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TEPCO Fukushima Daiichi Nuclear Disaster and Social Media: A Chronological Overview

Abstract:

This article is a chronological overview and discussion of the public's use of social media in Japan in response to the TEPCO (Tokyo Electric Power Company) Fukushima Daiichi nuclear disaster that occurred on 11 March 2011. Reactions have included defiance aimed at protecting children and protests against the government's nuclear policies. A mass media decline is apparent during the course of the events. However, there seem to be multiple levels of divides that have been preventing people from progressing beyond criticism to achieve effective activism.

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- Relevant publications:
 - Saito, K.: NEO in Wonderland – A Tale of Money That Changed Our Future, TaroJiro-Sha Editus, 2009. (in Japanese; an English version is electronically available⁶⁰)
 - Saito, K., Nakamura, S., Kurosawa, S., Ogata, D. and Minami, M.: Academy Camp – Fermenting Play-and-Learn Space through Communal Living, Organized Session on Shikakeology, The 26th Annual Conference of the Japanese Society for Artificial Intelligence, 2012. (in Japanese)

⁶⁰ <http://grsj.jp/neo.pdf>

Introduction

"What makes this case different from Chernobyl is, first and foremost, the existence of the Internet. Everyone can gain access to information, and we can even read reports from overseas news media such as The New York Times. No longer can anyone keep information hidden. The other big difference is that NPOs have been more active since the Great Hanshin Earthquake. These two factors have turned the situations into something else, in which we find some hope."

– Mr Seiichi Nakate

This quote is an excerpt from my interview (Saito, 2011) with Mr Seiichi Nakate, the first chairman of the *Fukushima Network for Saving Children from Radiation*, on 1 June 2011 in Fukushima City, Japan.

The ongoing accident of TEPCO (Tokyo Electric Power Company) Fukushima Daiichi Nuclear Power Plant, which immediately followed the Great East Japan Earthquake on 11 March 2011, is the first (and probably not the last) nuclear disaster since the rise of the Internet. Measures taken or not taken by TEPCO or the Japanese government have given rise to movements among Japanese citizens, especially among parents worried about the future of their children. These movements are often initiated and organized using social media such as Twitter, Facebook, blogs or mailing lists, urging people towards activities such as: 1) saving electricity to avoid rolling blackouts, 2) care for mental and/or physical health of Fukushima residents, especially of children, 3) care for lost communities in Fukushima Prefecture near the power plant, and 4) anti-nuclear protests.

This article is a chronological overview and discussion of the public's use of social media in Japan in response to the nuclear disaster. It is written from my viewpoint as a resident of Fujisawa (a city in East Japan 268km southwest of the power plant), a father of an infant, and an Internet researcher. The overview includes my personal experiences, as I thought it would be helpful to share these with the readers.

Chronological Overview

In this section, for the sake of clarity, the public's reactions are categorized into three approximate stages that, in reality, overlap. For a detailed and valid overview of *Fukushima Daiichi nuclear disaster*, readers are referred to the corresponding Wikipedia entry (Wikipedia contributors, as of 2013).

Stage I: Emergency Response

11 March 2011 (at 14:46 JST) – The Great East Japan Earthquake

All external power supplies were lost at TEPCO Fukushima Daiichi nuclear power plant, and the core of all three operating reactors (no.1~3) in the plant later went into meltdown.

Mr Noriyuki Shikata (@norishikata), then Deputy Cabinet Secretary for Public Affairs and Director of Global Communications, started using his own Twitter account to tweet about the accident; this has remained one of the most important sources of information about the accident in English.

12 March 2011 – Hydrogen explosion at reactor no. 1, at 15:36

Professor Ryugo Hayano (@hayano), a physicist at the University of Tokyo, started tweeting about the accident. The number of his followers went up to more than 20,000 by the end of the day (and to more than 130,000 as of September 2012). Later, on 21 June, TEPCO created a Twitter account @TEPCO_Nuclear to publish official announcements about the nuclear disaster. At around 54,000 as of January 2013, it has fewer

than half as many followers as Professor Hayano, suggesting that more people may have relied on information from an individual physicist rather than from the very organization that caused the accident.

