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RRADEW

Resilience to Radiological Events
in Wartime

WP3 – Case studies



Fukushima & the evacuees

Nuclear Threat in a Compromised Context

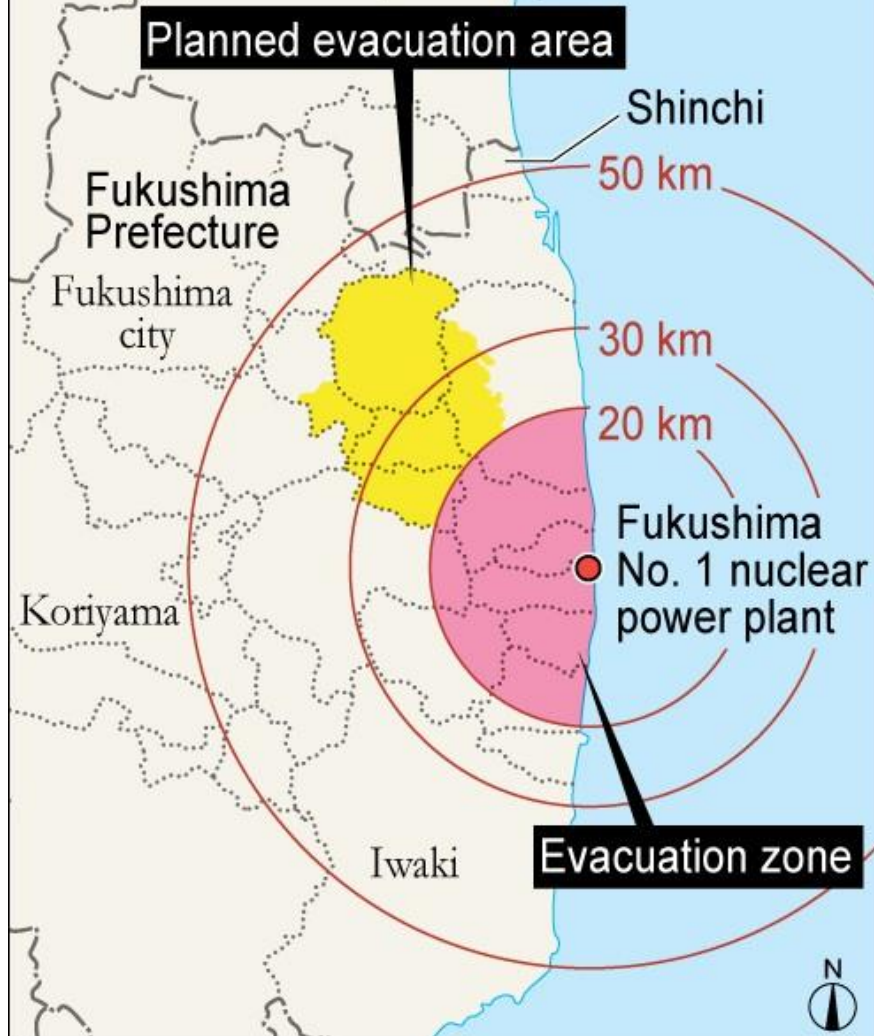


- **Resilience is often framed through**
 - **Measurement** → Adaptation on the basis of radioprotection principles (Co-expertise)
 - **Individual responsibility** → Legitimizing state disengagement by shifting the burden to individuals (Joseph, MacKinnon & Derickson)
- **The Role of Space**

Resilience is not just about managing risk but about **inhabiting space**—practicing, transforming, and narrating it (Ingold, Lefebvre).



Areas under evacuation orders as of April 22, 2011

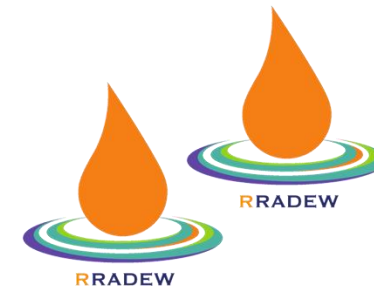


Semi-Structured Interviews: Key Themes

- **First Moments of the Disaster** → Immediate reactions, confusion, and survival responses.
- **Decision-Making Process** → What choices were made and on what basis? (official guidance, personal judgment, social pressure).
- **Fear of Radiation & Learning Process** → How individuals perceived and adapted to radiation risks over time.
- **Challenges & Resources** → Difficulties faced (housing, work, social exclusion) and support systems accessed.
- **Relationships & Social Dynamics** → Impact on family, professional life, territorial attachment, and interactions with radiation experts.



