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Rebuilding Trust after Fukushima

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Abstract

This paper focuses on the lessons that can be learned from the nuclear accident at the Fukushima Daiichi plant following the massive earthquake and tsunami that struck Japan on 11 March 2011. There has been a strong path dependency with the Fukushima disaster, with decisions made during the initial response period having a determinative impact on the subsequent recovery process. It is suggested that more focus needs to be placed on the social dimensions of the recovery process, such as rebuilding trust and restoring a sense of security and wellbeing for affected people. It is particularly important that lessons are taken from the Fukushima nuclear accident because the combination of aging infrastructure interacting with a natural hazard to trigger a technological disaster is a scenario that is likely to become increasingly common in the future.

Introduction

The 'triple disaster' – earthquake, tsunami and nuclear accident – that struck the Tohoku region of Japan on 11 March 2011 was unprecedented in its combination of natural and technological hazards.[1] There was a noticeable contrast between the relatively effective response to the tsunami, and the more flawed management of the nuclear accident. There has been a strong path dependency with the Fukushima disaster, with decisions made during the initial response period having a determinative impact on the subsequent recovery process. In particular, problems with the way evacuations were handled and information was conveyed to the public led to a breakdown of trust between affected residents and the government and Tokyo Electric Power Company (TEPCO) officials. Trust takes a long time to build, but it can be lost very quickly. This has certainly been the case in Fukushima. In the intervening years there has not been enough focus on addressing this problem, with most effort directed towards technical challenges, such as decontamination, clearing waste and rebuilding infrastructure. Moving forward there needs to greater emphasis on the social dimensions of the recovery process, such as rebuilding trust and restoring a sense of security and wellbeing for affected people.

There are a number of significant reasons why it is important that we learn from shortcomings in the way the Fukushima nuclear accident has been handled. First, for many people, the disaster has not finished. As of January 2015, there were still 118,862 evacuees from the nuclear accident (Fukushima Minpo News 2015a), and the region has a very uncertain future. Reflecting this uncertainty, in a recent Yomiuri Shimbun survey of 42 municipal leaders, 5 of the 6 who responded that they could not predict when reconstruction from the 2011 triple disaster would be complete were from Fukushima prefecture, in comparison to the majority of respondents who said within 3-5 years (Yomiuri Shimbun 2015). Second, the Fukushima accident demonstrated grave deficiencies in preparedness for responding to major nuclear accidents. Given that the Japanese government is now in the process of approving the restart of a series of nuclear reactors throughout the country, it is vital that lessons are learned so that the possibility of a similar accident reoccurring are minimized. This also has wider international relevance, as the United Nations (UN) system-wide study notes: 'The Fukushima accident has given rise to concerns regarding the adequacy of international safety standards and conventions, the global emergency preparedness and response system and the effectiveness of national regulatory bodies' (UN 2011). Third, and finally, the destructive combination of an earthquake and tsunami that triggered the disaster at the Fukushima Daiichi plant provides a clear warning of the type of risks that we will increasingly be exposed to, insofar as it was a 'na-tech' disaster, combining natural and technological hazards.

An Inadequate Response

Despite Japan's long history with earthquakes and tsunamis, and it being regarded as a world leader in disaster preparation, it was simply not ready for what happened on 11 March 2011. Naoto Kan, prime minster at the time, later reflected that, 'the cause of this catastrophe is, of course, the earthquake and the tsunami but, additionally, the fact that we were not prepared. We did not anticipate such a huge natural disaster could happen' (Biello 2013). In the case of the Fukushima Daiichi plant, it was over 40 years old, making it much more vulnerable to natural hazards, and TEPCO had not adequately updated its safety precautions (Nuclear Accident Independent Investigation Commission 2012). This left Daiichi ill-prepared for the massive earthquake and tsunami that struck. The plant was seriously damaged, it soon lost all power, which meant there was no way to cool the reactors, and 'even worse, there was no plan for what to do next because nobody in TEPCO had ever predicted total loss of power at a nuclear plant' (Birmingham and McNeill 2012: 64). This ultimately resulted in meltdowns in three of the reactors, and spent fuel becoming dangerously exposed in the fourth reactor. Radioactive material was released into the environment as a result of deliberate venting to reduce pressure, as well as a series of explosions in the reactor buildings. After a very tense and uncertain week, Fukushima Daiichi was gradually brought under control and the worst scenarios were averted (Kushida 2012: 25-27). The plant was stabilized and has since reached a state of cold shutdown, but Japan is still dealing with the fallout from the accident, literally and figuratively.

