

JAPAN'S DILEMMA

Nuclear power plant accident and implementation of Sendai Framework for DRR



“The scope of disaster risk reduction has been broadened significantly to focus on both natural and man-made hazards and related environmental, technological and biological hazards and risks. Health resilience is strongly promoted throughout.” (Foreword, Sendai Framework for DRR)



top left (a): Takizakura in Fukushima prefecture ©Koichi-Hayakawa

bottom left (b) : Mt.Fuji & Tokyo Sky Tree©Ichikawa City

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bottom right: Aquaculture facility near Fukushima Daiichi Nuclear Power Plant, which was severely damaged by Tsunami in 2011. Surrounding radiation level is still high. ©Fukuden

Japan is facing many dilemmas with regards to implementation of Sendai Framework for DRR, particularly in recovery process from the nuclear power plant accident in Fukushima. This edition is prepared by Fukushima Booklet Committee to share the recent ‘**10 Dilemmas**’ as lessons from Japan in DRR, in relations to 7 Global Targets of Sendai Framework for DRR.

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Fukushima Booklet Committee

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Beef cattle in Ranch of Hope, 14km away from Fukushima Daiichi Nuclear Power Plant.

Mr. Yoshizawa, the cow-keeper, resisted against the government order to kill the animals just after the nuclear accident, and still keeps 300 unsalable cattle contaminated with radiation.

SFDRR Global Target 1 : Substantially reduce global disaster mortality by 2030, aiming to lower the average per 100,000 global mortality rate in the decade 2020–2030 compared to the period 2005–2015.

Dilemma 1: Indirect/related deaths exceeds 2,000 in Fukushima

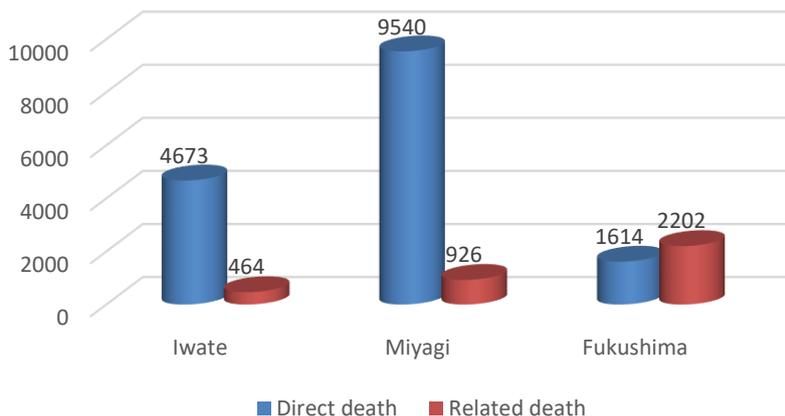


Mortality from disasters not only include direct casualties, but for those who die (including suicides) from stress of relocation, unemployment, or Post Traumatic Stress Disorder are all considered as ‘disaster mortality’. The mortality from nuclear power plant accident in Fukushima is not from acute exposure to radiation, but long-term relocation/displacement is deteriorating people’s health, and increasing related deaths including suicides.

As per the data from Recovery Agency of Japan, these ‘indirect/related deaths’ in Fukushima is 2,202 individuals (as of September 30, 2017) and it is still increasing. Direct deaths from earthquake and tsunami in Fukushima were 1614, so these indirect/related deaths are significantly higher. The ratio of indirect/related deaths in Fukushima is particularly high as compared to other prefectures (such as Miyagi or Iwate) affected by East Japan Earthquake and Tsunami.

For those displaced, long term radiation contamination makes it extremely difficult to make decisions on whether to return or not, and this uncertainty adds significant stress. For elderlies, relocating from the land they spent most of their life also has an influence on their life span.

Comparison of direct-deaths/disaster-related deaths in 3 afflicted prefectures



Using data as of September 2017 reported by The National Police Agency (direct-deaths) and Reconstruction Agency (disaster-related deaths)

**CAN YOU
IMAGINE?**

Your hometown was affected by radiation contamination from nuclear power plant accident. The government has not issued evacuation order, and some spontaneously evacuated but some are staying behind. What do you do? Would you quit your work and evacuate? What would your family members do?

Global Target 2: Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 in the decade 2020–2030 compared to the period 2005-2015.

Dilemma 2: Disaster impact still ongoing after 7 years



Even after 7 years, disaster impact from the nuclear power plant accident is still ongoing. Decontamination efforts focused on residential and agricultural lands, but complete decontamination is impossible. Furthermore, decontamination of mountains and forests are not possible. Decontaminated soil is stored in flexible container bags but are being temporarily stored/stacked. Ministry of Environment, despite strong opposition from the residents, have decided to re-use part of these contaminated soil for public works such as construction of roads and agricultural lands.



