SOCIALIZING NUCLEAR TECHNOLOGY POLICY IN MALAYSIA: ISSUES AND CHALLENGES

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Outline

- Global benchmarking of nuclear related policies & documents
- Overview of Malaysia
- Existing national policies related to nuclear technology
- The evolution of nuclear technology policy in Malaysia
- Issues and challenges
- Managing public acceptance & risk perception issues
- Stakeholder engagement
- Conclusion

Global Benchmarking of Nuclear Related Policies & Documents

- *Nuclear policies and national plans focus mainly on application in energy.*
- *Other nuclear technology applications more commonly embedded in guidelines of respective sectors*

FRANCE
- Energy and Nuclear Policy (Corps des Mines)

South Africa
- Nuclear Energy Policy for the Republic of South Africa (2008)

SOUTH KOREA
- 1974 Korea-US Atomic Energy Agreement (123 Agreement) 1974

UNITED KINGDOM
- A guide to Nuclear Regulation in the UK

Brazil
- Brazilian Nuclear Policy – BRICS Policy Center

NEPAL
- National Nuclear Policy (2007)

JAPAN
- Japan's Nuclear Energy Policy 2019
- Japanese consensus guidelines for pediatric nuclear medicine

CANADA
- Canada's 1996 Policy Framework on Radioactive Waste
- Nuclear Non-Proliferation Policy
- Non-Resident Ownership Policy in the uranium mining sector
- Nuclear Research and Development and Science and Technology

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

Malaysia ?

THAILAND
- Thailand Power Development Plan 2015-2036

UAE
- Policy of the United Arab Emirates on the Evaluation and Potential Development of Peaceful Nuclear Energy (2008)

INDONESIA
- Policy and Strategy on the Management of Radioactive Waste and Spent Fuel

USA
- Nuclear Power 2010
- U.S. Nuclear Regulatory Commission (NRC) & Agreement States regulations on nuclear medicine
- American Board of Nuclear Medicine ABNM Policy on Licensure

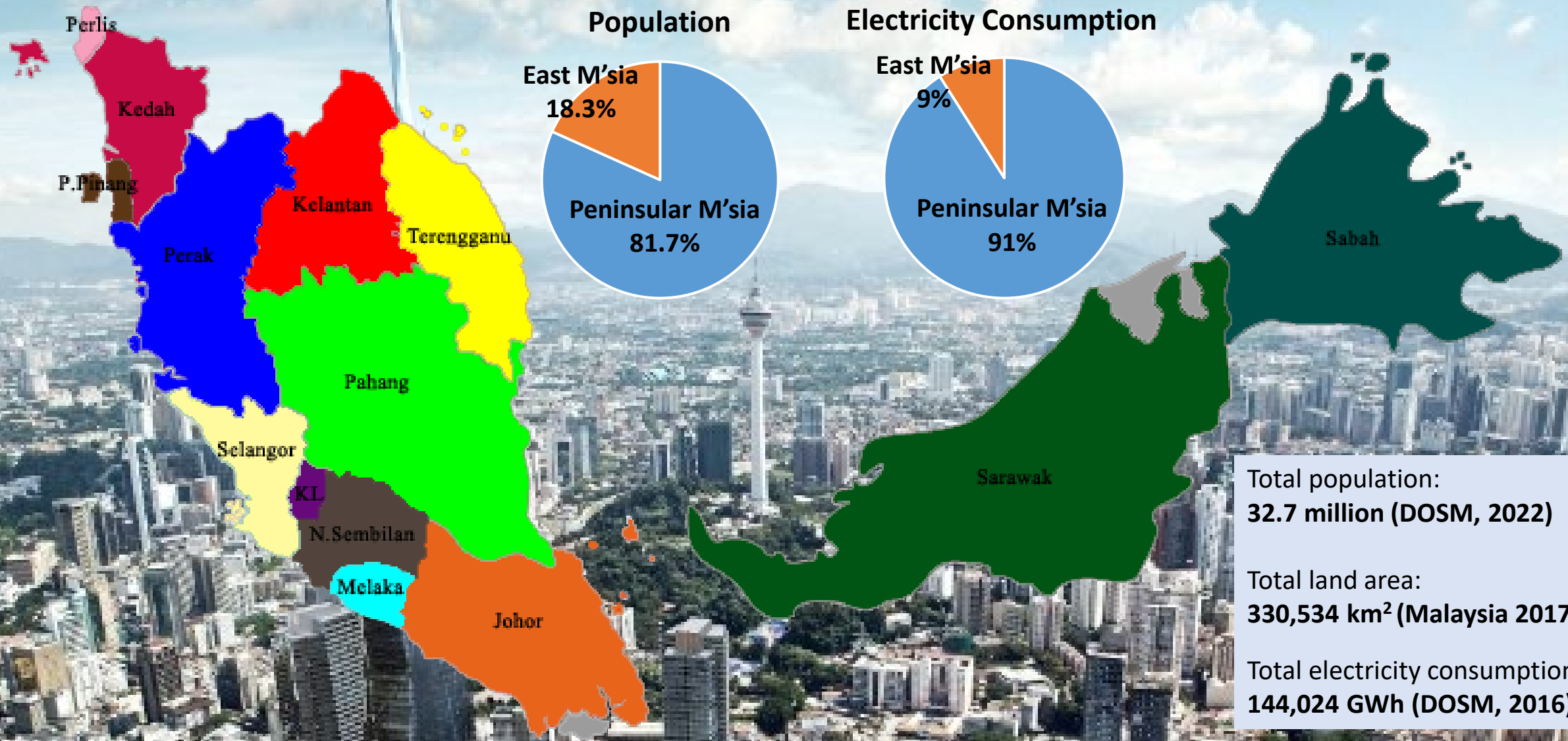
BANGLADESH
- Bangladesh Nuclear Energy Action Plan (BANPAP)

