



FORUM FOR NUCLEAR COOPERATION OF ASIA (FNCA) AND COMMUNICATION

COUNTRY REPORT - INDONESIA

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I. INTRODUCTION

Based on Act No. 10 in 1997 on Nuclear Energy, the main duties of BATAN (NATIONAL NUCLEAR ENERGY AGENCY) are to conduct research, development and the beneficial application of nuclear energy and the regulatory function held by the NUCLEAR ENERGY REGULATORY AGENCY (BAPETEN).

BATAN has been stipulated as Non Departmental Government Institution which is under and responsible to the President. BATAN is led by a Chairman and its programme is under the coordination of the Minister for Research and Technology.

VISION

Realization of reliable and safe nuclear science and technology to actuate and accelerate the pursuit of welfare.



MISSION

- 1. To conduct research & development and engineering of production as well as application of isotopes and radiation.**
 - 2. To conduct research & development and engineering of nuclear fuel cycle and radioactive wastes as well as services in radioactive waste management.**
 - 3. To conduct research & development, engineering and utilization of reactors as well as other nuclear facilities.**
 - 4. To conduct research & development, engineering and utilization of nuclear devices and instruments.**
 - 5. To conduct research & development, engineering and services of nuclear and radiation safety.**
 - 6. To conduct dissemination of information and results of assessment as well as proven research & development and engineering.**
 - 7. To foster professionalism, safety culture and quality management system.**
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BATAN PROGRAMMES
NUCLEAR ACT NUMBER 10/1997
NUCLEAR SCIENCE & TECHNOLOGY
FOR PROSPERITY



NUCLEAR INDUSTRY
ENERGY & NON-ENERGY

FOOD, ENERGY, ICT, HEALTH & MEDICINES,
MARINE & EARTH, MANUFACTURE

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IRRADIATOR, ACCELERATOR, RESEARCH REACTOR, SUPPORTING FACILITY

NUCLEAR SCIENCE, TECHNOLOGY & ENGINEERING WITH RELIABLE SAFETY

PROFESIONAL HUMAN RESOURCES, TQM, RELIABLE NETWORKS

AIRT  **APPLICATION OF ISOTOPE AND RADIATION TECHNOLOGY**
PILC  **PRODUCTION OF ISOTOPE AND LABELLED COMPOUND**
RWM  **RADIOACTIVE WASTE MANAGEMENT**

EPNDI  **ENGINEERING AND PRODUCTION OF NUCLEAR DEVICES & INSTRUMENTS**
NFC  **NUCLEAR FUEL CYCLE**
NPPT  **NUCLEAR POWER PLANT TECHNOLOGY**



II. PROGRAMME

The Programme of BATAN is based on a short, medium and long term strategic policy as well as referring to the National Development Programme and recognized as the BATAN Landmark Programme in the development and application of nuclear science and technology for peaceful purposes.

No.	PROGRAMME FOCUS
1	Food (Agriculture/Animal Husbandry)
2	Energy
3	Informatics and Communication Technology
4	Health and Medicine
5	Marine and Earth
6	Manufacture



III. RESULTS OF R&D and E

The research and development and engineering of the nuclear programme being conducted by BATAN is focused on resolving problems faced by the people and for the national development. The main results of research and development and engineering which refer to the National Research and Technology Programme and the National Development Programme, which consist of : food (agriculture/animal husbandry); energy; informatics and communication technology; health and medicine; marine and earth; and manufacturing.



III.1. FOOD (AGRICULTURE /ANIMAL HUSBANDRY)

1. Superior Variety : Rice, Soy Bean and Mung Bean
2. Organic Fertilizer and alley cropping
3. Infertile Insect Technology
4. Food Preservation
5. Animal Feed Supplement Technology
6. Livestock Reproduction Technology
7. Koksivet Supra 95





