NATIONAL NUCLEAR POWER PROGRAMME AND EXPECTATION TO INTERNATIONAL ORGANISATIONS

Special Symposium for the IAEA 50th Anniversary
April 11, 2007, Aomori, Japan

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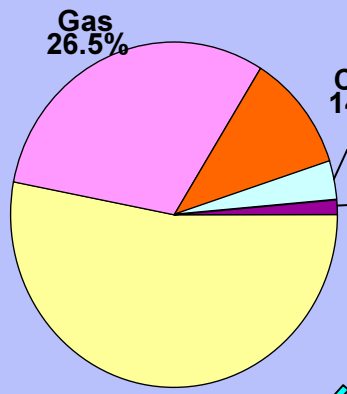
NATIONAL NUCLEAR POWER PROGRAMME AND EXPECTATION TO INTERNATIONAL ORGANISATIONS

Content :

- Energy Plan
- Roles of Nuclear Technology and Nuclear Energy
- Nuclear Power Plant Introduction and Fuel Cycle Programme
- Expectation to and Expected Support from International Organisations
- Remarks

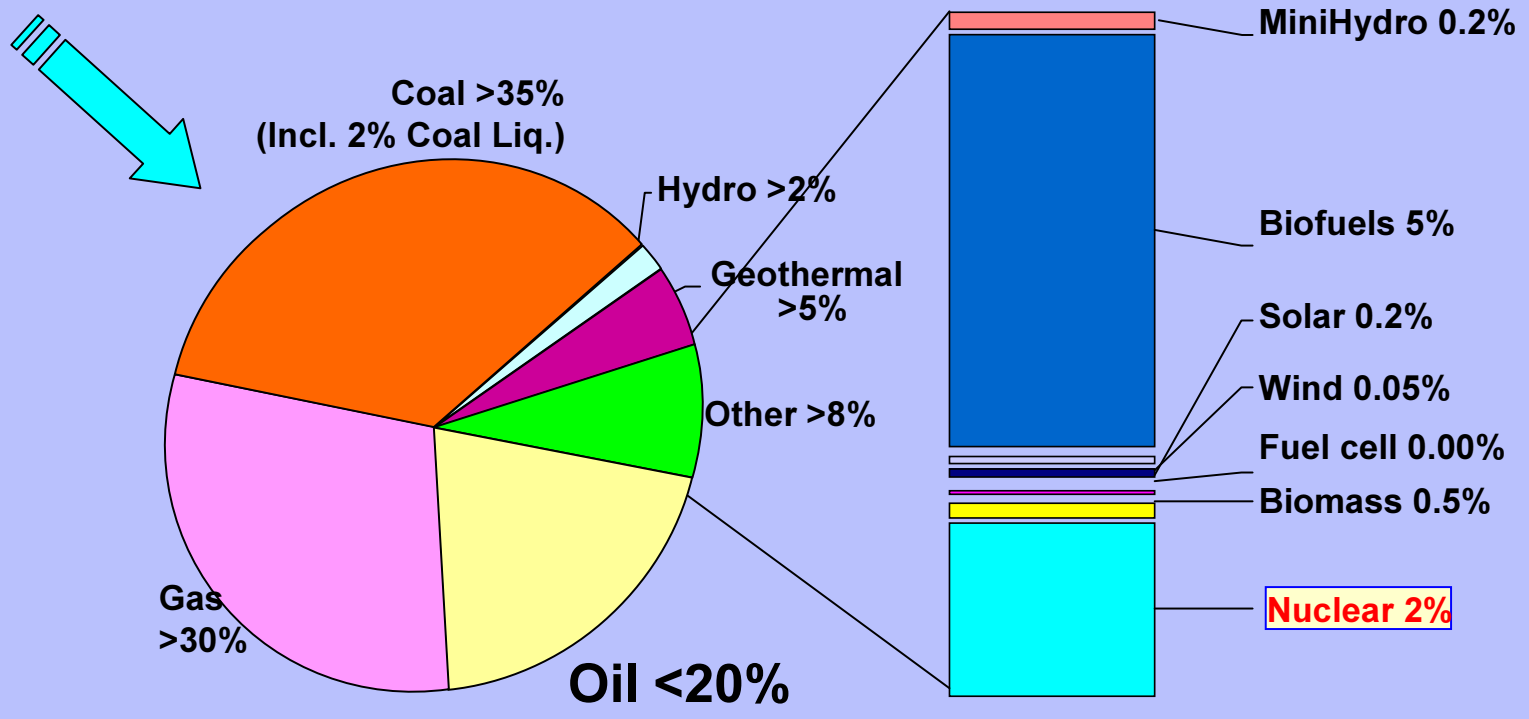
LONG-TERM NATIONAL ENERGY PLAN



TARGET of NATIONAL ENERGY MIX 2025

NATIONAL ENERGY MIX YEAR 2025 (OPTIMUM SCENARIO)
Presidential Regulation No.5 - 2006 for National Energy Policy