AUSTRALIA
- 2016 National Research Infrastructure Roadmap

INDIA
- National Energy Policy

*Non-exhaustive

Overview of Malaysia



Population

Electricity Consumption

Total population:
32.7 million (DOSM, 2022)

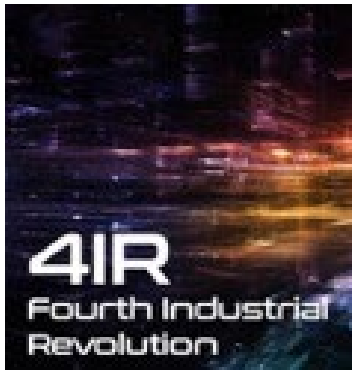
Total land area:
330,534 km^2 (Malaysia 2017)

Total electricity consumption:
144,024 GWh (DOSM, 2016)

Existing national policies related to nuclear technology

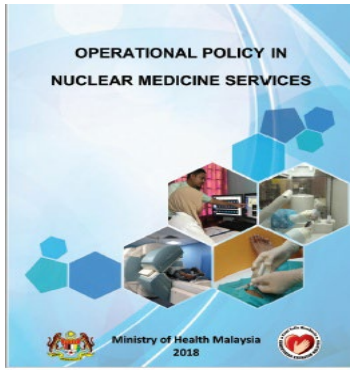
National Policy on Science, Technology and Innovation 2021-2030

National Nanotechnology Policy and Strategy 2021-2030



4IR Policy

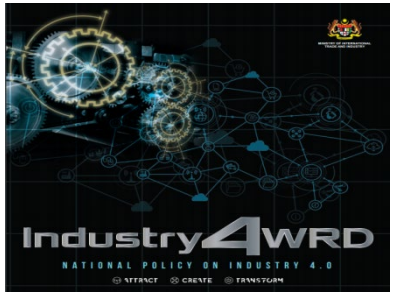
Malaysia Digital Economy Blueprint



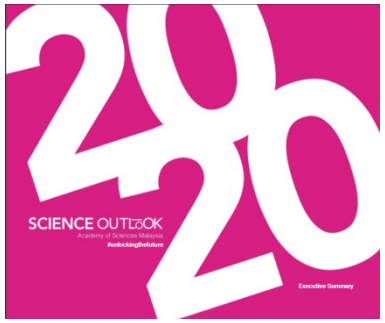
Operational Policy in Nuclear Medicine Service

Science & Technology Foresight Malaysia 2050

10-10 MySTIE Framework

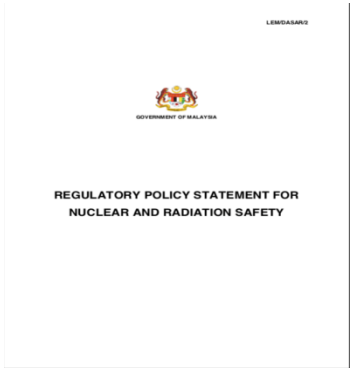


National Policy on Industry 4.0



Science Outlook 2020

National OGSE Industry Blueprint 2021-2030



Regulatory Policy Statement for Nuclear and Radiation Safety

Envisioning Malaysia 2050

Precision Medicine Initiative in Malaysia

The evolution of nuclear technology policy in Malaysia

National Nuclear Policy (NNP) 2010

- NNP 2010 consists of both nuclear power and non-power applications
- NNP 2010 was acknowledged by Cabinet but was recommended to conduct buy-in process among stakeholders prior adoption

National Nuclear Technology Policy (NNTP) 2030

- NNTP 2030 mainly focused on application of nuclear technology for non-power applications
- As part of future preparedness, NNTP 2030 also emphasised the need to develop local capability and capacity in nuclear power technology including innovative nuclear reactor technology
- NNTP 2030 is in formulation process