III.2. ENERGY

THE NECESSITY OF NPP IN INDONESIA

- As a developing country, energy consumption per capita per year in Indonesia is still low. We have been experiencing high growth in energy demand due to our high population growth.
 - Indonesia is an exporter of fossil energy, while on the other hand the domestic energy demand is increasing rapidly. The proven energy reserve is unfortunately not so abundant in comparison to her population.
 - On the other side, the oil and gas reserve are relatively limited as compared to new and renewable energy potential and also used for export and feed-stocks. Therefore energy alternative should be developed and deployed to fulfill national energy demand. This situation creates security energy of energy supply to be one of the most important issues to be addressed properly.
 - Government of Indonesia has undertaken a study on Comprehensive Assessment of Different Energy Sources for Electricity Generation in Indonesia.
 - This study was conducted by Interdepartmental team as well as NGOs and assisted by IAEA. **The results of this study shows that the energy mix policy should be applied;** contribution of oil should be reduced and replaced by gas, coal, and other alternative energy such as new and renewable energy as well as nuclear. The introduction of NPP on Java-Bali electric grid is techno-economically feasible and possible to be operated by 2016.
 - The introduction of nuclear power programme by Indonesian government, would not only as a solution to the rising demands of electricity, but also as part to save and prolong fossil energy for other purposes and to protect the environment from harmful pollutants.
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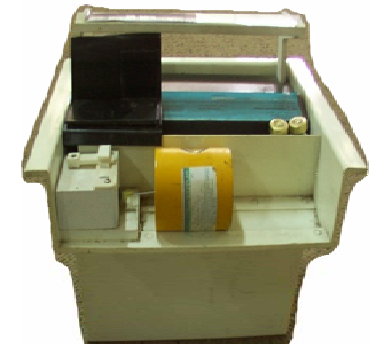
III.3. INFORMATICS AND COMMUNICATION TECHNOLOGY

- 1. Management Information System**
 - 2. Software for Monitoring security and safety in Centre for Research in Science and Technology (PUSPIPTEK) area**
 - 3. Nuclear Information System (NIS)**
 - 4. Software for nuclear medical equipment**
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III.4. HEALTH AND MEDICINE

1. **Reno-graph-development (Diagnosis of kidney function)**
2. **X-Ray Machine - development (Diagnosis of organ anatomy of the body)**
3. **Thyroid Uptake – development (Diagnosis of the Thyroid gland function)**
4. **Brachy-therapy : perfection and modification (Cervix Cancer Therapy)**
5. **Radiation Protection Clothing (Lead Apron)**
6. **Radiopharmaceuticals and Labeled Compounds**
7. **Sterile Biology Tissue**
8. **Examination protocol in Nuclear Medicine**
9. **Standardization and calibration of nuclear medicine equipment (X-ray source)**





III.5. MARINE AND EARTH

A. Natural Resources

- 1. Technology for exploration of nuclear ore**
- 2. Geophysics technique**
- 3. Hydrology Isotope Technique**

B. Nuclear Safety, Radiation and Environment

- 1. Increase of Safety and power of Triga 2000 Reactor**
 - 2. Beta-Gamma DIN-720 Survey-meter**
 - 3. Neutron Activation Analysis**
 - 4. Analysis of elements of solid samples with the Atomic Absorptions Spectrometry method**
 - 5. Techniques of measuring radiation dose**
 - 6. Radioactivity mapping of the environment in Indonesia**
 - 7. Technology Management of Radioactive Wastes**
 - 8. Technology for decontamination and decommissioning**
 - 9. Assessment of technology in safety of occupation, radiation and environment**
 - 10. Programme for radioecology and marine environment**
 - 11. Design & engineering of Waste Management Facility**
 - 12. Storage of Wastes**
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III.6. MANUFACTURE



A. Industry

1. Industrial X-Ray Machine
2. On line close control equipment, texture, thickness
3. On line density control equipment
4. On line control equipment for oil-well cement consistency
5. Foam control equipment
6. Reliability technology :
 - a. Non destructive testing
 - b. Destructive testing
 - c. Pipe stress analysis
7. Instrumentation System for Protection and Control
8. Deterministic and probabilistic analysis of nuclear reactor safety
9. Results of Thermo-hydraulic Experiments



B. New Materials

1. Separation Process Technology.
 2. Technology for processing & characterization technology of magnetic materials, Superconductor and Super-ionic
 3. Material Characterization Testing.
 4. Radiation Process Technology.
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