JAPAN ATOMIC ENERGY AGENCY (JAEA)
INTERNATIONAL FORUM ON NUCLEAR NON-PROLIFERATION
AND PEACEFUL USE OF NUCLEAR ENERGY
IN THE ASIA PACIFIC REGION
24 - 25 JUNE 2008
TOKYO, JAPAN

PANEL 3: CONFIDENCE BUILDING,
TRANSPARENCY AND HUMAN RESOURCE DEVELOPMENT

NUCLEAR POWER IN MALAYSIA: PROSPECTS, CONFIDENCE BUILDING, & INTERNATIONAL TRANSPARENCY IN NUCLEAR POWER DEVELOPMENT

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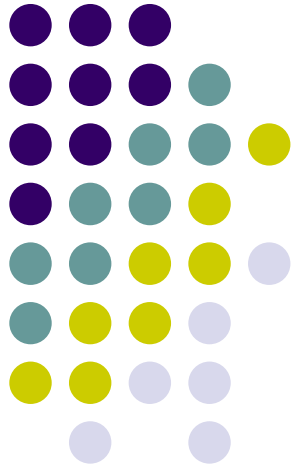


OUTLINE OF PRESENTATION

1. Status & Prospects of the Nuclear Energy Option in Malaysia

2. Validity of Need for the Nuclear Energy Option

3. Confidence Building & Transparency through the International System of Nuclear Governance & Participation in International & Regional Cooperation Framework & Initiatives

4. Concluding Remarks

1.
STATUS & PROSPECTS FOR THE NUCLEAR ENERGY OPTION IN MALAYSIA

STATUS OF NUCLEAR ENERGY OPTION IN MALAYSIA

Currently, nuclear energy is not an option, but there is an emerging interest for the option.

Status of the nuclear energy option influenced by:

- **The 1979 National Energy Policy; and,**
- **national energy security & fuel diversification policies.**

NATIONAL ENERGY POLICY

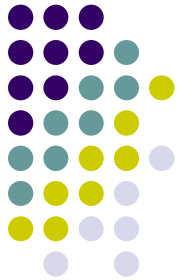
Objectives of 1979 National Energy Policy:

Supply Objective:
To ensure adequate, secure & cost-effective supply of energy;

Utilisation Objective:
To promote efficient utilization of energy & discourage wasteful and non-productive patterns of energy consumption; and,

Environmental Objective:
To ensure factors pertaining to environmental protection are not neglected in the production and utilization of energy.

NATIONAL FUEL DIVERSIFICATION POLICIES



National energy sources determined by Fuel Diversification Policies

1981 Four-Fuel Diversification Policy:

- to reduce over-dependence on single fuel source;
- to focus on four main sources of fuel, i.e., oil, hydropower, natural gas & coal.

2000 Five-Fuel Diversification Policy:

- to incorporate renewable energy as a fifth fuel:
- to expand sources of fuel to comprise oil, hydropower, gas, coal & renewable energy.

NEED FOR A SIXTH FUEL

Current national & global situation
generating interest on need for nuclear energy
as a sixth national fuel supply option,
particularly for electricity generation.

On the demand side,
interest & need driven by national energy security,
environmental & sustainable development issues.

On the supply side,
interest driven by advances in nuclear power technology
that has improved nuclear power plant economics.

DEMAND DRIVEN FACTORS IN RENEWED INTEREST IN THE OPTION

National Energy Situation:

- **lack of available competitive, sustainable, alternative commercial energy sources for the long-term, especially beyond 2020;**

- **need to enhance national energy security due to depleting indigenous resources;**

- **escalating global oil prices with Malaysia expected to revert to being a net oil importer by the year 2011;**

DEMAND DRIVEN FACTORS IN RENEWED INTEREST IN THE OPTION

- escalating coal prices with high dependence on coal imports & limited high quality indigenous resources;

- deregulation of gas prices, especially for the power sector;

- current natural gas fields expected to be depleted by 2027 with new fields of higher carbon dioxide content & competing petrochemical industry demand & committed exports of liquefied natural gas;

DEMAND DRIVEN FACTORS IN RENEWED INTEREST IN THE OPTION

- **geographical supply & demand mismatch for hydropower resources, between Peninsular Malaysia & Sarawak, with 700 km. of South China Sea in between;**

- **renewable energy sources, generally, lack economic competitiveness and are more suited in reducing commercial energy demand than in substituting commercial energy.**

DEMAND DRIVEN FACTORS IN RENEWED INTEREST IN THE OPTION

Global Environmental Situation:

- **need to reduce GHG emissions, subject to future national obligation under the post-Kyoto Protocol regime to the United Nations Framework Convention on Climate Change (UNFCCC) after 2012.**

DEMAND DRIVEN FACTORS IN RENEWED INTEREST IN THE OPTION

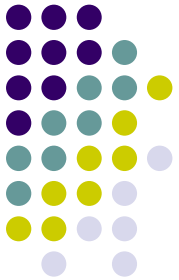
National State of Prepardness:

- **increasing level of confidence that national economic & industrial capabilities are well-developed enough for nuclear power;**

- **power grid size in Peninsular Malaysia is large enough for nuclear power plants;**

- **privatization of power generation industry has led to more innovative & enterprising power industry.**

SUPPLY-DRIVEN FACTORS IN RENEWED INTEREST IN THE OPTION



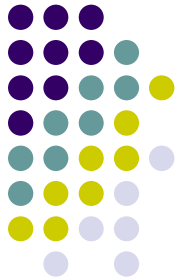
Nuclear Plant Technological Advancement:

- **extension of design life of modern plants from 25 to 40 years for past generation to 60 years for current generation plants;**

- **shortening of plant construction periods from 10 to 15 years to 3 to 6 years;**

- **improved safety of modern nuclear plants, with plant standardization, robust designs, and modular construction techniques.**

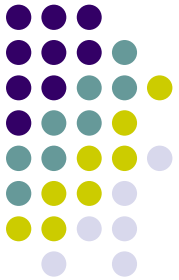
SUPPLY-DRIVEN FACTORS IN RENEWED INTEREST IN THE OPTION



Nuclear Fuel Technology Improvement:

- **improvement in design of nuclear fuel with extension of refueling cycle from 12 to 18 months to up to 24 months, resulting in improved plant load factors.**

SUPPLY-DRIVEN FACTORS IN RENEWED INTEREST IN THE OPTION

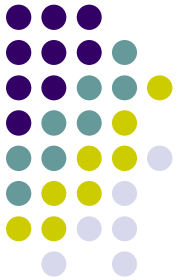


Nuclear Power Project Risk Reduction:

