



**COUNTRY REPORT**

**STRATEGY AND CHALLENGE OF  
NUCLEAR ENERGY DEVELOPMENT  
IN VIETNAM**

**Dang Thi Hong, VAEA**

**Tsuruga, Japan, March 2013**

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# Vietnam



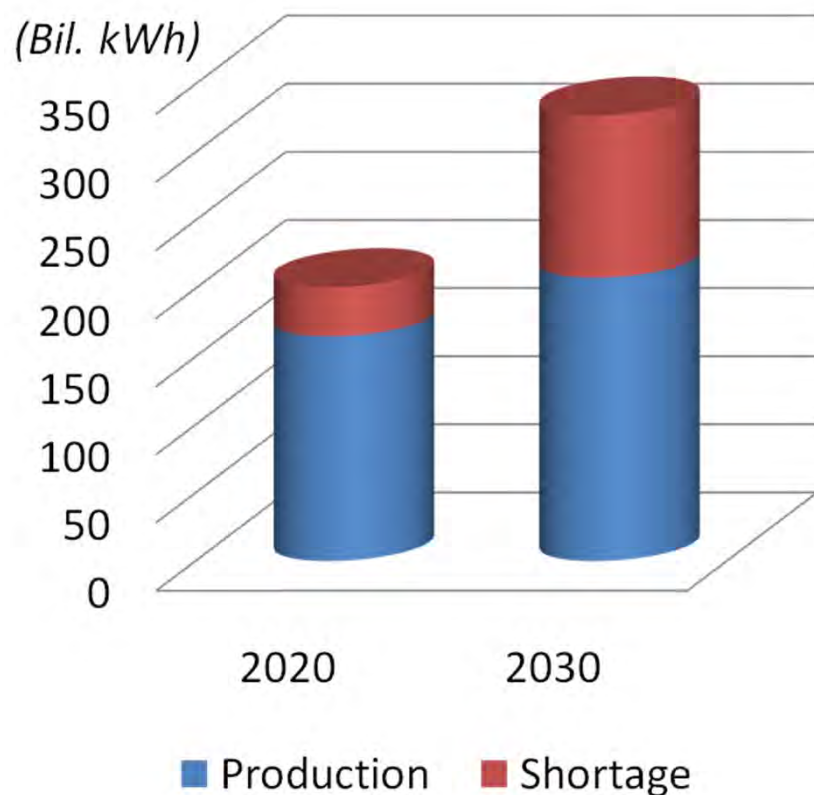
## VIETNAM – OVERALL DATA

Area	330,000 km <sup>2</sup>
Coastal lines	3,260 km
Population	86 mil.
GDP	120 bil. USD
Power consumption (per capita)	1,140 kWh/year
Power production	100 bil. KWh
Growth of Power Demand (2011)	12% - 15%

# Energy Demand



## Energy Demand



## Current status of energy security

	2020	2030
Domestic production	165*	208*
Demand (base scenario)	201*	327*
Shortage	36* <b>128**</b>	119*

Unit: Billion kWh

\*: 2006 estimation of base scenario (GDP growth rate of 7.1 - 7.2% for the period of 2001-2020), according to the "Strategy for peaceful utilization of atomic energy"