5% Non-Fossil ⇨ **>15% Non-Fossil**



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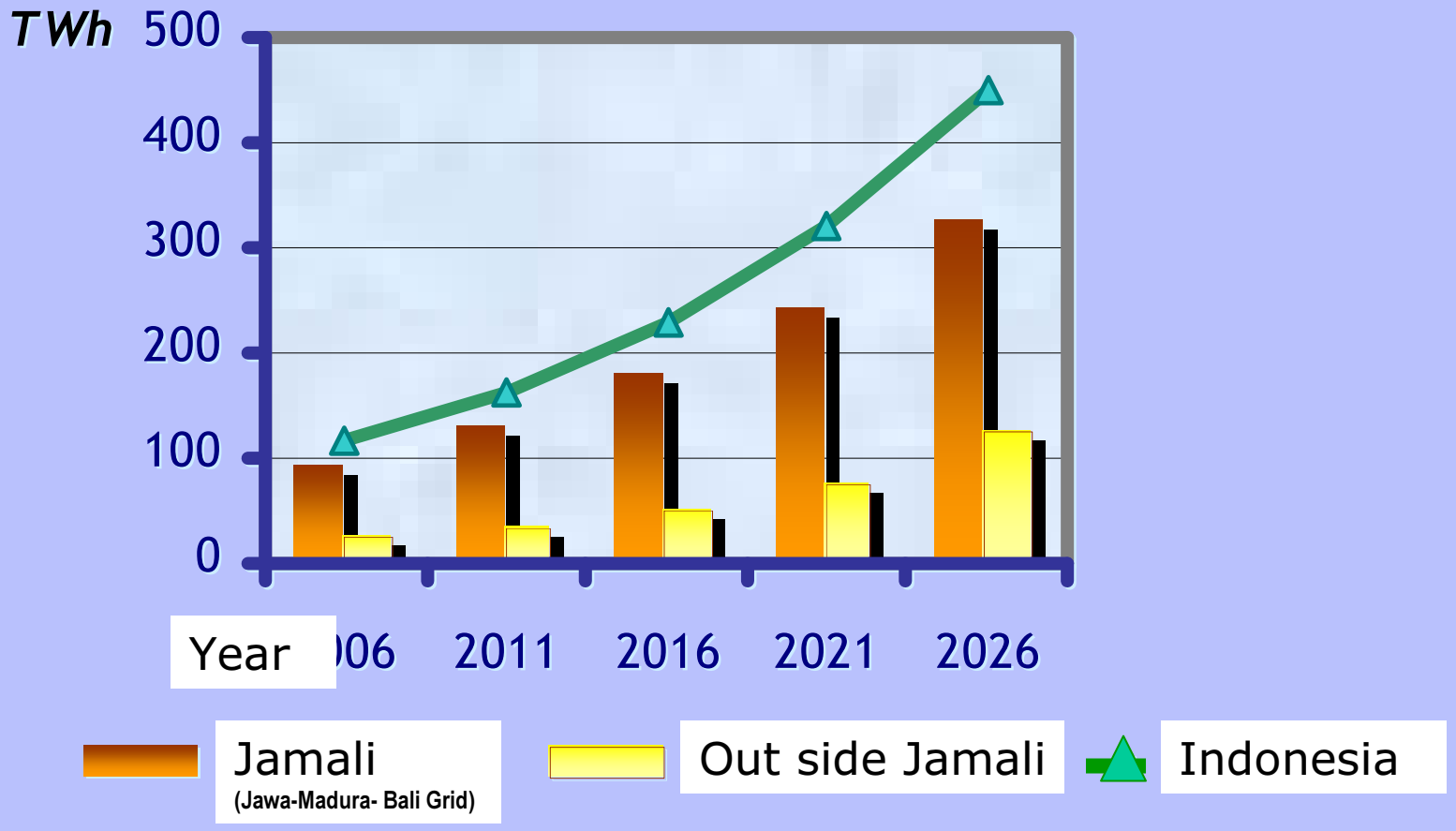
NATIONAL ELECTRICITY GENERAL PLAN (RUKN 2006 – 2026)