- **improved nuclear power plant licensing & regulatory process due to standardization of modern nuclear plant designs;**

- **minimised susceptibility to nuclear plant project cost overruns due to escalation in interest-during-construction (IDC), with shorter plant construction periods.**

SUPPLY-DRIVEN FACTORS IN RENEWED INTEREST IN THE OPTION



Improved Nuclear Power Economics:

- **improvements in nuclear plant technology, nuclear fuel design & utilization, reduction in construction & lead time, and extension of plant operating life, leads to better nuclear power economics.**

NUCLEAR ENERGY OPTION & THE NATIONAL ENERGY POLICY

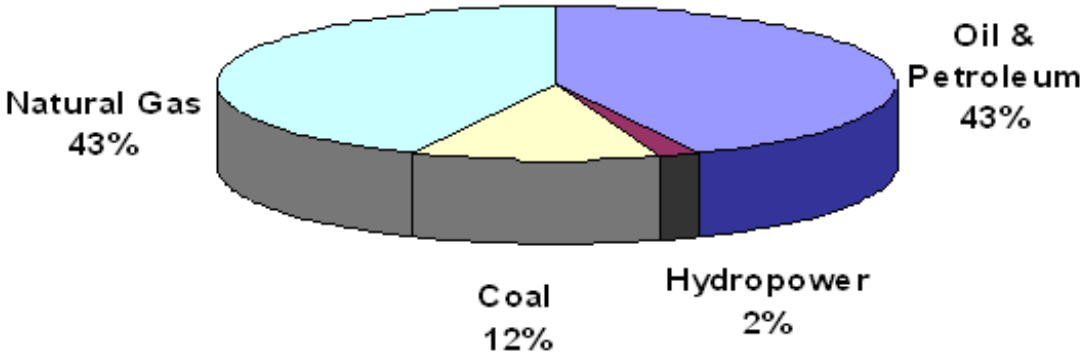
Nuclear energy option should be consistent with the 1979 National Energy Policy, especially:

Supply Objective:
in terms of ensuring national energy security due to high specific energy of nuclear fuel; and,

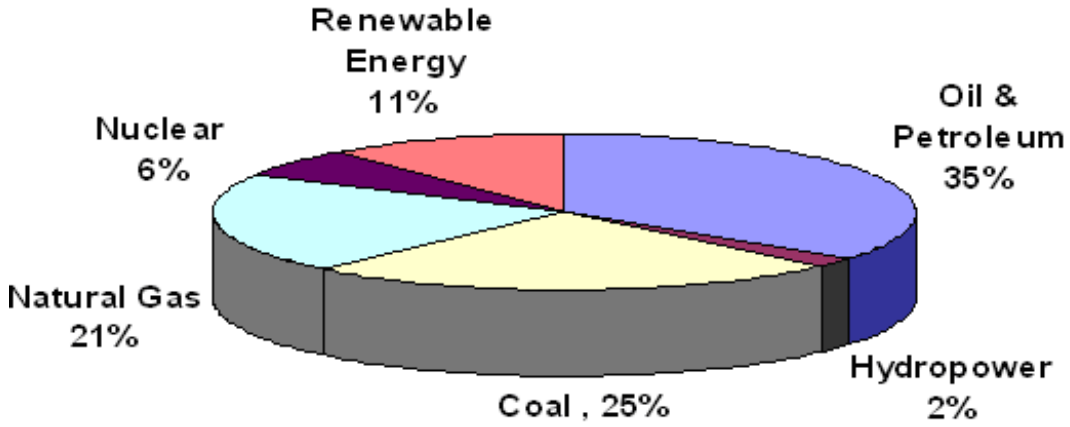
Environmental Objective:
in mitigating climate change through avoidance of green-house gas (GHG) emission with nuclear power generation.