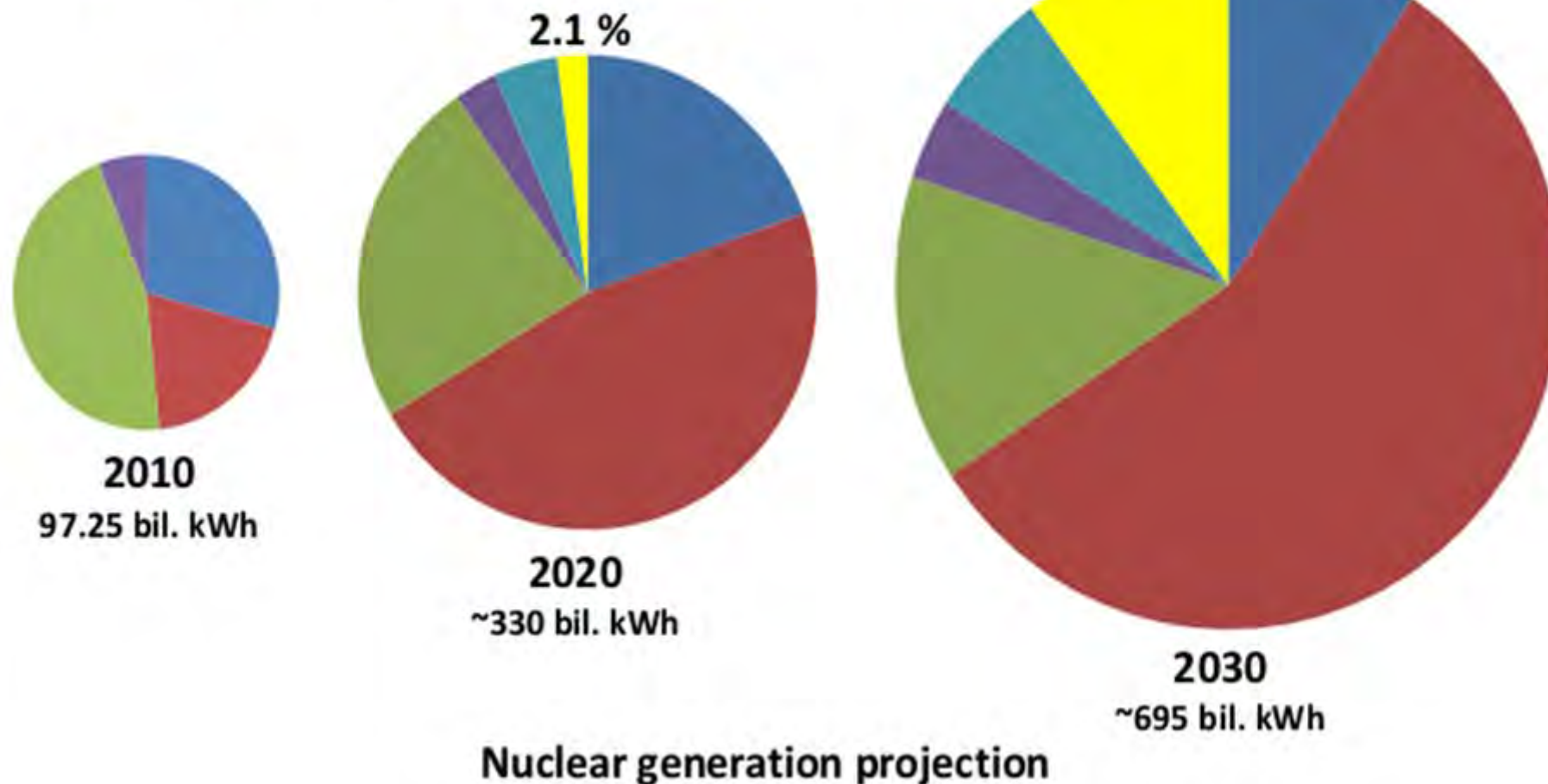
\*\* : 2009 estimation, according to the Pre-FS report by EVN

# NP Development Projection



*Planning for National Electricity Development for the Period of 2011-2020 with Consideration up to 2030*

