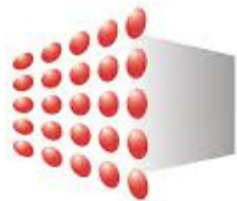


# *Singapore's Energy Policy*



ENERGY  
STUDIES  
INSTITUTE



*Nur Azha Putra*

*ERIA 2<sup>nd</sup> WG Meeting on the Study of International Cooperation on Nuclear Safety  
Management in East Asia Countries, 24 April 2014, Kuala Lumpur, Malaysia*

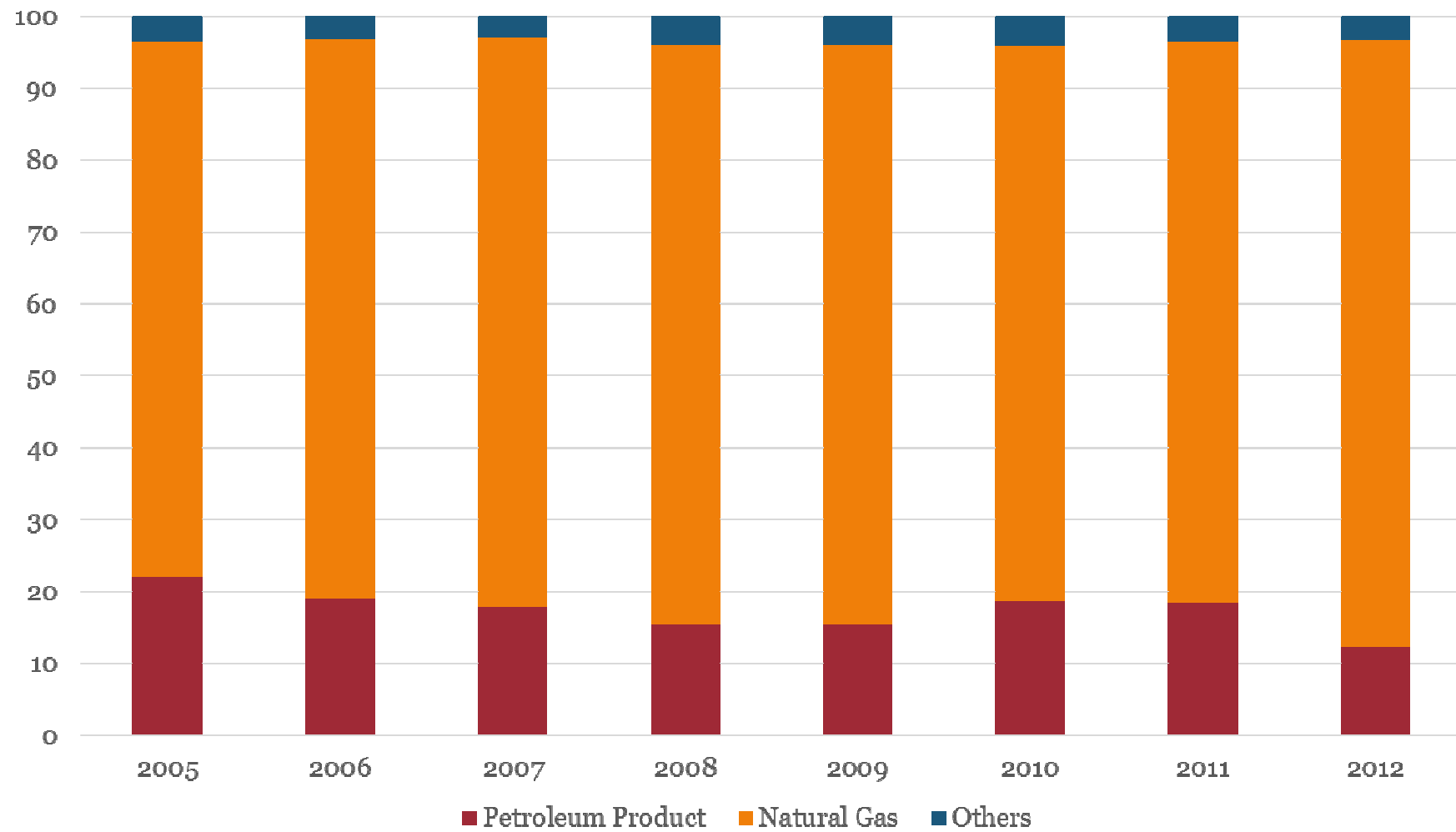
# Scope

- Energy Consumption in Singapore
  - National Energy Policy Report (NEPR)
    - Research and Development
    - Regional Cooperation/Integration
    - International Participation
    - Convention on the Physical Protection of Nuclear Material
- Challenges
- Summary & Conclusion