2.
VALIDITY IN THE NEED FOR THE NUCLEAR ENERGY OPTION

COMPARATIVE ENERGY MIX: MALAYSIA & THE WORLD IN 2005

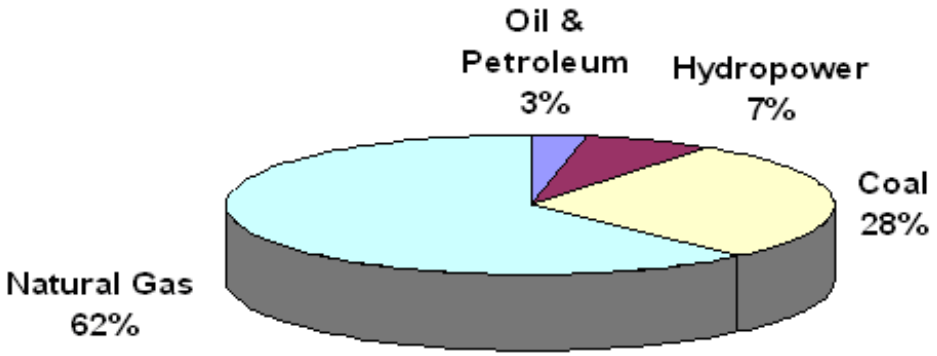


MALAYSIA



THE WORLD

COMPARATIVE ELECTRICITY FUEL MIX: MALAYSIA & THE WORLD IN 2005



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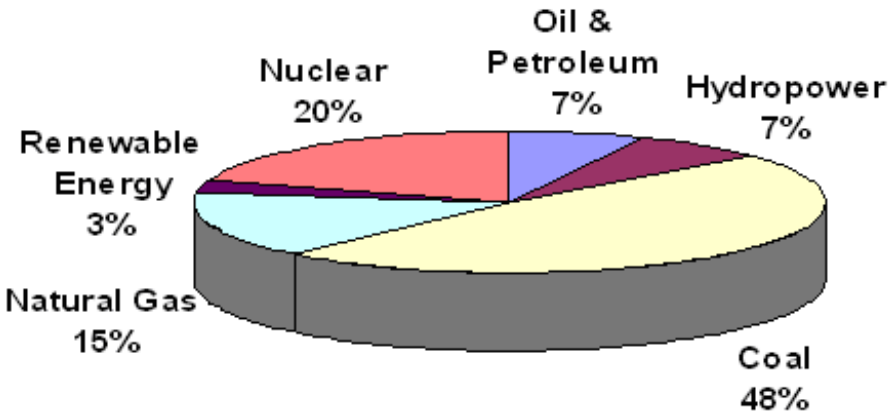
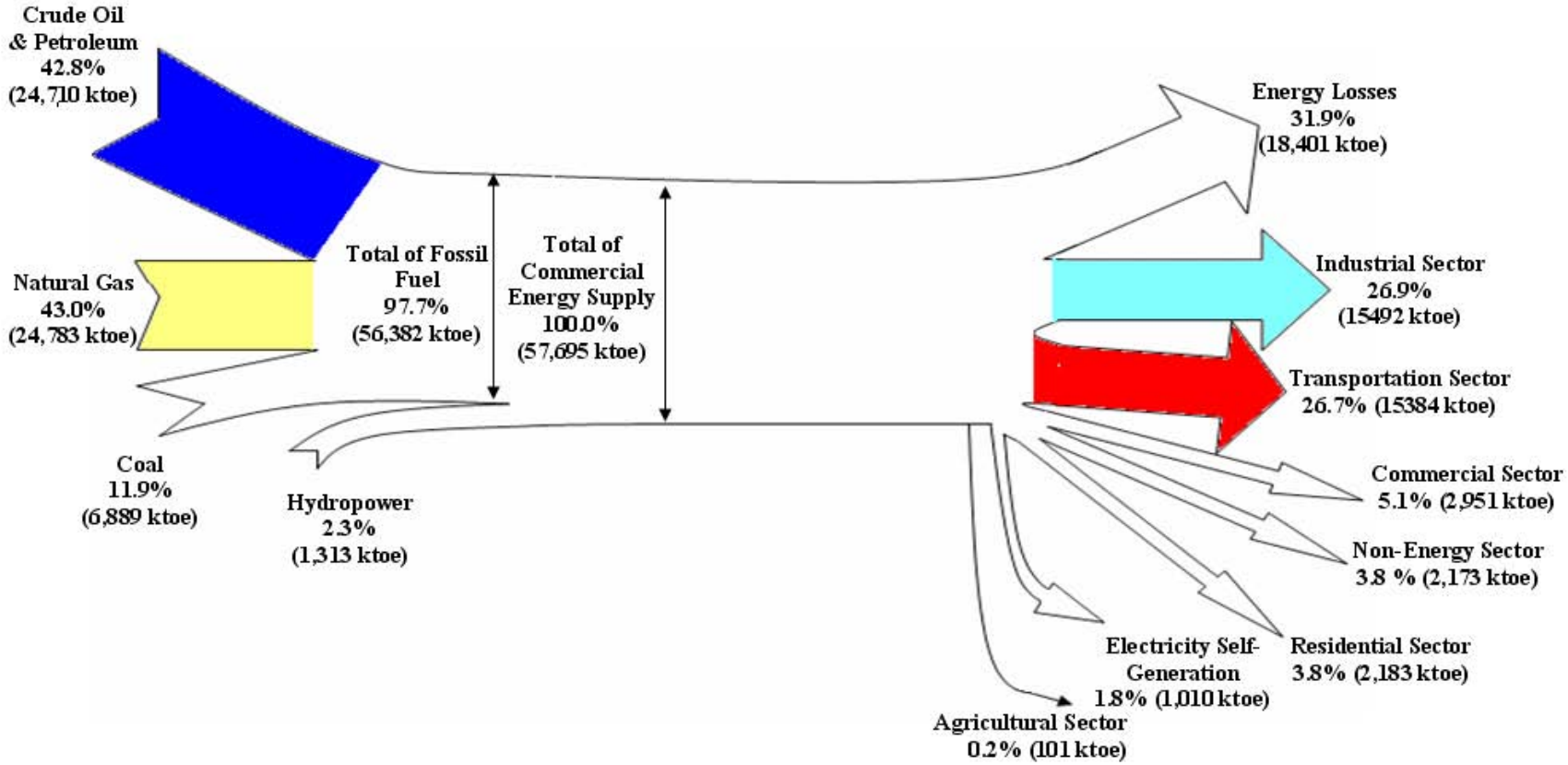
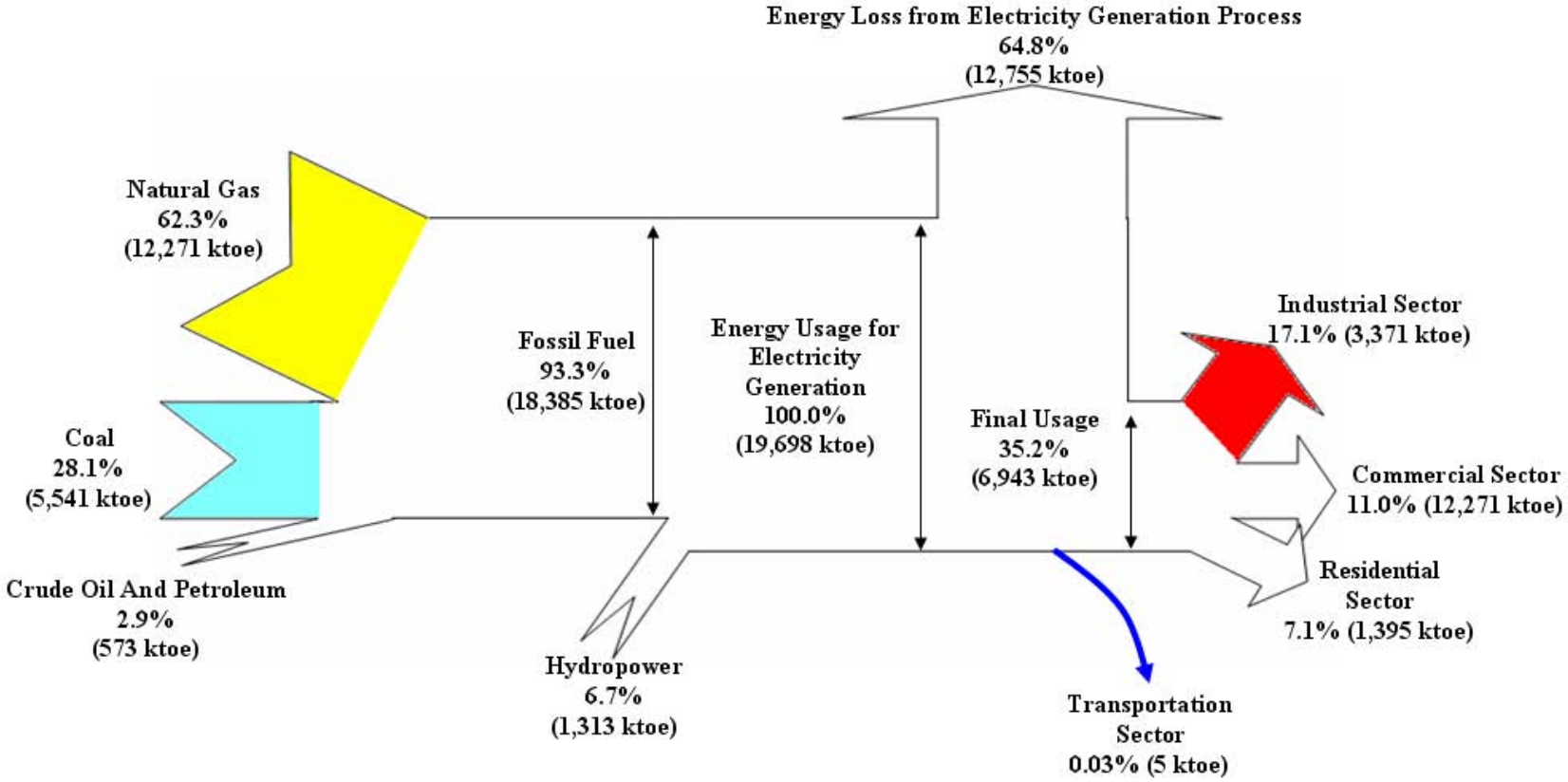