13 March 2011 – *TEPCO announced rolling blackouts*

There has been controversy over whether the series of planned power outages was indeed necessary, or whether it was a diversion or propaganda planned by TEPCO.

Operation YASHIMA¹ was a movement on Twitter with the hash tag #84MA (pronounced *yashima*) that started around this date to promote citizens' efforts to reduce electricity consumption to avoid large-scale blackouts. This movement was initiated by a young artist named Mr Koh Nakagawa, who spread the idea via Skype discussions and Twitter.

This human-powered smart grid seemed effective, but cities like Fujisawa suffered seven power outages during the period until 28 March, resulting in distrust of TEPCO and the government that allowed the blackouts.

On this date, the Cabinet Public Relations Office created an official Twitter account @Kantei_Saigai to disseminate information about the disaster, and started to tweet officially about the earthquake, tsunami and nuclear disaster. With more than 600,000 followers as of January 2013, this account has served as a reliable source of information with respect to all kinds of danger to the general public, including typhoons. However, although the account receives many reactions, especially to its announcements regarding the nuclear disaster, it never responds. The same is true of TEPCO's Twitter account. These accounts are not intended for two-way communication with the public.

14 March 2011 – *Hydrogen explosion at reactor no. 3, at 11:01*

15 March 2011 – *The first radioactive plume over Kanto area, far southwest of Fukushima*

Reactors no. 2 and 4 exploded in the early morning, at 06:00.

Friends of a Twitter account @dsHirano were warned at 08:17:32 as follows: "Let me advise you not to leave your children in schools or nurseries today." The account was that of Mr Tomoyasu Hirano, the founder of a software company called *Digital Stage*. He was reading tweets from people who had been analysing the limited information released by TEPCO, which gave rise to a rather fragmented view of the situations around the reactors; he somehow felt strongly that something was going especially wrong that day. I was unable to follow his advice that was retweeted 89 times, and my then two-year-old son went to the nursery, during which time the radioactive plume from the power plant crossed Kanto area including Tokyo and Fujisawa cities. No announcement was made from the government.

16 March 2011 – *U.S. Embassy advised Americans in Japan*

The advice for Americans was to leave areas within approximately 50 miles (80km) from the power plant.

On this date, Twitter account @savefukushimaa was created. The owner of the account is thought to be a housewife in Koriyama City, Fukushima, within the 80km range from the power plant. She called for actions to protect children in Fukushima. The account forwarded every tweet she mentioned, so that her followers could share information. I believe she was doing this manually. There were 11,476 tweets with 7,180 followers as of December 2011, but she seems to have stopped her activity in January 2012.

17 March 2011 – *Large-scale cooling efforts began*

¹ Named after an operation in "Evangelion", a popular Japanese animation, in which electricity from all Japan was collected for the deployment of an energy-intensive weapon.

I received a call from a friend (an ex-student of mine) at 4:00 in the morning, urging me to go west with my family before noon. He said that the government would announce the evacuation of the whole Kanto area, by which time the transportation system would have virtually ground to a standstill. I had some doubts, but thought it would be *polite* to follow his advice, and went with my family to Nagoya, 446km west of the power plant.

Nothing happened that day, but later we discovered that the government had concealed the worst-case scenario, in which evacuation should possibly be allowed for residents within 250km of the power plant (Kyodo, 2012).

21 March 2011 – *Possibly the largest fallout in Kanto area with rain*

This was the worst timing, but I returned with my family from Nagoya to the Kanto area on that date. This shows how helpless the general public was without information. Again, no announcement was made by the government.

On 24 March 2011, while rolling blackouts continued, I tweeted as follows at 19:23:35 in the darkness: "Group 1, Fujisawa City, under the rolling blackout. Tonight, Japan continues to fight against Godzilla²."

