

# Lessons from Fukushima Daiichi Nuclear Accident and Efforts of Nuclear Regulation Authority

Nobuhiko Ban

Nuclear Regulation Authority, Japan

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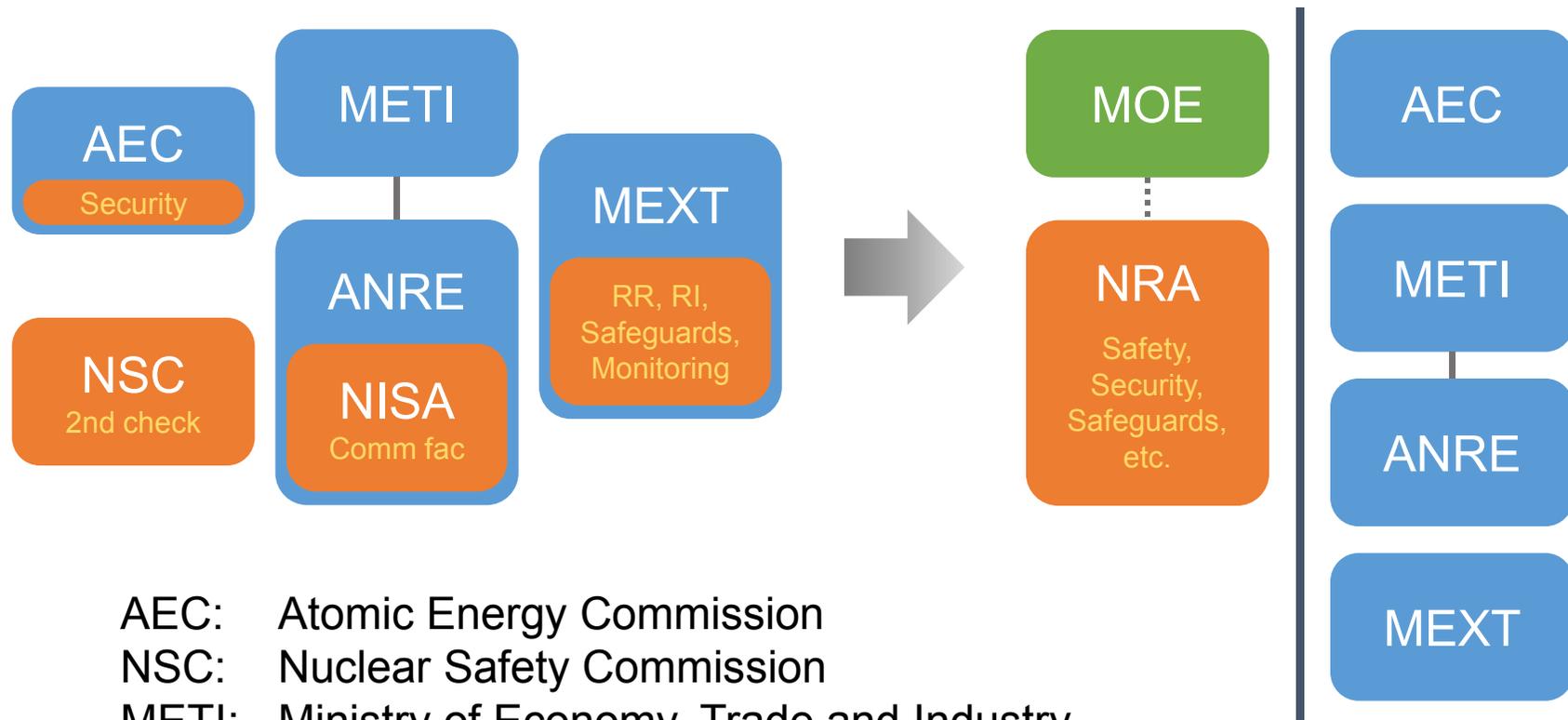
# Topics

- Lessons learnt from the accident and new regulations
- Post-accident response to the Fukushima Daiichi NPS

# Lessons Identified by IAEA

- Conservative assessment of natural hazards
- Periodical re-evaluation of the safety
- Safety improvements through operating experience
- Strengthening the defence in depth concept
- Countermeasures against beyond-DBA
- Comprehensive accident management provisions
- Training and exercise for severe accidents
- Independence of the regulatory body
- Promoting and strengthening safety culture
- Systemic approach to safety

