



CONNECTING THE LAST MILE

THE ROLE OF COMMUNICATIONS IN THE GREAT EAST JAPAN EARTHQUAKE

LOIS APPLEBY

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PHOTOS

Lois Appleby and courtesy of the Thomson Reuters Foundation – AlertNet

COVER PHOTO A rescue worker uses a two-way radio transceiver during heavy snowfall at a factory area devastated by an earthquake and tsunami in Sendai, northern Japan March 16, 2011.

REUTERS/KIM KYUNG-HOON, COURTESY THE THOMSON REUTERS FOUNDATION – ALERTNET

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FOREWORD

Within 48 hours of the mega-disaster that struck Japan on March 11, 2011, national media attention in both Japan and beyond was diverted by the events unfolding around the Fukushima Daiichi Nuclear Plant. The nuclear crisis added a third layer of complexity to the challenges facing Japan, one that went beyond mounting an emergency response to the magnitude 9.0 earthquake and the massive tsunami triggered by it.

Fukushima also unleashed a crisis in information management for the Tokyo Electric Power Company (TEPCO) and the Japanese Government; the result of which was a considerable erosion of trust of the Japanese public and of many of those directly affected by the disaster.

The challenges that Fukushima generated in information handling and the crisis of public confidence that followed, dominated perceptions about the role communications played in the large-scale humanitarian rescue and recovery operation that followed, well beyond Japan.

In March 2011, as the crisis in Japan played out, Internews humanitarian communication teams were working on the ground in Haiti and Pakistan, helping local media act as an information bridge between local governments, humanitarian agencies and vulnerable communities recovering from the impact of two severe natural disasters that had affected millions of people.

At the time, those two disasters were unprecedented in the complexity of the challenges they presented to both the governments of Haiti and Pakistan and to the international humanitarian community.

Our teams in Port-au-Prince and Islamabad immediately recognised that a multitude of communication initiatives mounted in response to the Japanese disaster must lie behind the Fukushima communications crisis – and that these would contain valuable lessons for the growing alliance of organisations that believe that information and communications are a form of aid in themselves,

and should be integrated into the mechanisms of humanitarian response and recovery operations.

Our own colleagues' interest in what could be learned from Japan was also shared by members of the Communicating with Disaster Affected Communities (CDAC) Network, notably UNOCHA. That interest was also validated by Google's initiative in July 2012, when the technology giant hosted a major forum on the role of information technology in the Great East Japan Earthquake in Sendai, Miyagi Prefecture.

This is why Internews decided to combine its own slender resources with those from the Swedish International Development Cooperation Agency (SIDA) to commission Lois Appleby, a first responder in Japan with CARE International at the time of the crisis, and seconded to Internews by the Crown Agents and the UK DFID's CHASE.

This report is the result of Lois Appleby's work and the invaluable additional support provided by Rina Tsubaki of the European Journalism Centre. It is also the result of our conviction that the international humanitarian community has much to learn from the role communications played in the Great East Japan Earthquake, well beyond the Fukushima crisis.

We believe *Connecting the Last Mile* will contribute to the growing knowledge base used by humanitarian agencies engaged in communicating with disaster-affected communities around the world.

We also hope that, over time, it will act as a catalyst for the development of a network of Japanese humanitarian communications practitioners equipped to meet the information needs of Japanese citizens in future crises.

Mark Harvey, Executive Director,
Internews Europe

Jacobo Quintanilla, Director,
Humanitarian Projects, Internews


EXECUTIVE SUMMARY

On 11 March 2011, Japan was hit by the most powerful earthquake it had experienced in a thousand years. It struck off the Pacific coast of Tohoku, 400km northeast of Tokyo. The earthquake caused a mega-tsunami that swept away entire towns and villages, leaving over 18,000 people dead or missing, over 6,000 injured¹ and over 470,000 survivors seeking shelter.² Some of the worst affected areas were without power, mobile phone networks and internet access for months. The emergency became even more extreme when a radioactive leak was discovered at the Fukushima nuclear power plant, 150km south of the earthquake's epicentre.

Japan ranks highly as a media and information-rich, digitally enabled society.

While the damage was catastrophic, it is generally acknowledged that the number of fatalities and damage could have been far greater had it not been for Japan's advanced disaster preparedness measures.³ Billions of dollars had been invested in these measures in the country.⁴ In the 1995 devastating Kobe earthquake, 80 percent of deaths were a result of buildings collapsing. In the 2011 disaster, few died as a direct result of the earthquake itself. Rather, 90 percent of deaths were caused by drowning as a result of the tsunami.⁵

Japan possesses some of the most advanced media and telecommunications infrastructure⁶ in the world, and Japanese citizens are major users of the internet and social media networks. Japan ranks highly as a media and information-rich, digitally enabled society⁷.

