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CENTRE D'ÉTUDE SUR L'ÉVALUATION DE LA PROTECTION DANS LE DOMAINE NUCLÉAIRE

Lessons learned on the transdisciplinary approach implemented for managing the Fukushima accident: A European perspective

Thierry SCHNEIDER
Director of CEPN, Chair of NERIS

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Introduction

- Identification of research gaps for emergency and recovery management based on the lessons learned from the Fukushima accident
- Publication of the NERIS research roadmap in November 2017
- One of the three main challenges:
  - ***Setting-up a trans-disciplinary and inclusive framework for preparedness for emergency response and recovery.***

NERIS Roadmap

Key features for the development a trans-disciplinary and inclusive framework:

- Further developing emergency response and recovery frameworks,
- Better addressing stakeholder engagement processes,
- Integrating non radiological aspects into the management strategies, including:
  - Health surveillance
  - Ethical issues
  - Socio-economic aspects
- Coping with uncertainty and incomplete information regarding environmental and health impacts of the accident.

Recovery framework
(based on the Chernobyl feedback experience)

- Accompany the people who have decided to stay
- Ensure the monitoring of the radiological situation
- Set-up the radiological, medical and epidemiological monitoring of people
- Improve the radiological quality of products
- Maintain and redeploy the economic activity of the territories

Lessons learned from the management of the Fukushima accident

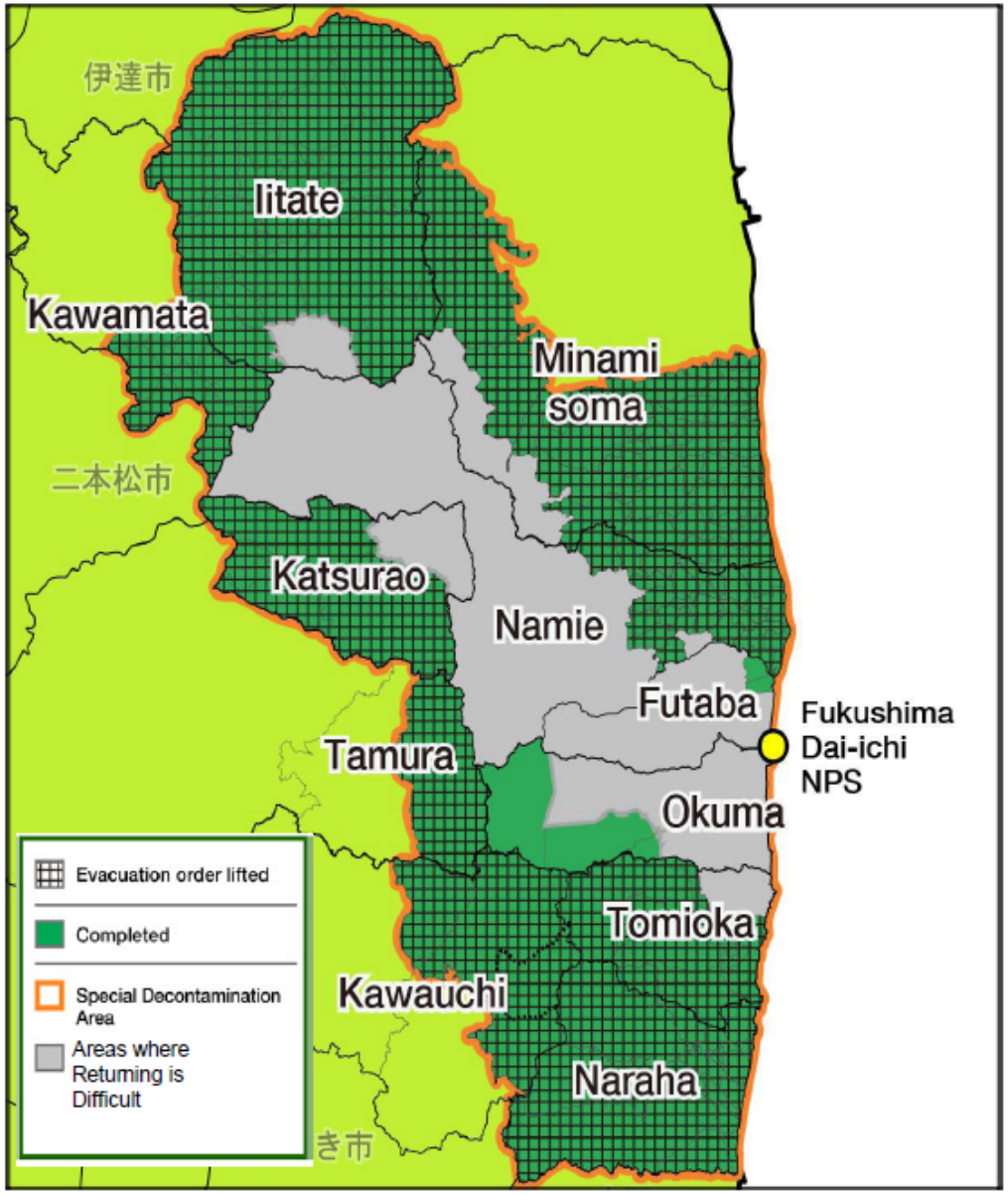
- The main features of the recovery framework remain valid
- Reinforcement of the importance of the transdisciplinary approach to address long-term issues
- Specific issues to be further investigated:
  - Return of populations and lifting of evacuation orders
  - New features on monitoring devices and strategies
  - Main challenges on radiological monitoring and public health issues
  - Management of food production and consumers' behaviour
  - Dynamics for economic and social development

