

# Putting Radiological Protection in Context

A stylized tree logo with a green trunk and a canopy of small green leaves, positioned behind the text 'in Context'.

Agneta Rising  
(World Nuclear Association)



# Representation In International Forums



INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION



**United Nations**  
Framework Convention on  
Climate Change



# Outline

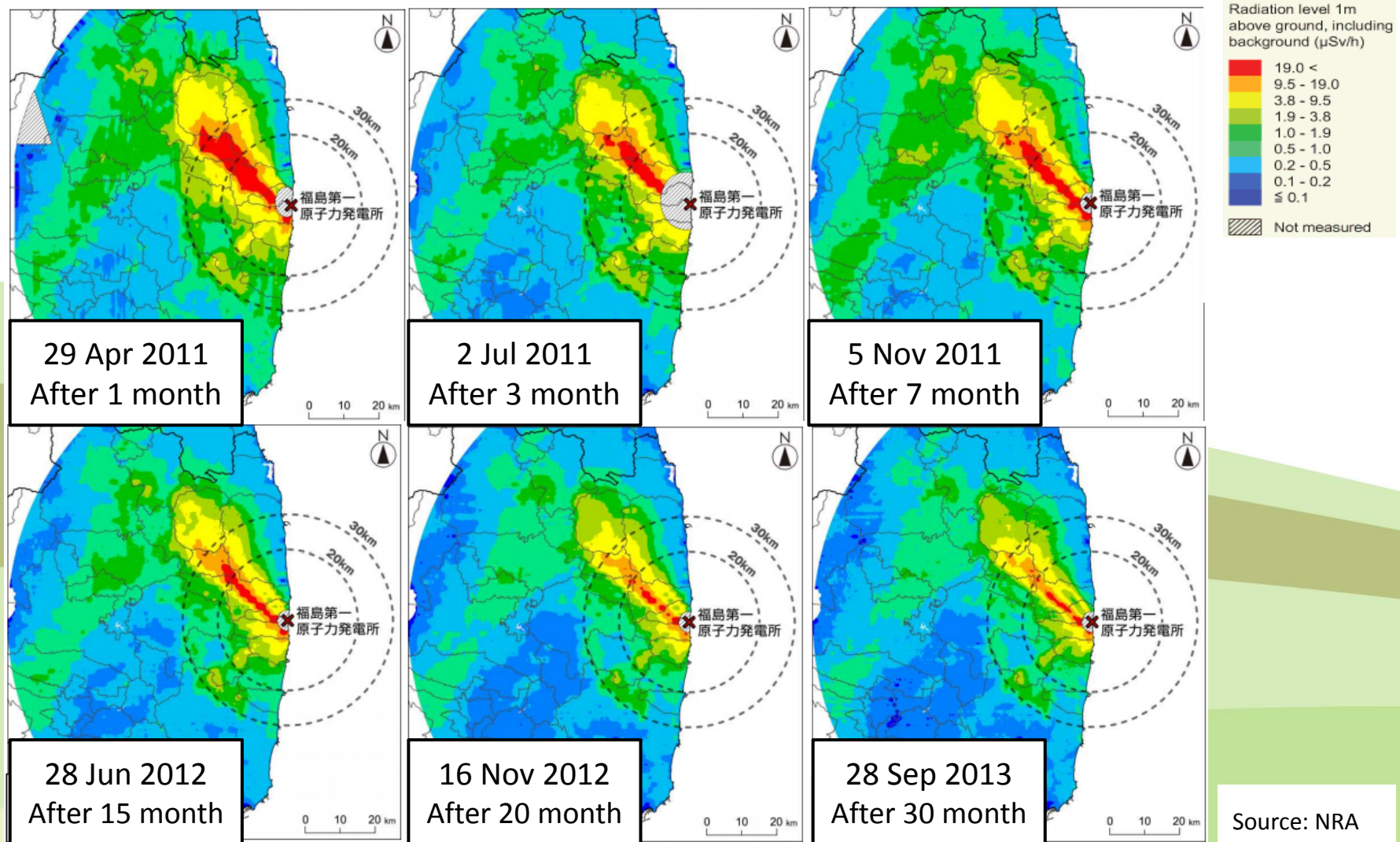
- Remediation phase
- Effect on the public
- Role of nuclear power



3 years  
have past



# Radiation decline



It is getting much lower.

