NUCLEAR POWER PROGRAM IN MALAYSIA

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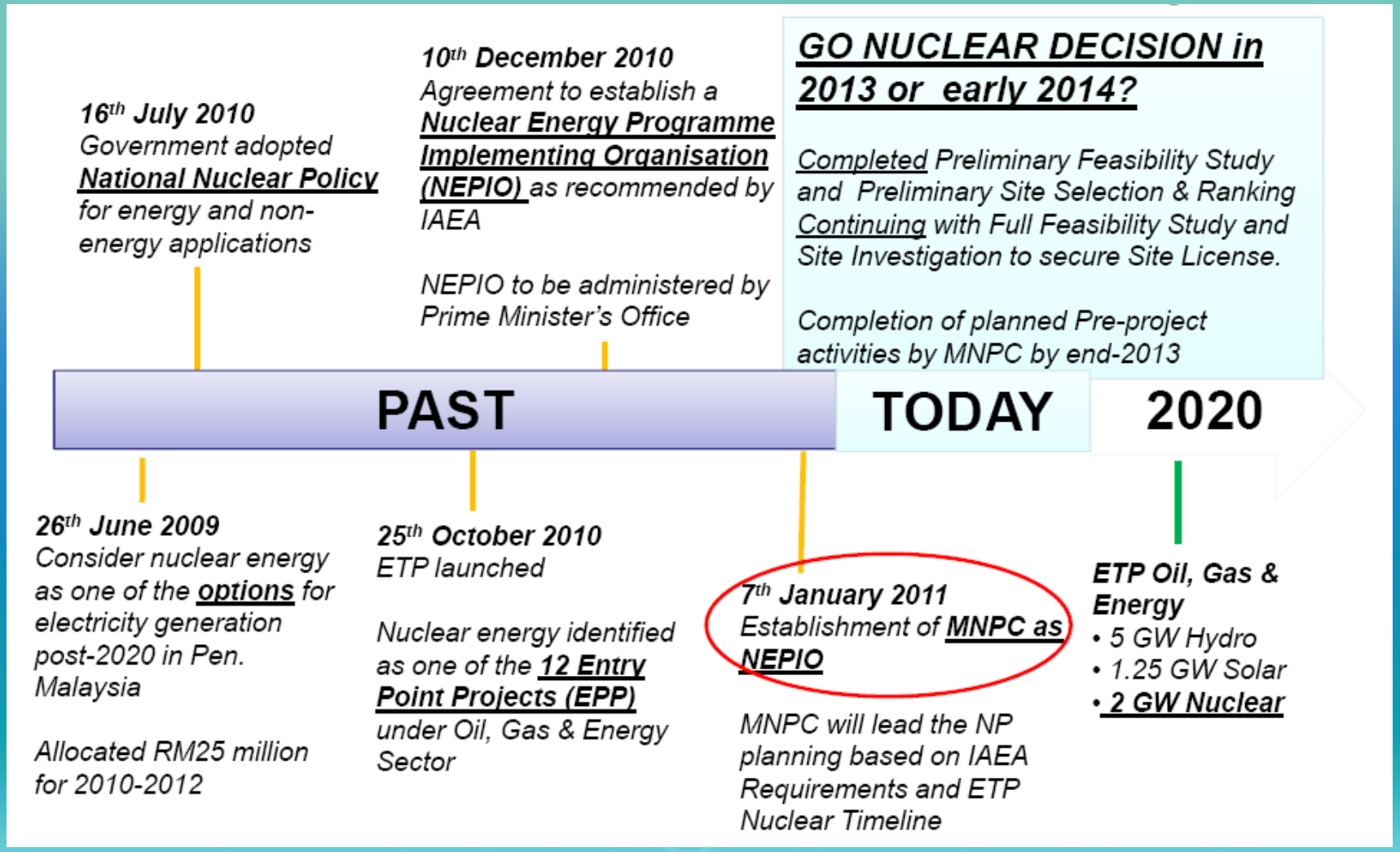
AGENSI NUKLEAR MALAYSIA, KEMENTERIAN SAINS, TEKNOLOGI DAN INOVASI