THE WORLD

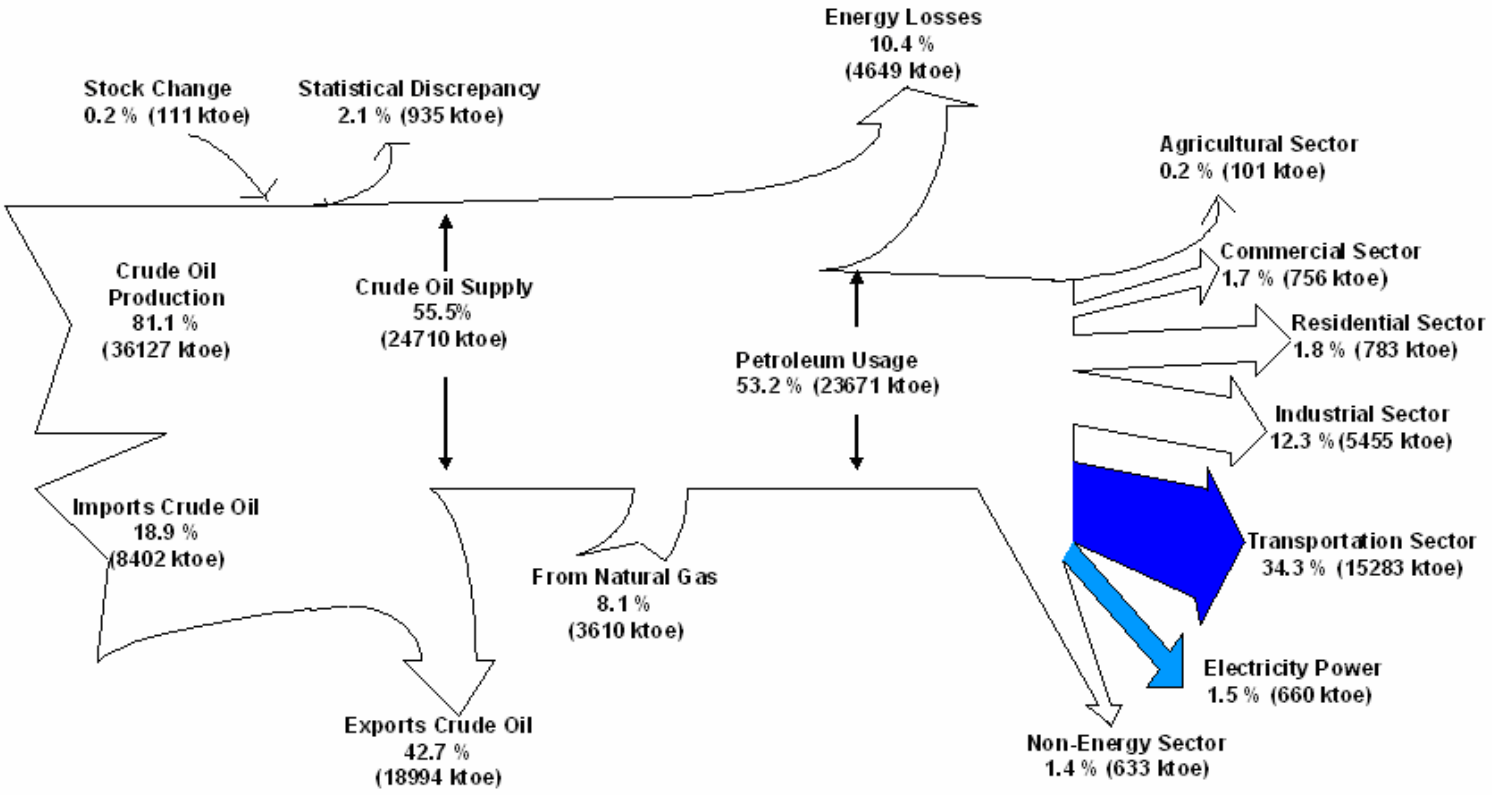
MALAYSIA
COMMERCIAL ENERGY FLOW 2005



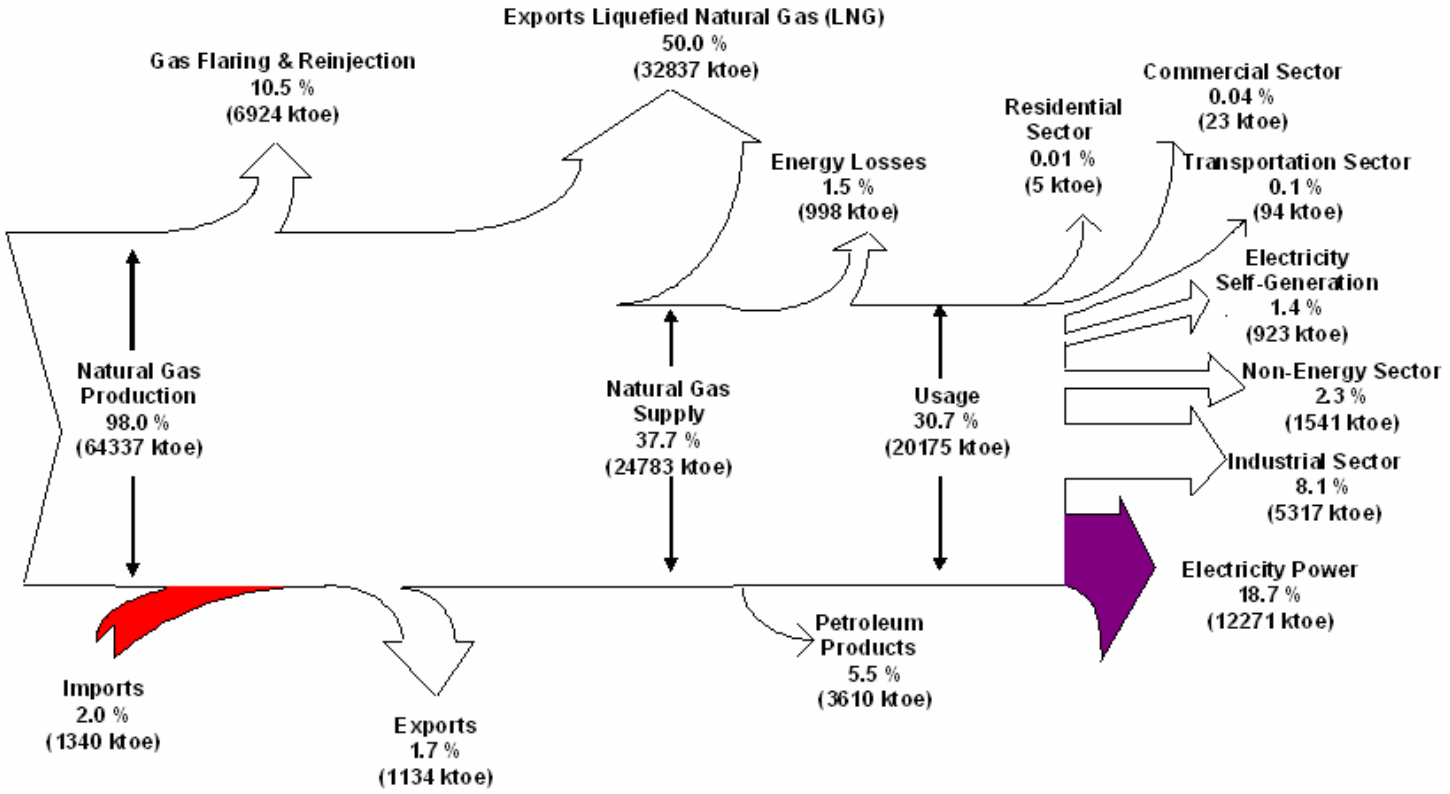
MALAYSIA COMMERCIAL ENERGY FLOW IN THE ELECTRICITY SECTOR 2005



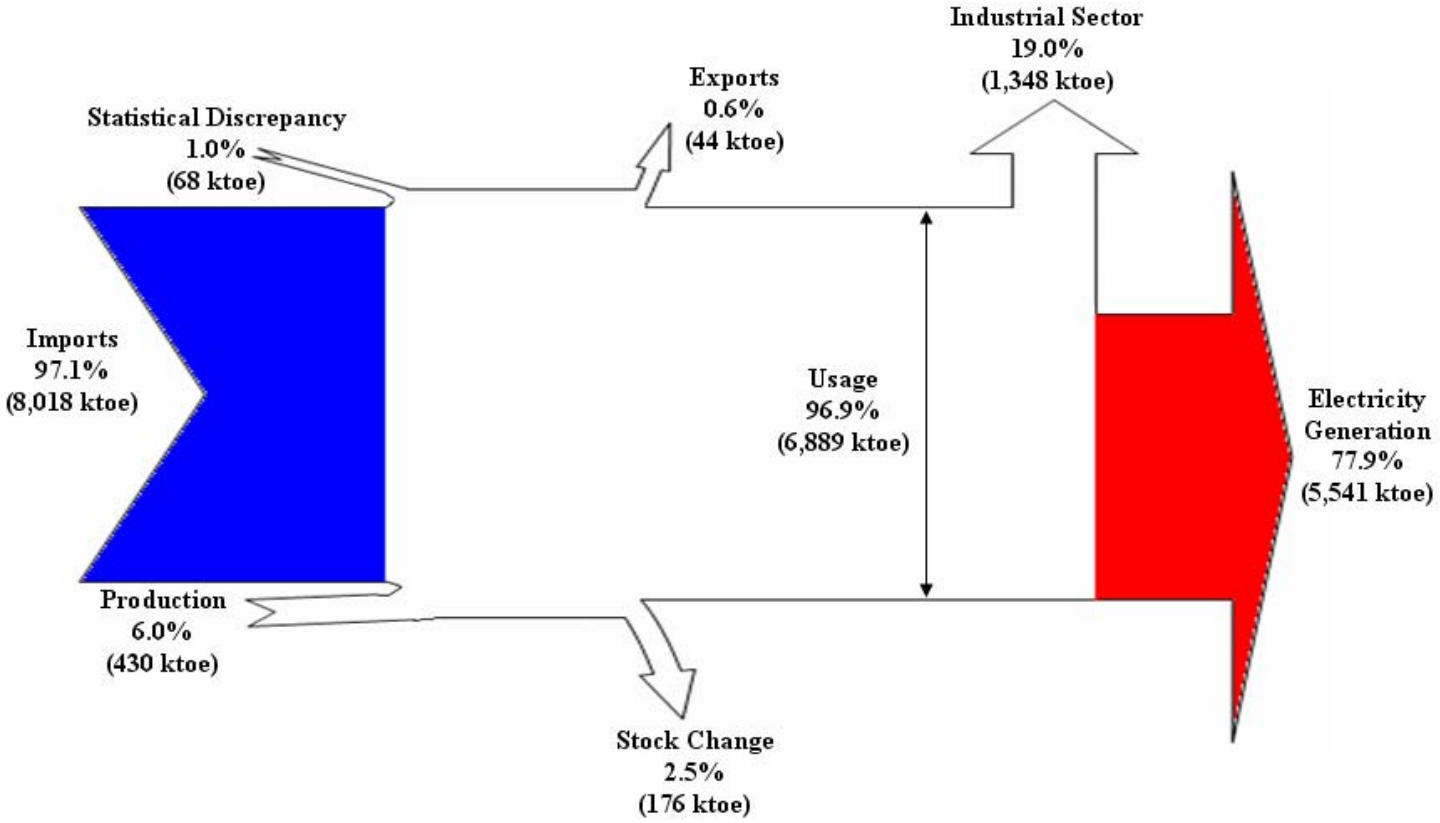