Accompany the people who have decided to stay

- Main challenge associated with the strategy of return of evacuees
- Not addressed similarly following the Chernobyl accident
- The process developed to accompany the people to take their own decision is critical, including the questions on:
  - The role of local and national authorities for preparing the infrastructures and the conditions and means for the return of evacuees
  - Ethical considerations ensuring the respect of autonomy of decision and ensuring dignity of people
  - The dynamics of the lifting of countermeasures

Lifting of evacuation orders

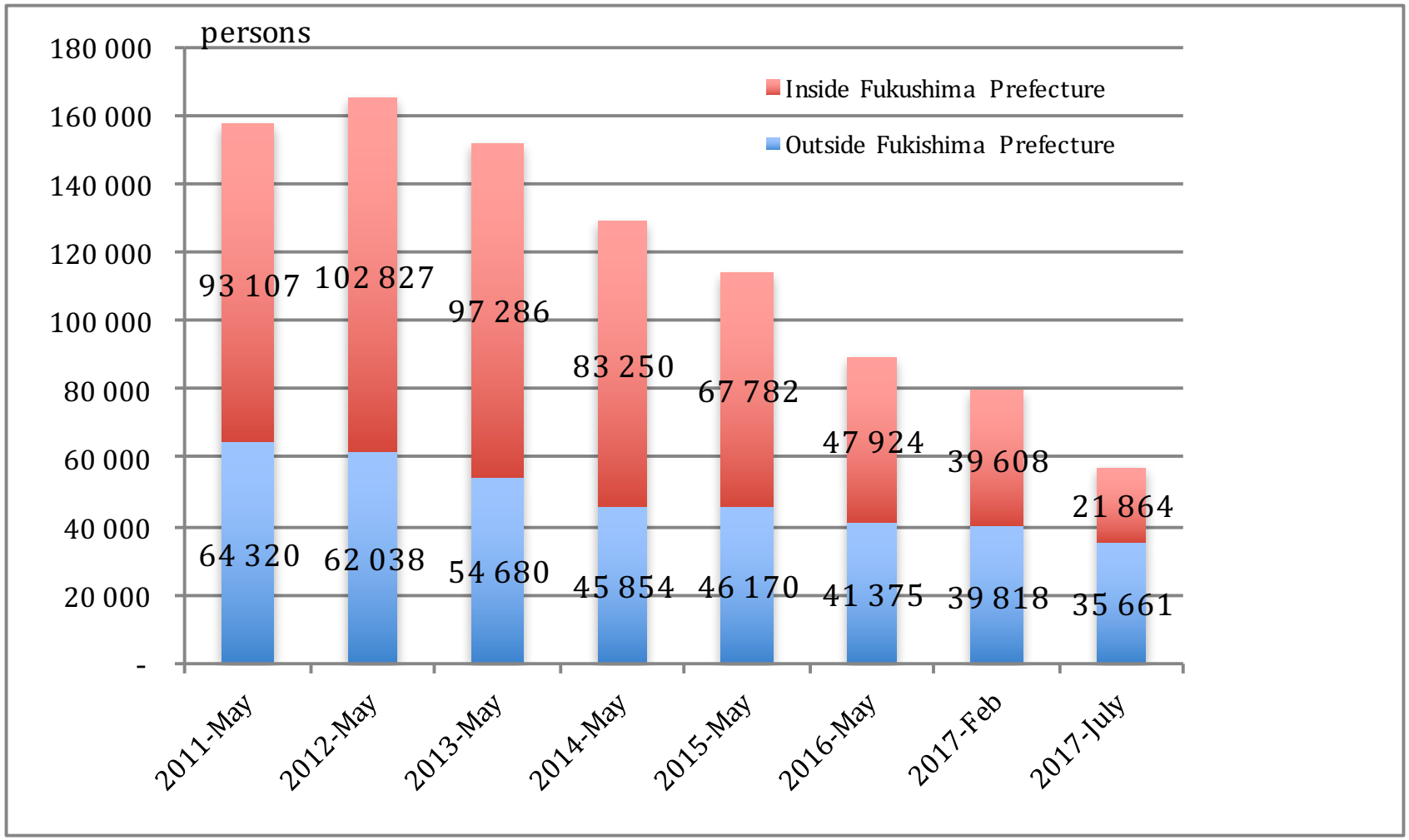
Source: METI



Municipality	Evacuation order was lifted on
Tamura city	April 1, 2014
Kawauchi village	October 1, 2014*1 / June 14, 2016*2 *1 Former Preparation Areas for Lift of Evacuation Order *2 Former Habitation Restricted Area
Naraha town	September 5, 2015
Katsurao village	June 12, 2016
Minamisoma city	July 12, 2016
Iitate village	March 31, 2017
Kawamata village	March 31, 2017
Namie town	March 31, 2017
Tomioka town	April 1, 2017

Municipality	Completion of decontamination
Tamura city	June 2013
Naraha town	March 2014
Kawauchi village	March 2014
Okuma town	March 2014
Katsurao village	December 2015
Kawamata town	December 2015
Futaba town	March 2016
Iitate village	December 2016
Tomioka town	January 2017
Minamisoma	March 2017
Namie	March 2017