Type of Interview	Category of Interviewed Actors	Number of Interviews Conducted
Health Professionals	Medical practitioners, radiology experts	5
Local Authorities	Mayors, municipal officers	3
Community Representatives	District chiefs, community leaders	4
Public Health Officials	Nurses, public health experts	4
Agricultural Sector	Farmers, agricultural advisors	3
Institutional Representatives	Government and emergency response officials	2
Citizens	Residents, evacuees	6
Disaster Response Experts	DMAT members, crisis management consultants	2



Mission

14-24 October 2024

Fukushima Prefecture





Thematic analysis of the interviews

Three Dimensions

1. Perception and integration of invisible health risks

2. Adaptation of living conditions

3. Identity transformation and community ties

1. Perception and integration of invisible health risks

Residents had no prior knowledge of radiation risks, leading to confusion and mistrust.

"At first, we had no idea how dangerous the radiation was. The government told us it was safe, but we heard different things on the news."

Self-protection strategies emerged to navigate invisible radiation risks.

- **Interpreting dosimeter readings** became essential—residents
- **learned from the internet, media, and visiting experts.**

"The 0... msv is what i check

- **Citizen Science & Empowerment**
- Faced with uncertainty, **citizen science initiatives** helped residents take control of radiation measurement.



• **Intergenerational Differences in Risk Perception**

- **Older residents** were more accepting of radiation risks and reluctant to leave.

"My parents refused to leave. They said, 'We have lived here all our lives. Where else should we go?'" (20-9, L57)

- **Younger families**, especially with children, were more cautious and preferred permanent relocation.



2. Adaptation of living conditions

Shape by basic infrastructure

- Even those **not fearing radiation** had to leave because **essential services were no longer available**.

"It wasn't about the radiation. There was no tap water, no electricity. We simply couldn't stay indoors and survive."



Shape by professional dynamics

- **Employment was a key factor**—some had no choice but to return.

"My company reopened in Minamisoma in October. I had no choice—either return or lose my job." (

- This often led to **family separations**: fathers returned for work, while mothers and children stayed in safer areas.

Shape by Family and Social Network

- **Conflicts within families** shaped evacuation and return decisions.
- *"My grandparents didn't want to evacuate. After many discussions, we left by car, wearing raincoats to protect ourselves from radiation."* (21-12, L140)
- Those with strong **family support in host communities** were more likely to stay away longer.

Shape by Public Policies

- The government promoted **progressive return**, but **compensation policies created paradoxes** (e.g., farmers being told to stop working "voluntarily").
- *"We were told we could continue farming, but also asked to stop. Since there was no official ban, we got no compensation."* (19-6, L217)

3. Identity transformation and community ties



Exile, and the Reconstruction of Self

- Forced displacement was not just **an exile** physical but also **an existential rupture**.
- **Evacuees, returnees, and those who stayed** all had to redefine their relationship to their home.

Stigma and Social Exclusion

- **Fukushima residents faced rejection** from the outside world, as radiation fears led to **discrimination and exclusion**.
- Some were treated as if they carried contamination:
At the supermarket, people avoided parking next to us when they saw our Fukushima license plate."
- **Even within families**, evacuees sometimes felt unwelcome:
"I had to change my clothes before seeing my granddaughter."

Social Fracture

- Some stayed, while others left, leaving their colleagues and relatives in difficult situations.
- The compensation system deepened social divides
"My neighbor got compensation because his house was in the red zone, but mine was just outside. We lived in the same village, but he got support, and I got nothing."

Professional Trajectories and Reinvention

- The disaster forced many to **change careers** : New vocations emerged :
"In the evacuees' camp, my daughter was very sick, and she was supported by a nurse. That's why she became one herself today.."
- **Not all career changes were voluntary**—many
I used to head the emergency department and was recognized by patients. Now, I sit alone in an empty office as a radio-protection specialist.



Lessons from Fukushima in Terms of Resilience

In sum : resilience is not just about adapting to risk but about how people inhabit, recreate, and transform space post-disaster.

