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DAN INOVASI NASIONAL

BerAKHLAK
Berorientasi Pelayanan Akuntabel Kompeten
Harmonis Loyal Adaptif Kolaboratif

#bangga melayani bangsa

NUCLEAR PLAN AND SAFETY IN INDONESIA

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National Research and
Innovation Agency (BRIN)

INDONESIA

Basic Profesional Training Course
on Nuclear Safety – Daejeon, 2022

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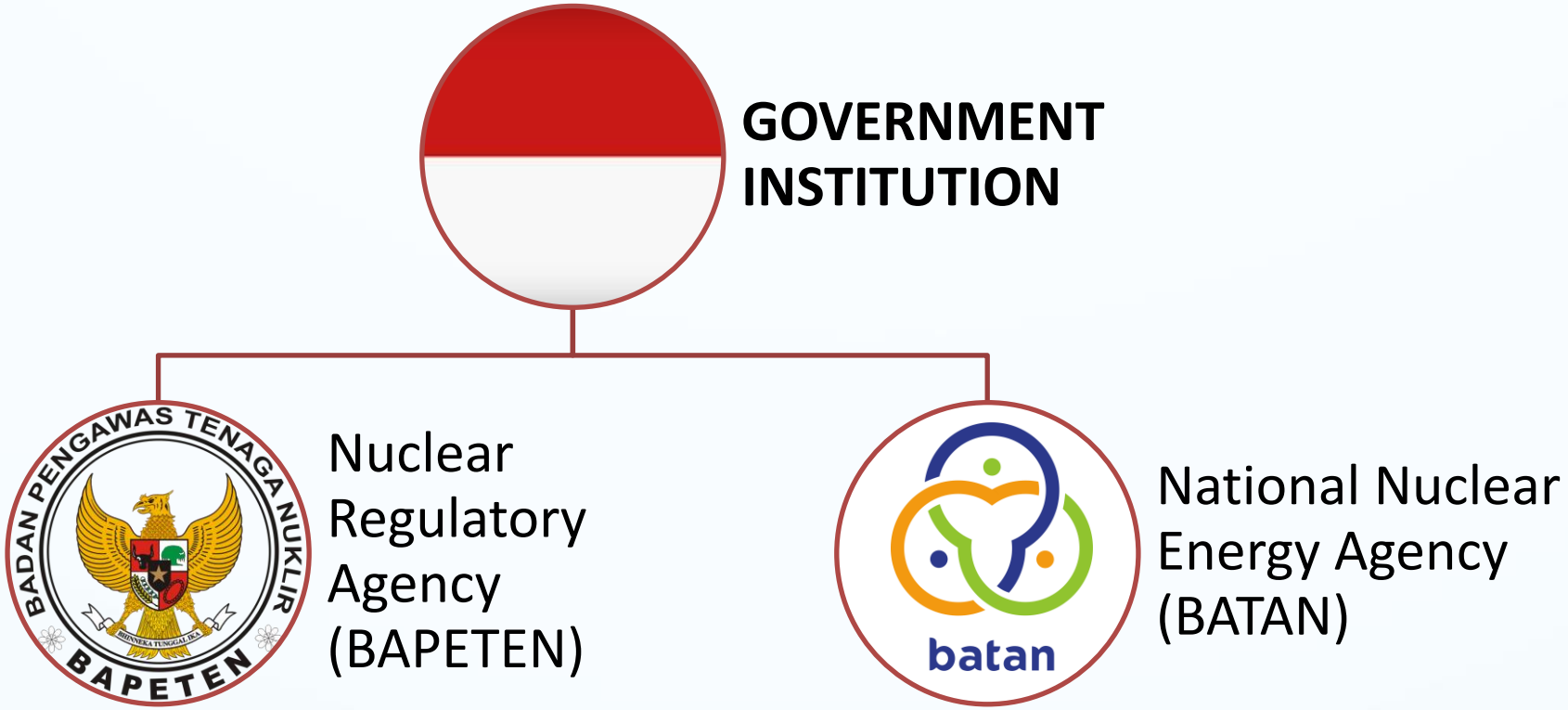
I INTRODUCTION