50% fallen from Nov 2011 to Sep 2013

# Outline

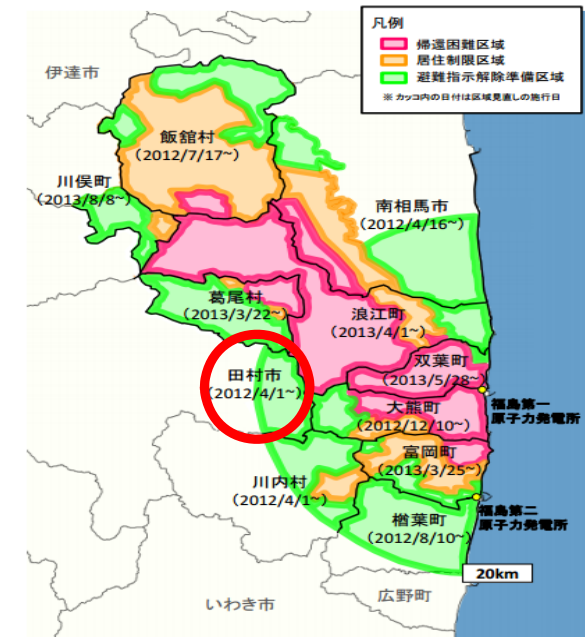
- Remediation phase
- **Effect on the public**
- Role of nuclear power

# Return to home

More than **80,000** evacuees - designated zone  
(More than 140,000 evacuees – Fukushima prefecture)



The first decision, for Miyakoji district, to lift evacuation order on 1<sup>st</sup> April 2014 is a big step and will be a crucial milestone.



The **psychological impact** of the accident and evacuation may have a **consequence on health and wellbeing**.



In remediation situations, **any level of individual radiation dose in the range of 1 to 20 mSv per year** is acceptable and in line with the international standards.

# Public concern

Evacuees accumulating undue worry...



“What do you want to know about Fukushima recovery?”

Source: Opinion poll of Fukushima prefecture (FY2013)

1. Food safety : 66.5%
2. Radiation effect on the health : 62.9%

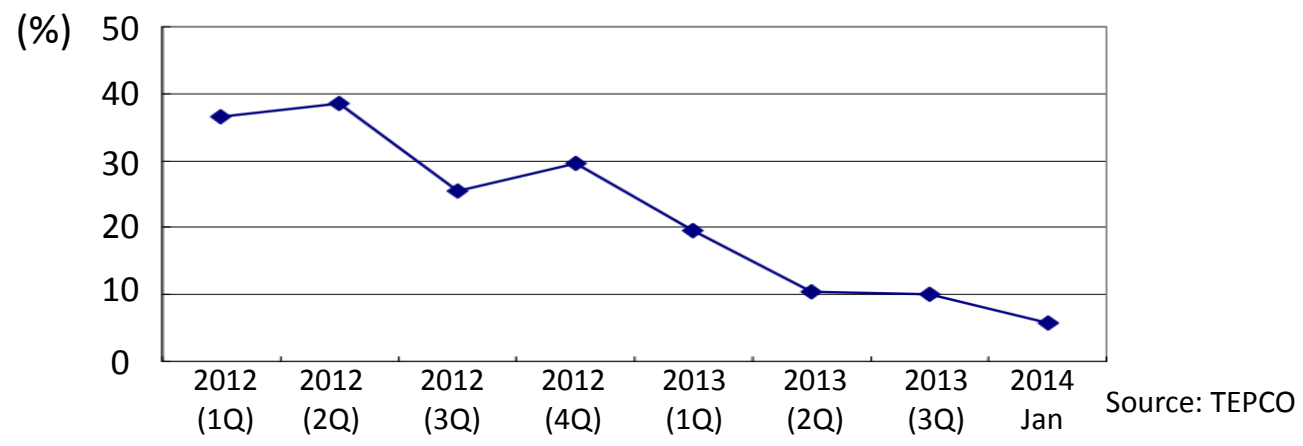
Though 3 years  
have past...

