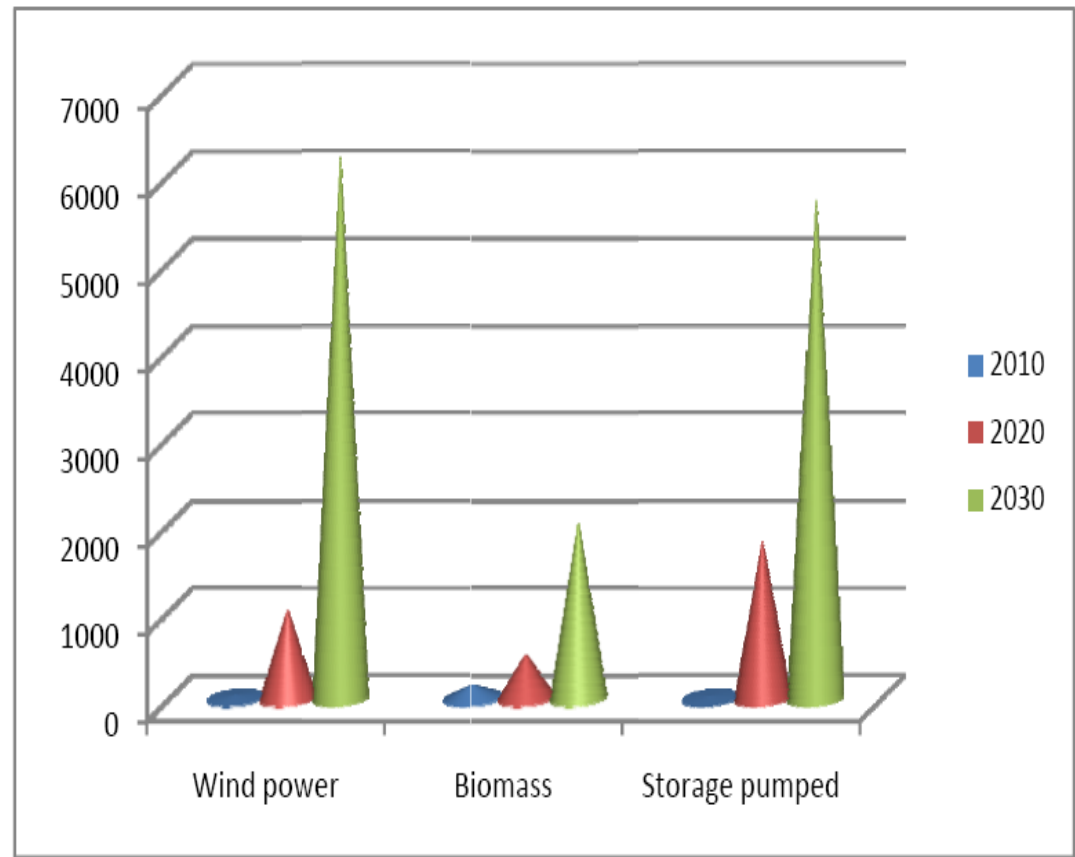


# OBJECTIVES AND ORIENTATION FOR RE DEVELOPMENT

## RE capacity

✓ Wind power: 1,000 MW in 2020 (0.7% of the total electricity generation) and 6,200 MW in 2030 (2.4% of the total electricity generation)