HYRARCHY


GOVERNMENT INSTITUTION
Nuclear Regulatory Agency (BAPETEN)
National Nuclear Energy Agency (BATAN)

HYRARCHY

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All Research Institution in Indonesia

2021 →

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NATIONAL RESEARCH & INNOVATION AGENCY OF INDONESIA

ORGANIZATION STRUCTURE

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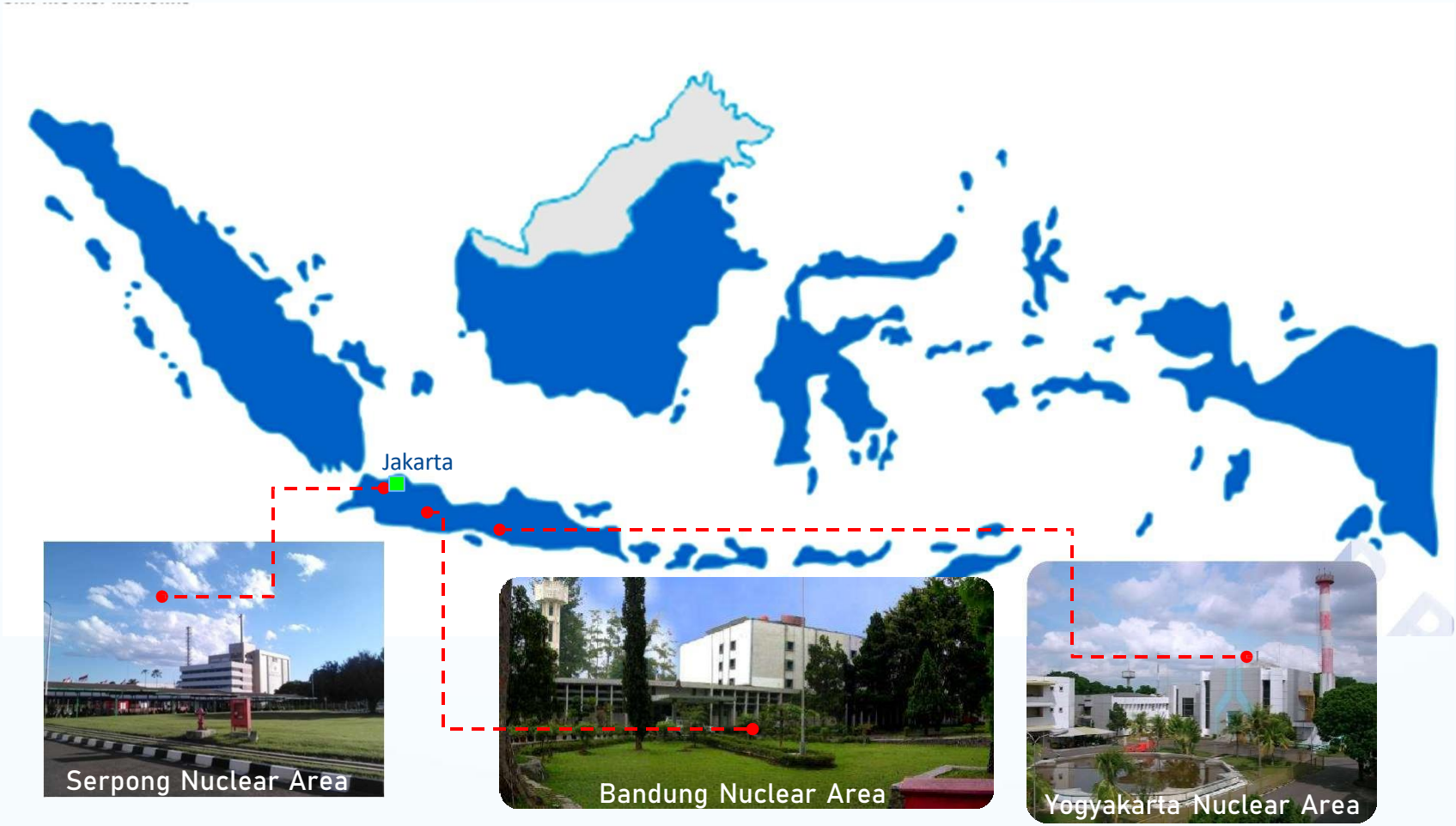
- **Nuclear Utilization**
  - **Directorate of Nuclear Facility Management**
    - Nuclear Cycle:
      - Nuclear Fuel Facilities
      - Research Reactors
      - Nuclear Waste Management, etc
    - Nuclear Application:
      - Radioisotope Installation
      - Irradiators
      - Nuclear medicine, etc
  - **Research Organization for Nuclear Energy**
    - Nuclear Technology:
      - Nuclear reactor
      - Accelerator
      - Nuclear cycle, etc
    - Nuclear Application:
      - Radiation & detection
      - Nuclear analysis
      - Radioisotope, etc