OVERALL STATUS OF MALAYSIA NUCLEAR PROGRAM

- **The Government of Malaysia has yet to decide on the implementation of the construction of nuclear power plant in Malaysia.**
- **The current activities focus on detail studies to identify issues and considerations as well as to objectively determine and assess the current level of national capabilities and state-of-preparedness pertaining to the development of a national nuclear power program, as one of the 131 Entry Point Projects (EPP) under Malaysia Economic Transformation Program (ETP)**
- **Pre-Project Activities are spearheaded by Malaysia Nuclear Power Corporation (MNPC), as NEPIO and Nuclear Malaysia as TSO with tentative Nuclear timeline**
- **The actual decision to implement nuclear power projects, however, will be guided by the Government's decision, after taking into account the recommendations in the details studies.**

Summary of Government Decisions



IAEA Milestones

According to the IAEA Milestones approach, Malaysia is at the Milestone 1:

- **Milestone 1**, Ready to make a knowledgeable commitment to a nuclear power programme. **In June 2009**, the Government decided for nuclear energy to be considered as one of the fuel options for electricity supply post-2020, especially for the Malaysian Peninsula;

- **Milestone 2**, *Ready to invite bids for the first NPP*, **in 2013**, based on the timeline for EPP on nuclear power development in the ETP, but which may be deferred to early 2014, taking into consideration the delay by a few months in the preparatory activities, due to concerns in Malaysia over the nuclear accident at Fukushima that was triggered by the huge earthquake and tsunami in Japan in March 2011; and,

- **Milestone 3**, *Ready to commission and operate the first NPP*, **in 2021 (might be postponed)**, also based on the timeline for EPP on nuclear power development in the ETP.

MAIN CHALLENGES

- To convince the public that nuclear power is safe, is the only viable and cost effective option for the country, in the face of depleting fossil fuel resources.
- To develop capacity building in nuclear power program for the country.
- To develop the legal infrastructure
- To identify the source of financing for the nuclear power program
- To obtain approval for plant site including to acquire public support on locality

ECONOMIC, SOCIAL, POLITICAL, STRATEGIC FACTORS INVOLVED IN NPP CONSIDERATION

The following factors have been considered when contemplating on the nuclear power option in the country, which as recommended in the Nuclear Energy Series No. NG-G-3.1 document entitled “Milestones in the Development of a National Infrastructure for Nuclear Power” (2007),

The 19 key areas:

1. national position,
2. nuclear safety,
3. management,
4. funding and financing,
5. legislative framework,
6. safeguards,
7. regulatory framework,
8. radiation protection,
9. electrical grid,
10. human resource development,