Stage II: Defiance to Protect Children

19 April 2011 – *MEXT announced 20 mSv/y and 3.8 micro Sv/h standards*

On this date, MEXT (Ministry of Education, Culture, Sports, Science and Technology) announced that children could be exposed to a maximum of 20 millisieverts of radiation per year, the same level allowed for adults in emergency exposure situations. Furthermore, the limit in playgrounds was announced as 3.8 microsieverts per hour, which seemed to be a much higher level than that applicable to radiation-restricted areas in industry (0.6 micro Sv/h or 5 mSv/y by effective dose) (Figure 1).

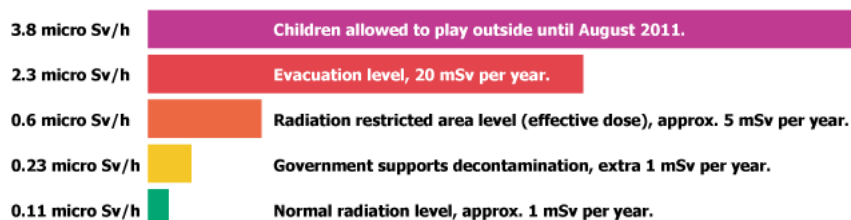


Figure 1. Radiation levels and standards approved by the government

This has changed the lives of many parents in Japan. Distrusting the policies of the government and schools, they have organized defiance as described in the following sections. I have heard many mothers and fathers saying that they had never imagined, before the nuclear disaster, that they would be involved in any kind of political movement.

Such changes have also been triggered by the way in which the government, industries and schools dealt with internal radiation exposure from water and foods. Some parents have had their children reject water and food provided by the schools. Some established radiation measurement facilities of their own, where neighbours can bring drinks, foods and/or soils. I have been involved in the operation of one of those facilities³.

² Godzilla (Wikipedia contributors, as of 2012) is a Japanese movie monster mutated as the result of a nuclear experiment. In the series of films, it physically destroys cities and contaminates them with radioactivity emitted from its mouth. Here it is used as a metaphor for the physical destruction caused by the earthquake and tsunami, and for the radiation contamination from the nuclear disaster.

³ <http://anshin-p.info>

30 April 2011 – *Start of organized defiance*

It seems that the earliest organized efforts started around this date.

On this day, I created a Facebook page entitled "Save Children of Fukushima"⁴. This page was originally intended as an archive of information gathered from the Twitter account @savefukushimaa. Since the information is an uncontrolled mixture, however, I subsequently tried to turn it into a more comprehensible collection of information. The page had 3,068 fans as of September 2012.

On the following day, the "Fukushima Network for Saving Children from Radiation"⁵ was formed in Fukushima, the largest known parental network for the protection of children from the nuclear disaster with more than 700 members as of September 2011.

Many other organizations emerged. We launched spontaneous campaigns to collect signatures for petitions against the 20 mSv/y standard, appealed to Diet members and promoted public awareness of the issue.

27 May 2011 – *MEXT announced the 1 mSv/y goal for Fukushima children*

However, schools were still allowed to stage outdoor activities in accordance with the 3.8 micro Sv/h standard.

Many of the organizations to protect children planned and conducted time-off programmes further away from the power plant during the summer vacation for children of Fukushima; this would have been difficult to promote without the Internet and social media. I am also a founding member of the "Academy Camp" (Saito et.al., 2012); it involved academic and athletic workshops that brought more than 100 children from Fukushima to the foot of Mt. Fuji that summer. Academy Camp continued in the winter and summer of 2012, and we experimented with the use of social media to share ongoing activities in the camp with parents in Fukushima and with the general public⁶.

26 August 2011 – *MEXT abolished the 3.8 micro Sv/h standard*

This resolved the contradictory situation in schools whereby children were allowed to play outside even when the level of radiation was higher than the prescribed level for evacuation.

Nonetheless, issues have remained with respect to protecting children from radiation. On 11 September 2011, Professor Shirabe of the Tokyo Institute of Technology and I formed the "Scientists' Network for Protecting Children from Radiation Hazards", which was intended as an advisory body for individuals and organizations.