NUCLEAR RESEARCH REACTOR IN INDONESIA

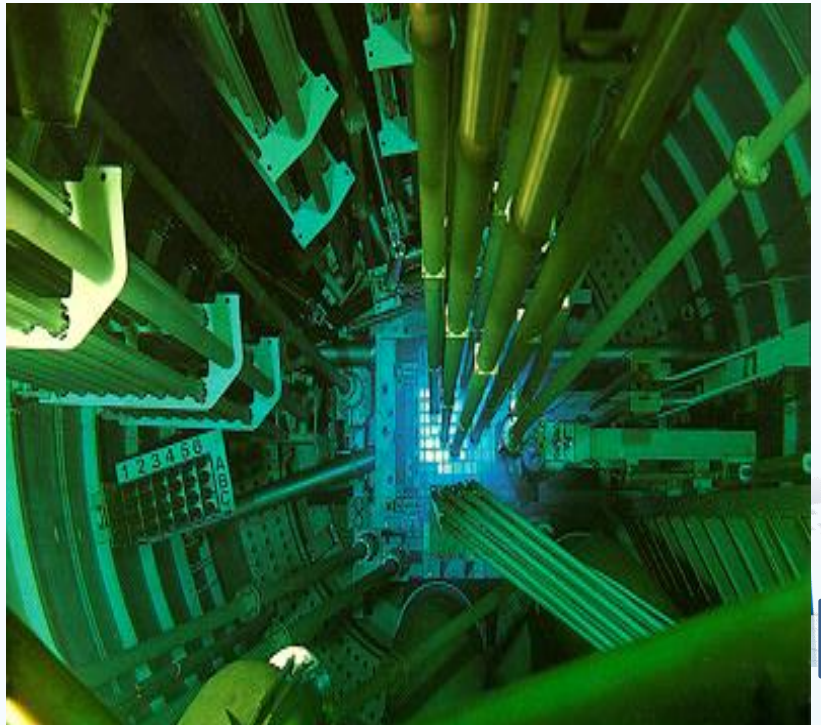


RSG GA Siwabessy – Serpong

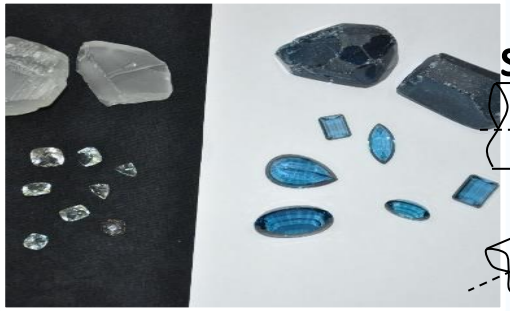
Multipurpose Reactor G.A Siwabessy

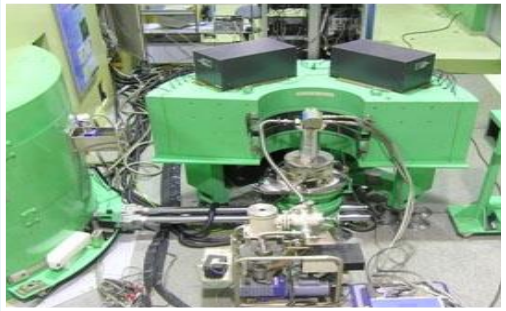
Location in KST BJ Habibi Building 30 Serpong Tangerang Selatan Banten Indonesia