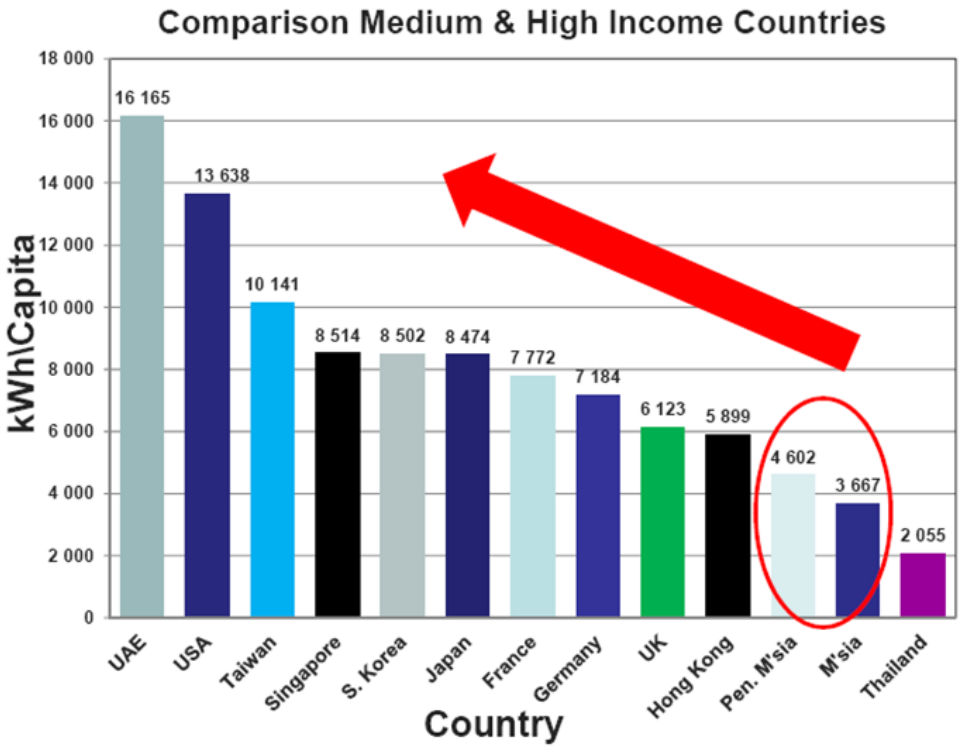
ECONOMIC, SOCIAL, POLITICAL, STRATEGIC FACTORS INVOLVED IN NPP CONSIDERATION

11. stakeholder involvement,
12. site and supporting facilities,
13. environmental protection,
14. emergency planning,
15. security and physical protection,
16. nuclear fuel cycle,
17. radioactive waste,
18. industrial involvement,
19. procurement.

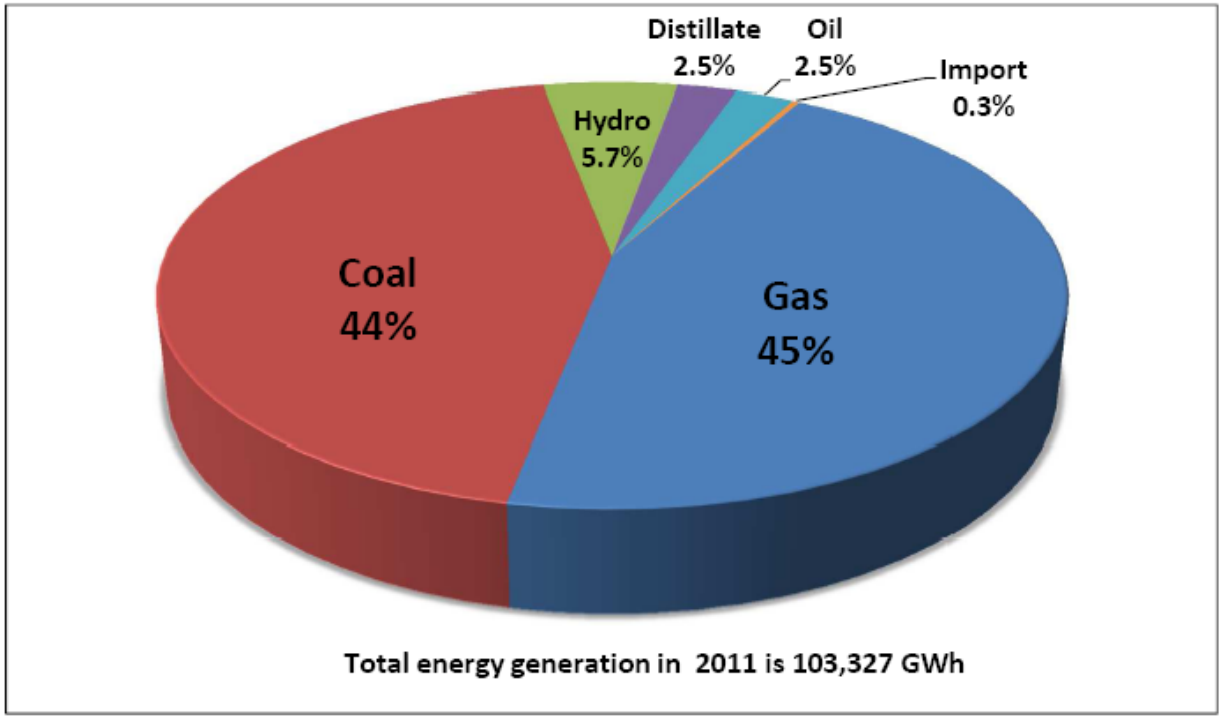
BENEFITS AND DRAWBACKS OF NUCLEAR POWER

As Malaysia positions itself to be a developed nation by year 2020, its electricity usage per capita will inevitably rise from industrial, commercial & domestic consumers

We need mid to long-term plan to address this.