# Reform of Nuclear Regulatory Body



AEC: Atomic Energy Commission

NSC: Nuclear Safety Commission

METI: Ministry of Economy, Trade and Industry

ANRE: Agency for Natural Resources and Energy

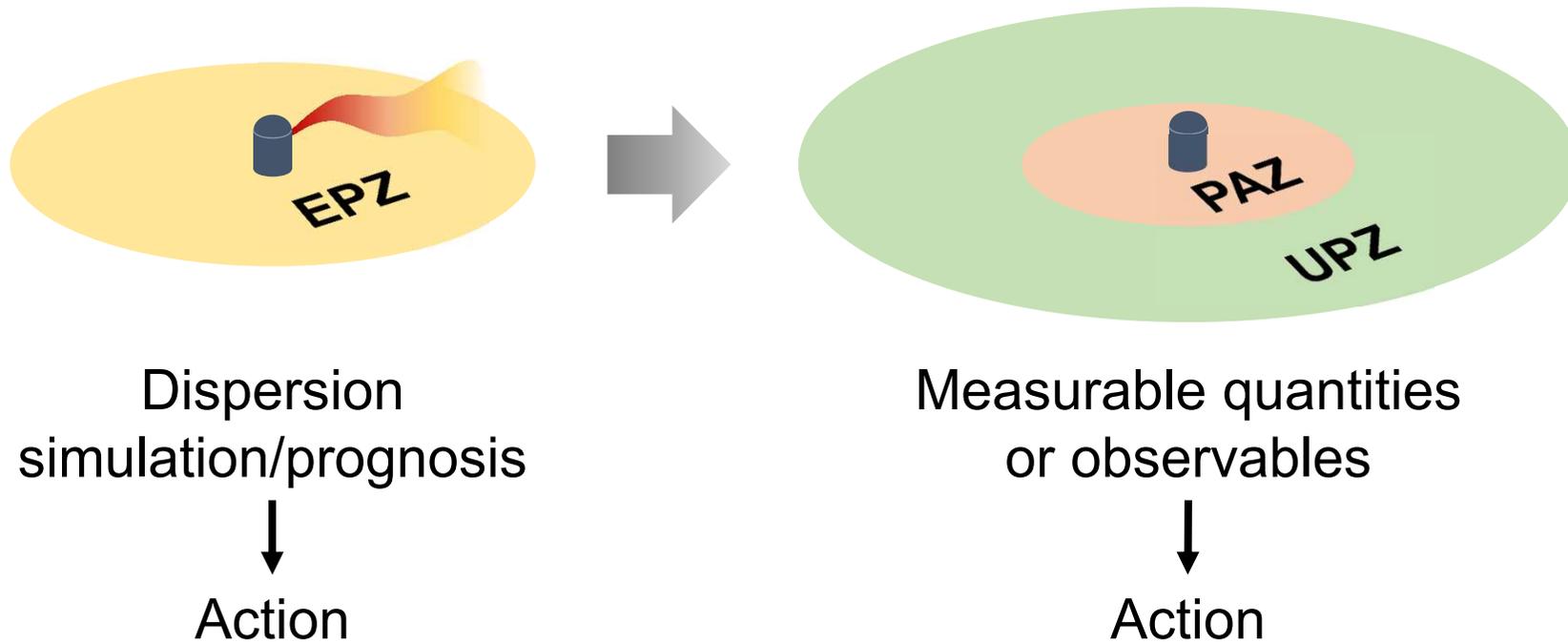
MEXT: Ministry of Education, Culture, Sports, Science and Technology

MOE: Ministry of Environment

# New Regulatory Requirements

- Emphasis on defense-in-depth concept
- Assessment and enhanced measures against extreme natural hazards
- Prevention of common cause failures
- Protective measures against severe accidents and terrorism
- Back-fitting to the existing plants

# Emergency Preparedness and Response



EPZ: Emergency planning zone

PAZ: Precautionary action zone

UPZ: Urgent protective action planning zone

# Topics

- Lessons learnt from the accident and new regulations
- Post-accident response to the Fukushima Daiichi NPS

# Response to Fukushima Daiichi NPS

- Designated the NPS as Specified Nuclear Power Facilities
- Required TEPCO to submit a plan to implement safety measures
- Examined the plan and set priorities in the near-to-mid term
- Monitor the progress on site
- Review the priority regularly
- Check the validity of measures in case of abnormal/unexpected events