■ Hydro ■ Thermal ■ Gas ■ Import ■ Renew ■ Nuclear



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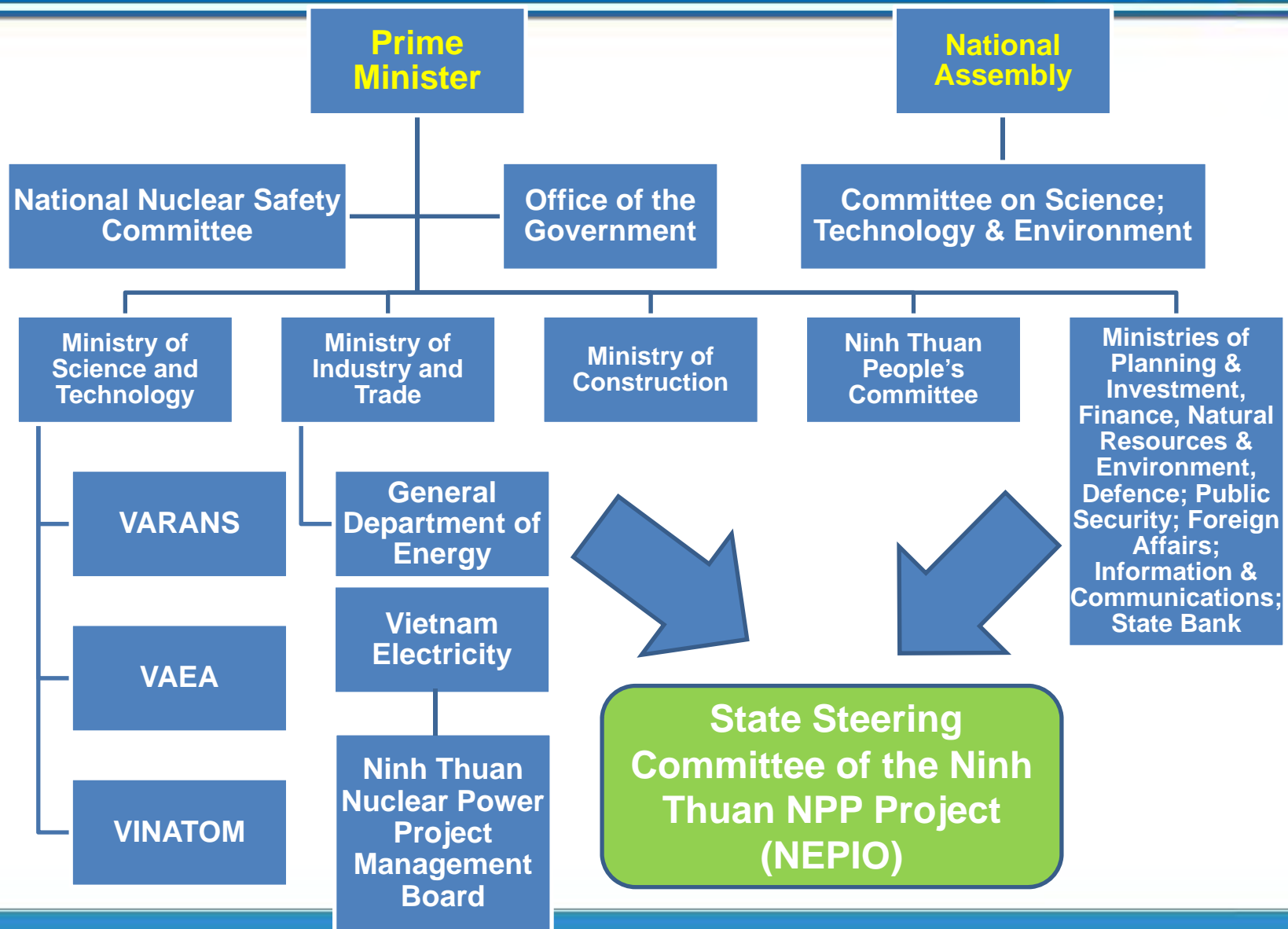
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# Management System



# National Policies on Atomic Energy



2006

- **Strategy on Peaceful Utilization of Atomic Energy up to 2020**

2007

- Master plan to Implement the Strategy on Peaceful Utilization of Atomic Energy up to 2020

2008

- **Atomic energy law**

2009

- **Resolution No. 41/2009/NQ-QH12 by the National Assembly on the Investment Policy of the Ninh Thuan Nuclear Power Project**