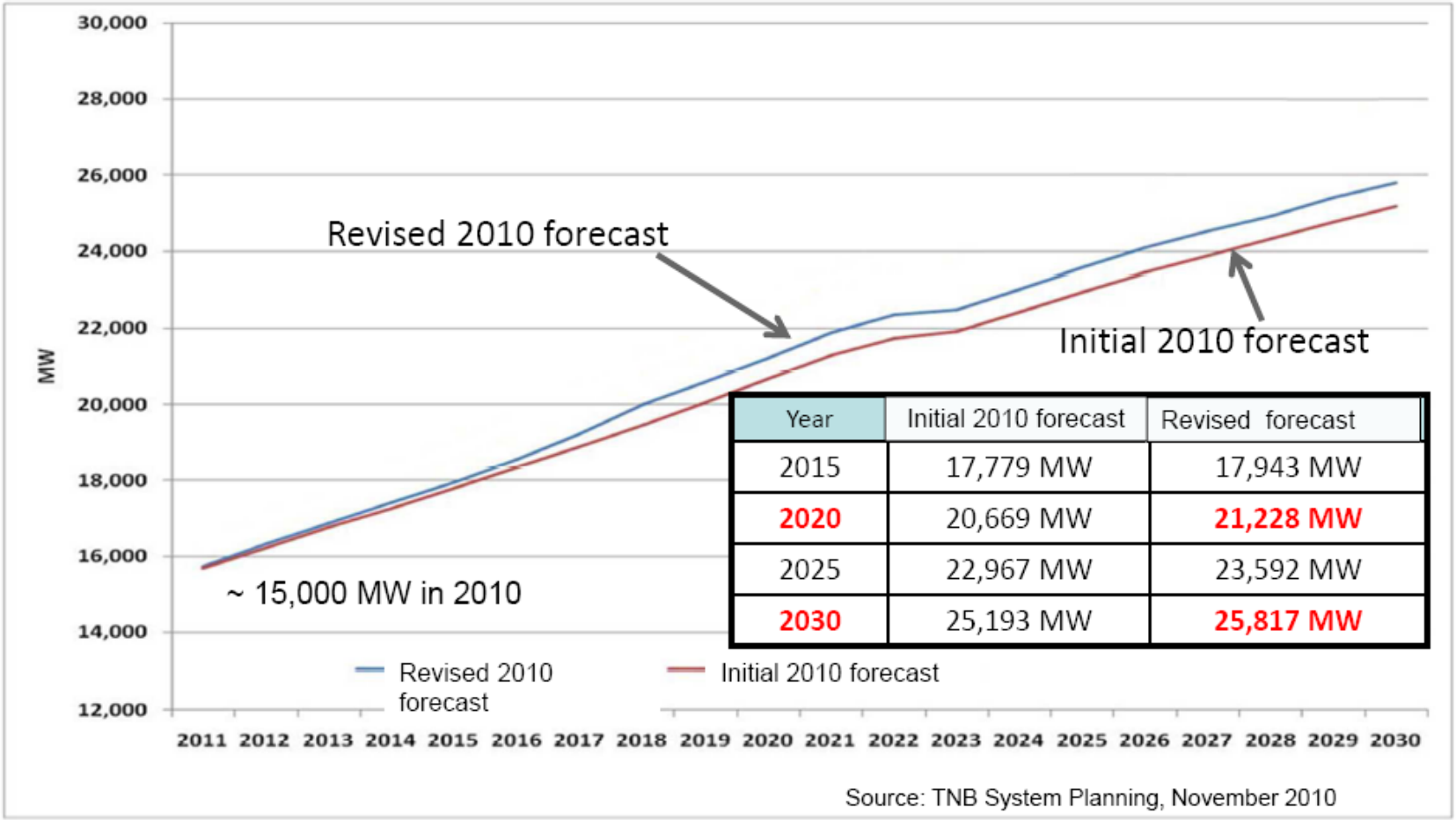
Generation Mix 2011: Peninsular Malaysia



- Generation fuel mix in 2011 has changed from 2010 due to prolonged gas curtailment
- Fossil fuels still dominate - 94% of total energy mix
- Need more diversification to reduce over dependence on fossil fuels

Source: TNB System Planning, December 2011

Malaysia's Electricity demand will rise when we become a developed nation in 2020 and beyond. New Power capacity must be planned and installed.