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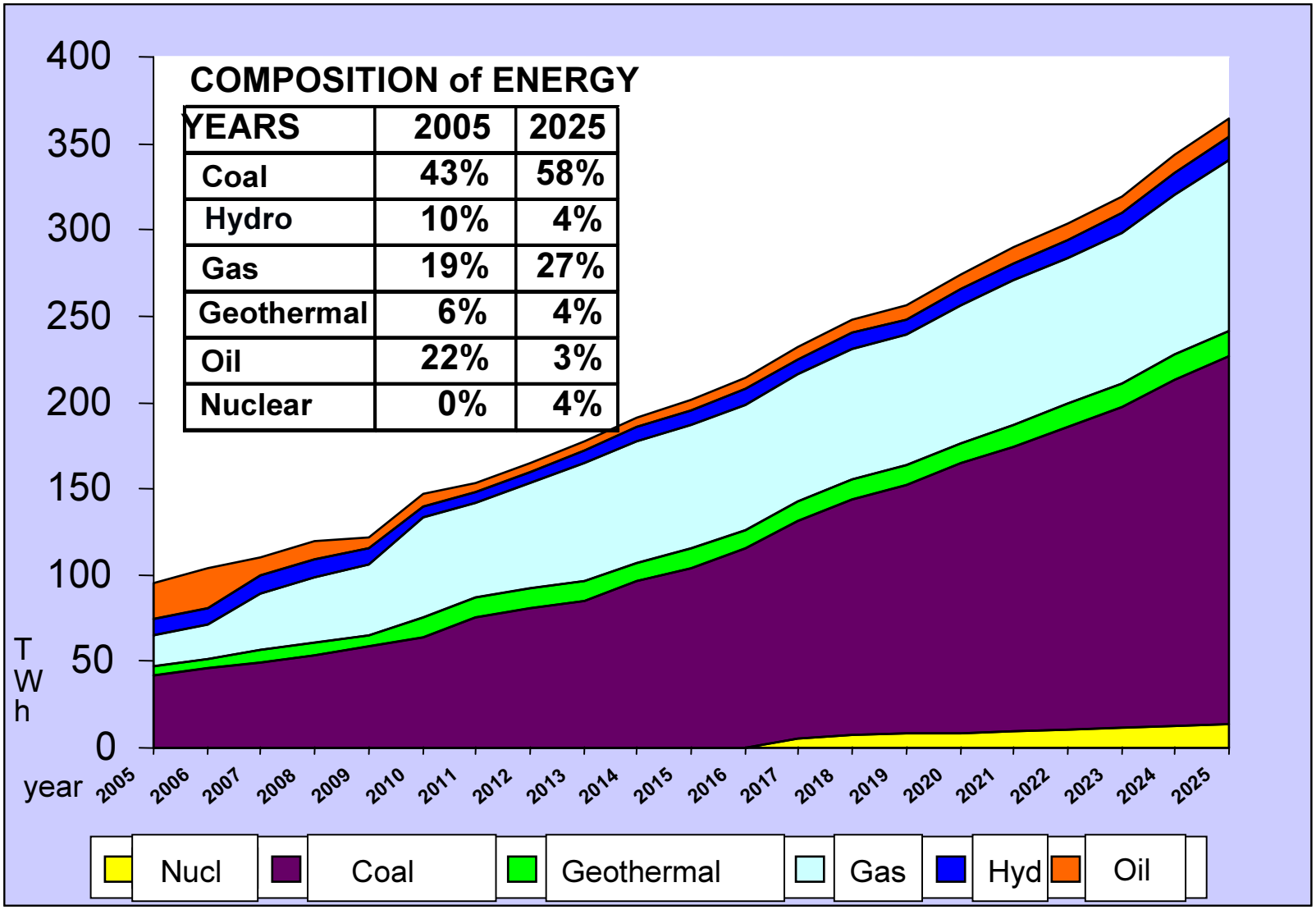
ELECTRIC POWER PRODUCTION PLAN

Jawa-Madura-Bali Grid

(in accord with Act 17/2007 on Long-term National Development Plan)



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R&D & UTILIZATION OF NUCLEAR TECHNOLOGY AND NUCLEAR ENERGY

- Energy:

  Symbiotic and synergistic to fossil, new and renewable energy sources to suffice conservation, diversification, and intensification, i.e.