MALAYSIA COMMERCIAL ENERGY FLOW IN THE PETROLEUM SECTOR 2005



MALAYSIA COMMERCIAL ENERGY FLOW IN THE GAS SECTOR 2005



MALAYSIA COMMERCIAL ENERGY FLOW IN THE COAL SECTOR 2005

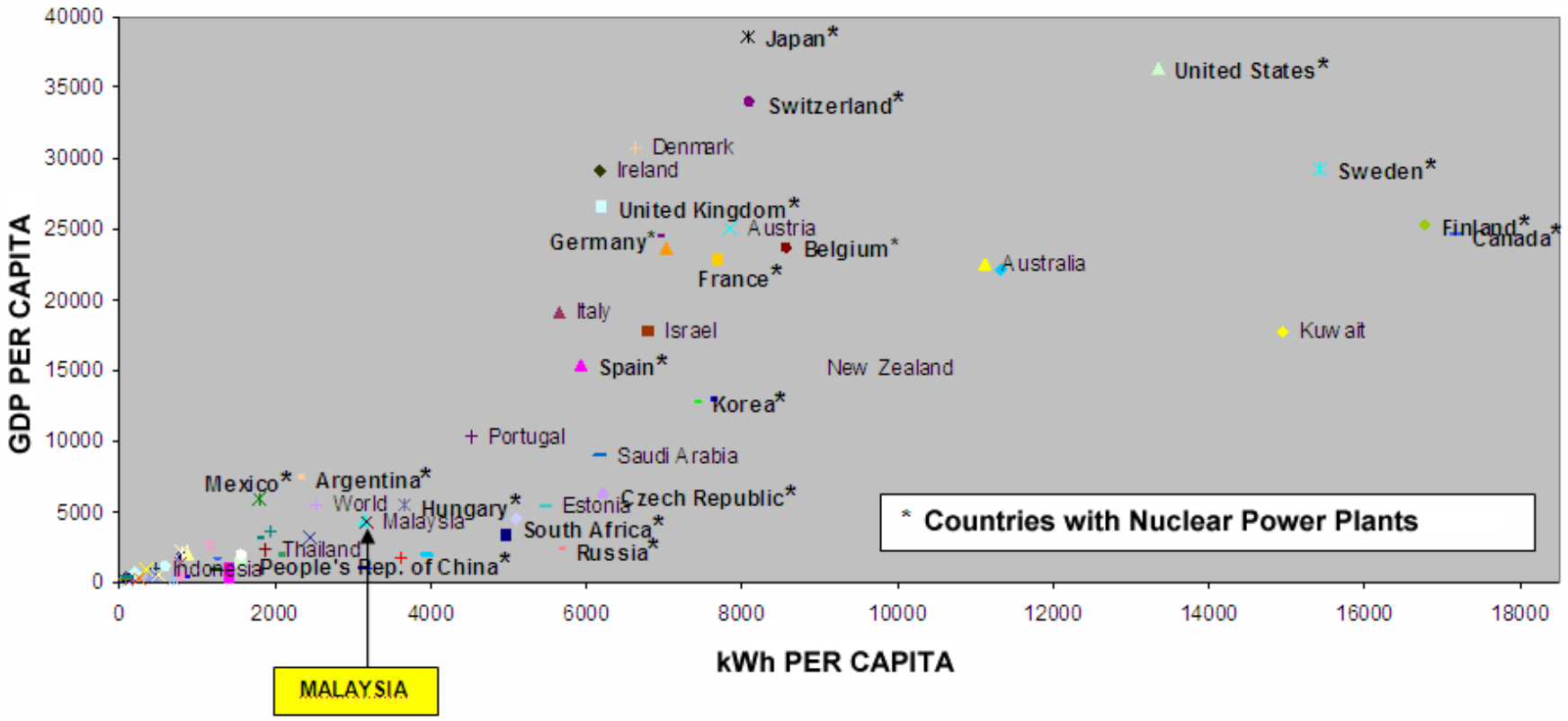


COMPARATIVE
GDP & ENERGY CONSUMPTION PER CAPITA

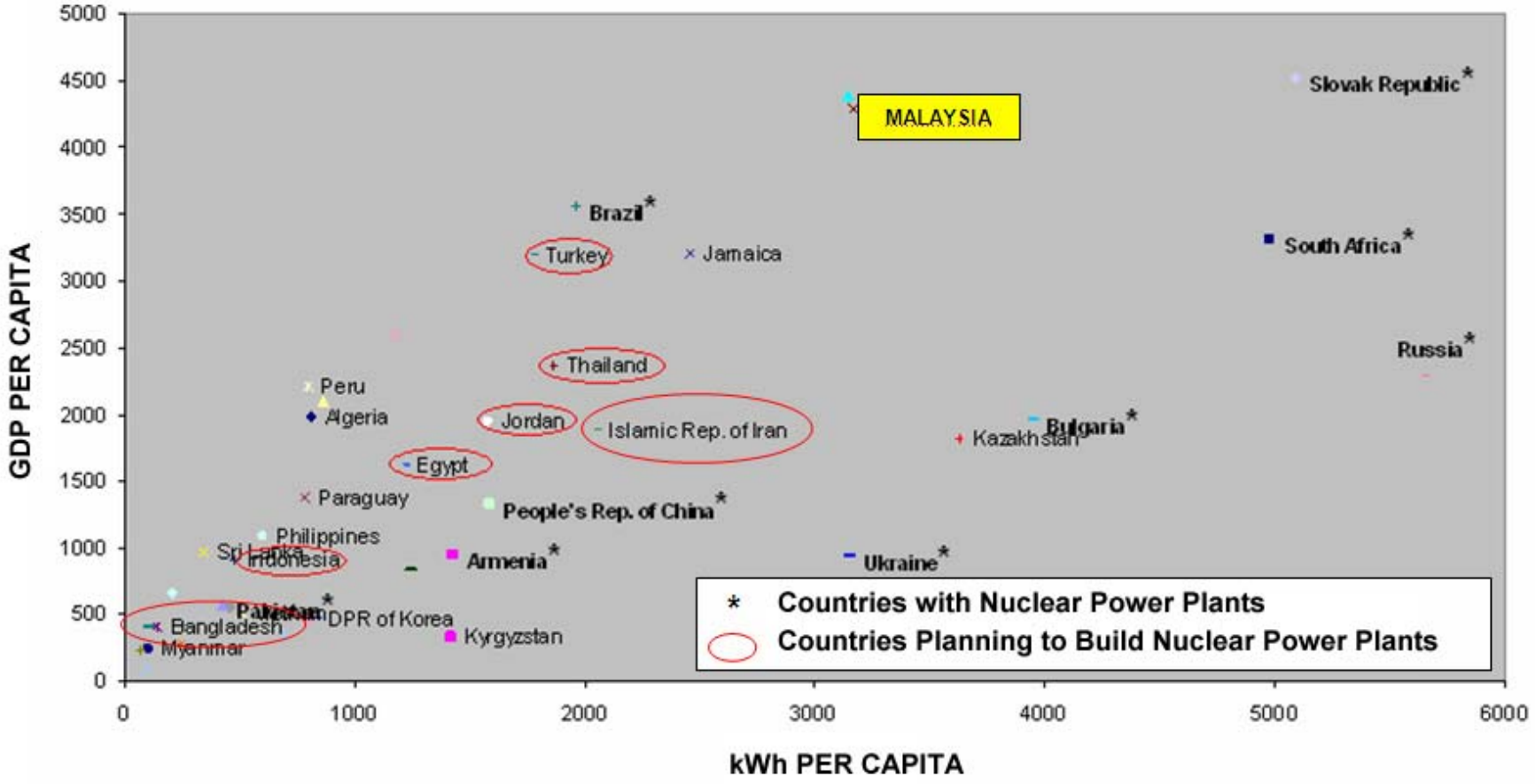
- countries with higher Gross Domestic Product (GDP) and energy consumption per capita than Malaysia have opted for nuclear energy;

- countries with lower GDP and energy consumption per capita than Malaysia are thinking of opting for nuclear energy.