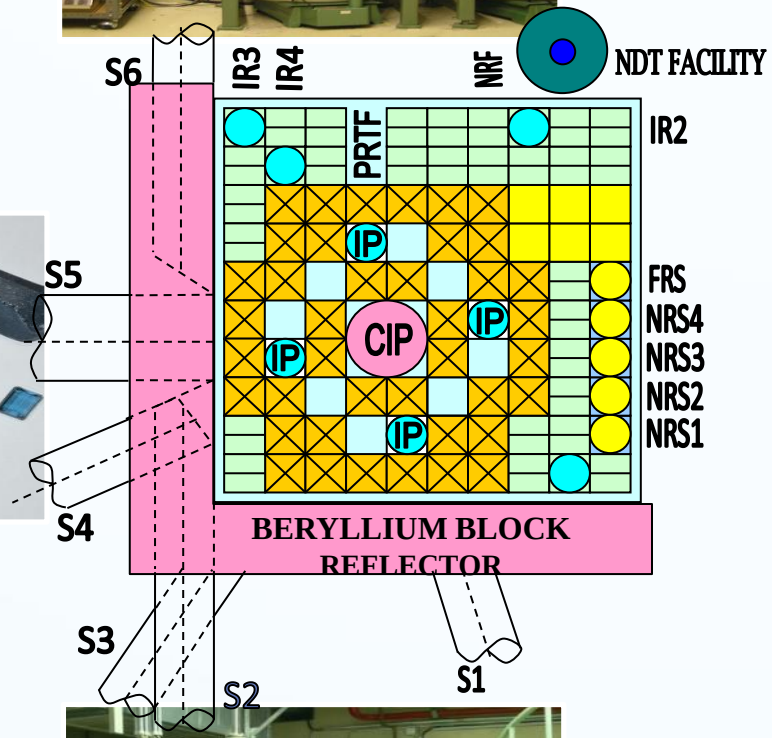
Bulid : 1983
Critical condition : 1987
Power : 30 Mw (Thermal)
Peak Thermal Neutron Flux : 2×10^{14} $cm^{-2}s^{-1}$
Fuel Type : U_3Si_2Al MTR (*Material Testing Reactor*)
U235 Enriched : 19.75%
Moderator/Coolant : H_2O



Facility of RSG GA Siwabessy







1. Radioisotope Production
2. Silicone Doping Facility
3. Rabbit System Facility
4. Power Ramp Test Facility
5. Neutron Scattering

   a. Neutron Radiography Facility
   b. Neutron Diffractometer For Residu Stress Measurement
   c. Four Circle / Texture Diffractometer
   d. High Resolution Powder Diffractometer
   e. Triple Axis Spectrometer
   f. Small Angle Neutron Scattering Spectrometer
   g. High Resolution Small Angle Neutron Sccattering Spectrometer

Kartini – Yogyakarta

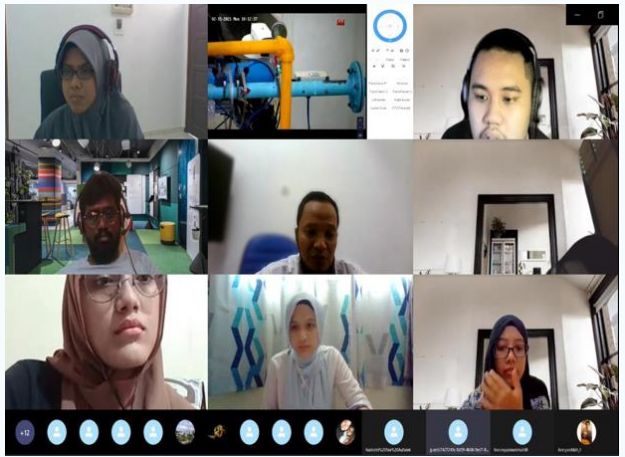
CURRENT STATUS:

- Built in 1979
- Operating capacity: 100 kW
- Smallest reactor
- Purpose: education
- Type: TRIGA
- Operating licenses: Dec, 2029