  - Application of Nuclear Technology for Fossil:
    - EOR, SOx and NOx treatment using Electron Beam Machine
  - Application of Nuclear Technology for Renewable Energy:
    - Hydro, geothermal, bio-fuels (Yatropha Curcas sp, sweet sorghum), etc.
  - Nuclear Power Plant Introduction:
    - Planning of NPP introduction, pre-project activities, project implementation, construction, commissioning, operation, maintenance and decommissioning, and continuous socialization.
  - Preparation of Nuclear Fuel Supply (open cycle, for long term DUPIC, ADS, and or burner)
  - Study on Future NPP for Co-generation, ADS, other INPRO

NUCLEAR TECHNOLOGY

Irradiation Process

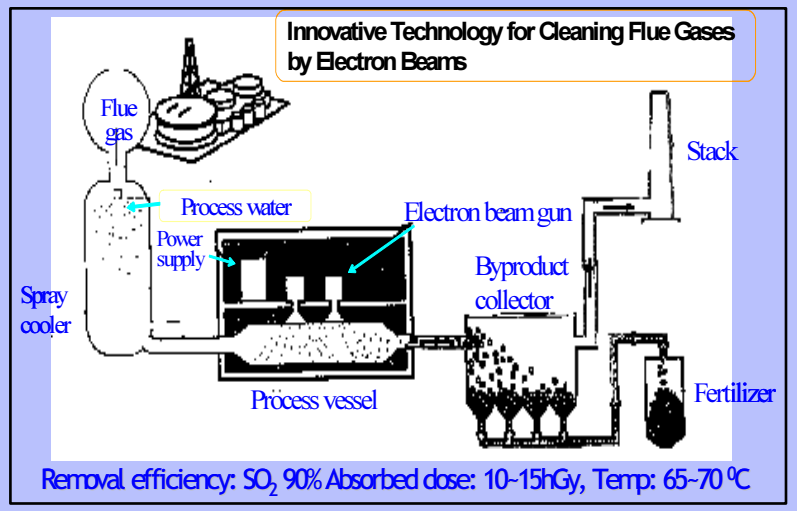
Tracer Technique

Tracer Technique

Irradiation Process

Tracer Technique

Flue gas treatment, coal fired power plant

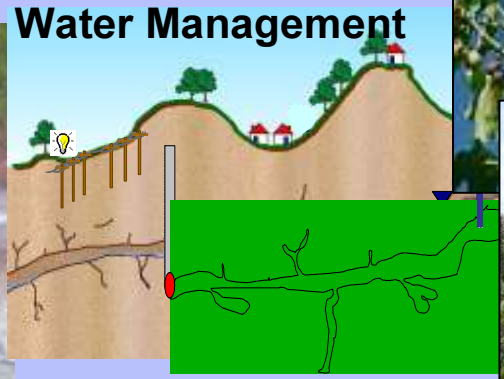


Bio-Fuels:

Oil intensification

Micro Hydro::

Water Management



Geothermal :