COMPARATIVE
GDP & ENERGY CONSUMPTION PER CAPITA



COMPARATIVE
GDP & ENERGY CONSUMPTION PER CAPITA



3.
CONFIDENCE BUILDING AND TRANSPARENCY THROUGH THE INTERNATIONAL SYSTEM OF NUCLEAR GOVERNANCE AND PARTICIPATION IN INTERNATIONAL & REGIONAL COOPERATION FRAMEWORK & INITIATIVES

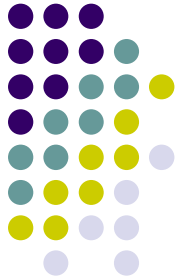
NUCLEAR TREATIES & CONVENTIONS THAT MALAYSIA IS A PARTY OR SIGNATORY TO

No.	Treaty, Convention or Agreement:	Status of Malaysia:
1.	1956 Statute of the International Atomic Energy Agency (IAEA)	Acceded to on 15 January 1969.
2.	1968 Treaty on the Non-proliferation of Nuclear Weapons (NPT)	Signed on 1 July 1968 and ratified on 3 May 1970.
3.	1972 Agreement between the Government of Malaysia and the IAEA for the Application of Safeguards in Connection with the NPT (Comprehensive Safeguards Agreement)	Concluded & entered into force on 29 Februari 1972.
4.	1997 Additional Protocol to the IAEA Comprehensive Safeguards Agreement	Signed on 22 November 2005, but yet to be ratified.

NUCLEAR TREATIES & CONVENTIONS THAT MALAYSIA IS A PARTY OR SIGNATORY TO

No.	Treaty, Convention or Agreement:	Status of Malaysia:
5.	1980 Agreement between the IAEA and the Governments of Malaysia and the United States of America Concerning the Transfer of a Research Reactor and Enriched Uranium (IAEA Project and Supply Agreement)	Concluded & entered into force on 20 September 1980.
6.	1959 Agreement on Privileges and Immunities of IAEA	Not a party to.
7.	1986 IAEA Convention on Early Notification of A Nuclear Accident	Acceded to on 1 September 1987 and entered into force on 2 October 1987.
8.	1986 IAEA Convention on Assistance in the Case of Nuclear Accident or Radiological Emergency	Acceded to on 1 September 1987 and entered into force on 2 October 1987.

NUCLEAR TREATIES & CONVENTIONS THAT MALAYSIA IS A PARTY OR SIGNATORY TO



No.	Treaty, Convention or Agreement:	Status of Malaysia:
9.	1979 Convention on the Physical Protection of Nuclear Material (CPPNM)	Cabinet approval to accede to made on 27 October 2003, but legal process to criminalise related offences still on-going.
10.	2005 Protocol to Amend the Convention on Physical Protection of Nuclear Material.	Yet to accede to, but related offences will be criminalised together with those for 1979 CPPNM
11.	1994 Convention on Nuclear Safety	Yet to accede to, but need to accede, especially with nuclear power.
12.	1963 Vienna Convention on Civil Liability for Nuclear Damage	Not a party to.

NUCLEAR TREATIES & CONVENTIONS THAT MALAYSIA IS A PARTY OR SIGNATORY TO

No.	Treaty, Convention or Agreement:	Status of Malaysia:
13.	1997 Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage	Yet to accede to, but may need to accede or adopt provisions in national legislation, especially with nuclear power.
14.	1997 Convention on Supplementary Compensation for Nuclear Damage	Yet to accede to, but may need to accede or adopt provisions in national legislation, especially with nuclear power.
15.	1997 Joint Convention on the Safety of Spent Fuel Management and on Safety of Radioactive Waste Management	Yet to accede to, but need to accede, especially with nuclear power.

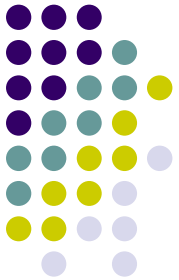
NUCLEAR TREATIES & CONVENTIONS THAT MALAYSIA IS A PARTY OR SIGNATORY TO

No.	Treaty, Convention or Agreement:	Status of Malaysia:
16.	1963 Treaty Banning Nuclear Weapon Tests in the Atmosphere, in Outer Space and Under Water (Partial Test Ban Treaty, PTBT)	Signed and ratified on 15 July 1964.
17.	1967 Treaty on Principles Governing the States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (Outer Space Treaty)	Signed on 20 February 1967, but yet to ratify.
18.	1972 Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Sea Bed and the Ocean Floor and in its Sub-soil Thereof (Sea-bed Treaty)	Signed on 20 May 1971 and ratified on 21 June 1972.

NUCLEAR TREATIES & CONVENTIONS THAT MALAYSIA IS A PARTY OR SIGNATORY TO

No.	Treaty, Convention or Agreement:	Status of Malaysia:
19.	1995 Treaty on the South-East Asia Nuclear Weapons-Free Zone (SEANWFZ)	Signed on 15 December 1995 and ratified on 11 October 1996
20.	1996 Comprehensive Nuclear Test-Ban Treaty (CTBT)	Signed on 23 July 1998 and ratified on 17 January 2008.
21.	2005 International Convention on Suppression of Acts of Nuclear Terrorism	Signed on 16 December 2005, but yet to ratify.

PARTICIPATION IN INTERNATIONAL & REGIONAL NUCLEAR COOPERATION



Malaysia participates in the IAEA Technical Cooperation Programme (TCP) since becoming the 101st IAEA Member State in 1969.

Malaysia joined in 1975 the Regional Co-operation Agreement for Research, Development & Training in Nuclear Science & Technology in Asia & Pacific (RCA).

Malaysia joined in 1990 the Forum for Nuclear Cooperation in Asia (FNCA).