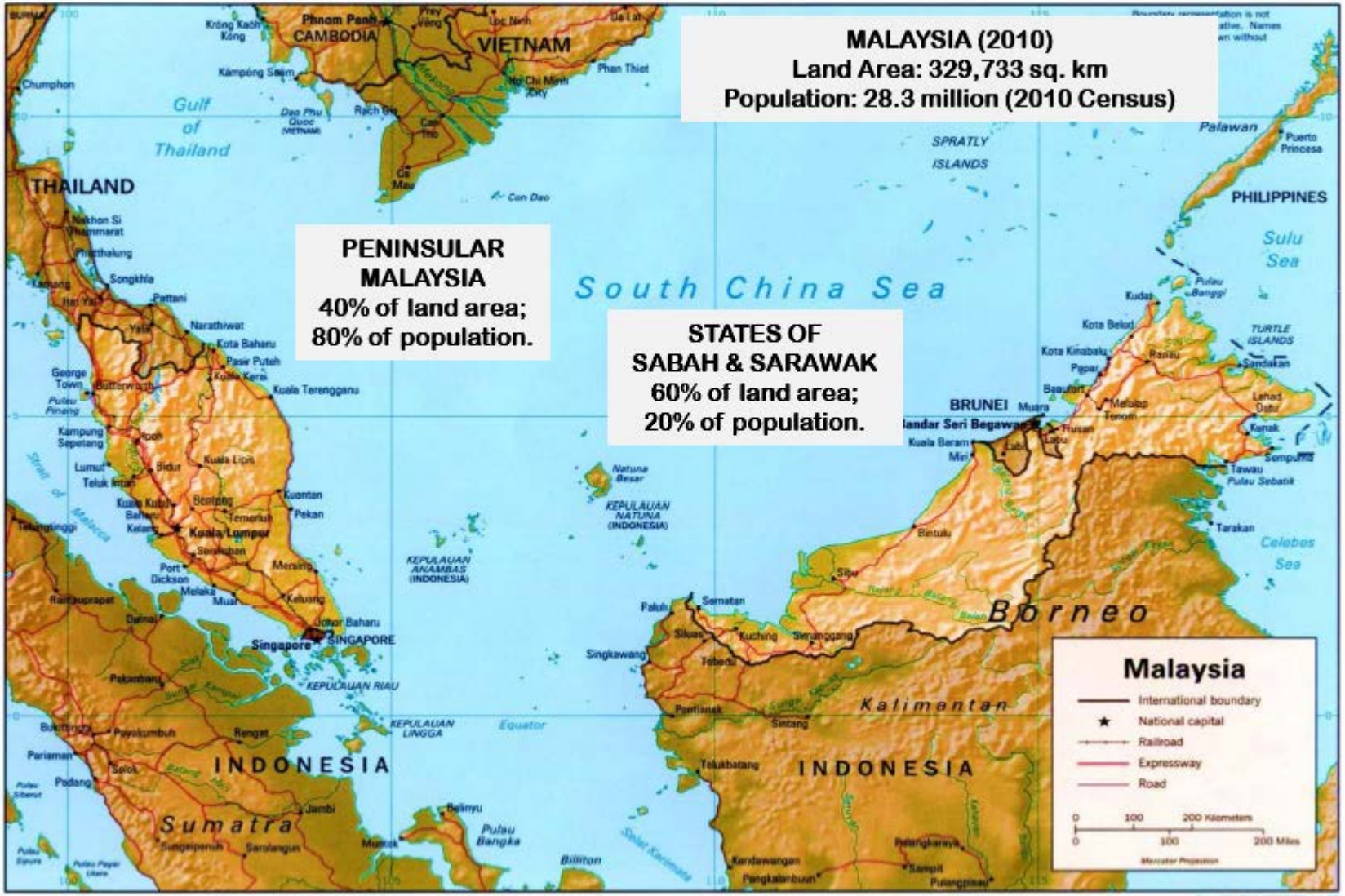
Year	Initial 2010 forecast	Revised forecast
2015	17,779 MW	17,943 MW
2020	20,669 MW	**21,228 MW**
2025	22,967 MW	23,592 MW
2030	25,193 MW	**25,817 MW**