Search for potential resources

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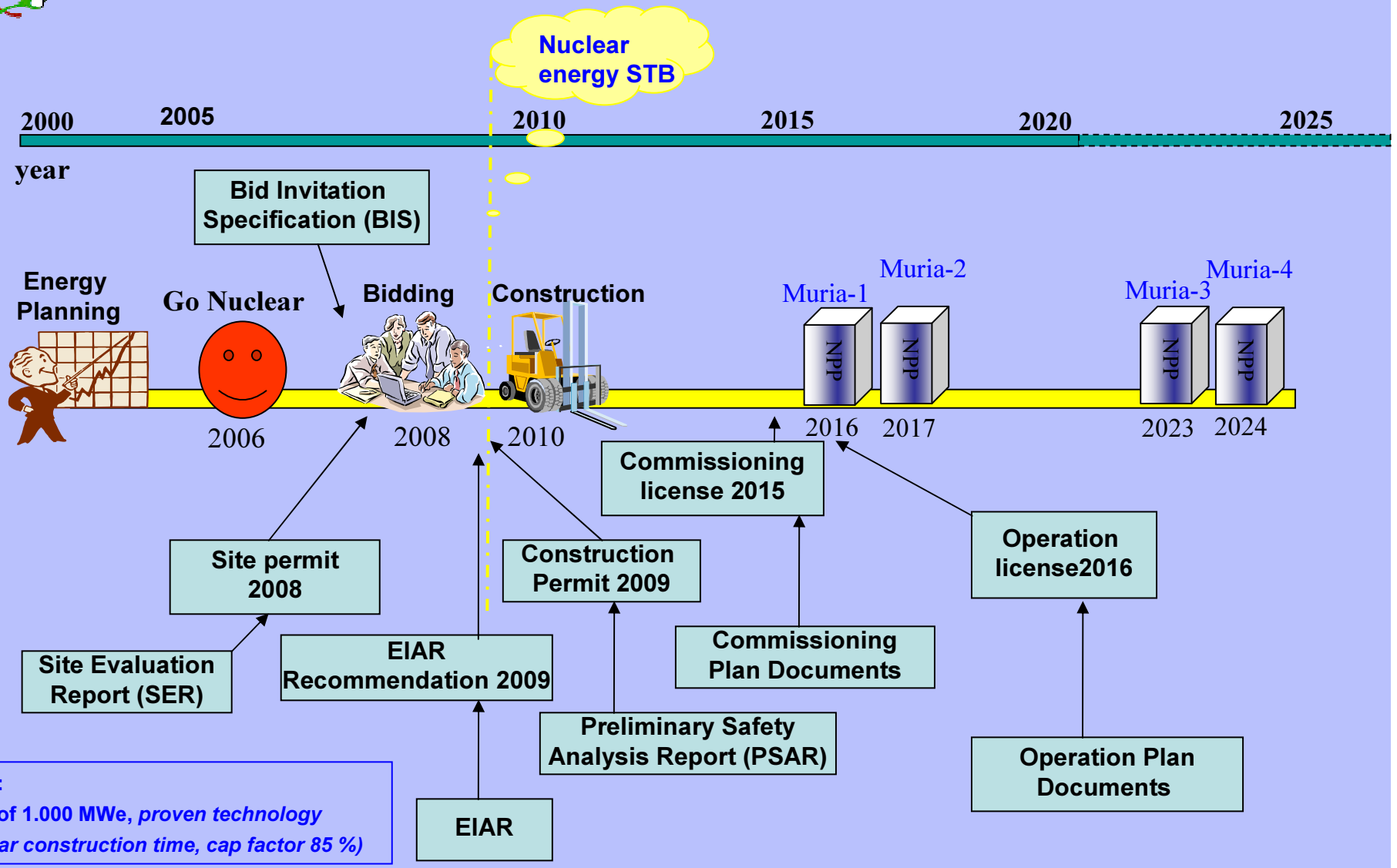
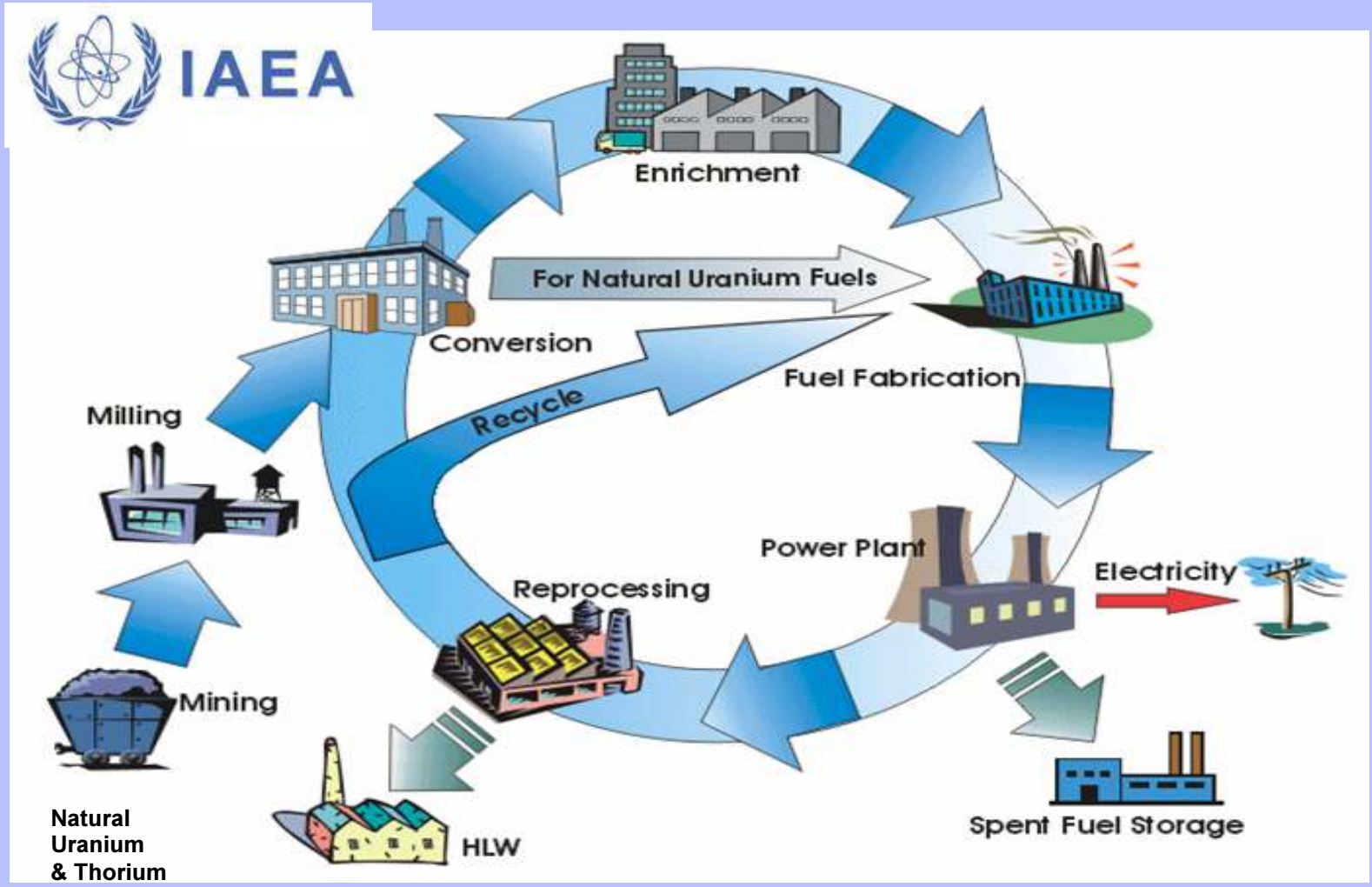
NPP ROAD MAP AND MILESTONE 2000-2025