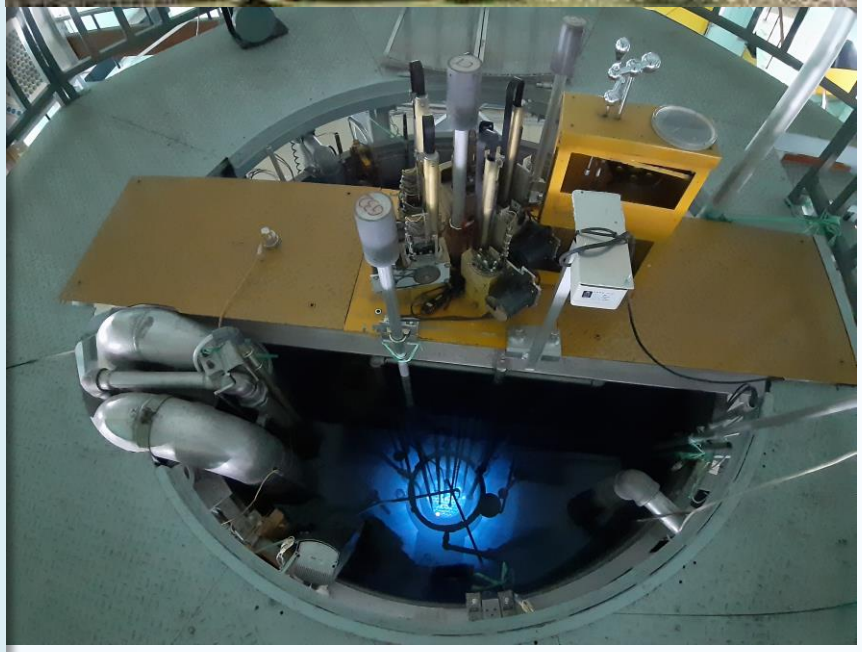
Kartini – Yogyakarta

Kartini Reactor Activities:

- Practicum
- Nuclear Reactor School
- Reactor Operator and Maintenance Training
- IAEA RTC
- Internship and Joint- Research
- Internet Reactor Laboratory (MoU with University of Sharjah United Arab Emirates & UTM)



TRIGA 2000 – Bandung



HISTORY :

- 1965, start 250 kW
- 1971, 250 kW to 1000 kW (1 MW)
- 1996, 1000 kW to 2000 kW (2 MW)
- 2000, start 2 MW

CURRENT STATUS:

- First reactor
- Purpose: research
- Operating licenses: May, 2027

TRIGA 2000 – Bandung

UTILIZATION:

- Radioisotope research & development
- Nuclear Analytical Technique
- Other (training, academic practicum)

2027 and beyond -> will follow management's direction, whether to continue operating or decommissioning