Decontamination work in Iitate village, about 60 km distance from Fukushima Daiichi Nuclear Power Plant

Let's imagine that radiation contaminates your beautiful country. How are you going to decontaminate? There is no chemical or technology that can decontaminate your land, rivers, lakes, mountains, completely. The real decontamination is scraping off the surface of top soil and washing off rooftops and walls of the houses. And where would you store such contaminated soil, leaves, and other objects?

**CAN YOU
IMAGINE?**

Dilemma 3: Long term 50,000 evacuees/IDPs becoming invisible



Official record shows that at least 46,000 individuals are being evacuees/internally displaced as of May 2018. However, this data does not cover all the evacuation from areas where evacuation order was not given, or evacuation from other prefectures such as Tokyo. Evacuation order to areas nearby Fukushima Nuclear Power Plant is gradually being lifted, but the criteria for this move is based on emergency phase dosage limit of 20mSV/year; whereas international standard of limit of exposure is 1mSV/year as per International Commission of Radiological Protection (ICRP). Until when should we use our emergency phase dosage limit which is 20 times higher than international standard? Those families with small children are not returning to affected areas, but if official evacuation order is lifted, then compensation from Tokyo Electric Power Company (TEPCO) is also terminated. This adds economic and psychological stress for those who are displaced. And those from the areas where official evacuation order is lifted, they are no longer considered as 'evacuees' and will be eliminated from official statistics.

Recovery is important, but the situation of these evacuees/IDPs is important to consider. Nuclear accidents generate many IDPs, and it is long term issue. Even after the existence of evacuees/IDPs are crossed off from official data, real life of being evacuees/IDPs are going to continue.

Global Target 3: Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030.

Dilemma 4: Skyrocketing disaster management cost in Fukushima



The government estimated that recovery cost from Fukushima Nuclear Power Plant accident would be around 12 trillion Yen (approx. 109 billion USD) in 2015, but this has increased recently to 21.5 trillion Yen (approx. 196 billion USD) in December 2016. Furthermore, this figure does not include everything, so we really don't know how much it would cost at the end of the day.

The damage from nuclear disaster to industries, particularly to agriculture and fishery business, is significant, and such economic loss is continuing. Every year, 5 billion Yen (approx. 455 million USD) is spent to conduct radiation check of rice from Fukushima, and despite that fact that there isn't a case of rice that exceeds standard radiation limit since 2015, the price of Fukushima rice is decreasing. For dairy farmers, they had to continuously milk and dispose after the accident, and many had to slaughter their livestock. For fishery business, despite continuous effort on pilot projects and strict radiation checks, consumers' trust is hard to gain, and export of seafood from the area significantly lowered. Nuclear accidents affect many of such special products from your area, and economic loss is unimaginable.



Cost of the accident at TEPCO's Fukushima Daiichi Nuclear Power Plant

Use	Amount [yen] (USD)
Decomissioning / Contaminated Water Countermeasures	8.0 trillion (73 billion)
Compensation	7.9 trillion (72 billion)
Decontamination	4.0 trillion (36 billion)
Interim Storage of Radioactive Waste	1.6 trillion (15 billion)
Total	21.5 trillion (196 billion)

Based on the document distributed in the 6th meeting of Committee for Reforming TEPCO and Overcoming 1F Challenges on Dec.9, 2016

http://www.meti.go.jp/committee/kenkyukai/energy_environment/touden_1f/pdf/006_s01_00.pdf (Japanese only)

What are the special products from your country? Maybe coffee, tea, vegetables, fruits, meat, dairy products, seafood, or tourism? If nuclear power plant accident, similar to the one in Fukushima, occurs in your area, such special products will no longer be accepted by consumers. How much of such economic loss would be? And how would you reduce such risks in prior?



Global Target 4: Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030.

Dilemma 5: Nuclear power plant accident shut down all designated/core hospitals in affected area



Within days from the nuclear power plant accident on March 11, 2011, around 3,000 patients from 28 hospitals in the affected area, and such patients faced with deteriorated health condition, and some even died during the process.

In the coastal area, 7 hospitals within 20km radius from nuclear power plant shut down for evacuation, and in 8 towns in Futaba area, all 4 hospitals that had hospitalization/surgery function have shut down.*¹ New medical center has opened in Tomioka town in April 2018, and such recovery efforts are continuing. However, the hospitals in the area are facing with significant shortage of doctors and nurses. Even for those who recently returned to the area, shortage of daycare or medical care is causing distress.