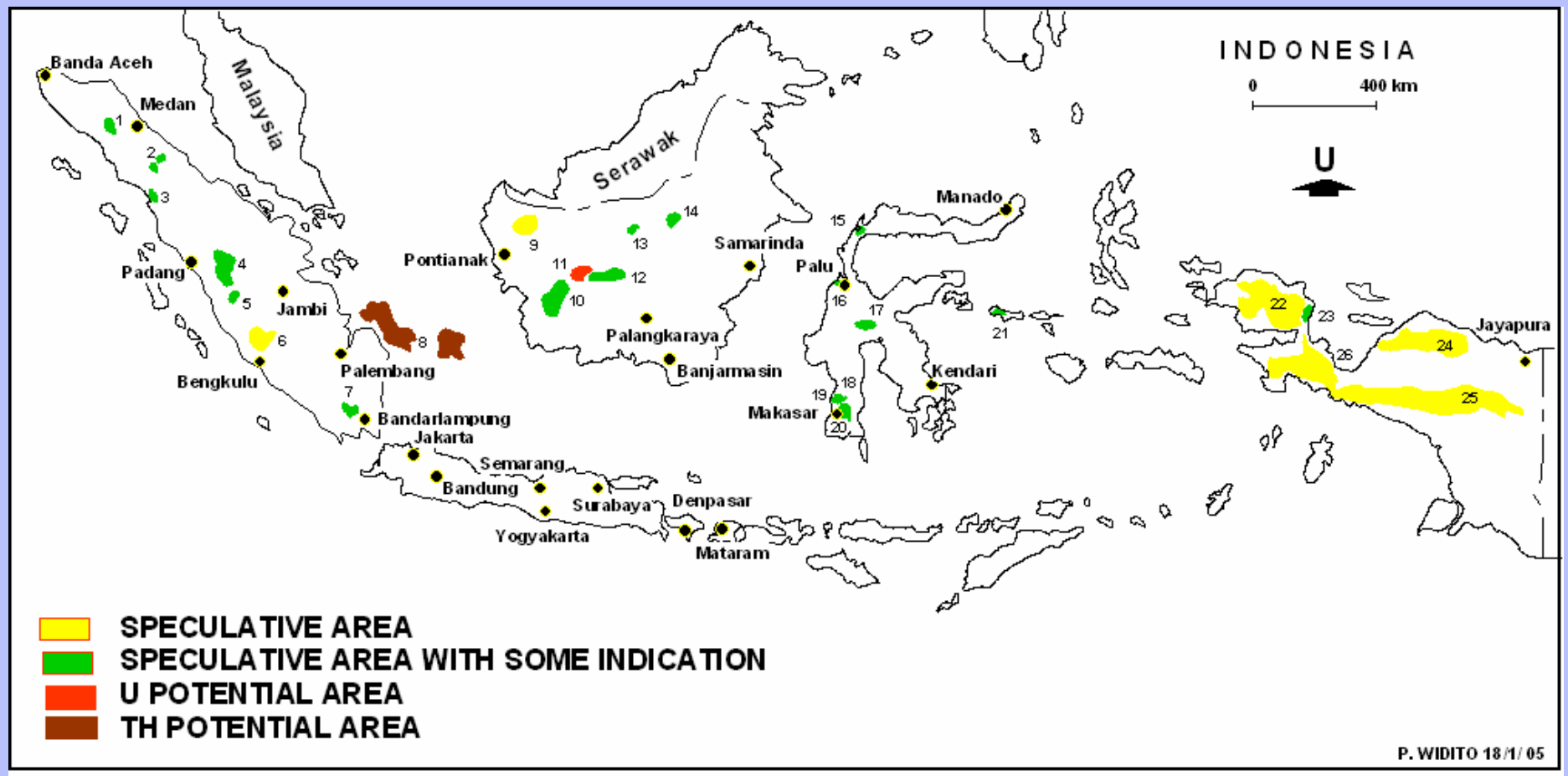


FUEL CYCLE



For nuclear energy to be sustainable as a global source of emission – free energy, the reactor fuel cycle must also remain sustainable (DG-IAEA Scientific Forum 2004)

RADIOACTIVE MINERAL RESOURCE MAP



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NUCLEAR FUEL CYCLE- OPTION POLICY

Natural Uranium Services

1. Purchase from producer countries
2. Explore and exploit domestic U deposit if economically justified

Uranium Conversion Services

1. Purchase from producer countries
2. Domestically produced according to the optimum amount of domestic U deposit if economically justified

Uranium Enrichment Services

Purchase from producer countries

Fuel Fabrication Services

- Purchase from producer countries for first loading
- Leasing and or long-term contract
- Step wisely produced domestically if economically justified

Spent Fuel Storage Services

1. Short-term, store in the plant
2. Medium-term, away from reactor, centralized facility

Radioactive Wastes Services

Processed and managed in the plant, and centralized facility

GOVERNMENT, OWNER, AND UTILITIES ACTIVITIES

- The latest study for National energy planning with nuclear option 2001-2002
- Socialization/public information, education, and community development 2003-2016
- Government decision and consultation with Parliament 2004 - 2006
- Up-dating of the site related data for site permit 2004-2007
- Nuclear site permit 2008
- Preparation of the regulation and licensing 2004-2008
- Ownership establishment, utility of the plant 2006-2007
- Preparation of Updating-FS, SER, BIS and PSAR draft 2005-2007

- Bidding, negotiation and contractual process 2008-2009
- Engineering and design 2009-2011
- Licensing process for sitting, construction, commissioning and commercial operation (including "AMDAL/EIAR") 2008-2010
- Procurement of materials and services 2009-2014
- Construction 2010/11-2016/17
- Commissioning and commercial operation 2016/17-2018

Based on Nuclear Act No 10 Year 1997

By GOVERNMENT

By OWNER, UTILITIES

Act, Decree, Regulation, and Drafts Relating to NPP Programme

- Electricity Power Act No. 15, 1985
- Nuclear Energy Act No. 10, 1997
- National Long-term Development Planning (RPJP) 2005-2025 Act No. 17, 2007
- President Decree No. 103, 2001 on BATAN & BAPETEN Tasks, Function, and Responsibility jo President Decree No. 64, 2005
- Presidential Regulation No. 7, 2005 on National Medium-term Development Planning (RPJM) 2004–2009
- Presidential Regulation No 5 Year 2006 on National Energy Policy (KEN)
- Various Government Regulations, e.g. PP 63/2000, PP 64/2000, PP26/2002, PP 27/2002, relating to safety of ionizing radiation, licensing of the use of nuclear energy, radioactive transport, radioactive waste management, as well as electricity
- Government Regulation PP 43/2006 on Licensing of Nuclear Reactor
- National Electricity General Plan (RUKN) 2006-2026, DOEMR 2006.
- Guidance for the Application and Development of Sustainable Nuclear Energy System in Indonesia, 2006
- Draft of National Energy Act
- Draft of Nuclear Power Implementing Agency
- Draft of Government Regulation on National Nuclear Emergency Preparedness

Indonesian Status to the International Nuclear Arrangements.

