The requirements for the recovery of public trust in nuclear power in Japan

Research Reactor Institute, Kyoto University
International Research Institute for Nuclear Decommissioning

Hajimu Yamana

Recovery of public trust to nuclear power

Understanding the necessity of nuclear power

1. Enhancement of public understanding of the importance of nuclear power for energy security

Safety improvement

2. Reinforcement of safety with strengthened “Defense in Depth”
3. Reformed nuclear safety regulation (Nuclear Regulation Authority)
4. Operator’s voluntary activity to improve safety further

Information

5. Disclosure information in a proper way
6. Transparency of the power generation business

Radiation safety

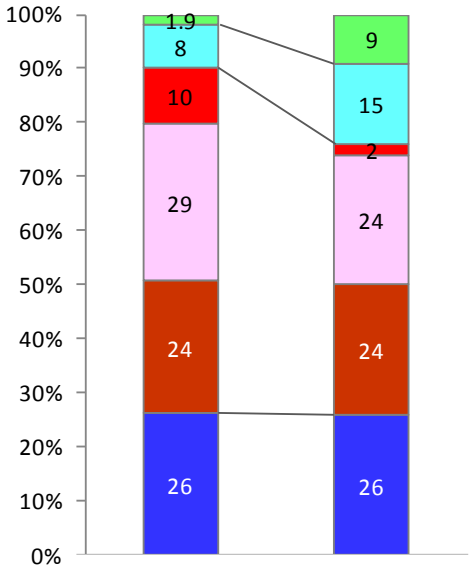
7. Improvement of public understanding of radiation safety
8. Calming exaggerated media reports

Scientific trust

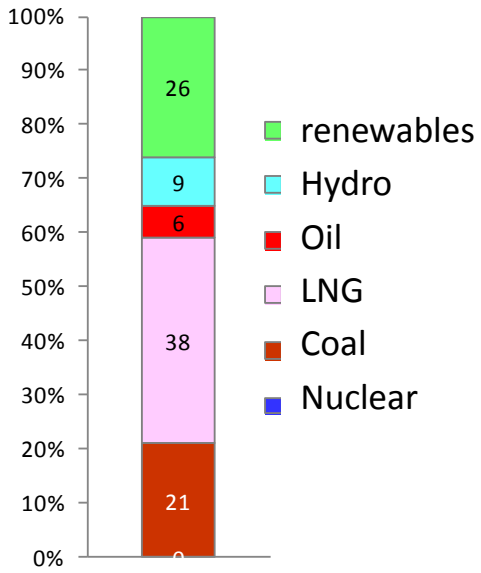
9. The necessity of an independent academic authority