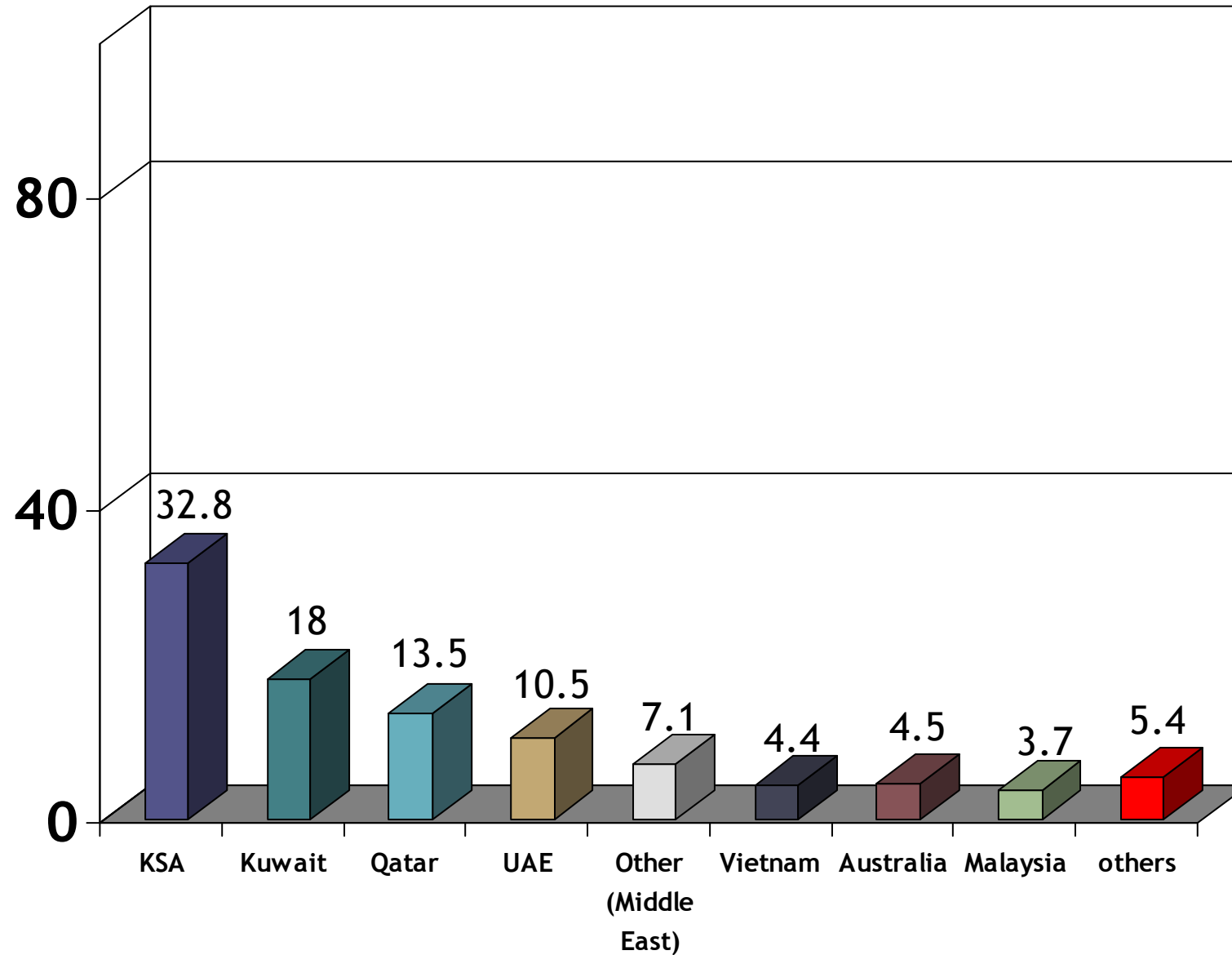
# Energy Consumption in Singapore

- Singapore is an island city with limited energy resources
- Currently, energy market entirely reliant on oil, natural gas imports, and refuse
- (2012) Singapore electricity generated from:
  - Natural gas (PNG & LNG): 84.3 per cent
  - Petroleum Products: 12.3 per cent
  - Refuse: 3.4 per cent
- PNG imported from Indonesia & Malaysia
- LNG imported from Qatar, Trinidad, Egypt, Nigeria, Equatorial Guinea, and Australia