2010

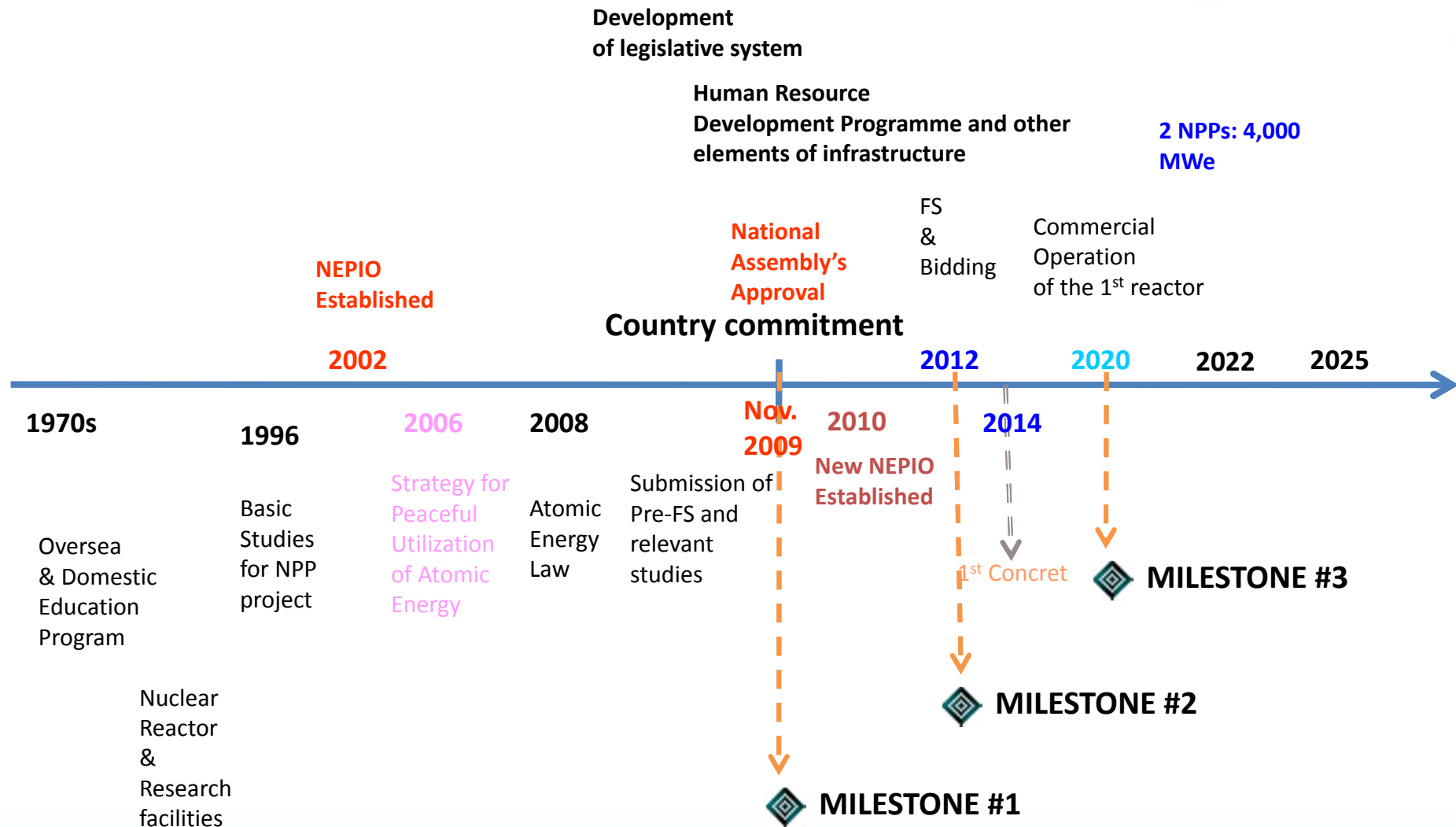
- Master Planning for the Peaceful Development and Utilization of Atomic Energy up to 2020

2011

- Planning for National Electricity Development for the Period of 2011-2020 with Vision up to 2030 (Master Plan VII)



# National Program



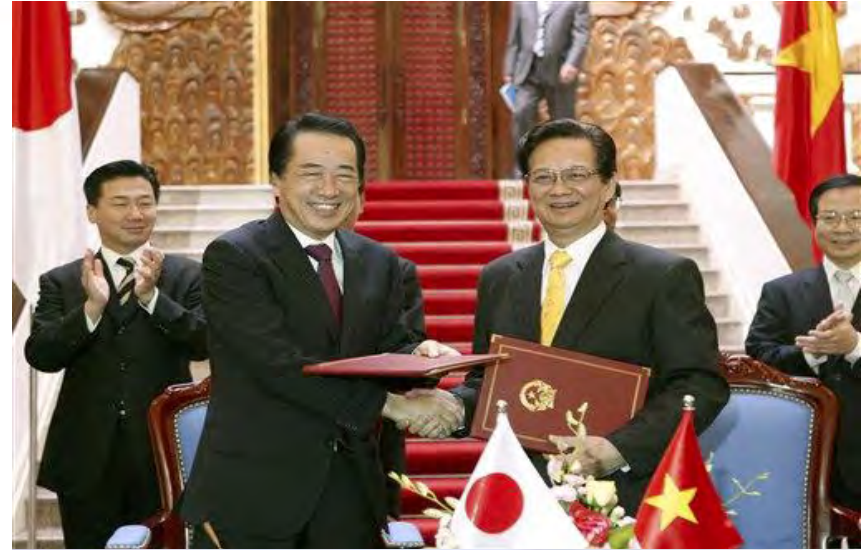
# NEPIO - Ninh Thuan Nuclear Power Project Management Board