This network of scientists and scientifically-minded people has been operated entirely on Facebook, using a Facebook page⁷ for public relations and a private Facebook group for discussion and coordination. We have published recommendations, comments and leaflets that often argued against the government's policies.

Stage III : Protests against Nuclear Policies**16 December 2011** – *Government announced the cold shutdown of the nuclear power plant*

Meanwhile, efforts continued to gain control of the reactors and spent nuclear fuels. This has resulted in inadequate support for workers at the power plant because they have had to work according to normal rather than emergency standards.

⁴ <https://www.facebook.com/SaveChildrenOffFukushima>

⁵ http://kodomofukushima.net/index.php?page_id=257

⁶ <https://www.facebook.com/academy.camp>

⁷ <https://www.facebook.com/ScientistsForChildren>

5 May 2012 – All 54 (or 50⁸) reactors in nuclear power plants in Japan shut down

This shutdown was achieved passively in the sense that the government did not allow shut-down reactors to restart after periodical inspection.

While officially announcing that the country aims to eventually stop depending on nuclear power, however, the government had been working towards restarting the Oi reactors in Fukui Prefecture to mitigate the electricity shortage predicted for that summer in the Kansai area, including Osaka City.

Opposing this policy, people stepped up the weekly protests that had started in March 2012 – these took place every Friday evening in front of Kantei, the prime minister's official residence. This campaign was promoted using Twitter and USTREAM, and more and more people joined the protest every week.

15 June 2012 – Protest by more than 11,000 people in front of Kantei

Since the previous week, the number of people has more than doubled, presumably in response to Prime Minister Noda's speech about the need to restart the Oi reactors, given while the protest was ongoing.

A week later, the number went up to 45,000 people (Figure 2).

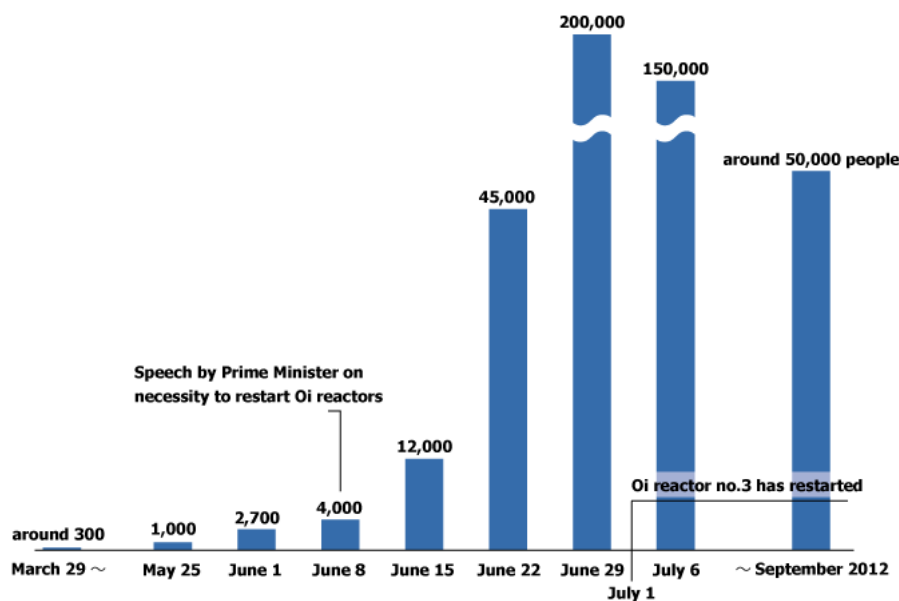


Figure 2. Number of protestors in front of Kantei on Friday evenings, according to the organizers⁹

21 June 2012 – Diet passed a law to support nuclear refugees, victims and children

29 June 2012 - The number of protestors went up to 150,000 ~200,000

Somehow, the series of protests received only little attention in the mass media. The NHK (the public broadcasting organization of Japan) in particular seems to have completely ignored the movement. Frustrated volunteers called for donations on several social media to charter a helicopter on their own to fly over Kantei

⁸ Depending on whether you include the four reactors in TEPCO Fukushima Daiichi power plant in the accident; these have now been officially excluded as nuclear reactors in Japan.