Dilemma 6: Schools have shut down, and children not returning



Many schools in evacuation zone had to close after the nuclear power plant accident. Even though the evacuation order was lifted in some area, children who evacuated are not returning, and the schools had to make a decision of whether to shut down, or to merge with other schools. Even if schools opened, Japan's Teachers Union in their news on March 13, 2018*² expresses difficulty in recovering education institution as many children are not returning back.

**CAN YOU
IMAGINE?**

If evacuation order is issued after nuclear power plant accident, many institutions, facilities, and shops will be shut down. And even if evacuation order is lifted, it is difficult for them to return. What are critical infrastructure/institution aside from hospitals or schools? And how would you live in a town without such critical infrastructure/institution?

Global Target 5: Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020.

Dilemma 7: Restarting of nuclear power plants without comprehensive local disaster risk reduction plans



Local disaster risk reduction plans, including those targeting nuclear accidents, needs to involve the community, institutions such as hospitals and schools, business industry while creating the plan. However, Japan has a decentralized approach, and how such plan is made is completely up to each municipalities (with some guidance from the central government). And, the municipalities that include diverse stakeholders in the process is still limited. Current law on nuclear power plant operation does not require such comprehensive local disaster risk reduction plans, so re-starting of nuclear power plants without such plans is a challenge.

In addition, there is no disaster risk reduction plans that covers the workers at the nuclear power plants. When, and how such workers will evacuate? And how it would link with evacuation plans of the residents? Citizens' Commission on Nuclear Energy * is calling for such comprehensive plans that connect emergency response in both within and outside of nuclear power plant.



Sendai Nuclear Power Plant in South Japan, one of the NPPs which restarted after the Fukushima Nuclear Disaster

If nuclear power plant is in the process in your country, how would you include all-of-society (which Sendai Framework for DRR calls for) in creation process of the emergency evacuation and response plan? What are difficulties you would face? And what would be the benefit of doing so? How would you connect the existing strengths of your communities to such plans?

**CAN YOU
IMAGINE?**

Global Target 6: Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of the present Framework by 2030.

Dilemma 8: Exporting while struggling with recovery in Fukushima



As a country that is facing with continuous challenge with recovering from the nuclear power plant accident in Fukushima, sharing our lessons is one big contribution Japan can make to disaster risk reduction community in the world. However, our public appeal is focusing on our success in recovery and not concrete and specific lessons we are learning. As we approach Tokyo Olympics in 2020, there seems to be some people believe the positive news should be spread on the impact of nuclear power plant accident.

Japan also sells nuclear power plants to other countries, including India, Turkey, Jordan, UK, etc. Although Japan is trying to reduce the dependency to nuclear power internally, we are selling it to other countries. And in some cases, tax money is being used to finance/insure these investments. As the risk of nuclear power plant is quite high, such government back-up is necessary in closing the deals.

Those who are exporting nuclear power plants, including Japan, appeal that the new type of nuclear power plant is safe; but isn't this another 'safety myths' we are creating? At the 3rd UN Conference on Disaster Risk Reduction in Sendai in 2015, Japanese government representative openly admitted that 'Japan will no longer create safety myths around nuclear power plants'. Any nuclear accidents could become cross-border issue as it contaminates air, water, and the whole environment. How shall we move forward with the spirit of Sendai Framework for DRR in such international cooperation?

**CAN YOU
IMAGINE?**

If Some countries that export nuclear power plants indicate that they are willing to take care of used energy rods. However, if an accident occurs, who will pay for decontamination or compensation cost? Is your country ready to bear such costs?



Barricaded street in Futaba town, where Fukushima Daiichi Nuclear Power Plant is located

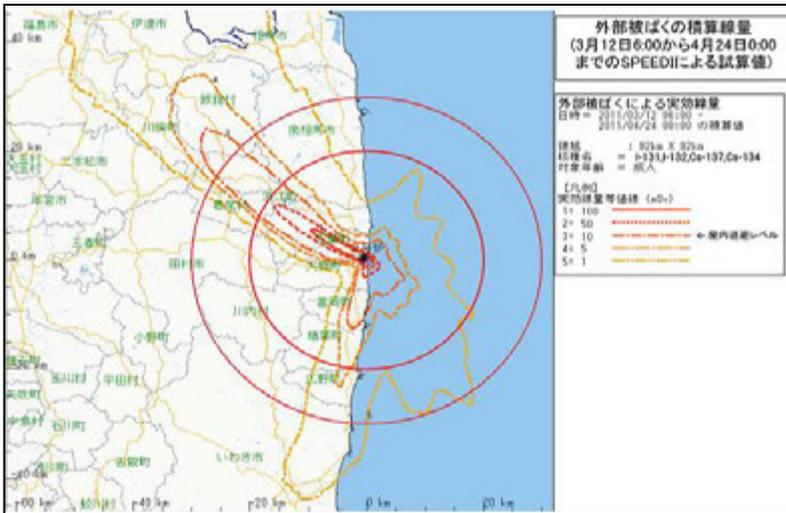
Global Target 7: Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to people by 2030.