This report, set against the backdrop of a highly developed communications infrastructure, highlights the specific role that communications played in both survival and recovery in the hours, days, weeks and months after the Great East Japan Earthquake occurred. It does not focus on the handling of information related to the Fukushima nuclear disaster by the Tokyo Electric Power Company (TEPCO) and the Japanese Government, as this issue – however important – has already received great attention.⁸

Connecting the Last Mile explores, rather, how communities in the most devastated areas of the prefectures of Iwate, Miyagi and Fukushima got their information. It identifies which communications channels were used before, during and after the earthquake and tsunami, and it attempts to answer a central question: what are the lessons learned about communications with disaster-affected populations from the megadisaster, not only for Japan but for the international community of humanitarian responders?

EARTHQUAKE ALERTS AND TSUNAMI WARNINGS: THE EFFICACY OF EARLY WARNING SYSTEMS

Japan's highly sophisticated disaster preparedness mechanisms range from multimedia, automated disaster warning systems and stringent regulations on earthquake-resistant buildings, to automatic shutdown functions on high-speed trains and high-risk machinery during earthquakes.

The automatic earthquake alerts issued by the Japan Meteorological Agency (JMA) seconds before the earthquake struck interrupted TV and radio broadcasts and were received by schools, disaster prevention and local government offices as well as

1 NATIONAL POLICE AGENCY OF JAPAN, 28 NOVEMBER 2012
2 WORLD BANK, EVACUATION CENTRE MANAGEMENT: KNOWLEDGE NOTES, CLUSTER 3: EMERGENCY RESPONSE, NOTE 3-5, P.3
3 WORLD BANK JAPAN [HTTP://WEB.WORLDBANK.ORG/WEBSITE/EXTERNAL/COUNTRIES/EASTASIAPACIFICEXT/JAPANEXTN0_CONTENTMDK:25019507-PAGEPK:1497618-PIPK:217854-THESITEPK:273812.00.HTML](http://web.worldbank.org/website/external/countries/eastasiapacificext/japanextn0_contentmdk:25019507-pagepk:1497618-pipk:217854-thesitepk:273812.00.html)
4 [WWW.NYTIMES.COM/2011/03/12/WORLD/ASIA/12CODES.HTML?PAGEWANTED=ALL](http://www.nytimes.com/2011/03/12/world/asia/12codes.html?pagewanted=all)
5 [WWW.JAPANTIMES.CO.JP/TEXT/NN20110421A5.HTML](http://www.japantimes.co.jp/text/nn20110421a5.html)
6 WIKIPEDIA: [HTTP://EN.WIKIPEDIA.ORG/WIKI/COMMUNICATIONS_IN_JAPAN](http://en.wikipedia.org/wiki/communications_in_japan)
7 WIKIPEDIA: LIST OF COUNTRIES BY NUMBER OF INTERNET USERS: [HTTP://EN.WIKIPEDIA.ORG/WIKI/LIST_OF_COUNTRIES_BY_NUMBER_OF_INTERNET_USERS](http://en.wikipedia.org/wiki/list_of_countries_by_number_of_internet_users)

8 THE NEW YORK TIMES: CULTURE OF COMPLICITY TIED TO STRICKEN NUCLEAR PLANT: [WWW.NYTIMES.COM/2011/04/27/WORLD/ASIA/27COLLUSION.HTML?PAGEWANTED=2&_R=4&SRC=ME](http://www.nytimes.com/2011/04/27/world/asia/27collusion.html?pagewanted=2&_r=4&src=me) BBC ARTICLE: JAPAN DID NOT KEEP RECORDS OF NUCLEAR DISASTER MEETINGS: [HTTP://WWW.BBC.CO.UK/NEWS/WORLD-ASIA-16754891](http://www.bbc.co.uk/news/world-asia-16754891) ARTICLE ON THE NEWS SCIENTIST: TEPCO UNDER FIRE OVER HANDLING OF FUKUSHIMA CRISIS [WWW.NEWSIDENTIST.COM/ARTICLE/DN20337-TEPCO-UNDER-FIRE-OVER-HANDLING-OF-FUKUSHIMA-CRISIS.HTML](http://www.newscientist.com/article/dn20337-tepco-under-fire-over-handling-of-fukushima-crisis.html) RELEASE OF THE FUKUSHIMA NUCLEAR ACCIDENTS INVESTIGATION REPORT [WWW.TEPCO.CO.JP/EN/PRESS/CORP-COM/RELEASE/2012/1205638_1870.HTML](http://www.tepco.co.jp/en/press/corp-com/release/2012/1205638_1870.html)

companies operating critical infrastructure. The JMA system and the evacuation drills that are common practice for most coastal towns in Japan saved thousands of lives⁹.

