

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

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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.

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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

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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



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Evolution of the number of evacuees



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Source: Fukushima Prefecture

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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

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

- The characteristics of exposure really dependent 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)



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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 FOR YOUR ATTENTION