The importance of nuclear power in Japan

2010



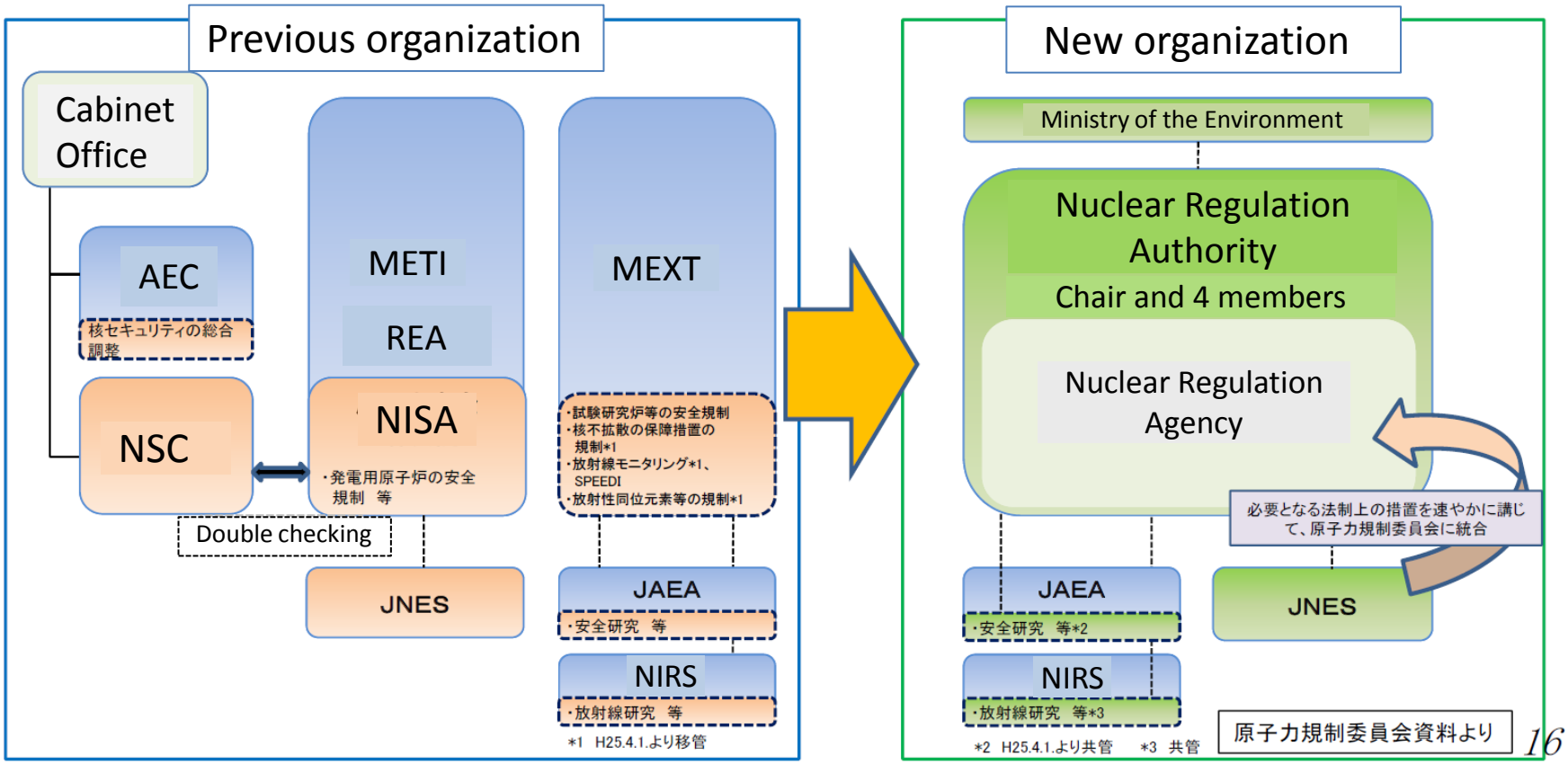
Zero-Nuclear Scenario for 2030



Preliminary plan proposed under previous DPJ administration (Zero-Nuclear Scenario of 1.1 Trillion kWh as the total demand)

- As a result of the shutdown of nuclear power plants, Japan has been suffering from a severe power crisis, including the continuous drain of huge amounts of money for fossil fuel imports and a tight balance between the demand for and the supply of electricity, which have caused a serious trade deficit and negative economic impact.
- The global energy market has been changing rapidly, and global warming is also progressing. From the energy security perspective of Japan, which is highly dependent on imports from other countries, the abrupt reduction of nuclear power is quite risky.
- Thanks to its low fuel cost, small geopolitical risk, and high performing energy stockpile, nuclear power works as a quasi-indigenous energy resource.

Reform of nuclear safety regulation



AEC: Atomic energy commission NSC: Nuclear safety commission METI: Ministry of economy, trade and industry REA: Resource and energy agency NISA: Nuclear and Industrial Safety Agency MEXT: Ministry of education culture and sport NIRS: National institute for radiological safety