## SG Fuel Mix for Electricity Generation (2005-2012)



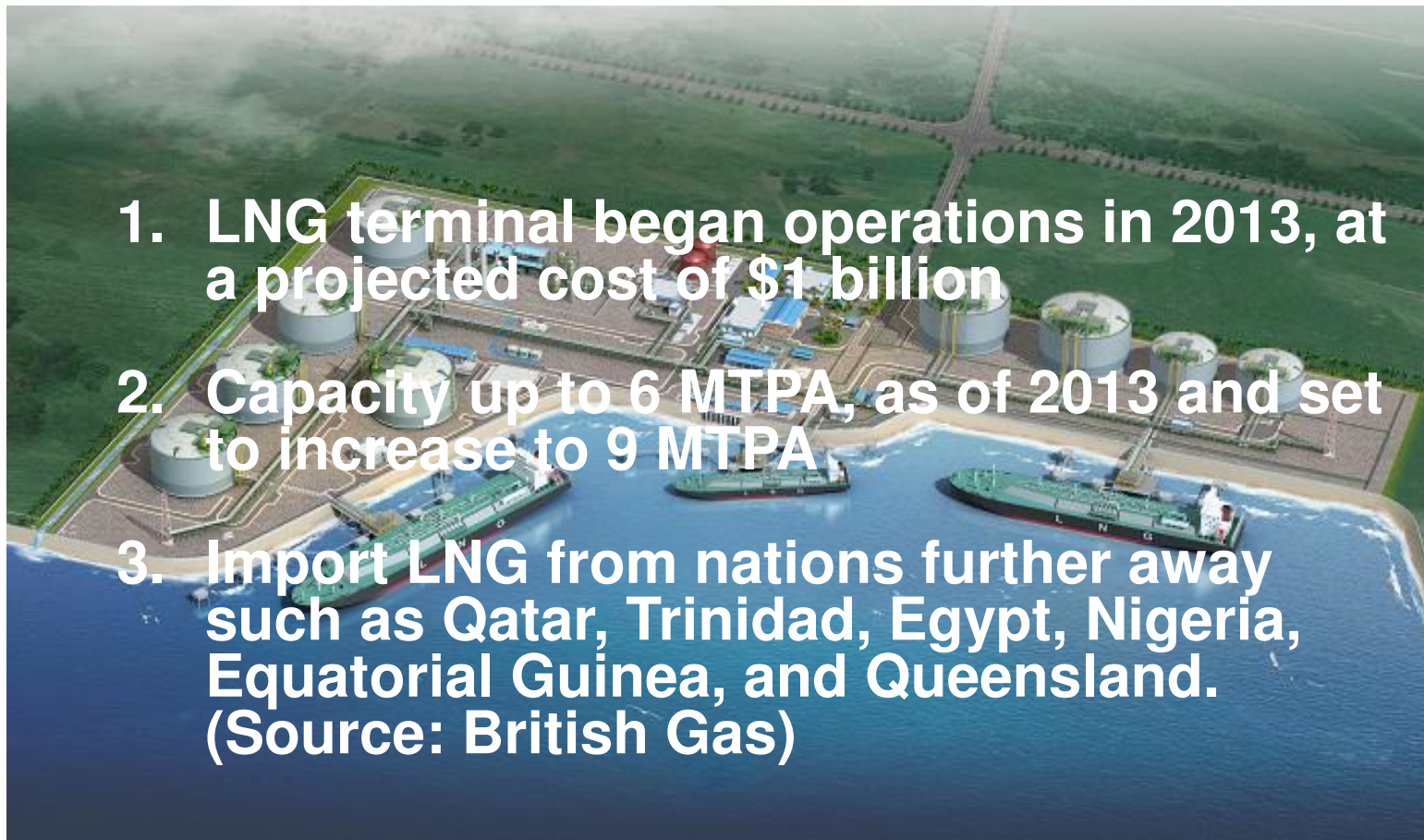
## S' pore Sources of Crude Oil (in %) (2006)



# Energy Consumption in Singapore (contd.)

- Singapore energy mix is one of the least diversified in Southeast Asia
- Completed the construction of the LNG terminal - one of the initiatives outlined in the National Energy Policy Report
- Government has added liquefied natural gas (LNG) to its fuel mix (from 2013)
- 2012: Decided that existing nuclear energy technology is not suitable for SG due to population density & small size...however