Dilemma 9: Early warning system that did not function in Fukushima



Japan has a system called SPEEDI (System for Prediction of Environmental Emergency Dose Information) which can forecast radiation spread at the time of nuclear power accident. However, the information from SPEEDI was not used in Fukushima, and Nuclear Regulation Authority decided that such system will not be used to determine the residents' evacuation beyond 2014. Current regulation indicates that at the time of the nuclear accident, residents who live in 5km radius from the nuclear power plant evacuates first, and those who live within 30k radius should stay indoors. However, this would also mean that until and unless 30km radius is contaminated, the residents are not going to evacuate. The most important thing is early evacuation and reducing radiation exposure, but how this can be achieved is still in discussion.

Furthermore, Local Emergency Response Headquarter site was planned to be established near the nuclear power plant, but due to radiation spread, many stakeholders could not gather to such operation site. The communication between the government headquarter and the field was also a challenge for Japan, and it created chaos with regards to information and orders.



SPEEDI data forecasted radiation spread on March 12, 2011, which was not shown to the public at that time

Dilemma 10: Nuclear disaster risk information not mainstreamed



The risk information from nuclear power plant accident is not mainstreamed in school curriculum in Japan. The government also plans to decrease the number of radiation monitoring posts. At least 199 people, who were 18 year or younger at the time of the accident, had been either diagnosed with thyroid cancer or with suspected cases of cancer^{*3}, but there is a discussion of reducing long term health examination in Fukushima. Nuclear power plant accident requires continuous and long-term monitoring of the health of affected communities, along with awareness raising of risks, but there are different opinions on how this can, or should, be done.

**CAN YOU
IMAGINE?**

If nuclear power plant accident occurs, what are data/information you would use to construct public communication? How would you coordinate with various agencies in your country, and how would you determine which information to pass on to people and which information not to pass on? Also, how would you monitor the health condition of those affected and how long would you do this?

*Notes

1. "Damage Status of the Hospitals in Fukushima Prefecture Affected by the Great East Japan Earthquake and the Accident of TEPCO Fukushima Daiichi Nuclear Power Station" Dr.Kazuhira Maehara, Director of Shirakawa Kosei General Hospital
https://www.jstage.jst.go.jp/article/jjrm/61/6/61_802/_pdf (Japanese only)
2. "The Eighth Spring in Fukushima: Situation of Schools and Children in the Afflicted Area" by Fukushima pref. Teachers Union Mar.13, 2018 <https://www.jtu-net.or.jp/news/> (Japanese only)
3. Documents distributed in the 31st Prefectural Oversight Committee Meeting for Fukushima Health Management Survey held on June 18, 2018
<https://www.pref.fukushima.lg.jp/uploaded/attachment/273534.pdf> (Japanese only)

About the Fukushima Booklet Committee

The Fukushima Booklet Committee is a group of non-governmental organization's (NGOs) in Japan working to share the reality and lessons of the 2011 Fukushima nuclear power plant disaster internationally.

Member Organizations:

CWS Japan / Fukushima Beacon for Global Citizens Network (FUKUDEN) /

Japan NGO Center for International Cooperation (JANIC) /

Japan Iraq Medical Network (JIM-NET) / Kanagawa Development Education Center (K-DEC)
Peace Boat

This project grew out of the Japan CSO Coalition for 2015 WCDRR (JCC2015), which organized various activities in preparation for the UN World Conference on Disaster Risk Reduction held in Sendai in March 2015. At that time, we published the booklet "10 Lessons from Fukushima: Reducing risks and protecting communities from nuclear disasters." This booklet is now available in 14 languages as follows:

Japanese / English / Chinese (traditional) / Chinese (simplified) / Korean / French / Spanish / Turkish / Armenian / Bengali / Arabic / Polish / Vietnamese / Thai

PDF files of the above language versions can be downloaded here:

<http://fukushimalessons.jp/booklet.html>.

Based upon the experiences and testimony of local people, this booklet was created through the collaboration of many NGOs, researchers and experts. It outlines the reality of the Fukushima nuclear disaster, ten lessons from this which should be shared for considering future response and prevention. The booklet also includes information regarding various international legal tools and standards which can be utilized to advocate for the rights of those affected by the disaster.

Since the 2015 publication of the booklet, we have made efforts towards its dissemination in cooperation with civil society groups and experts around the world, with a particular focus on raising awareness and understanding of the reality and risks of nuclear power plants in countries where there are currently existing or construction plans for nuclear power plants.

Written and designed by:

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