Source: TNB System Planning, November 2010

BENEFITS OF NUCLEAR POWER

- Nuclear power plants produce much less green-house gas for each unit of electricity produce, compared to those produced by fossil fuel. Quality of environment will be enhanced and climate change mitigated.
- Will reduce the heavy reliance on fossil fuel in the country's energy mix
- An alternative resource for the generation of electricity in the face of the country's depleting oil and gas resources in meeting the country's future electricity demand.
  - Coal is nearly 100% imported from Australia, Indonesia, China and South Africa.
  - Hydropower potential is mismatched, where the hydro potential is mostly in East Malaysia while the demand for electricity is in West Malaysia. To add to that there is a 700 km of international waters dividing East and West Malaysia.

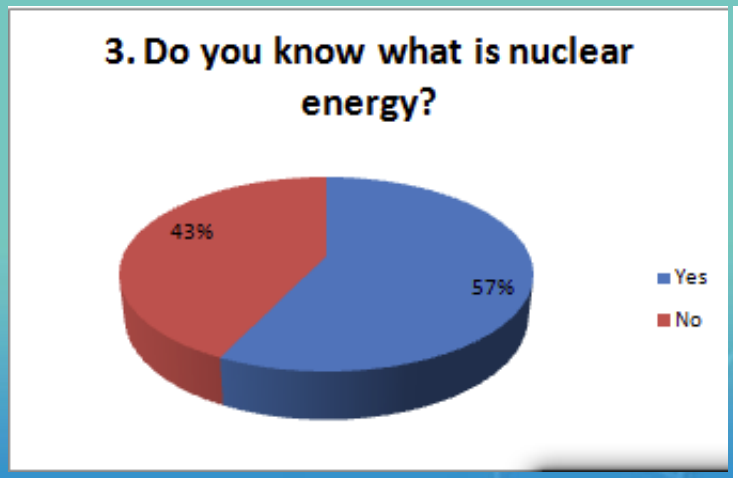
MALAYSIA

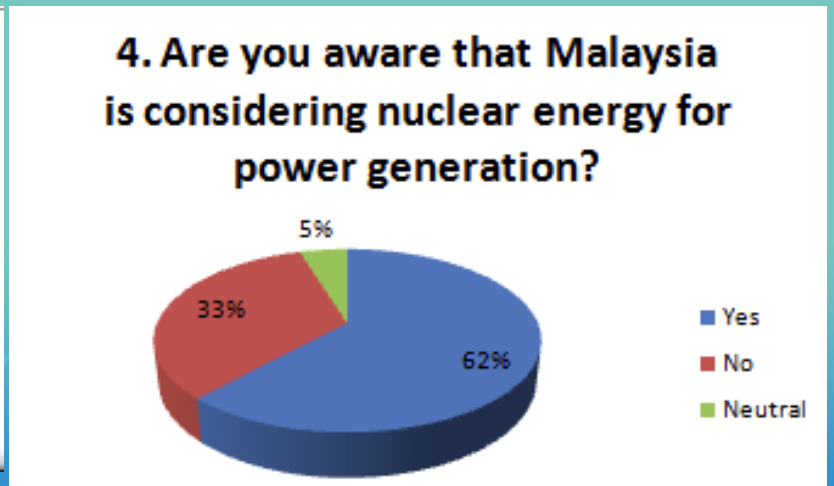

MALAYSIA (2010)
Land Area: 329,733 sq. km
Population: 28.3 million (2010 Census)
PENINSULAR MALAYSIA
40% of land area;
80% of population.
STATES OF SABAH & SARAWAK
60% of land area;
20% of population.
THAILAND
CAMBODIA
VIETNAM
PHILIPPINES
BRUNEI
INDONESIA
INDONESIA
Gulf of Thailand
South China Sea
Sulu Sea
Celebes Sea
SPRATLY ISLANDS
Borneo
Sumatra
Kalimantan
Singapore
SINGAPORE
Malaysia
International boundary
National capital
Railroad
Expressway
Road