# SGs LNG Terminal



1. LNG terminal began operations in 2013, at a projected cost of \$1 billion
2. Capacity up to 6 MTPA, as of 2013 and set to increase to 9 MTPA
3. Import LNG from nations further away such as Qatar, Trinidad, Egypt, Nigeria, Equatorial Guinea, and Queensland.  
(Source: British Gas)

# National Energy Policy Report (NEPR)

- *Energy for Growth* announced by the government in 2007 (updated in 2013)
- Govt sees Energy as the driver of economic growth
- NEPR prepared by the Energy Policy Group (EPG)
  - EPG: formed in 2006
  - an inter-ministerial group led by Ministry of Trade and Industry
    - members: Economic Development Board, Energy Market Authority, Ministry of Environment and Water Resources, Ministry of Foreign Affairs & Ministry of Finance



# National Energy Policy Report (NEPR)

- Holistic approach towards energy security
  - National, Regional & International levels
- Aims to carry out three main policy objectives
  - Economic competitiveness
  - Energy security
  - Environmental sustainability
- Policy objectives translates into six strategies
  - Promote competitive markets
  - Diversify energy supplies
  - Improve energy efficiency
  - Build energy industry and invest in R&D
  - International cooperation
  - Whole-of-Government Approach

# National Energy Policy Report (NEPR)

- What does it mean for Singapore?
- At the National Institutional Framework:
  - Develop & Strengthen government agencies, support research institutions and think-tanks
  - Eg. ESI was formed in 2007 to conduct an inter-disciplinary (security, economics & environment and climate change) policy research in energy studies
    - Stakeholders: MTI, MFA, MEWR, and EMA
  - Create agencies with specific functions and roles
    - Eg. National Research Foundation – Promote R&D

# National Energy Policy Report (NEPR)

## Whole-of-Government Approach

- Energy Division (ED), Min of Trade & Industry
  - develops & manages S'pore's overall energy policy
- Energy Market Authority (EMA)
  - regulates the electricity & gas industry and district cooling services
- Clean Energy Programme Office (CEPO)
  - plan & execute strategies to develop S'pore into a Global Clean Energy Hub
- Energy Efficiency Programme Office (E2PO)
  - improve energy efficiency – Energy Efficient Singapore
- National Research Foundation (NRF)
- Energy Studies Institute (ESI)

# Regional Cooperation/Integration

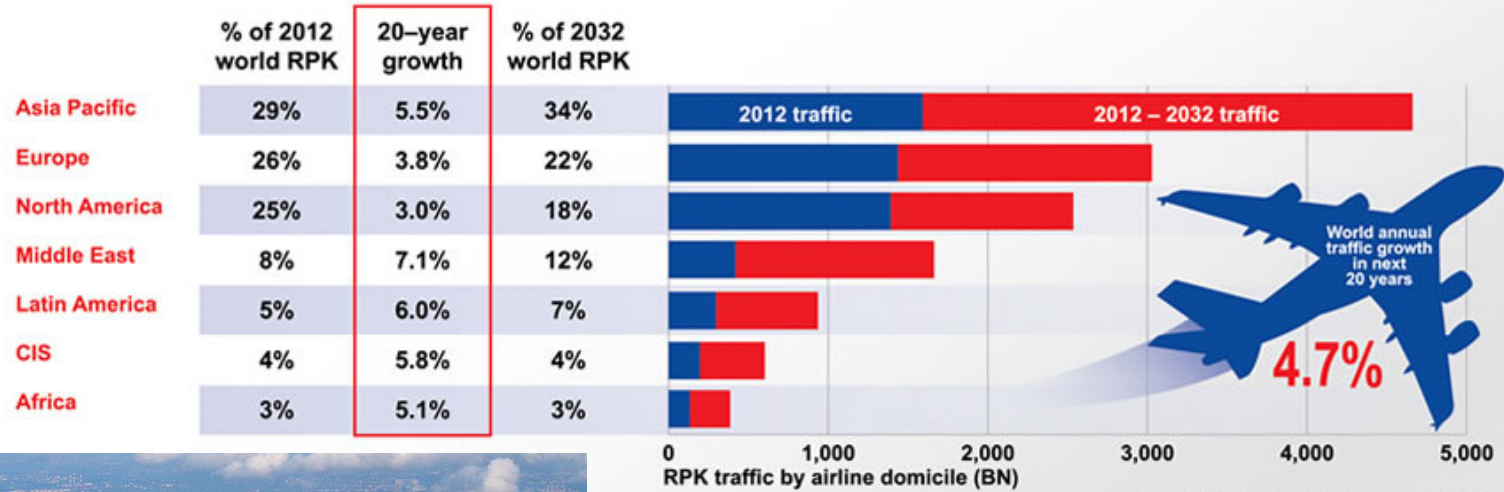
- Singapore active in various energy-related initiatives
  - As a member of ASEAN, Singapore has signed MOUs on
    - Energy Security
    - ASEAN Power Grid
    - Trans-ASEAN Gas Pipelines project
  