Notwithstanding, the first tsunami warning issued by the JMA greatly underestimated the tsunami's size, which reached a peak of around 40 metres on some parts of the coast. Many fleeing its approach did not receive additional warnings that corrected the initial estimate of 6 metres in Miyagi and 3 metres in Fukushima.

The role of wireless public address systems issuing tsunami warnings in residential areas was effective in some towns, but limited in others when systems were damaged by the earthquake or disabled by power cuts. Many deaths occurred among people who had not received corrected alerts about the tsunami's size, and who did not take refuge in higher ground as a result.

The JMA is working to improve the accuracy of its tsunami prediction technology. There is increasing recognition in Japan and internationally that there is no fail-safe system that can cope with the most dire of scenarios. Also recognised is the fact that public education on the limitations of disaster management technology, and continued work on risk awareness and disaster preparedness, is needed.

“One of the great learnings from the Great East Japan Earthquake which can be applied in many other disaster-prone countries is the absolute importance of preparing populations at risk for the worst-case scenario... Japan excels when it comes to public awareness of risks, evacuation drills and mobilising the population in a way that few countries can emulate.”

MARGARETA WAHLSTRÖM, UN SPECIAL REPRESENTATIVE FOR DISASTER RISK REDUCTION

THE TECH AND SOCIAL MEDIA SURGE

Within minutes and hours of the earthquake there was a dramatic increase in social media activity as survivors shared updates, posted photos and uploaded videos on social media sites whenever they had access to the internet.

Within the first hour after the earthquake, a Twitter hash tag was created by a user in Southern Japan as a focal point for requests for assistance and Twitter Japan created tags for specific information needs such as, for example, evacuation centres information. Twitter's global network facilitated search and rescue missions for survivors stranded by the tsunami. Within three days the Government of Japan had also set up its first disaster-related Twitter account.

Within 90 minutes of the earthquake Google launched its Person Finder platform and mobilised 5,000 volunteers to create over 600,000 personal records during the 90 days the platform was live.

By the end of the first day of the disaster, Japan's version of the Ushahidi Crisis Map, Sinsai.info, had been built by a community of tech volunteers.

And in response to the growing concerns about radiation pollution following the ensuing crisis at the Fukushima nuclear power plant, Safecast, a volunteer-led project to collect and share radiation measurements, was created within a week of the disaster and generated over 3.5 million readings by December 2012.¹⁰

A combination of high internet penetration and 3G mobile usage, along with the rapid roll-out of internet-based information initiatives, created a lifeline for those in areas with internet connectivity and power. Those with enough power to use mobile and smartphones were able to access information about the dead and the living, receive official announcements, contact friends and relatives, and access information about the wider dimensions of the disaster.

Yet the impact of the tech and social media response was blunted by two key factors: **large-scale power blackouts and the disabling of telecommunications networks** which limited

9 UC BERKLEY: SUMMARY OF HOW WARNING SYSTEM PERFORMED DURING THE GREAT EAST JAPAN EARTHQUAKE [HTTP://SEISMO.BERKELEY.EDU/~RALLEN/RESEARCH/WARNINGSINJAPAN/](http://seismo.berkeley.edu/~ralLEN/RESEARCH/WARNINGSINJAPAN/)

10 [HTTP://VIMEO.COM/51823402](http://vimeo.com/51823402)

access to the internet and mobile phone systems; and, equally importantly, **the demographics of the disaster.**

The disaster affected the coastal regions of Iwate, Miyagi and Fukushima are predominantly fishing and rural areas with declining populations where 30 percent of the population is over 60 years old.¹¹ People aged over 60 accounted for 65.8 percent of the dead.¹² In addition to having physical and psychological difficulties with evacuation¹³ many of those over 60 were unaccustomed to accessing information online, unfamiliar with social media networks and unaware, therefore, of the relief resources available to them.¹⁴

THE CRITICAL “LAST MILE”: THE VALUE OF LOW TECH AND THE HYPER LOCAL

When we went to the evacuation centres with the newspapers, big crowds gathered. People were so hungry for information we could barely stick the paper on the wall. If there is no information after a disaster, people become even more stressed and anxious. Old media works best in emergencies.