⁹ http://coalitionagainstnukes.jp/?page_id=28

while the protest was ongoing. The video is publicly available on USTREAM¹⁰, and photographs have been published¹¹ on the Web under Creative Commons CC BY-NC-ND 2.1 license.

1 July 2012 – Oi reactor no. 3 restarted

A protest took place throughout the night at Oi power plant and was broadcast on USTREAM.

On 6 July it rained in Tokyo, and 150,000 protestors were reported to be in front of Kantei.

12 August 2012 – Extended deadline for public comments on nuclear policy in 2030

The government requested comments from the public to help it choose between three alternative scenarios for the ratio of nuclear power to total national electricity demand in 2030: 0%, 15% and 20~25%. This request for comments was hardly promoted at all in the mass media, but was heavily promoted in social media and on the government's own web site. In the end, 88,280 comments were submitted from the general public.

The result (Figure 3) shows that, despite the government's observed intention to induce people to choose the 15% scenario, 87% of the submitted comments supported the zero nuclear power scenario (Tokyo Newspaper, 2012a).

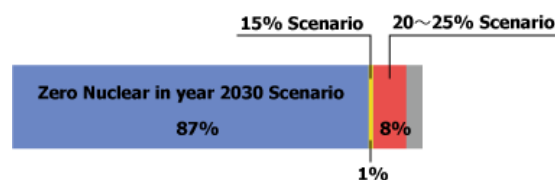


Figure 3. Composition of the submitted public comments

6 September 2012 – Democratic Party of Japan proposes targeting a "Zero Nuclear Society"

7 September 2012 – Governor of Osaka admits that restarting the Oi reactors was not necessary

14 September 2012 – Government announces targeted a Zero Nuclear Society in 2030s

This decision (Japan Times, 2012) contains contradictions and reservations, however. The government does not intend to stop recycling nuclear fuel, something that would not be necessary if we did not use such fuels. Reactors that are confirmed *safe* will be restarted, but who will determine which reactors are safe and how? The government says that the policy itself will be subjected to continuing reviews because there might be unforeseen changes in the energy situation, implying that the government could shift back to promoting nuclear energy.

The public protests are bound to continue.

Discussion

The people of Japan seem to have succeeded in introducing certain changes to Japan's policies, but we have failed to achieve fundamental shifts, and this far from constitutes a triumph of the people. In this section, I attempt to discuss why.

¹⁰ <http://www.ustream.tv/recorded/23644422> (part 1), <http://www.ustream.tv/recorded/23645808> (part 2)

¹¹ <http://fotgazet.com/news/000226.html>

Reasons for Uprising

The scale of public protests against nuclear policies is something we have not seen in Japan for more than 40~50 years, since the protests against the U.S.-Japan Security Treaty in the 1960s. Obviously, the earthquake and tsunami also destroyed a long-held mindset of the people of Japan. I argue that the distrust in the authorities, which was the main trigger of the movement, arose as a result of the authorities and general public seeing different realities.

It is apparent that the distrust arose in part from the insufficient information disclosed by the government and its failure to listen to the public, especially at the early stage of the nuclear accident. In addition, it is my opinion that people did not understand why the authorities could state uncertain things with such certainty. The authorities claimed that the reactors would never explode. They did. The authorities claimed that heavy plutonium particles would never fly far. We found the particles. The authorities claimed that radioactive caesium particles are stuck to the ground and would not easily float. We found that there was a sudden increase in radioactive fallout last winter that was caused by the refloating of radioactive caesium. People quickly learned that the authorities are hardly any more reliable than themselves.

Even for the brightest mind, it is much easier to reflect upon what has already happened than to predict what might happen next, because we think using abstractions that exclude things we do not regard as important or things we are unaware of. Indeed, Kimura (2012) depicted how the scientist who first denied the possibility of the reactors exploding, having been informed that one actually had, was quickly able to explain the mechanism of the explosion.