- Represented at Track II networks
  - East Asia Summit's Energy Task Force
  - APEC's Energy Task Force
  - ASEAN Nuclear Energy Cooperation Sub-Sector Network (NEC-SSN)
  - Council for Security Cooperation in Asia-Pacific (CSCAP)
  
- International Participation:
  - Attended the Nuclear Security Summit 2014
  - As of 2014, preparing to accede to the Convention on the Physical Protection of Nuclear Material (CPPNM)

# Convention on the Physical Protection of Nuclear Materials (CPPNM)

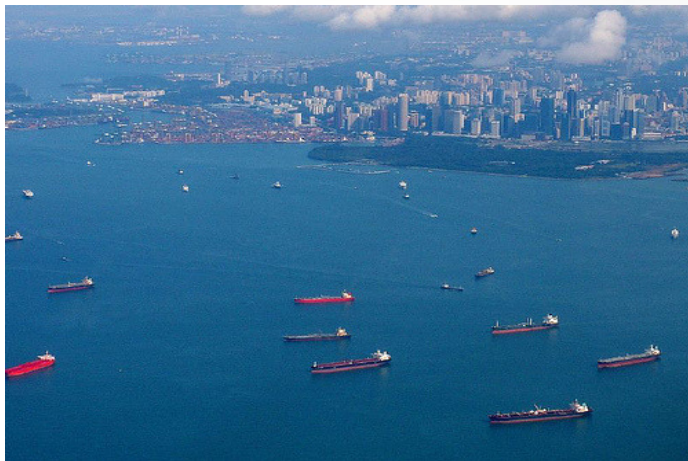
- The *Convention on the Physical Protection of Nuclear Material* was signed at Vienna and at New York on 3 March 1980
- The Convention is the only international legally binding undertaking in the area of physical protection of nuclear material
  - It establishes measures related to the prevention, detection and punishment of offenses relating to nuclear material
- The Convention is a key component of the Global Nuclear Security Architecture (Seoul Communiqué, NSS 2012)

# Challenges

## Asia Pacific lead in world traffic till 2032



Source: Airbus Global Market Forecast 2013



# Challenges

- Singapore is one of the world's busiest port (maritime)
- Container port traffic rose by more than 10% to 32.6m TEUs in 2013 (source: MPA 2014)
  - Global volume in 2012 is 56m. (source: Drewry Research)
- Handles more than 60,000 containers from more than 60 container vessels daily
- At any one time, there are 1,000 ships in the ports
- Focal point for 200 shipping lines with links to more than 600 ports in over 120 countries
- Therefore, SG has had to manage the challenges of smuggling and trafficking

# Latest updates

- 23 Apr 2014: Govt announced that it intends to strengthen its nuclear energy expertise
- NRF announced a 10-year Nuclear Safety Research and Education Programme
  - \$63M will be set aside for the first 5 years
  - Programme has two components:
    - SG Nuclear Research and Safety Initiative (SNRSI)
      - R&D capabilities in nuclear safety
    - Nuclear Education & Training Fund (NETF)
      - Education and training in nuclear safety



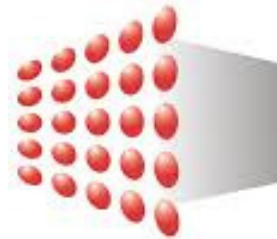
## Summary & Conclusion

- Will not adopt nuclear energy at the moment
- As an international transshipment hub, Singapore has a key role to deter the theft, smuggling, and misuse of nuclear substances
- Singapore is concerned about nuclear energy safety and security in the region
  - Invest in nuclear safety R&D and education

# Thank you!

**Energy Studies Institute**

29 Heng Mui Keng Terrace  
Block A, #10-01  
Singapore 119620



ENERGY  
STUDIES  
INSTITUTE