Issues and challenges

GOVERNANCE SYSTEM & REGULATORY FRAMEWORK (Integrity)

- Governance system and regulatory frameworks are not integrated
- National level strategic direction and prioritization for the development of nuclear technology is lacking

INFOSTRUCTURE (Digital Infrastructure)

- Lack of an integrated information center to provide nuclear technology related data

INSTITUTIONS (Governance Bodies)

- Need for champions from institutions of governance & industry associations

INFRASTRUCTURE (Physical & Natural)

- Fragmented supply chain
- TRIGA PUSPATI has 10 years remaining lifespan before decommissioning without solid decision on future plan. Max thermal capacity is 1MW which limits its applications

INTERNATIONALISATION (Global Best Practices & Standards)

- Ratification of relevant international instruments (only 4/24 treaties under auspices of IAEA has been ratified since 1969)

Challenges of Nuclear Technology in Malaysia

INCENTIVES (Investment: Fiscal or non fiscal)

- Lack of private sector participation and investment
- Inadequate investment in experimental development to translate R&D outputs to market at 24.5% of GERD, compared to Thailand 63.26% and Singapore 44.78%

INTERACTION (Collaborative Network/ Strategic Partnerships)

- Lack of public acceptance towards nuclear technology and collaborative platform
- Limited market access: 2015 - Q1 2021, average rate of commercialisation of products by Nuklear Malaysia is only 12.98%

INTELLECTUAL CAPITAL (Talent Stock)

- No short- and long-term human resource planning
- Talent loss due to brain drain
- Migration of nuclear engineering graduates due to lack of nuclear power plant jobs

Managing public acceptance & risk perception issues

Stakeholder engagement

INTERNATIONAL STAKEHOLDERS

relevant inter-governmental agencies for international nuclear governance, foreign Governments, especially supplier States, international civil society.

NATIONAL & STATE POLITICAL STAKEHOLDERS

Government & political leaders, policy-makers, Members of Parliament, Senators & State Legislative Assemblies.

NATIONAL PROFESSIONAL STAKEHOLDERS

Government Ministries & agencies, Government-linked companies, industry organisations, professional bodies, academic & training institutions & other agencies

GENERAL CIVIL SOCIETY & PUBLIC STAKEHOLDERS

civic society, mass media, non-governmental organisations (NGO's), religious, women & other civic organisations, teacher training colleges, university & school students, general public.

STATES & LOCAL STAKEHOLDERS

local Government, community leaders, local associations

Stakeholder Mapping (Influence-Interest Matrix)

Influence/Interest	Low Influence	High Influence
Low Stakes (concerned)	Lowest priority stakeholder group ***School student/ Worker/Public (Social Medial***	Useful for decision and opinion formulation ***Industry /Licensee / Clients/ Non-Government Organisation/ Civil Society Organisation/ Retiree***
High Stakes (implicated)	Important stakeholder group (perhaps needing empowerment) ***University Graduate, Members of Professional Associations (RPO, MARPA, MARS , MSNDT , SSN Network, etc)***	Most critical stakeholder group ***Ministry ,Government and State Agencies/ MOSTI, KETSA, MOH, Department of Atomic Energy***