A number of major investigations into the Fukushima accident have been completed and their findings published (Investigation Committee on the Accident at the Fukushima Nuclear Power Stations 2012; Kushida 2012; Nuclear

Accident Independent Investigation Commission 2012; Independent Investigation on the Fukushima Nuclear Accident 2014). A common theme is the serious inadequacy of the existing institutional framework for dealing with a nuclear accident. As Kushida observes, 'Japan's governance structure of nuclear power, and channels of information and coordination between various advisory organizations, became dysfunctional during the crisis' (2012: 34). In the days after 3/11, as Fukushima Daiichi spiralled out of control and the potential magnitude of the disaster remained unclear, there was a remarkable degree of confusion within the government and bureaucracy, marked by major shortcomings in the way information was being circulated. TEPCO showed itself woefully unprepared for such an accident, and there were serious problems with the way it was communicating information to the government. The end result was that there were serious failings in the way information was conveyed to the general public during the crisis, while mainstream Japanese media failed to challenge official accounts that the situation was under control.

This confusion and uncertainty, when combined with a more general breakdown in the institutional framework meant to deal with a nuclear disaster, contributed greatly to problems with the way evacuations were handled and information was provided to different levels of government and the general public. The lack of clear guidance created immediate problems insofar as people were making decisions – such as where to go, what to eat, whether to stay outdoors – on incomplete or incorrect information. As Kushida notes, 'public confusion and mistrust of the government (and TEPCO), were compounded by conflicting announcements about radiation emissions, which varied between the government and TEPCO' (2012: 39). Data from System for Prediction of Environmental Emergency Dose Information (SPEEDI), a computer system that estimates radiation dispersal, was not used, nor was it given to the Prime Minister's office or made available to the public. As a result of these failures of communication, some evacuees – such as the residents of Namie town – moved from safe areas to radiation 'hot spots' and people were unnecessarily exposed (Onishi and Fackler 2011). The Diet commission into the accident concluded that 'Insufficient evacuation planning led to many residents receiving unnecessary radiation exposure. Others were forced to move multiple times, resulting in increased stress and health risks—including deaths among seriously ill patients' (Nuclear Accident Independent Investigation Commission 2012: 19).

Whether intentional or not, failing to be open and transparent during the immediate crisis contributed to a profound sense of distrust towards the government and TEPCO. The mistakes that were made during the response phase – especially in terms of how the evacuations were handled and the way information was disseminated – have had major ramifications for subsequent rebuilding attempts.

Rebuilding without Trust

People are afraid of nuclear radiation, and remain deeply sceptical of the assurances given by the TEPCO and the government (Fukushima Action Research on Effective Decontamination Operation [FAIRDO] Experts 2013: 40; Cleveland 2014). This mistrust has been reinforced by TEPCO's repeated failures to disclose information properly, the government's inconsistent messages, and a string of revelations and scandals relating to the Fukushima accident. Notably, the fact that meltdowns occurred was not admitted to the public for months, as were worst case scenarios that included the evacuation of Tokyo (Fackler 2012). Given the widespread perception that people had been misled or misinformed about the Fukushima accident, they are now sceptical of official assurances that the radiation levels are not a major threat (Kingston 2014). Reflecting these problems, according to the 2012 Edelman Trust Barometer, this has resulted in a 'precipitous drop in trust in Japan', with significant decreases in levels of trust in the government, the media, NGOs, and business (Edelman 2012, p. 5). Japan slipped from 22nd to 53rd place on the 2013 Press Freedom Index as a result of 'a lack of transparency and almost zero respect for access to information on subjects directly or indirectly related to Fukushima' (Reporters Without Borders 2013: 3). By the 2015 survey, Japan had the lowest trust index of the 27 countries examined, with continued decline in trust in all the institutions considered.

One of the biggest problems after the triple disaster has been fear of radiation – an amorphous danger that you cannot see, touch or smell – which is causing increased stress and anxiety. The uncertain, on-going nature of nuclear accidents leads to 'a high incidence of psychosomatic symptoms, psychological distress and psychiatric disorders' (World Health Organization 2013: 90). This is echoed by the United Nations Special Rapporteur on the right to health, who emphasized the impact it has had on people's mental wellbeing by saying that: 'the evacuation has caused the breakdown of families and communities, giving rise to mental health concerns, especially among first responders, older persons, mothers and children' (Grover 2013: 7). Parents fear for the current and future health of their children. Even the smallest rise in the number of children in Fukushima with thyroid cancer is widely reported, despite the likelihood that these increases are due to the extremely sensitive screening techniques being used (Willacy 2013; Fukushima Minpo News 2015b). People are concerned that they may later develop illnesses, such as leukaemia.