Assurance of nuclear safety by the new safety regulation

Previous safety requirement

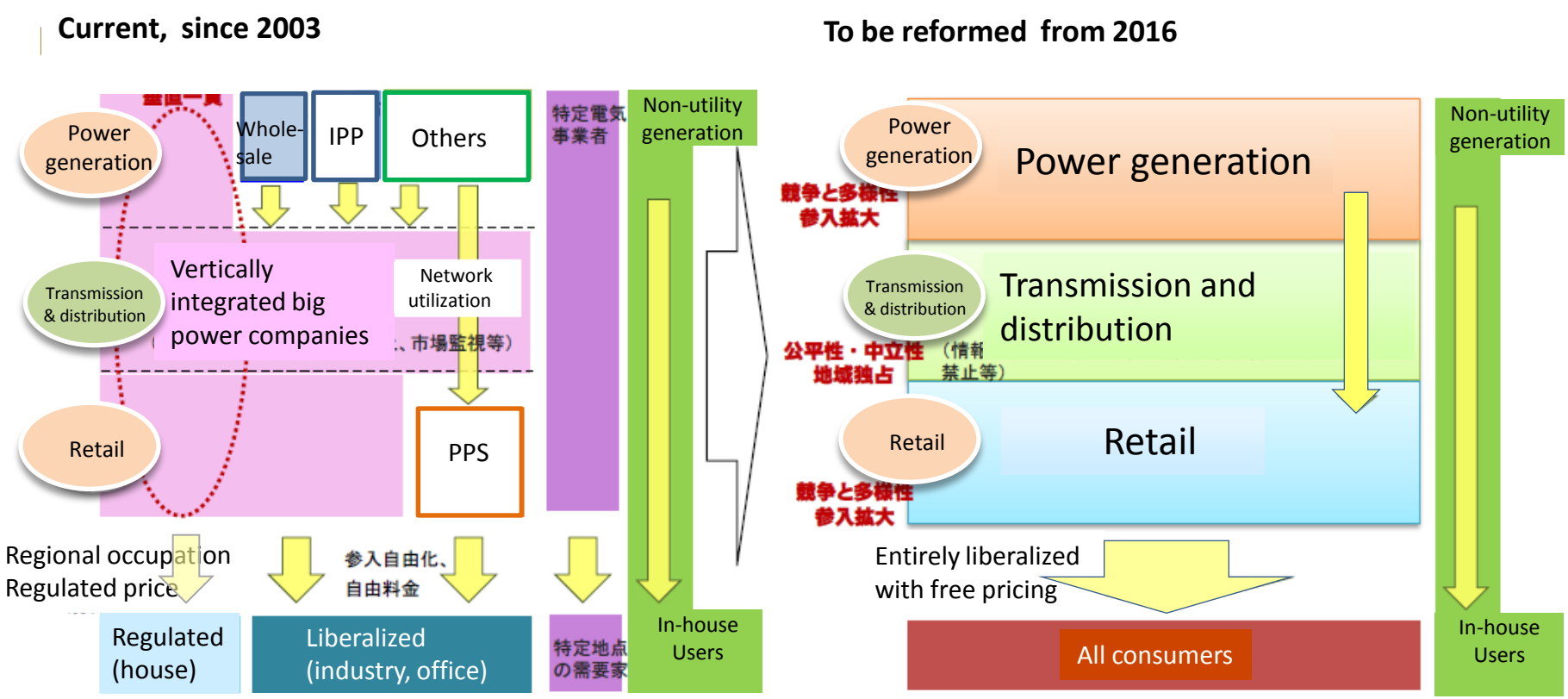
Safety standard to assure prevention of severe accidents (design standard)
(no core disruption even with a single malfunction or failure of device)

- Natural phenomena
- Fire incident
- Reliability of power supply
- Function of auxiliary facility
- Anti-seismic and tsunami