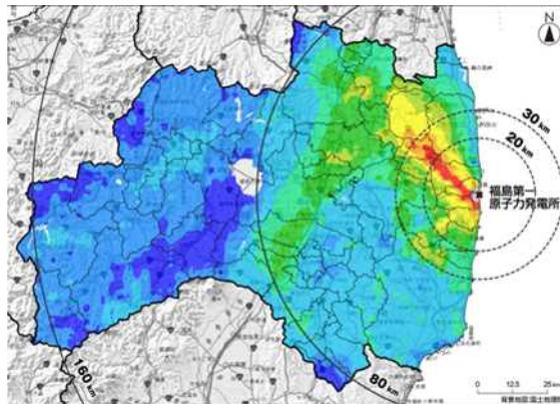
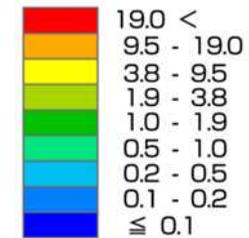
# Radiation Monitoring after the Accident

- Coordinate Comprehensive Radiation Monitoring Plan
- Conduct monitoring around Fukushima Daiichi NPS
- Assess the monitoring results
- Publicize the results through a website
- Develop a database of the results

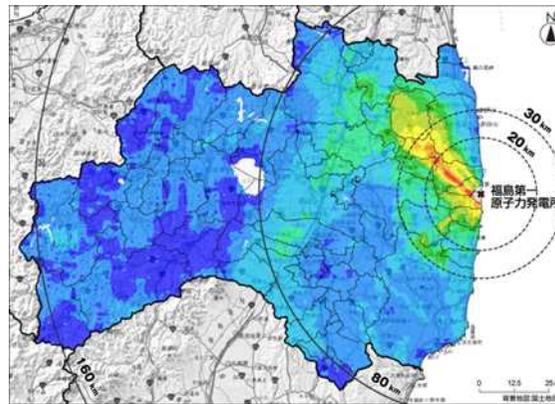
# Dose Rates in Fukushima Pref.



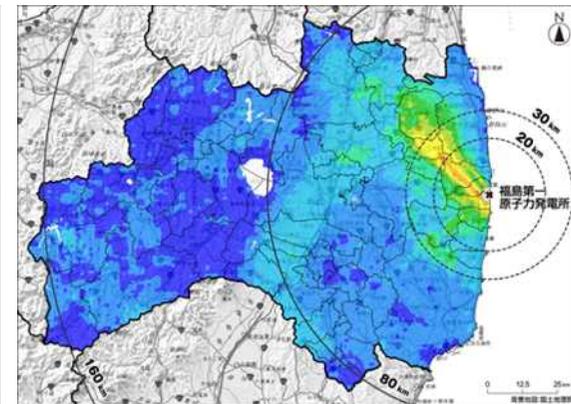
Dose rate at 1 m  
above the ground ( $\mu\text{Sv/h}$ )



November 2011

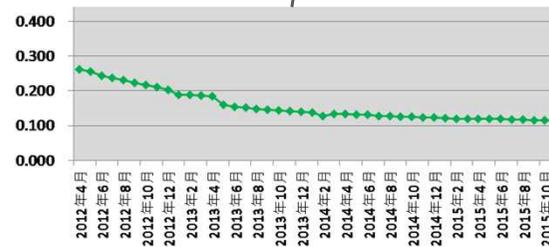
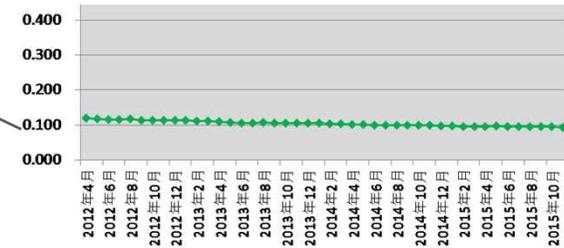
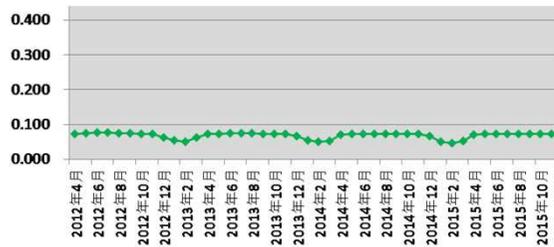
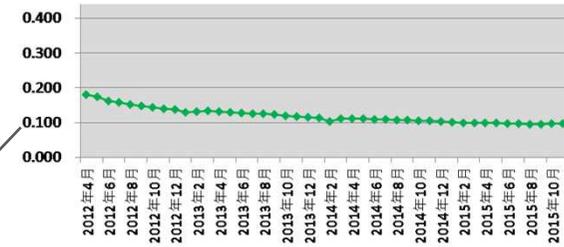
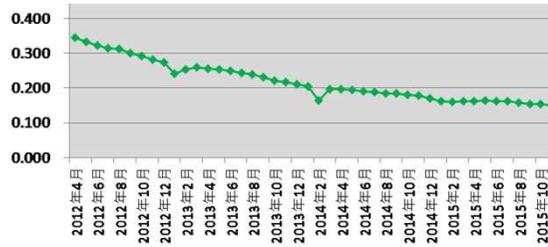


