National Report: Indonesia

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R²D²P: Workshop on Safety Assessment for Decommissioning
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International Atomic Energy Agency

Legal and Regulatory Framework (1)

- Act no 10 year 1997 on Nuclear Energy is a basic law for nuclear activities in Indonesia.
- Nuclear Energy Regulatory Agency (BAPETEN) which was established in 1998 based on the Act, is an independent regulatory body.
- BAPETEN is chaired by a Chairman who reports directly to the President of Rep. of Indonesia.
- The main task of BAPETEN is to control all nuclear activities through 3 regulatory functions: (1) set up regulation, (2) conduct licensing, and (3) perform inspection.

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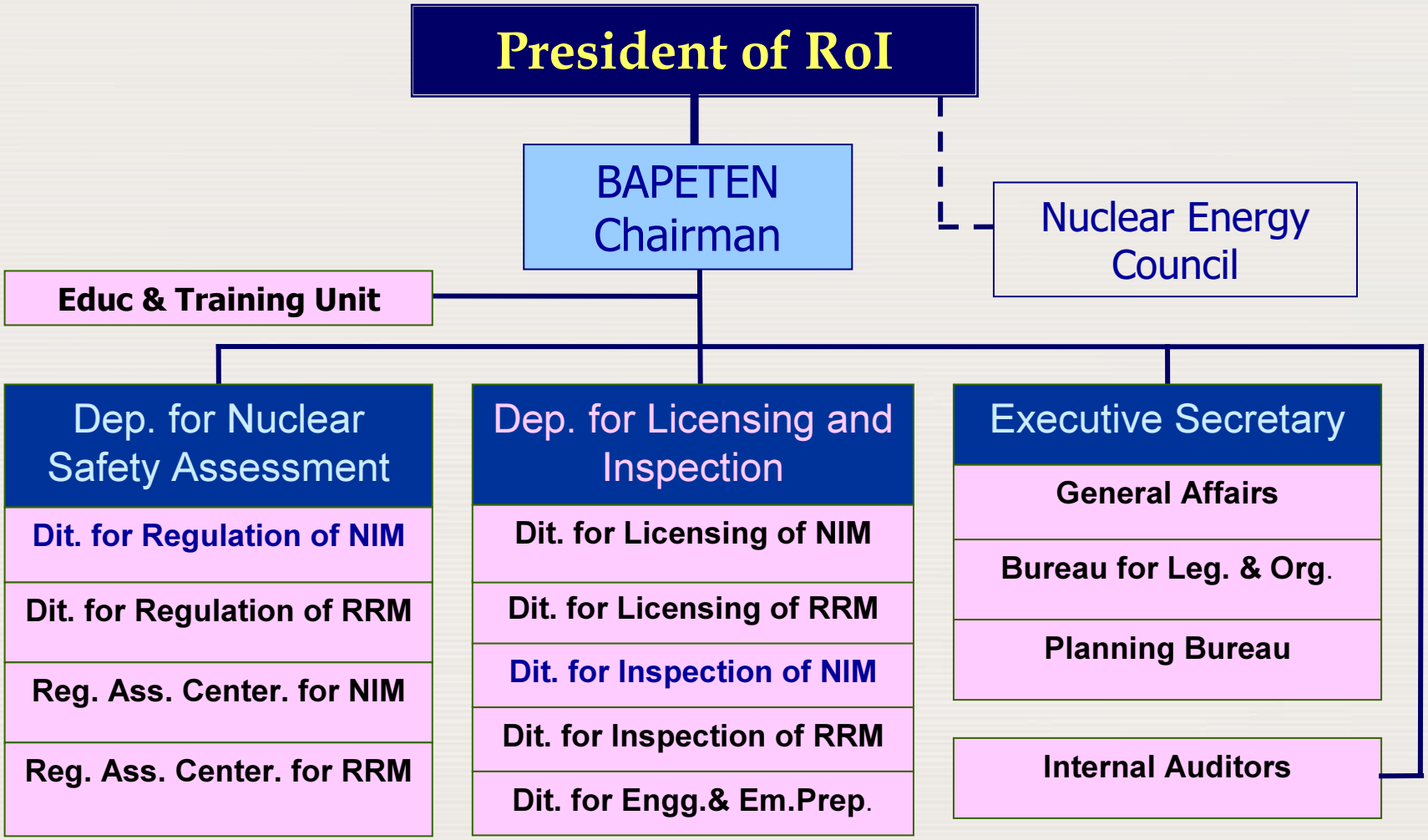
Legal and Regulatory Framework (2)