The situation is made more difficult by the fact that communicating information to the public about nuclear issues is a particularly difficult proposition. Radiation elicits an unusually high level of fear amongst the general public. As Aldrich notes, 'extensive surveys have shown that residents in Japan (and, in fact, around the world) envision nuclear-related problems with the highest levels of dread' (2013:

266) This problem is reinforced by the highly scientific and technical nature of knowledge about nuclear power and radiation. Before 3/11, few people had heard of terms like 'millisieverts', 'microsieverts', 'becquerels' and 'curies'. Now such scientific jargon has become much more widespread, but most people still have trouble understanding what these terms mean. This problem is reinforced by the tendency for TEPCO and the government to release raw data in an overly technical format that is difficult for non-experts to decode, which is then generally relayed by media without providing sufficient context or background to understand properly. Even for those that do understand these terms, it is still not always obvious what to believe, with the science surrounding radiation remaining heavily contested, especially in terms of whether a linear no-threshold model should be used or not.[2] This manifests itself in public sphere in relation to debates over what a safe level of radiation is, and what the aims of the decontamination efforts should be.

The accident destroyed the so-called 'nuclear safety myth', the claim that nuclear power was completely safe and that a nuclear accident would never occur in Japan. The words of energy companies, government officials and nuclear experts – who collectively made up the informal alliance dubbed the 'nuclear village' – were widely discredited. As Gusterson observes, 'the disaster at Fukushima has generated cracks in what we might call the "social containment vessels" around nuclear energy—the heavily scientized discourses and assumptions that assure us nuclear reactors are safe neighbors' (2011). This meant, however, that the opinions of a large number of Japan's experts on nuclear power were now rendered suspect because of their links to the informal alliance that is seen as partly responsible for this tragedy. Now when experts say that physical health consequences of the nuclear accident appear to be very minor, or that much of the contaminated water at Daiichi is safe to be released into the ocean, there is considerable doubt about the veracity of these claims, often combined with an assumption that 'they' must be hiding 'something'. With the discrediting of nuclear experts following the Fukushima Daiichi accident, many people do not know who or what to trust, which in turn leads to problems with misinformation, rumours, confusion and difficulty in differentiating among the severity of risk. The resulting situation is taking its toll, with people suffering from 'fear and depression, resulting from both well-intentioned and politically motivated ignorance on radiation doses and effects following the accident' (Conca 2014).

A particularly serious example of this problem is the attempt to decontaminate areas to reduce the background radiation to a level sufficient that it is deemed safe to return and live. While decontamination efforts have helped to reduce radiation levels, it has been strongly criticised for being costly and ineffectual. The Japanese government has already awarded $13 billion in contracts mainly to construction companies with limited experience in decontamination (Tabuchi 2012). It must be questioned whether this has been the best use of resources. Reducing radiation levels to scientifically safe amounts will do little if people do not believe that they can live there safely. People need to feel confident that they can trust what they are being told. The fact that TEPCO has a material incentive in declaring the evacuated areas as being safe to return, insofar as it allows them to stop paying compensation, only reinforces the widespread scepticism about the information people are being provided. Radiation levels should not be viewed as a purely scientific matter; it is also a social issue. There has been too much emphasis on decontamination, and not enough focus on engagement with affected communities about decontamination. As a result, people do not know whether it is safe to return, or if they should leave, or what their future holds, leading to widespread mental health problems and family issues.

Moving Forward

Regaining the trust of Japan's public is a task that is just as difficult as the technical challenges faced in decommissioning Fukushima Daiichi and reducing radiation levels. This should not be seen as a secondary problem, but a primary one. There is no easy or quick solution: it takes time, it takes effort and engagement, and it requires transparency from the government, the Nuclear Regulation Authority (NRA) and TEPCO.