Evolution of the number of evacuees



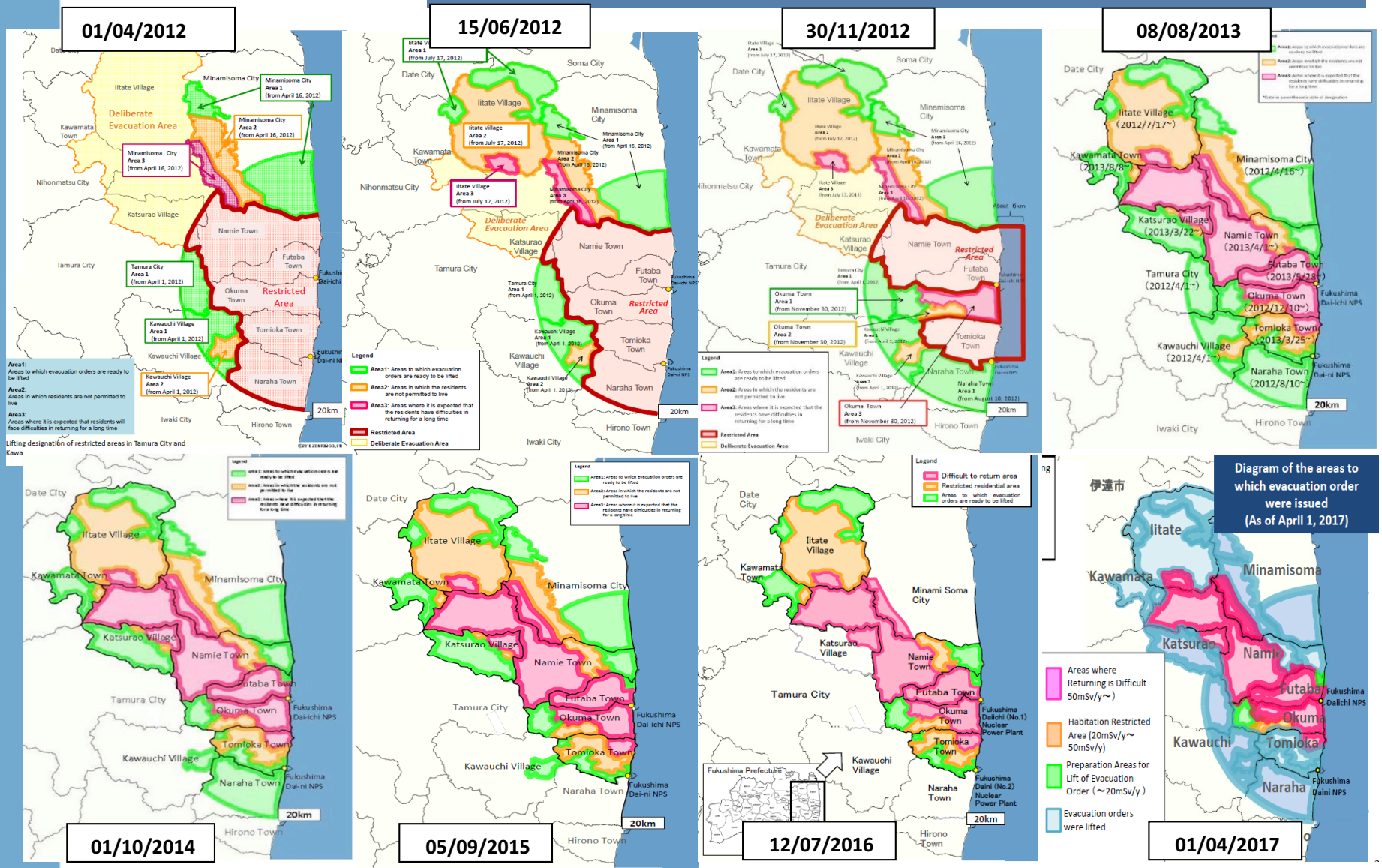
Source: Fukushima Prefecture

Ensure the monitoring of the radiological situation

Main issues at stake:

- Evolution of the radiological perimeter and the definition of zones
- Identification of the radiological criteria used within the decision making processes and their evolution in time
- Large development of individual devices and self measurements after the Fukushima accident
  - Coordinating the production of measurements
  - Sharing this information
  - Specific role for radiation protection experts in accompanying the people for the interpretation of the results

Evolution of zones



Set-up the radiological, medical and epidemiological monitoring of people

- The characteristics of exposure really dependant on the local and individual situation
- Organising the radiological and health surveillance to help the people to improve their living conditions is a challenge
  - Especially in the areas where the social and economic activities and the structure of the population have been largely disturbed after the accident
- Role of the radiation protection experts and the support mechanisms have to be reconsidered, with a specific emphasis on the transdisciplinary approach
- Provision of adequate education and training support

Improve the radiological quality of products (1)

- The situation of the agricultural production remains a sensitive issue even more than 6 years after the Fukushima accident
  - Large majority of the food products present radiological measurements below the detection level
  - Confidence from the consumers is still missing for many products
- Initiatives from producers and different organisations have to be considered to cope with this situation

Rice control in Fukushima Prefecture

- Systematic control introduced in 2012 (each bag of rice produced)
- ~ 200 measuring stations
- In 2012, only 71 bags (30 kg) above 100 Bq/kg on 10 million bags checked (max 360 Bq/kg)

Special stand for Fukushima products

- With photos of the producers
- Fairs with local products were also organised

(Source: Coop-Fuku)

Improve the radiological quality of products (2)