HIROYUKI TAKEUCHI, EDITOR, HIBI SHIMBUN (DAILY NEWSPAPER) ISHINOMAKI

In accordance with its legal obligation to provide disaster-related information in Japan, the national public broadcaster, NHK, switched all domestic channels to emergency broadcasts less than two minutes after the earthquake. Commercial television networks suspended advertising broadcasts and opened up their airwaves. Between 11 and 13 March 2011, the six major national broadcasters dedicated over 90 per cent of their airtime to coverage of the disaster.

Still, a post-disaster survey by NHK revealed that it had failed to provide sufficient information to disaster-affected communities regarding supplies of food, water, gasoline and electricity¹⁵. In response, NHK stated that “in a broad scale, complex disaster affecting wide areas in many different ways, TV alone cannot meet the diversified needs of people”. Instead, that gap in the provision of locally relevant information was met by a proliferation of citizen-led initiatives. Unlike television, mobile telephony and the internet, radio and print were less dependent on grid-based power supplies.

Community radio, local newspapers, newsletters – in some instances, hand written newsletters – and word of mouth played a key role in providing lifesaving information for communities. Radio was consistently ranked the most useful source of information by disaster-affected communities, from the day of the disaster right through until the end of the first week.

Significantly, in response to the 1995 Hanshin-Awaji earthquake, the Japanese Ministry of Internal Affairs and Communications already had a temporary emergency radio broadcasting licencing scheme in place. Within one month of the earthquake 21 new disaster FM stations had received licences and started to broadcast emergency information.

Connecting the Last Mile highlights three initiatives (H@! FM, Tome City; Radio Ishinomaki, and Hibi Shimbun) that provide evidence of the pivotal role that hyper local media played in meeting the intense demand for information coming from survivors, their strategic importance in disaster response and recovery systems, and the challenge of sustainable financing for them.

11 MINISTRY OF INTERNAL AFFAIRS AND COMMUNICATIONS/WORLD BANK REPORT KNOWLEDGE NOTE 3-6, P7

12 CABINET OFFICE WHITE PAPER ON AGEING SOCIETY, 2012 (JAPANESE ONLY)

13 NHK, 巨大津波その時ひとはどう動いたか (TELEVISION PROGRAMME, AIRED ON 2ND OCTOBER, 2011)

14 NHK, 巨大津波その時ひとはどう動いたか (TV PROGRAMME, AIRED ON 2ND OCTOBER, 2011)

15 大震災とメディア-東日本大震災の教訓, MITSURU FUKUDA (2012), PP.19-21

“When the power goes down, community radio stations are essential lifelines, particularly in the early stages of a disaster. Sadly in normal times it is not acknowledged and funding is very limited.”

MASAHIKO KONNO, TECHNICAL DIRECTOR, RADIO ISHINOMAKI

GAPS IN INFORMATION AND HUMANITARIAN RESPONSE COORDINATION

The unprecedented scale of the disaster challenged existing response mechanisms and led to a major international as well as domestic response that involved UNOCHA, the large humanitarian international NGOs and the spontaneous mobilisation of networks of concerned citizens around the world.

Municipal governments and social welfare organisations became local response coordinators yet many were, understandably, inexperienced and had reduced capacity as their own staff and buildings had been lost in the disaster.

The Great East Japan Earthquake revealed two communications-related challenges for the humanitarian operation. The first was a **lack of information-sharing systems and co-ordination mechanisms between humanitarian responders**, a recurrent challenge in all disasters. This caused duplications and inefficiencies in the response.

For example, survivors were repeatedly asked for the same information by various groups like the Self Defence Force, the police and NGOs. Underlying this was also the perception that national and

international NGO groups were actually “volunteer groups” rather than professionals; this was reflected in the fact that Japan’s national disaster response plan did not include a provision for the role of NGOs.

The second challenge **involved humanitarian responders’ lack of awareness about the valuable information resources** being generated by one very significant, albeit volunteer, community: **the volunteer technical and crisis mapping communities.**

The OpenStreet Map volunteer community, for instance, created a map of over 500,000 roads in disaster-affected areas while volunteers working with another crisis map, Sinsai.info, verified, categorised and mapped 12,000 tweets and emails from the affected regions for over three months. These platforms had the potential to close information gaps hampering the response and recovery operation, but it is unclear to what degree they were used by professional responders.