**Need clear communication!**



# Food safety ~high standards~

Ratio above the standard of "Cs" fish within 20km



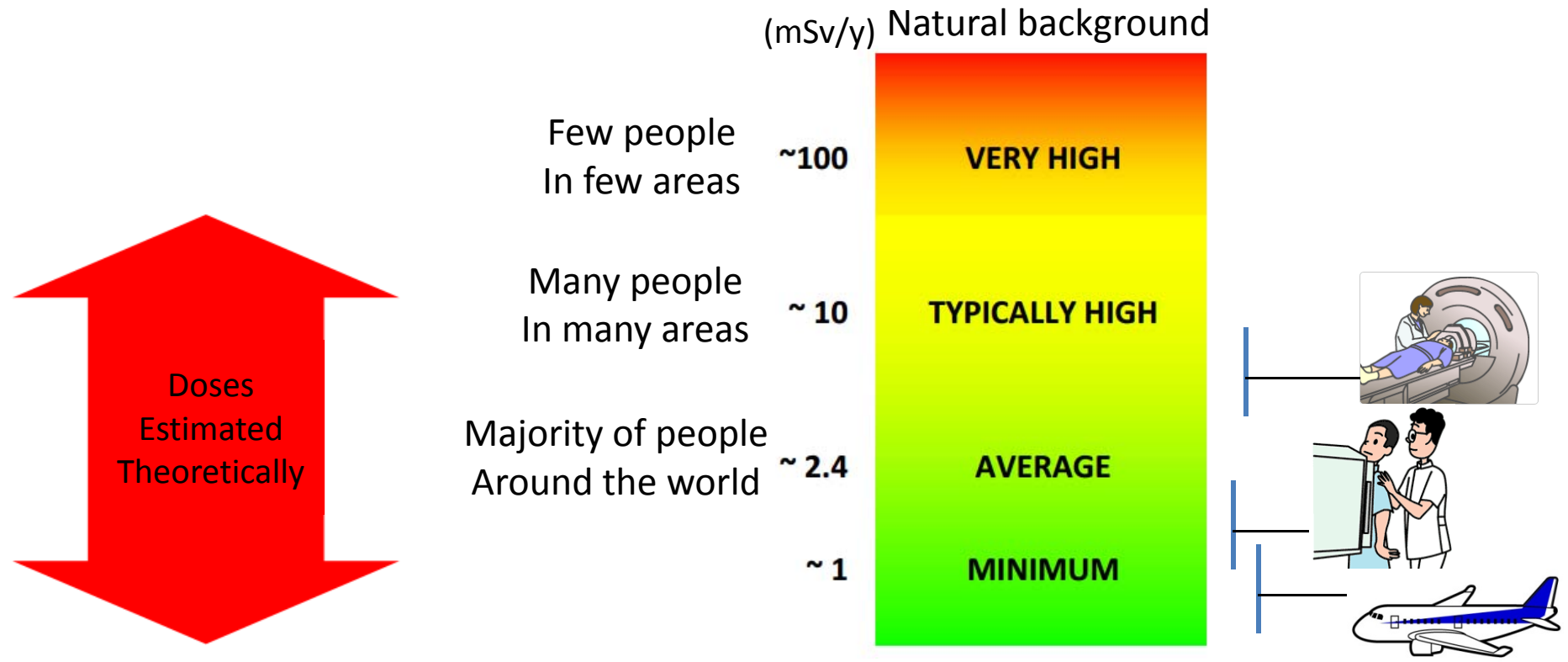
Standard of "Cs" for food (Bq/kg)

	Japan		EU	WHO
	~ Mar 2012	Apr 2012 ~		
Water	200	10	1,000	10
Food	500	100	1,250	1,000



- Comprehensive implementation of food safety measures has protected consumers.
- Intensive monitoring of foodstuffs has shown much of the land can produce food below the reference level for permissible radioactivity.

# Radiation effect *~cannot be observed~*



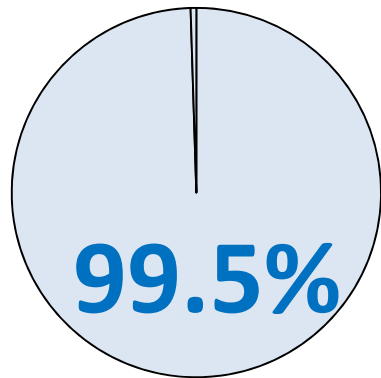
- No observable increases in cancer rates above baseline rates are anticipated.
- No expectation to cause an increase in the incident of miscarriages, stillbirths and other physical and mental conditions that can affect babies born after the accident.



# Dose Distribution of the Workers at the Fukushima site

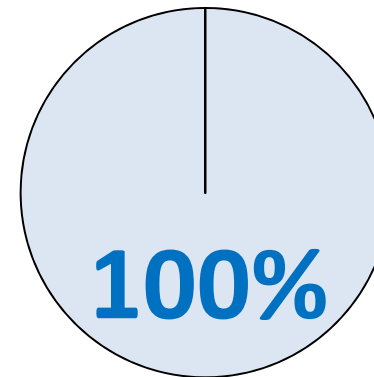
<Combined cumulative effective dose>

Less than 100mSv  
(Mar 2011 ~ Jan 2014)



(total 32,034 workers)

Less than 50mSv  
(Apr 2013 ~ Jan 2014)



(total 13,154 workers)

Source: MHLW, TEPCO

<Exposure dose limit for decontamination work>

Emergency worker (accident ~ 16 Dec 2011)	250mSv
Normal (current)	50mSv per year and 100mSv in five years