Nuclear Fuel Cycle Facilites

Experimental Fuel Element Installation

Radiometalurgical Installation

Radioactive Waste Facilites

Transfer Channel-Interim Storage for Spent Fuel

Facility for Radioactive Waste Processing Installation

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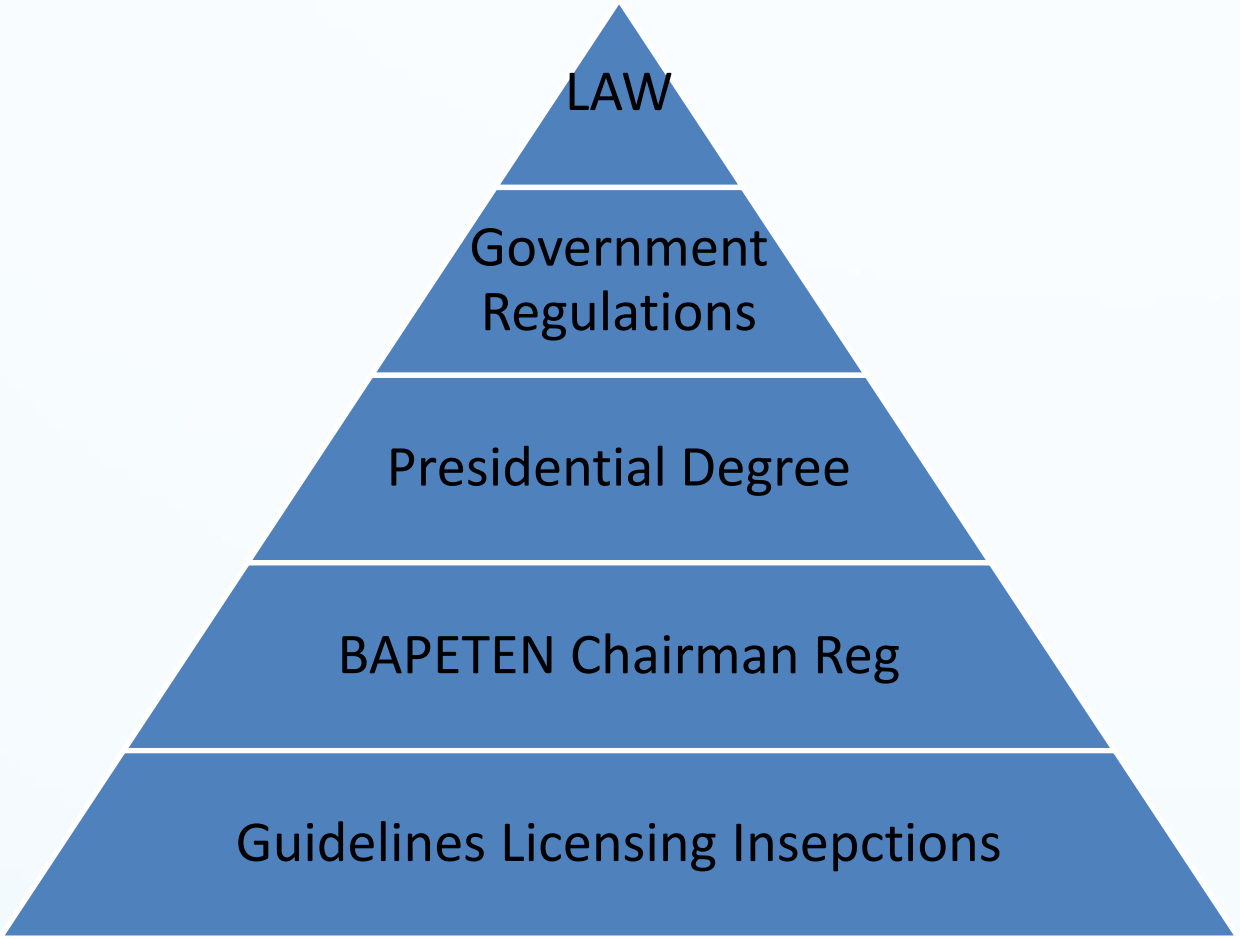
REGULATORY

Hierarchy of Law & Regulation

ACT NO. 10, 1997 ON NUCLEAR ENERGY



Government Regulation

The Government Regulation

1. Number 33 Year 2007 on the Safety Ionizing Radiation and the Security of Radioactive Sources

2. Number 54 Year 2012 on the Safety and Security of Nuclear Installations

3. Number 2 Year 2014 on Licensing of Nuclear Installations and Nuclear Materials Utilizations

4. Number 61 Year 2013 on Radioactive Waste Management

BAPETEN Chairman's Regulation

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BAPETEN Chairman's Regulation :

1. Number 6 Year 2010 on the Health Monitoring for Radiological Workers
2. Number 4 Year 2013 on Radiation Protection And Safety In Nuclear Energy Utilization
3. Number 1 Year 2010 on Nuclear Emergency Responses and Preparedness
4. Number 4 Year 2010 on the Nuclear Energy Facility and Utilization Activity Management System
5. Number 2 Year 2015 on Verification and Safety Analysis Research Reactor
6. Number 6 Year 2011 on the Decommissioning of Non-Reactor Nuclear Installation
7. Number 4 Year 2009 on the Decommissioning of Nuclear Reactor