- The case of fish products is largely different from the rest of agricultural production:
  - Need to consider the management of the discharges from the nuclear site as well as the interaction with local stakeholders.
- Recent lifting of order of evacuation also creates a sensitive context for the future of agriculture in these areas:
  - Useful to follow the evolution of the situation
  - To address the sustainability of the development including the improvement of the radiological quality of the food products

Maintain and redeploy the economic activity of the territories (1)

- One of the main challenges in the affected areas concerns the ability to set up a new dynamics for the economic and social development taking into account radiological protection issues
- Currently, compensation and economic mechanisms have been set up
- Several projects are proposed to the affected municipalities, but their sustainability remains critical
- Success of the recovery clearly depends on the maintenance and redeployment of the economic and social activities
- Also depends on the inclusiveness of the decision process

Maintain and redeploy the economic activity of the territories (2)

- In this context, the role of radiation protection experts is to contribute to these projects on:
  - Design
  - Evaluation
  - Follow-up

- Ensuring the vigilance of the radiological protection of the people living in these areas

Needs for further research as identified by NERIS

- Improving the efficiency and the sustainability of the protective actions
- Developing guidance framework for engaging stakeholders in the decision-making processes and empowering them to contribute to the assessment of the situation
- Further considering societal, ethical and economic aspects in emergency and recovery management
- Reinforcing preparedness and response on health surveillance programme with the general objective of improving the living conditions of affected populations
- Developing adequate Education & Training programmes for various actors

- For further information on NERIS roadmap:
- http://www.eu-neris.net/

THANK YOU

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