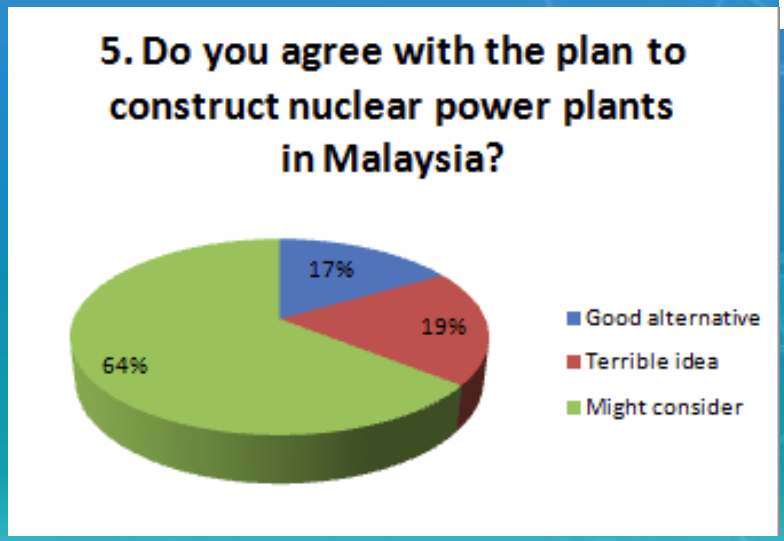
DRAWBACKS OF NUCLEAR POWER

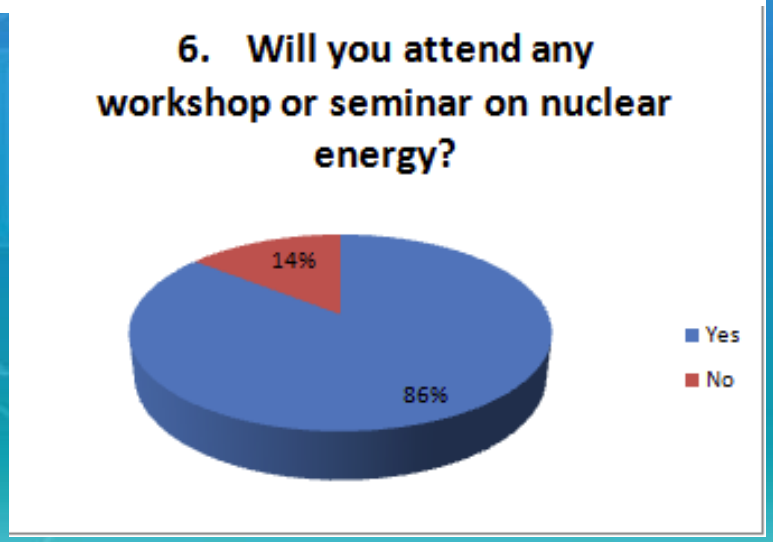
- The high initial financial investment of a nuclear power plant
- Radioactive waste disposal and management
- Political decision
- Public opposition

Public Acceptance: Recent Study By UNITEN students









From Nik Hanis Mansor & Nor Ezreen Ahmad, A Plan for Nuclear Acceptance in Malaysia, Serikandi Plan Dec. 2011

ROLE OF THE PUBLIC IN THE NATIONAL DEBATE ON NUCLEAR POWER; DO YOU ENCOUNTER PUBLIC OPPOSITION AND HOW YOU DEAL WITH IT.

- The decision to embark on a nuclear power program will only be made after the comprehensive studies (Legal and Regulatory Infrastructure Study, Communication Strategy and Plan, and Feasibility Study and Site Evaluation) have been completed, after which, the decision will be made public.

THANK YOU