LIMITATION DOSE AND DOSE CONSTRAINT

LIMITATION DOSE : 20 mSv/y

DOSE CONSTRAINT

Multi Purpose Reactor	: 19 mSv/h
Radiometalurgical Installation	: 17,5 mSv/h
Experimental Fuel Element Installation	: 15 mSv/h
Radioisotope and Radiopharmaceutical Technology Installation	: 15 mSv/h

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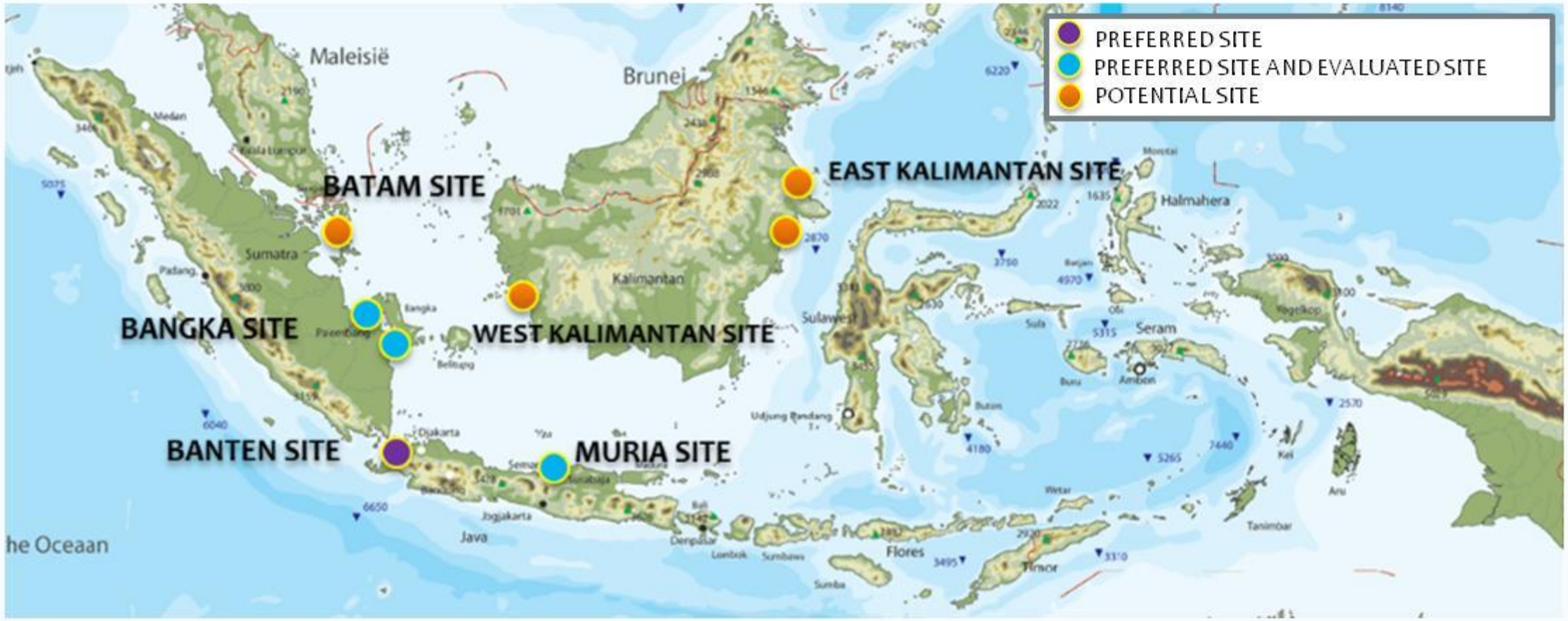
NUCLEAR STRATEGIES

NPP SITE PLAN



Source: https://www-pub.iaea.org/MTCD/publications/PDF/cnpp2016/countryprofiles/Indonesia/Indonesia.htm

NEXT COLLABORATION

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LAST ENERGY

INDONESIA POWER

ThorCon Power

TSINGHUA UNIVERSITY 1911

Universitas Pertamina

PERTAMINA

CHALLENGES

Acceptance & stigma

Sustainable policy

Political matters

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THANK YOU

Badan Riset dan Inovasi Nasional
National Research and Innovation Agency

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