✓ Biomass and cogeneration: ~500 MW (0.6%) in 2020 and 2,000 MW (1.1%) in 2030



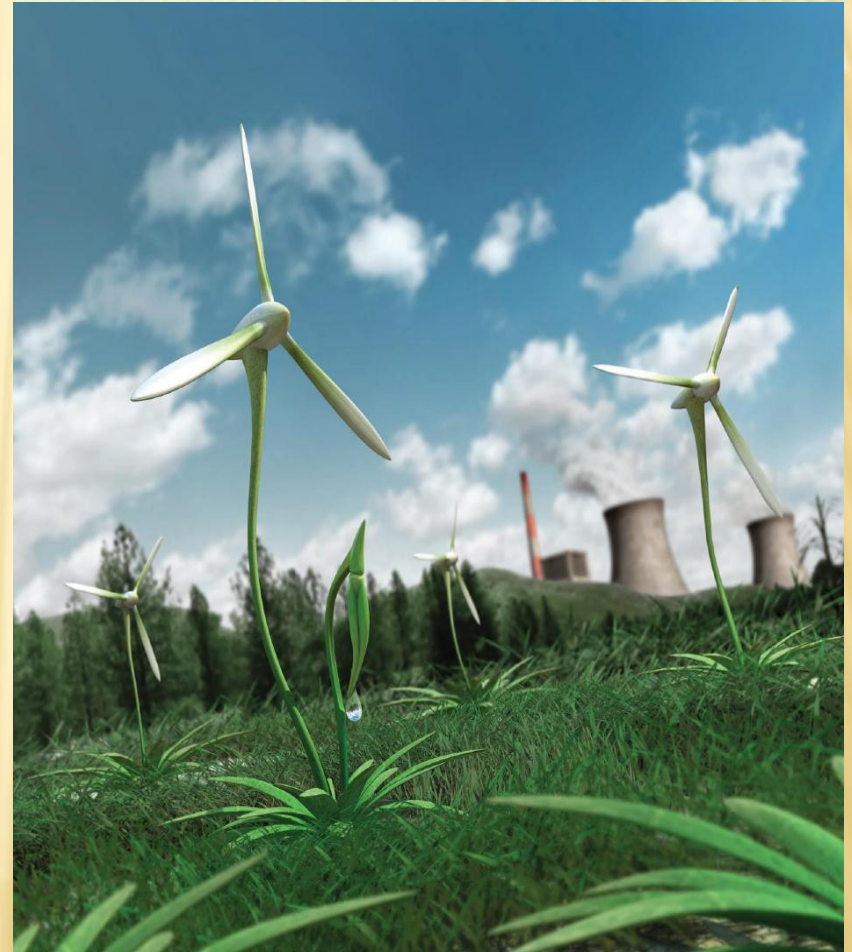


# MECHANISM AND POLICY TO ENCOURAGE THE DEVELOPMENT OF RE DEVELOPMENT

## General incentives:

- Import tax exemption for goods which can not be produced inland
- Corporate tax exemption for the first four years and reduce to 50% in the next 9 years.
- Obligation to purchase electricity: EVN must purchase all electricity generated from renewable energy sources
- Tax and land use fee exemption for renewable energy projects
- Free Environmental protection fee

\* Feed-in Tariffs for Biomass, Biogas development in Vietnam???



# Biogas Program for Vietnamese livestock sector 2003 - 2014

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## **Biogas production potential in Vietnam:**

- Waste from livestock areas:
  - + Household: 6.5 million households
  - + Scale farms: 23,000 camp
- Waste water from the village food processing agricultural products
- Total potential of biogas:
  - + Power: 181 MW
  - + Heat:  $1.825 \times 10^3$ TOE



# Biogas Program for Vietnamese livestock sector 2003 - 2014

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**Executive Agency:** Ministry of Agriculture and Rural Development

**Donors:** Holland government

**Project objective:**

- Contribute to rural development through the use of biogas technology, animal waste treatment,
- Supply cheap energy to farmers,
- Create more employment in rural areas and,
- Reduce the use of fossil fuels, reduce deforestation and greenhouse gas emissions.

**Project period:** 2003 - 2014

- Phase I (2003 -2006): implemented in 12 provinces and cities.
- Bridging period (2006): prepare for Phase II.
- Phase II (2007 - 2014): the project nationwide 58/63 provinces.

# Biogas Program for Vietnamese livestock sector 2003 - 2014

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## Typical biogas plant

- Fixed dome, lifetime 15 – 20 years.
- Rate of operation 95%
- Digester volume 8m<sup>3</sup>.
- Feeding:
  - + ~ 14 pigs (90%)
  - + ~ 4 cows (30%)
  - + ~ 5 persons night soil (50%)
- Biogas production: 1000 m<sup>3</sup> / plant / year.
- Energy production: 11 GJ<sub>nett</sub> / plant / year.
- Power: 0.61 kW<sub>gross</sub> / 0.35 kW<sub>nett</sub>



# Biogas Program for Vietnamese livestock sector 2003 - 2014

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## Project outputs:

- Until the end of 2012, the project has supported the construction of over 160,000 biogas, trained 807 technicians, 398 biogas team of builders and organized thousands workshops propaganda and trained for hundreds of thousands of people use biogas.

## Project outcomes:

- Supply energy to about 600 thousand people, and reduce carbon emissions into the air over 300 thousand tons per year.
- Provides clean energy equivalent to 2800 TJ/ year. This energy source can replace 245,000 tons of agricultural waste in cooking, 326,000 tons of wood, 36 000 tonnes of husk; 6593 tons of kerosene, 39,405 MWh and 4677 tons of liquefied natural gas.
- From 2003 to present, about 300 thousand jobs have been summarized as participate in the biogas system.
- Family living expenses decreased by 65%; agricultural output increased by 5% to 20%.

# CONCLUSION FOR RE DEVELOPMENT

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- Vietnam is considered to have great potential for renewable energy
- Development of RE source is one of the necessary solutions to meet energy demand and ensure power energy security, especially for remote areas, islands ... which can be not connected to the national electricity system to implement the objectives of the Government's rural electrification
- It is necessary for the establishment of mechanism and policies to encourage RE development and create a legal framework for investors in RE sector
- Support from international organizations/developed countries in terms of financial and technical support to promote RE development in Viet Nam is really needed