- **Chairman:** Acting on behalf of the Prime Minister in directing & supervising activities of NEPIO
- **Permanent Deputy Chairman (MOIT):** Overseeing the project
- **Minister of MOST:** Regulation, safety issues, public acceptance
- **Minister of MOC:** Construction, materials & equipments management, localization
- **Chairman of People's Committee of Ninh Thuan:** Directing the resettlement program & local issues
- **Ministers of other ministries:** Issues related to the responsibilities of each ministry
- **EVN:** Acting as owner and head of the management board of the project. Funding the activities of NEPIO

- ***Development Program Orientation for Nuclear Power in Vietnam up to 2030:***
  - Total investment: 3,000 bil. VND (150 mil. USD)
- Objectives up to 2020:
  - For Nuclear Power Program:
    - 2,400 engineers (200 educated overseas);
    - 350 Master degrees & PhDs (150 educated overseas);
  - For other applications of nuclear energy:
    - 650 engineers (150 educated overseas);
    - 250 Master degrees & PhDs (100 educated overseas)

# Major Events





## Ninh Thuan NPP Project

- **Ninh Thuan:**
  - Area: 3,360.1 km<sup>2</sup>
  - Population: 911,600 (2004)
  - Density: 271,3 per./km<sup>2</sup>
  - GDP per capita: 600 USD (2010)
- **1<sup>st</sup> Plant:** Phuoc Dinh
  - 2 reactors (2020, 2021)
  - 2,000 MW
- **2<sup>nd</sup> Plant:** Vinh Hai
  - 2 reactors (2021, 2022)
  - 2,000 MW



# NPP Projects



- Potential sites (8 sites)

2020: 1<sup>st</sup> Nuclear power reactor of 1,000 MW

2025: 8,000MW nuclear power - 8% of total national electricity capability

2030: 15,000MW nuclear power - 10% of total national electricity capability



# Ninh Thuan Nuclear Power Project (1)



*Especially, Ninh Thuan is chosen for the construction of the first two NPPs in the country, with the total investment of r. 16 bil. USD and the most advanced and safe technology in the world. This is an essential opportunity for Ninh Thuan to have a breakthrough in rapid and sustainable development.*

**- Prime Minister Nguyen Tan Dung, Ninh Thuan 2011**

# Projected timeline for the 1<sup>st</sup> NPP





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# Challenges (1)



- **Tight schedule:** Less than 10 years for the preparation, construction, commissioning and operation of the first NPP.
- **Infrastructure:**
  - The imperfection of the legal and regulatory framework.
  - Lack of experience, skill and competence for:
    - Process of bid preparation and evaluation;
    - Large scale project management;
    - Regulatory bodies.
  - Insufficiency in supporting and auxiliary facilities to a NPP project.

# Challenges (2)



- **Financing:** The total amount of investment for the project will be over \$12 bil.
- **Technology:** Lack of experience and human resources in advanced technologies like nuclear power
- **Education & Training:**
  - The HR development plan has just been initiated;
  - Shortcoming of teaching staff for universities and training facilities;
  - Lack of interest from talented students.

# Challenges (3)



- **Public Acceptance:**
  - After Fukushima, public acceptance is a problem for NPP project;
  - Understanding on nuclear power safety is relatively low.
- **Siting:** Ninh Thuan province has a plan of developing tourism, which may cause problem for the NPP Project.
- **Radioactive Waste:**
  - Needs for long-term spent fuel storage to be considered in details.

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# Conclusion



- The success of the 1<sup>st</sup> NPP project requires national-wide well coordinated activities, a big efforts, a strong commitment and a good management by relevant national organizations, a close international cooperation with the IAEA and other nuclear organizations.
- Experiences from developed countries such as Japan, France or South Korea in nuclear power programme implementation benefits Vietnam very much as well as for other new comer.
- The NEPIO of Vietnam established in May 2010 will play a leading role in ensuring the success of the nuclear power projects.

**Thank you for your attention!**