No	INTERNATIONAL NUCLEAR TREATY AND CONVENTION	STATUS
1.	▪Non-Proliferation Treaty (NPT) ▪Safeguard Agreement with IAEA ▪Additional Protocol to Safeguards	▪Ratified : Act No.8 / 1978 ▪Signed (Valid) ▪Signed (Valid)
2.	Convention on Physical Protection of Nuclear Material and its amendment	Ratified : President Decree No.49 / 1986
3.	Convention on Early Notification of a Nuclear Accident	Ratified : President Decree No.81 / 1993
4.	Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency	Ratified : President Decree No.82 / 1993
5.	Treaty on the South East Asia Nuclear Weapon Free Zone	Ratified : UU No.9 / 1997
6.	Convention on Nuclear Safety	Ratified : President Decree No.106 / 2001
7.	Convention on Supplementary Compensation for Nuclear Damage	Signed 1997
8.	Comprehensive Nuclear Test-Ban Treaty (CTBT)	Signed 1996
9.	Joint Convention on the Safety of Spent Fuel Management and the Safety of Radioactive Waste Management	Signed (1997)
10.	Protocol to Amend the Vienna Convention	Signed (1997)
11.	Bilateral Cooperation and Supply Agreement (s)	Signed 1997

EXPECTATION TO INTERNATIONAL ORGANISATIONS

The development of nuclear power programme has been typified by high degree of international cooperation and regulation. Many international agencies, treaties, and conventions exist for control and regulatory purposes, as well as for technical information exchanges.

- The above mentioned status of Indonesia to the International Arrangements shows that the country are ready to international instruments for commencing an introduction of nuclear power plant project.
- Although Indonesia has developed significant infrastructure to construct NPP and gained some experience in construction and operation of various conventional power plants and running three research reactors with various supporting nuclear facilities for couple decade but further bilateral, regional and international cooperation for NPP project implementation are needed in various areas, e.g. design, engineering and operation of NPP; the inculcation of a safety culture; regulation; HRD including education and training; cooperation in third party liability convention; nuclear trade; spent fuel and waste management; technology development of advance reactors and back end of the fuel cycle; and non-proliferation not only to be able of implementing the programme safely and securely but also to satisfy one of the most important expectation i.e. the need of sustainability of the NPP operation, especially the availability of fuel cycle services, and its economic competitiveness.
- Therefore we need to have various cooperation with international organizations, while expecting the developed countries continue to enhance the sustainability of the fuel cycle services by various advancement of technology on reactors and fuel cycles with the aim to consume the natural resources of Uranium more efficiently. We also expect that the technology advancement of fuel cycles give rise to the enhancement of proliferation resistance

EXPECTED SUPPORTS FROM INTERNATIONAL ORGANISATIONS

Since Indonesia has never introduced the NPP yet, the international cooperation is necessary to guaranty safe, secure, and successful implementation of NPP programme as well as sustainable utilization and peaceful NPP operation. The cooperation is also needed to be long-term and committed to give rise the enhancement of domestic nuclear industries to be capable in mastering the state of the art technology for developing its participation. The cooperation shall consists of, but not limited to :

- Public education and information leading to public acceptance.
- Support on financing scheme development
- Technical supports on establishment of technical regulation and licensing, HRD for NPP operation & maintenance as well as inspection.
- Technical support for project management and operating organizations in the construction and commissioning of NPP.
- Technical support for operation, maintenance and supporting activities of the NPP.
- Technical support on licensing and regulatory surveillance.
- Supply and services of NPP, components, and fuel cycle.
- Technical support for enhancing product and services of domestic nuclear industries.

REMARKS

The energy development in Indonesia necessitates the introduction of NPP in the second decades of 21st century, and the first NPP should be in operation by 2016 for Java – Madura - Bali grid

- The Government has led all necessary pre-project activities, and is completing the requirement needed for owner establishment.
- Some political, economical, social and technical efforts have been done to facilitate the introduction of the first NPP in Indonesia. Few preparation studies, however need to be further up-dated, to conclude the objective.
- In spite of the complete, comprehensive and long-time preparation that have already been carried out, main influencing factors i.e public education and information as well as community development leading to acceptance still need to be continually managed to succeed the NPP introduction in Indonesia although majority has been supporting.
- The international cooperation, i.e. multilateral, regional, and bilateral with developed and experience countries are needed to pursuit safe, secure, and peaceful introduction as well as sustainable operation of the NPP and its economic competitiveness.
- The long term cooperation is also expected to be committed to give rise the enhancement of domestic industry to be reliable, safe, and peaceful nuclear industries enjoying the state of the art technology from advanced countries.

Thank you for your attention

April 11, 2007
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