Considering the huge amount of money and effort expended on decontamination, which has yet to convince many evacuated residents that it might be safe to return, it would be advisable to begin investing much more in social infrastructure and building support networks for affected people. This needs to be done through more proactive and engaged efforts than the current ones, such as the 'Decontamination Information Plaza' established in Fukushima city that has failed to become a useful conduit for disseminating information to residents (FAIRDO Experts 2013: 50-52). Such initiatives have to overcome a great deal of scepticism, with residents remaining wary of the information they are given. As Schmid notes, 'the handling of the Fukushima disaster has revealed and reinforced latent distrust in nuclear industry experts and the government agencies charged with regulating nuclear safety' (2013). This will not be overcome quickly, but it is more likely to be achieved through placing more emphasis on listening and responding to the concerns of affected residents, teaching them more about radiation and the risks they face in a language that is easily understandable to non-experts, then letting them make their own decisions about whether they believe it is safe.

Certainly there is much about the Fukushima disaster that is distinctive, but it is not without precedent, and there is

a need to build on the knowledge taken from the experiences of Chernobyl and Three Mile Island. One of the most fundamental lessons that emerged from these previous nuclear accidents is that the largest impacts were social and psychological, and that some parts of the population are acutely vulnerable. The Chernobyl Forum concluded the biggest public health problem caused by the disaster was its impact on mental health of those affected, with the uncertain long term consequences of being exposed to radiation creating 'a situation of unresolvable distress' (Adams et al. 2011; Bromet 2012: 2). Reviewing the twenty year period after the disaster, another study concluded that 'the highest risk group appears to be women with young children although evidence about a high incidence of suicide in cleanup workers suggests that they too comprise a high-risk group' (Bromet and Havenaar 2007: 520). Knowing this, much greater efforts must be made to address the mental and social consequences of the nuclear accident, with a specific focus on mothers and those working at Fukushima Daiichi, who are acutely vulnerable (Hobson 2014).

Simply reducing radiation levels to a level mandated as scientifically safe and pushing former residents to return home will achieve little, and will likely create high risk communities composed primarily of aging residents that lack the resources or desire to move elsewhere. In this regard, there has been an excessive emphasis on rebuilding what was there before. This thoroughly underestimates the consequences of the triple disaster. Reflecting on the impact of Chernobyl on Ukraine, Petryna reflects that, 'a state, a society, and knowledge and experience of health have been reconfigured' (Petryna 2004: 254). One can say something similar about Japan. It may not be an easy thing to accept, but the Fukushima that existed on 10 March 2011 is destroyed, lost forever. All the decontamination crews in the world will not be able to fix what happened.

It is particularly important that we learn from the Fukushima nuclear accident because the combination of aging infrastructure interacting with a natural hazard to trigger a technological disaster is a scenario that is likely to become increasingly common in the future. This is certainly not the first 'na-tech' disaster, even if it has been the most spectacular to date. As a result of climate change, extreme weather events are becoming more severe and more common. This leaves existing technological infrastructure increasingly at risk, as the hazards now exceed the assumptions on which this infrastructure was designed. While the focus has been on the dangers of operating nuclear power, the lessons of Fukushima have much wider applicability. Next time it may not be a nuclear plant, it could instead be a chemicals factory or an oil refinery, and the results could be equally or far more devastating. Simply put, much existing infrastructure was not designed for the 'new normal' that is resulting from climate change, which means there is a much greater risk of technological disasters becoming a common accompaniment to natural disasters. While 'many experts said it was a black-swan event, completely unpredictable' (Shrader-Frechette 2011: 267), the realities of environmental change suggests that it is highly likely there will be an increase of these 'black swans'. Quite simply, Fukushima is a future we need to better prepare for.

Policy Recommendations

- Rebuilding should not be focused on trying to restore what existed before 3/11, but instead be centred on assisting affected residents build new lives, either in Fukushima or elsewhere.
- Information provision during and after a disaster is of fundamental importance. There is need to convey information promptly and in an easily understandable and accessible manner. Failure to do so will likely lead to a breakdown of trust.
- There needs to be a focus on engaging with people's fears about radiation, rather than dismissing them as being unscientific.
- There should be an immediate re-evaluation on decontamination efforts, including consideration of reallocating the remaining budget to direct compensation to affected residents and programs based on improving education and awareness about radiation risks.
- There needs to be greater focus on preparedness for the dangers posed by natural hazards interacting with technological hazards, especially in critical facilities those located close to areas with large populations.

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Notes

1 For a wider discussion of the human consequences of the triple disaster, see Bacon and Hobson (2014)

2 This linear no-threshold (LNT) theory has led to the widespread belief that there is no safe dose of radiation and that regulations should establish exposure limits as low as possible if not zero. For the past 30 years, the radiation protection community has debated the appropriateness of the LNT theory as a philosophical foundation for regulatory decision-making and radiation protection practice' (Mossman 2003: 11).

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