Yet the authorities always seem to be so certain. It seems as if those people have become overly used to the controlled environment in which they do not have to deal with uncertainty and in which their abstractions in thinking always work. If that is true, their methods of communicating risks will inevitably fail, because risks are about uncertainty.

Decline of Mass Media

It has become apparent that the mass media have become just one of the players in the dissemination of news and the formation of public opinion, at least in the eyes of social media users. Newspaper articles and TV programmes still play important roles, but they are often introduced to people through (re)tweets and sharing on social media. Discussions on the news have already taken place on social media to an extent and level we would not usually expect from mass media.

The role of mass media must be to collect, interpret, edit and propagate information. Today, social media users can assume such a role themselves, and even do a better job. One important aspect is that mass media and social media users can now access the same primary information from the government and other parties concerned. Another important aspect is that social media users are better motivated to pursue what they consider to be the truth, while mass media need to sustain themselves in the economy controlled by the government and large organizations including electric power companies.

As reported by Kanehira (2012), most mass media failed to report on the protests against the government's nuclear policies, one obvious reason being that such media seem to place themselves on the side of the authorities rather than on the side of the general public. Both Kanehira and Kimura, as journalists, bemoan the tendency of today's news media in Japan to neglect the importance of collecting information themselves, of contacting protestors and government officials and conducting interviews.

If that is really the case, the problem once again is one of experiencing different realities.

Multiple Levels of Divides

Experiencing different realities is not only a problem of the authorities and media.

There have been multiple levels of divides among people in Japan with respect to the use of social media, as a result of which we have been seeing different realities that may pose an obstacle to solutions.

The first level of divide is between users and non-users of the Internet. For example, the large-scale protests in front of Kantei every Friday evening were seldom reported in the mass media, and were thus unknown to non-Internet users until late June. The people of Fukushima admit that there are fewer Internet users there as compared to other prefectures, and information about time-off programmes for children, for example, has been difficult to disseminate to those who need it.

The second level of divide is between clusters of social media users. Such users often choose to avoid reading the opinions put forward by opposing clusters by blocking users and separating themselves from other people's realities. For example, there are users who take an optimistic view of the effects of radiation and users who take a different view. They call each other *anzen-chu* and *kiken-chu*, respectively, meaning people with the mentality of a lower secondary school student who unquestioningly believes in safety/danger. If conversations between them take place, they rarely lead to constructive discussions.

Criticism or Activism?

Although no problems are solved simply by blaming someone for something, online arguments tend to go that way. Sadly, the above-mentioned divide between clusters of social media users has caused situations exactly like this, and debates rarely seem connected to actions.

Let me therefore state once again that the situation is far from a triumph of the citizens.

(The first draft of this article was written in September 2012. In December, the Liberal Democratic Party won the election, supported by the smallest number of total voters since World War II (Tokyo Newspaper 2012b). The new Prime Minister Abe has announced his intention to reconsider the zero nuclear policy set by the former cabinet.)

Conclusions

The ongoing accident of TEPCO Fukushima Daiichi Nuclear Power Plant is the first nuclear disaster since the rise of the Internet.

It goes without saying that the disaster itself is a tragedy. However, as Mr Nakate said in the quoted interview, we may find some hope in the fact that people have been sharing information and getting involved in joint actions or efforts through social media on the Internet.

In order for such hopes to be fulfilled, however, we have to address the multiple levels of divides that may obstruct our path to solutions: 1) the divide between users and non-users of the Internet, and 2) the divide between different clusters of social media users. We would also have to take our use of social media for participation in politics to the next stage, that is to say beyond criticism and towards effective activism.

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¹⁹ [http://en.wikipedia.org/wiki/Godzilla_\(1954_film\)](http://en.wikipedia.org/wiki/Godzilla_(1954_film))

²⁰ http://en.wikipedia.org/wiki/Fukushima_Daiichi_nuclear_disaster