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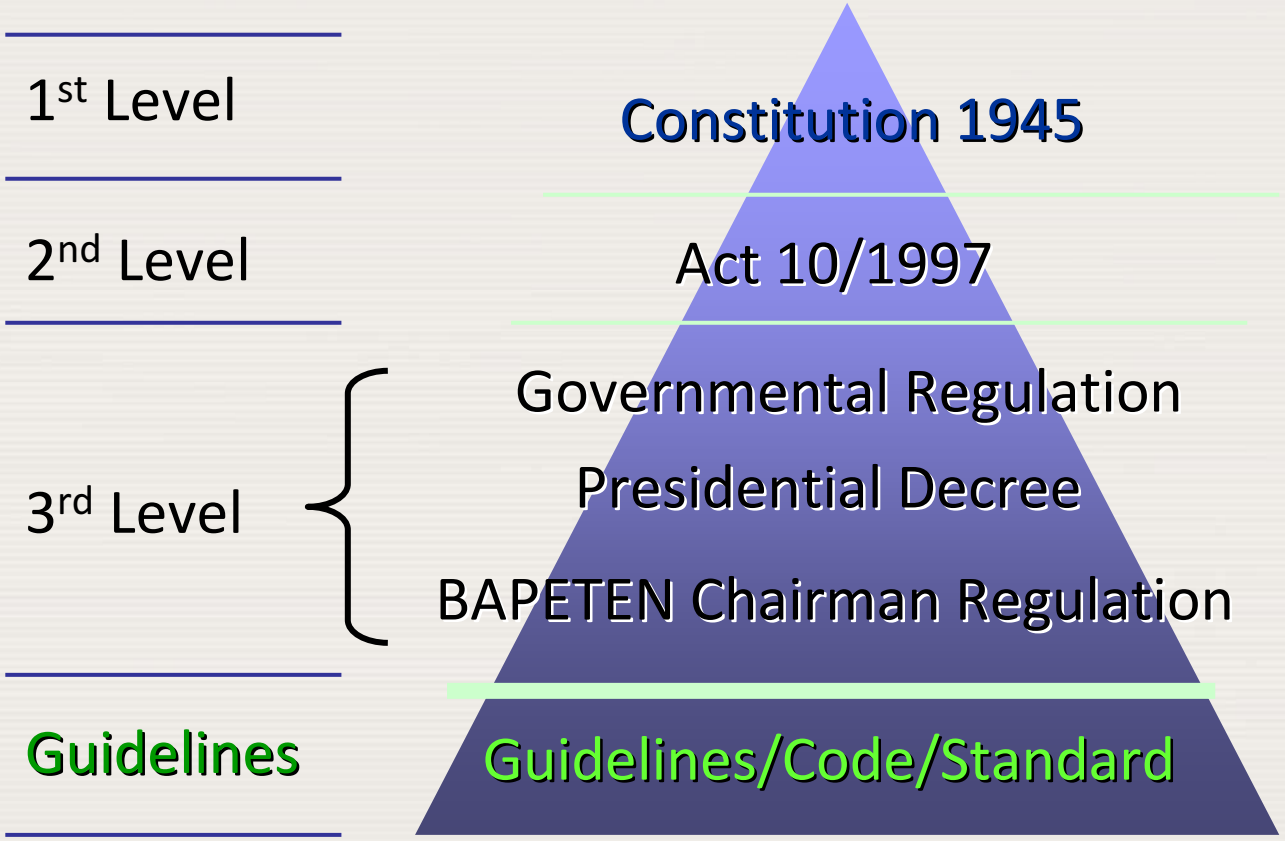
Legal and Regulatory Framework (3)

HIERARCHY OF NUCLEAR LAW



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Legal and Regulatory Framework (4)

- Provisions on decommissioning of nuclear reactor are included in:
  - Act No. 10/1997 on Nuclear Energy;
  - Government Regulation No. 43/2006 on Reactor Licensing; and
  - BAPETEN Chairman Regulation No. 4/2009 on 'Decommissioning of Nuclear Reactor' (detailed/technical provisions).

