

# Executive Summary

In introducing and generating nuclear power, it is necessary to respond appropriately to various technical troubles during operation that cannot be avoided when using these technologies.

For the countries considering the introduction of nuclear power, it is important to know how to achieve both nuclear safety and improved capacity factor to continue stable operations even before the first reactor is constructed.

This report aims to clarify common conditions necessary to improve both nuclear safety and effective use, and to compile the policy proposals for the kind of actions stakeholders should take.

The study team collected information from Japan, the United States (US), and major European countries on major troubles that affected the capacity factor. Through the literature survey, facts about the efforts of operators, enhancing regulations by regulator and government, improvement of regulations by the regulator, and communications on safety improvement between the operator and the regulator have been found out as crucial factors for effective use of nuclear power.

The study team visited the US and major European countries to interview experts on nuclear energy. The interview survey revealed major opinions on reasonable regulation, communication, and continuous improvement towards reasonable regulation.

The study team also analysed the communication between the regulator and the operators, which would impact the capacity factor, and completed the report shared with the East Asia Summit (EAS) member states<sup>1</sup> on the contributing factors to improve both nuclear safety and effective use. The policy proposals in this report are as follows:

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<sup>1</sup> The East Asia Summit comprises the 10 ASEAN countries – Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Viet Nam – plus Australia, China, India, Japan, New Zealand, the Republic of Korea, Russia, and the United States.

- 1) Approach to safety
  - The tolerable range of risks is to be determined.
  - Safety is to be judged based on whether residual risks are within the tolerable range. The tolerable range should be regarded as 'safety goal'.
  - The judgement is to be made by applying both the deterministic method and the concept of probabilistic risk assessment (PRA).
- 2) Approach to safety improvement measures
  - Regarding safety improvement measures, the regulator shall not enforce any specific method or equipment on operators. Since operators are familiar with the risks, the regulator is to restrict its activities to making judgements on the proposals of operators according to the individual circumstances.
  - Decisions on whether to accept safety improvement measures will be made after evaluating the costs and benefits. In making the decision, the regulators are to provide technical grounds.
  - Long-term suspension without technical grounds is to be avoided. Only by operating does it become possible to discern good outcomes and problems about the safety improvement of a facility. Non-operating facilities could never demonstrate improvement in safety.
- 3) Concept of regulations
  - Regulations shall be reasonable and practicable.
- 4) Governmental involvement in regulation
  - The government establishes an agency that monitors unreasonable regulations, such as regulatory orders without legal grounds and managing with legal grounds but without technical grounds.
  - When a regulation is revised, its reasonableness is to be discussed in the parliament.
- 5) Active initiatives by operators
  - Operators are to autonomously initiate the evaluation of safety and costs and benefits considering the safety goal, and to reflect the outcome on their management.
  - If a regulator's decision is questionable, the operator is to appeal to a monitoring agency or court for a review.