Decisions and actions under radiological threats are shaped by social, economic, cognitive, and emotional factors, not just rational risk assessment (*Murakami et al., 2020; Fassert; Schneier & Lochard*).

Yet, emergency planning frameworks primarily focus on shock absorption and adaptation through radiation dose metrics, neglecting spatial dimension ie physical, symbolic, social,

Our contribution to fill this gap : How to support resilience as a dynamic spatial process ?

1. Rethinking Risk Measurement
2. Moving Beyond Rigid Institutional Frameworks
3. Build Bridges to Prevent Social Fragmentation



1. Rethinking Risk Measurement: Beyond Scientific Metrology

- **Official radiation maps and safety thresholds dictate recovery but overlook lived experiences.**
- Risk assessments must be **community-driven and diverse**, integrating multiple perspectives.
 - **Personal dosimeters & mobile apps (cf SHAMISEN)** → Empower individuals to monitor their own exposure and adjust daily routines
 - **Embedded experts** → Specialists living alongside affected communities to better understand their realities.
 - **Participatory mapping** → Residents contribute real-time contamination data, challenging official narratives.
 - **Local experimentation** → Communities develop adaptive strategies based on direct observations and lived knowledge.
- **Support diverse, community-led risk assessment initiatives.**
- **Integrate qualitative risk perception into official recovery policies..**



2. Moving Beyond Rigid Institutional Frameworks

- **Resilience is shaped by imposed trajectories** : work obligations, lack of compensation, family pressures
 - Return policies must not be based solely on radiation
 - **Evolving risk perceptions** → Public confidence shifts through social influence, media narratives, and personal experiences.
 - **Environmental signals** → The reopening of schools, businesses, and public services fosters a sense of normalcy.
 - **Social and emotional attachments** → Returning is not just about physical safety; it's about reclaiming daily routines, reconnecting with loved ones, and restoring a sense of belonging.
- **Adapt return policies to include social and economic realities.**
- **Encourage gradual return strategies instead of rigid "safe" vs. "unsafe" zoning.**



3. Build Bridges to Prevent Social Fragmentation

- **3.1. Ensuring Mobility and Access to Essential Services**
- **Secure transport corridors** → Facilitate movement for medical personnel, emergency responders, and supply chains.
- **Supply chain continuity** → Ensure steady access to food, medicine, and critical industries in affected areas.
- **Safe zones & transport hubs** → Enable controlled access and support phased reintegration.
- **Prioritize essential mobility networks to prevent further isolation.**
- **Develop flexible transport solutions for returnees and workers.**



3.2. Combating Stigma and Misinformation



- **Public awareness campaigns** → Address misconceptions and provide accurate information on radiation exposure.
- **Education programs** → Strengthen risk communication skills and scientific literacy.
- **Fair employment policies** → Prevent discrimination against evacuees in the job market.
- → **Promote evidence-based radiation education in schools and media.**
 - **Provide employment incentives for businesses hiring evacuees.**



3.3. Acknowledging the Complexity of Post-Disaster Identities



- **Recognizing diverse experiences** → Evacuees, returnees, and those who stayed have distinct realities and challenges.
 - **Personal struggles matter** → Loss, displacement, and prolonged uncertainty shape individual recovery paths.
 - **Rebuilding trust through dialogue** → Public forums, museums, and community initiatives foster understanding and reconciliation.
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- **Facilitate inter-community dialogue to rebuild trust.**
 - **Support initiatives that document and share diverse experiences.**



3.4. Integrating New Residents Without Erasing the Past



- **Inclusion requires recognition** → Newcomers integrate more effectively when they understand the region's radiological history and its impact on local communities.
 - **Personalized support for new residents** → Provide guidance on radiological risks, safety measures, and community adaptation strategies.
 - **Align economic renewal with local heritage** → Ensure that new industries and reconstruction efforts respect traditional ways of life and past livelihoods.
- Offer tailored support programs to help newcomers navigate radiological concerns.
- Ensure economic policies preserve local identity and acknowledge pre-disaster community structures.



Thank you for your attention



"There is no such thing as a catastrophic hazard except in relation to a given environment" thus emphasizes that catastrophe is a relational and contextual phenomenon. What matters is not just the event itself, but the relationship between the event and the system's ability to cope with it.