# Communication(1) ~rebuild the public trust~

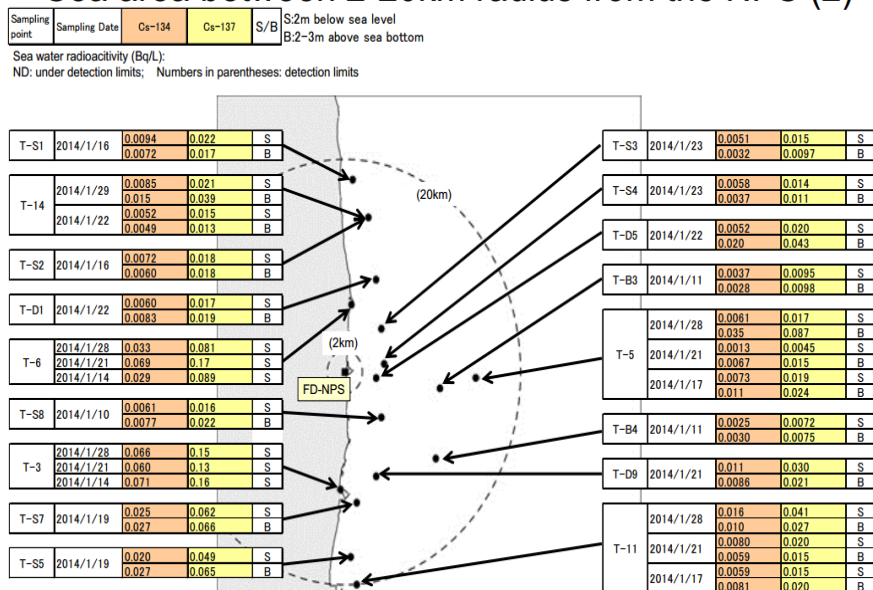
1. **Simple message**  
(Few and familiar words)

Not only showing data!

2. **Clear, understandable and relevant information**  
(not too much; not too little)

(e.g.) sea monitoring case

Sea area between 2-20km radius from the NPS (2)



1. "The seawater is OK"
2. "Extensive monitoring shows that seawater in the open ocean consistently meets WHO guidelines"

# Communication(2) ~rebuild the public trust~

1. Dialogue through two way

Not only for  
gathering data!

2. Specialist talk with the concerned people

3. Don't be too fast





# UNSCEAR – the real impacts

- “The doses to the general public, both those incurred during the first year and estimated for their lifetimes, are generally low or very low. No discernible increased incidence of radiation-related health effects are expected among exposed members of the public or their descendants. The most important health effect is on mental and social well-being, related to the enormous impact of the earthquake, tsunami and nuclear accident, and the fear and stigma related to the perceived risk of exposure to ionizing radiation. Effects such as depression and post-traumatic stress symptoms have already been reported. Estimation of the occurrence and severity of such health effects are outside the Committee’s remit.”

## UNSCEAR – the lesson?

- "The evacuations greatly reduced (by up to a factor of 10) the levels of exposure that would otherwise have been received by those living in those areas. However, the evacuations themselves also had repercussions for the people involved, including a number of evacuation-related deaths and the subsequent impact on mental and social well-being (for example, because evacuees were separated from their homes and familiar surroundings, and many lost their livelihoods)."
- ICRP: Radiation protection principle  
Every activity to reduce dose  
should do more good than harm

# Outline

- Remediation phase
- Effect on the public
- **Role of nuclear power**

# Impact for Japan



## Environment

CO2 emission intensity  
from electricity industry

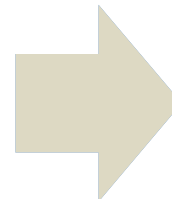


**39% up**

FY2012: 487gCO<sub>2</sub>/kWh, FY2010: 350gCO<sub>2</sub>/kWh  
Source: FEPC

## Economic efficiency

Additional fuel cost



**JPY3.6 tri/year**  
**(USD35 bil/year)**

Source: METI (November 2013)

## Energy security

Continuous request for  
saving energy



**Restrain industry**

# Building nuclear power today

## Countries experienced serious accident



UK: Windscale fire, 1957  
<Today>  
16 reactors in op.  
19 GWe planned



USA: Three Mile Island, 1979  
<Today>  
100 reactors in op.  
5 under construction



Ukraine: Chernobyl, 1986  
<Today>  
15 reactors in op.  
2 under construction

## Nuclear power reactors

Operable

**435**

(Japan: 48)

Under Construction

**72**

(Japan: 2)

Source: IAEA, WNA  
(as of 17 March 2014)



# Conclusion

- Good progress has been made toward revival.
- There is *no health effect for the general public from food and radiation* related to the accident.
- Reasonable decision regarding energy is important considering all benefits of nuclear power.

# Neighboring property to my summer house