Public Consultations via Unified Public Consultation (UPC) Platform

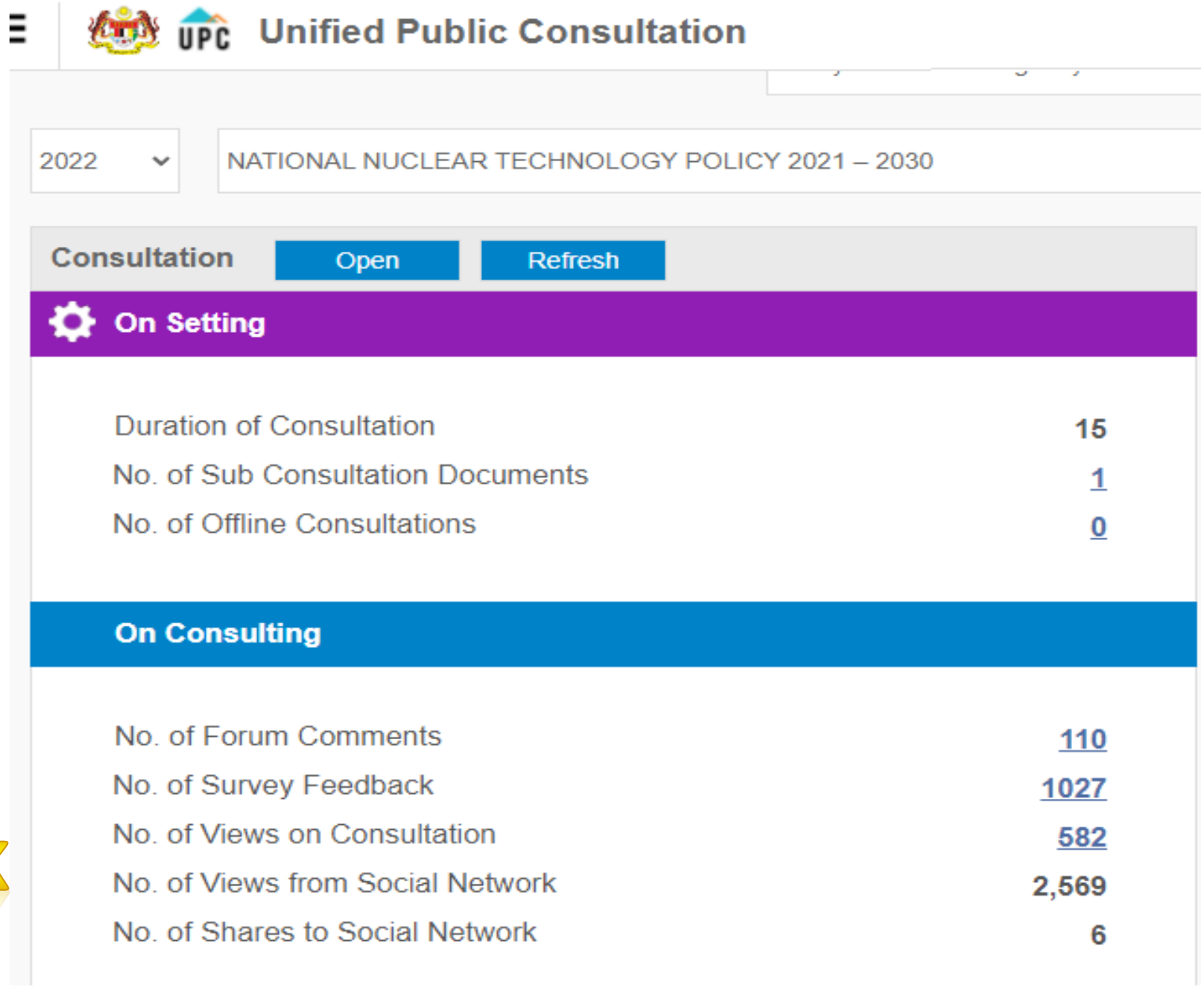
Duration of consultation: 15 days

RESULT

2569 VISITORS

110 COMMENTS

1027 SURVEY FEEDBACK



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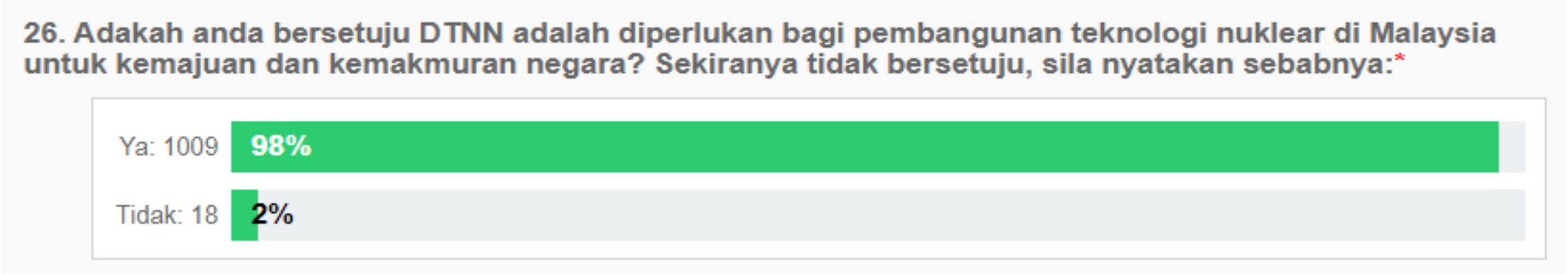

- Do you agree the national nuclear technology policy is needed for development of nuclear technology in Malaysia for national growth and prosperity?
  - 98 % (1009) respondents agreed
  - 1009 respondents are composed of men (53%) dan women (47%)

- From 110 comments received, 106 (96.4%) were positive comments. Hence, it can be concluded that the majority of respondents agreed with the effort to introduce nuclear technology policy.

Conclusion

- The nuclear technology policy is developed based on country's need and government policy
- The policy serves as a reference guide to relevant stakeholders in advancing nuclear technology sector
- Among key successful socialization of nuclear technology policy in Malaysia is the requirement for buy-in process among stakeholders
- Based on public consultation, the majority of the public agreed with the effort to introduce nuclear technology policy for advancing peaceful uses of nuclear technology in the country for nation's growth and prosperity