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License / Authorisation

- There are 3 research reactors in Indonesia:
  - Triga-2000 (2 MW) Reactor, Bandung
    - first criticality 1964 and operated at 750 kW,
    - upgraded to 1 MW (in 1971), and upgraded to 2 MW (in 2000)
  - Kartini Reactor (100 kW), Yogyakarta – first critical 1979
  - MPR-30 (30 MW), Serpong – first criticality 1987
- All the reactors in are licensed by BAPETEN.
- The validity of each license is as follows:
  - Triga-2000, Bandung : ……2016
  - MPR-30, Serpong : ……. …….2020
  - Kartini Reactor, Yogya : ……2011

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Basics of Decommissioning

- Some issues below may be considered as basics of decommissioning (**for Triga-2000 Reactor Bandung**):
  - Regulations (provisions on decommissioning);
  - Ageing of facilities:
    - Triga-2000 Reactor Bandung has been operated for more than 40 years.
  - Some technical problems such as:
    - Core bubbling, that has been occurred since 2004
    - Detection of fission products in cooling water.

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Transition from operation to decommissioning

- Triga-2000 Reactor has an authorization for operation until year 2016. However, the reactor has been shutdown since several years ago due to some technical problems. While the operators are striving to accomplish the problems, the management are discussing about the decision on decommissioning.
- In the transition period, the management of Triga-2000 Reactor Bandung has initiated some preparations:
  - Development of decommissioning plan (draft)
  - Setting up an organization special for running the decommissioning plan;
  - Identification of decommissioning tasks and equipments/tools required;
  - Preparing procedures and working instructions;
  - Developing training programme for workers; etc.

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Characterization Survey

- In order to map the potential hazard inside and surrounding the reactor, characterization survey are important task.
- The survey has not been done yet, but according to their decommissioning plan, the following surveys are planned to be done:
  - Surface gamma radiation using GM Counter
  - Surface contamination using smear test
  - Airborne contamination by air sampling
- The survey will be performed at several locations that are considered to be representing the whole picture of radiation hazards.

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Cost Estimates

- Cost estimates is one of important steps that is enabling management to estimates the decommissioning cost and is easing them to plan the budget required.
- In the case of Triga-2000 Bandung, however, since the decommissioning plan is still at the early stage, and its decision is still under discussion, the cost estimates of the decommissioning has not been carried out yet.
- Based on the plan, the decommissioning activities will be funded from the national budget (annual bases).

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Decommissioning Technologies

- The decommissioning technologies are not mentioned in the draft of decommissioning plan, but following tools will be applied (as the draft mentions):
  - Shears (manual and remote handling): for cutting metal and dismantling concrete;
  - Power nibblers (manual and remote handling): for cutting stainless steel and softer metals;
  - Mechanical saws;
  - Orbital cutter: for cutting an object by circling outer parts of the object;
  - Abrasive Cutting Wheels; etc.

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Safety Issues/Questions

- Relevant to Indonesian reactor's situation, we would like to raise the following questions/issues:
  - During the transition period before initiating the decommissioning (extended shutdown), safety and security of the reactor shall be maintained. However, it would be costly since it is not productive anymore. How to manage the reactor during such period, so that its safety and security could be maintained efficiently?
  - What is the key point of strategy that should be taken or considered (particularly during planning) in order to get the decommissioning plan be implementable effectively and efficiently?
  - Is it possible for a country under R2D2P to get a consultation (or expert mission) from the experts who have field experiences in planning (cost estimates, time scheduling, planning man power, etc.) and conducting the reactor decommissioning?

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