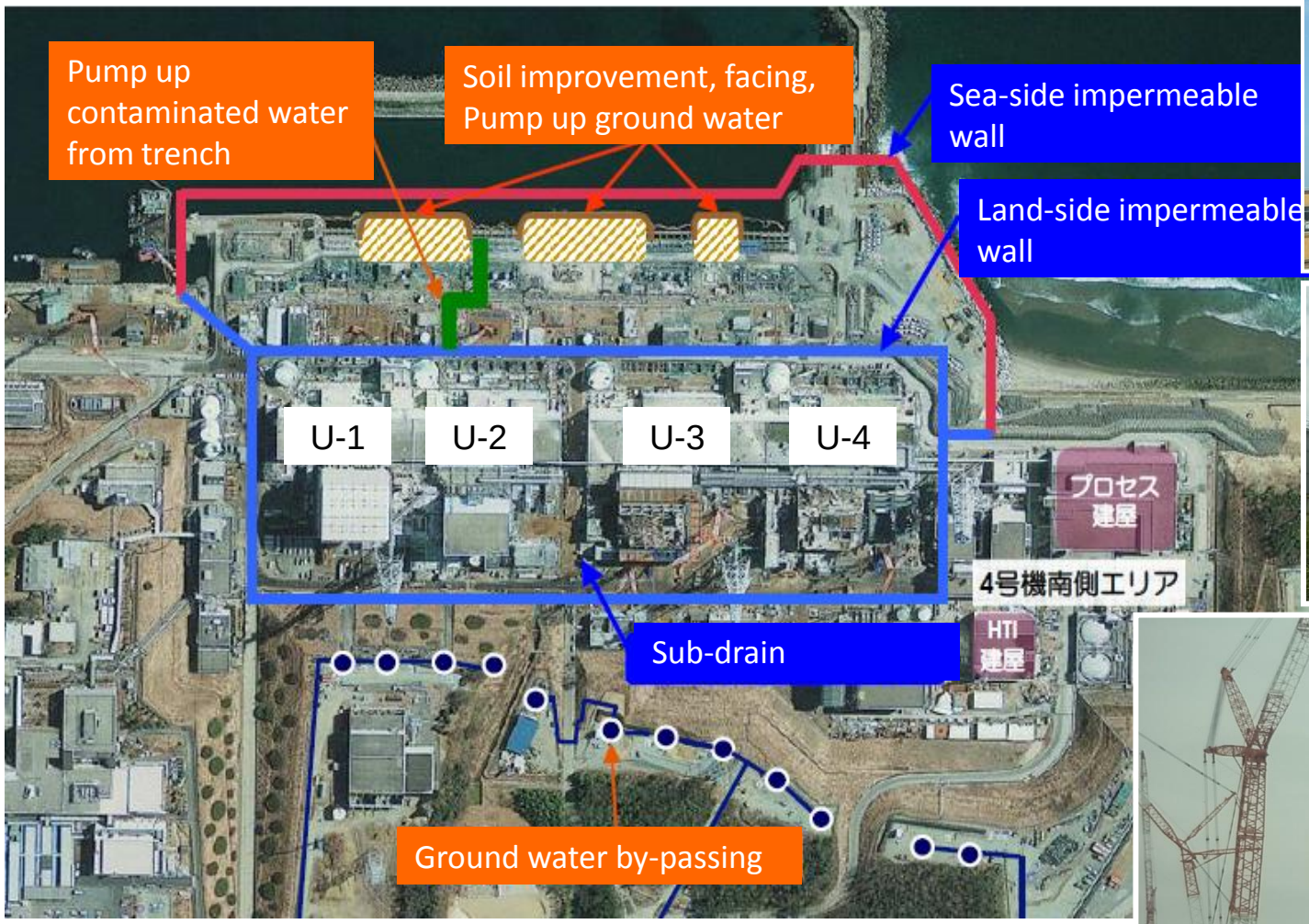
Revised safety requirement

- Counter measure for aimed air crush — Terrorism
- Prevention of Radioactivity diffusion — Severe accident
- Prevention of PCV damage — Severe accident
- Prevention of core disruption (assumed multiple contingency) — Severe accident
- Internal water overflow
- Natural phenomena — Reinforcement or renewal
- Fire incident — Reinforcement or renewal
- Reliability of power supply — Reinforcement or renewal
- Function of auxiliary facility — Reinforcement or renewal
- Anti-seismic and tsunami — Strengthened

Electricity business reform planned in Japan



Disclosure information risk communication as the key
Contaminated water issue at Fukushima Daiichi site as an example



Public confusion in understandings of radiation safety

Radiation exposure of reference

100 mSv

Minimum dose of cancer detection
Minimum dose of tissue damage

20 mSv/y

Minimum unacceptable risk

1 mSv/y

World average of natural background dose

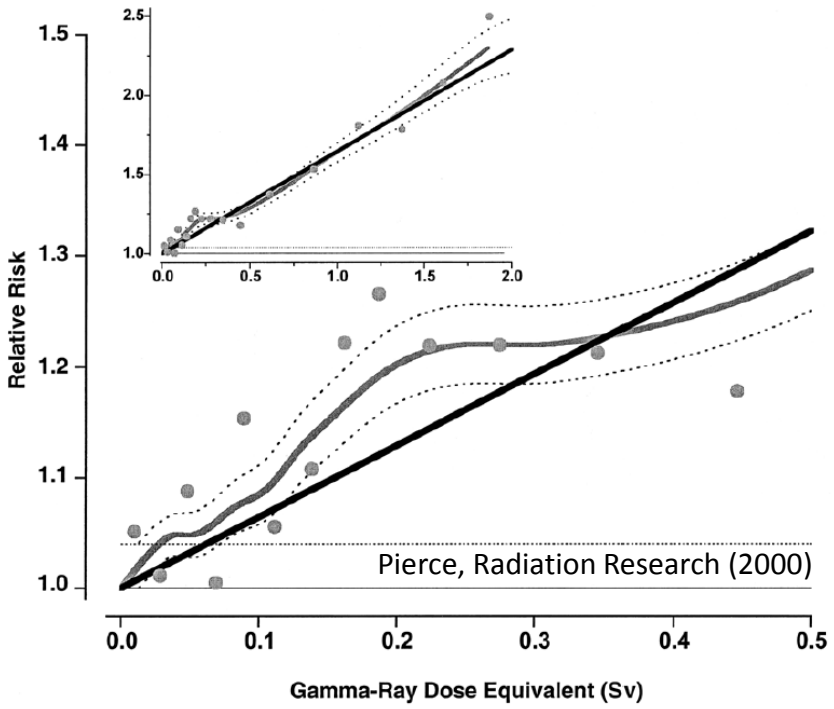
Fluctuation range of natural background

Quotation from Prof. Kai's speech

Increased risk of developing cancer

Probability of cancer incidence by 1 mSv	
Stomach	0. 00001
Lung	0. 00001
Bone marrow	0. 000005
Mammary gland	0. 000002
Thyroid	0. 0000008
Bone	0. 0000005

LNT hypothesis



Contact: report@tky.ieej.or.jp