PARTICIPATION IN INTERNATIONAL ILLICIT NUCLEAR TRAFFICKING DATABASE

Malaysia joined on 29 March 2001, the IAEA Illicit Trafficking Database in Nuclear Materials and Other Radioactive Sources, operated by the IAEA in cooperation with the World Customs Organisation (WCO) & International Police Organization (INTERPOL).

PARTICIPATION IN REGIONAL NUCLEAR WEAPON FREE-ZONE

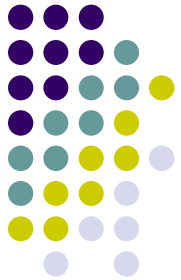
As a State Party to the SEANWFZ or Bangkok Treaty, Malaysia is a member of the SEANWFZ Commission, comprising Ministers of Foreign Affairs of all Parties, and also of the SEANWFZ Executive Council, comprising senior officials of all States Parties, at the level of Secretary General of Ministry of Foreign Affairs.

Malaysia participates in the implementation of the SEANWFZ Plan of Action agreed to by the SEANFWZ Commission in 2007.

PARTICIPATION IN REGIONAL SECURITY FRAMEWORK

As a member of the Association of South-East Asian Nations (ASEAN), Malaysia actively participates in the ASEAN Regional Forum (ARF), including in the formulation of the ARF Statement on Non-proliferation, issued at the 11th ARF in Jakarta on 2 July 2004.

PARTICIPATION IN REGIONAL SAFETY FRAMEWORK



As a member of ASEAN,
Malaysia also actively participates in on-going negotiations on ASEAN Nuclear Energy Safety Sub-Sector Network (NES-SSN), under the framework of the ASEAN Ministers on Energy Meeting (AMEM) & ASEAN Senior Officials of Energy (SOE), based on the decision of the 12th ASEAN Summit in Cebu, Philippines.

PARTICIPATION IN REGIONAL SCIENCE & TECHNOLOGY FRAMEWORK

As a member of ASEAN,
Malaysia also actively participates in
the ASEAN Committee on Science & Technology (COST),
which is also considering regional cooperation
in the area of nuclear science & technology
and nuclear power development.

PARTICIPATION IN REGIONAL UTILITY COOPERATION FRAMEWORK

As a member of ASEAN,
Malaysia also actively participates in
the Head of ASEAN Power Utilities/Authorities (HAPUA),
under the framework of
the ASEAN Ministers on Energy Meeting (AMEM)
& ASEAN Senior Officials of Energy (SOE),
which is also considering regional cooperation
in the area nuclear power development
amongst electric utilities of Member States.

PARTICIPATION IN REGIONAL TRACK II DIPLOMACY ON NUCLEAR SECURITY

As a member of ASEAN and the ARF,
Malaysia also actively participates in the activities of the Council for Security Cooperation in Asia Pacific (CSCAP), particularly the CSCAP Export Control Expert Group (XCXG) & CSCAP Study Group on Countering the Proliferation of Weapons of Mass Destruction (WMD) in the Asia Pacific, which is part of the ARF Track II Diplomacy, i.e. diplomacy between think-tank institutions in ARF States, rather than Track I Diplomacy between official representatives.

PARTICIPATION IN BILATERAL NUCLEAR SECURITY INITIATIVES

As one of the 20 largest trading nations in the world, Malaysia participates in the following initiatives of the United States of America (USA) to ensure supply chain security in international trade:

Container Security Initiative (CSI)
at the Port Kelang & Port of Tanjung Pelepas;

and Megaport Initiative
at Port Kelang (West Port & North Port).

PARTICIPATION IN IAEA POLICY-MAKING ORGANS

Malaysia actively participates in the IAEA General Conference & Board of Governors (BOG), and was elected Member of the IAEA BOG for the 1976-78, 1980-82, 1984-86, 1988-90, 1992-94, 1996-98 & 2002-2004 sessions.

Malaysia was also the founding Chairman of the Non-Aligned Movement (NAM) Chapter in Vienna, and has played an active role in the negotiations of certain key issues in the BOG from 2003 to 2006 as the Chairman of NAM.

PARTICIPATION IN GLOBAL INITIATIVES ON NON-PROLIFERATION & DISARMAMENT

Malaysia also actively participates in the following initiatives on nuclear non-proliferation, disarmament & elimination:

1. **NPT Review Process;**
2. **1995 hearing in the International Court of Justice (ICJ) on the Legality of the Use by a State of Nuclear Weapons in Armed Conflict and on the Legality of Threat or Use of Nuclear Weapons;**
3. **Initiated the United Nations General Assembly (UNGA) Resolution on Follow-up to the Advisory Opinion of the ICJ on the Legality of Threat or Use of Nuclear Weapons that consistently calls for a Nuclear Weapons Convention, to ban nuclear weapons at every UNGA session since 1996;**
4. **Preparatory Commission of the CTBT Organization.**

TRANSPARENCY IN NATIONAL NUCLEAR POWER DECISION-MAKING

National deliberations and decision-making on the possible utilization of nuclear energy are transparent through public consultations and debate in the Parliament.

National capacity-building for nuclear power, including human capital development, involve international multilateral & bilateral cooperation that are transparent to the international community.

High level of private sector involvement in power industry with collaboration of international business partners ensure further transparency in nuclear power development.

5.
CONCLUDING REMARKS

CONFIDENCE-BUILDING & TRANSPARENCY ISSUES

1. **Key issues in confidence-building & transparency in nuclear power development are centred on the scope & transparency of the nuclear fuel cycle;**

2. **The international system of nuclear governance, with committed implementation of obligations by States, is adequate for confidence-building & transparency;**

3. **It is deemed not necessary to create new regional systems of nuclear governance, which duplicate the existing international system, especially new regional treaty-based systems that impose overlapping regional & international obligations in nuclear power programme implementation on States.**

CONFIDENCE-BUILDING & TRANSPARENCY ISSUES

4. **Stereotyping, profiling or pre-judgment of States that are interested in nuclear energy utilization, based on ethnic, religious or other such characteristics, concerning their nuclear non-proliferation commitment, should be avoided in the interest of confidence-building;**

5. **Concern over nuclear weapon non-proliferation safeguards and nuclear safety & security by advanced supplier States should be balanced with need to assure supply assurance for nuclear power technology and nuclear fuel & services, consistent with relevant treaties, conventions & agreements;**

CONFIDENCE-BUILDING & TRANSPARENCY ISSUES

6. Greater international cooperation in assisting States develop their national nuclear power programmes would increase transparency & confidence-building;

7. Threats of nuclear weapon non-proliferation are linked to global & regional political and other issues that require confidence-building measures and transparency in other spheres of activities in various non-nuclear field.

THANK YOU