November 2013

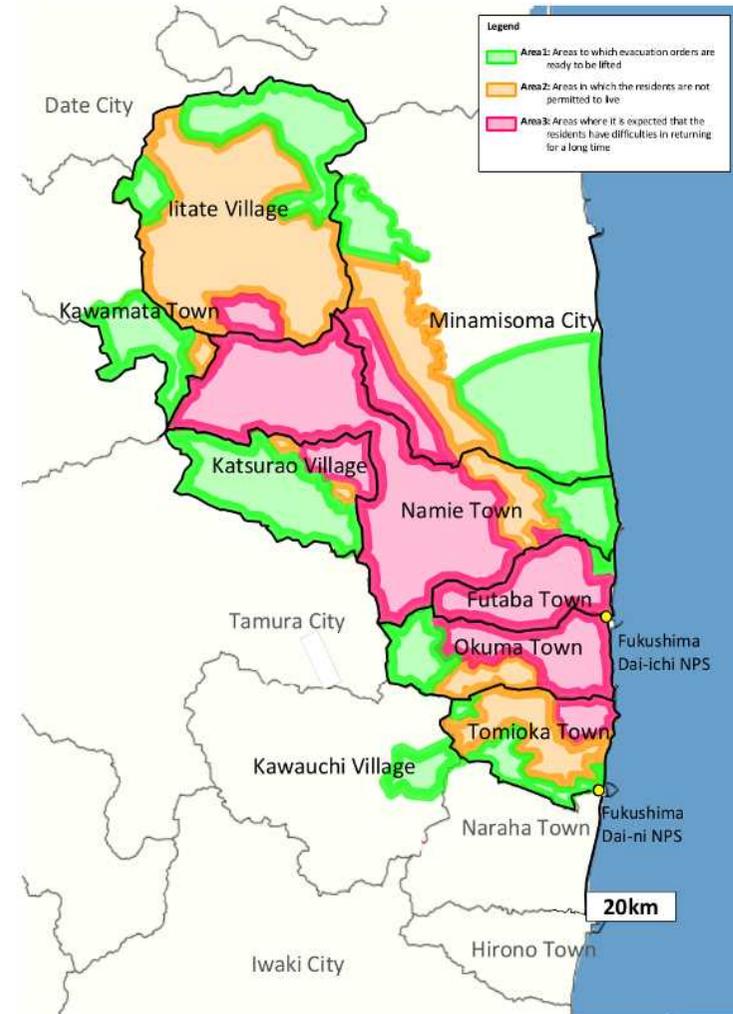


November 2015

# Time Course of Dose Rates ( $\mu\text{Sv/h}$ )

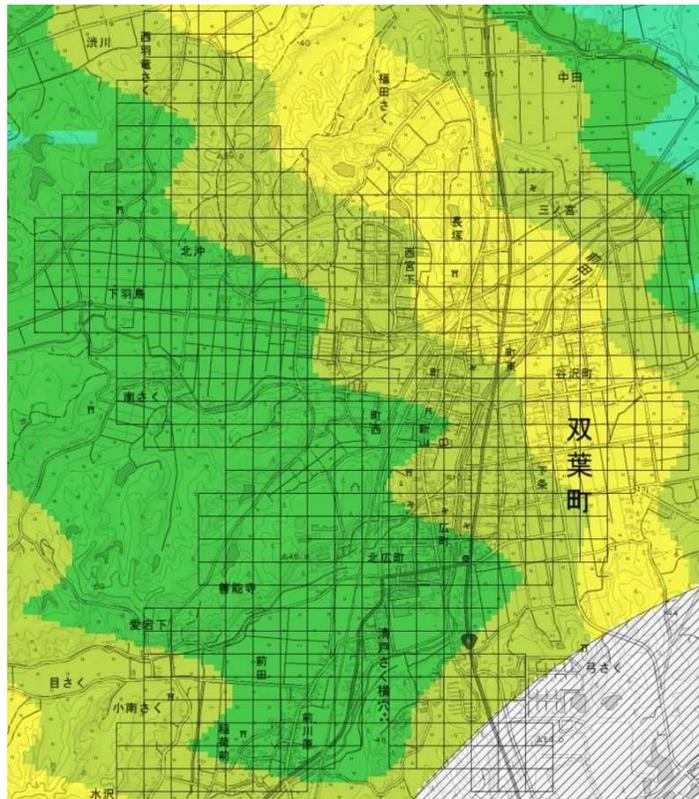


# Detail Monitoring in Evacuated Areas

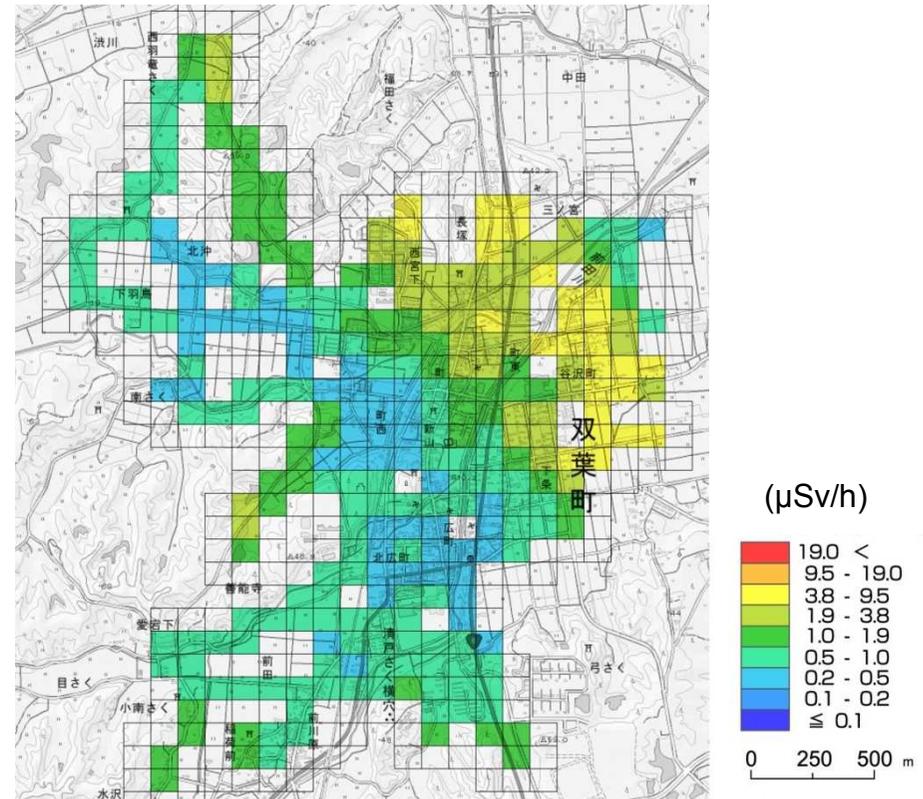


# Comparison of Measured Data

## Airborne survey



## Walking survey



# Role of RP in the Current Situation

- People's problems are complex and diverse.
- Radiation is not the only problem.
- More attention should be paid to individual people's lives.
- Taking actions against radiation is not an end in itself, but is a means to improve living conditions.

# Summary

- After the Fukushima Daiichi nuclear accident, the NRA was established as an independent regulatory body.
- The NRA is implementing enhanced nuclear regulations incorporating lessons from the accident.
- The NRA keeps an eye on the decommissioning process and the trend in radiation doses to commit to rebuilding people's lives in Fukushima.