In conclusion, this report demonstrates the importance of using all possible channels and technologies, from the highest tech to the lowest, in order to ensure connecting the “last mile” – that is, to reach the most vulnerable populations with critical information when disaster strikes.

The “last mile” needs to be connected in even the most technologically advanced societies. The Great East Japan Earthquake also corroborates evidence drawn from other major disasters: that information saves lives, that communication itself is a form of aid, and that humanitarian aid is more effective when coordinated by an inclusive community of responders.

KEY LESSONS AND RECOMMENDATIONS* FROM THE GREAT EAST JAPAN EARTHQUAKE FOR THE INTERNATIONAL HUMANITARIAN COMMUNITY

- 1 Early warning systems and disaster preparedness save lives, but no information alert system is fail-safe in the worst-case complex disaster scenarios. **Public education on the limitations of disaster management technology, and continued work on risk awareness and disaster preparedness is needed.**
- 2 Internet and social media platforms have a major contribution to make to disaster response and recovery, but are dependent on critical power and telecommunications infrastructure and do not currently reach key vulnerable groups. **Building resilient communications infrastructure and restoring connectivity should be at the heart of disaster management planning.**
- 3 All media channels are important – from high tech to the lowest tech. Local community led media, in particular radio, contributes more effectively to the information needs of communities in disaster zones than national broadcast media, and have an important role to play in early warning and disaster management systems. Emergency broadcast licence schemes are of critical importance. **Local media need to be adequately supported technically and financially and emergency responders need to work with them closely before, during and after disasters.**
- 4 Humanitarian response operations in complex disasters are more likely to meet the needs of affected populations when inclusive mechanisms and protocols for coordination and information sharing are in place between all actors – government, NGO, volunteer communities and, most importantly, with disaster affected communities. **As new humanitarian information flows from non-traditional humanitarian responders such as the private sector and volunteer technical communities increase, these groups and their tools should be more integrated within formal disaster management and response structures.**

* FOR SPECIFIC SECTOR-WISE RECOMMENDATIONS READ SECTION 9. RECOMMENDATIONS, P. 45

METHODOLOGY

The report is based on secondary research, including surveys and reports by government agencies, academia, NGOs and other relevant stakeholders and the Japan Commercial Broadcasters Association. See *Key References* section for more.

On-site research was also conducted during a two-week field visit to Miyagi and Iwate where interviews were conducted with survivors, local government officials, media professionals, academics, private sector companies, NGOs and civil society group members.

1 MARCH 11, 2011: JAPAN'S TRIPLE DISASTER

On March 11, 2011, at 2.46pm local time, a massive, underwater earthquake measuring 9.0 magnitude on the Richter scale struck off the Pacific coast of Tohoku, a region in northeast Japan.

The earthquake, the most powerful ever recorded in Japanese history, caused a mega-tsunami - the term used to describe a tidal surge with larger-than-normal waves - that toppled seawalls and which spread over a 500 sq km area, destroying towns and villages along 650 kilometres of coast line. It also resulted in over 18,000 dead or missing with thousands more injured and over half a million homes damaged or destroyed.

As the full effects of the disaster came to be known, it was also discovered that the tsunami had damaged the Fukushima nuclear power plant and that, as a result, radioactive material was leaking into the sea.¹⁶

Simply because of its geography, Japan is one of the most disaster prone countries in the world.¹⁷ It sits on four tectonic plates and is subject to earthquakes, tsunamis, volcanic eruptions and extreme weather such as typhoons.

However, having invested billions of dollars in earthquake resiliency measures since 1995's Great Hanshin-Awaji or Kobe earthquake, which killed over 6,000 people, Japan is also considered a world leader in disaster preparedness.¹⁸



Location of earthquake, tsunami and affected nuclear power plants. GRAPHIC COURTESY ECONOMIST INTELLIGENCE UNIT

1.1 THE COMMUNICATIONS LANDSCAPE BEFORE, DURING AND AFTER THE DISASTER

Japan has a highly sophisticated media and telecommunications infrastructure with around 220 terrestrial television and 300 AM/FM radio stations.¹⁹ Both public and private broadcasters use the Early Warning System run by the Japan Meteorological Agency (JMA) to alert the population whenever earthquakes or tsunamis are suspected.

16 NATIONAL POLICE AGENCY JAPAN, NOVEMBER 2012.

17 ECONOMIC DAMAGE CAUSED BY NATURAL DISASTERS IN JAPAN: AN EMPIRICAL ANALYSIS FROM THE PERSPECTIVE OF SOCIAL VULNERABILITY, MAMPEI HAYASHI

18 [HTTP://HHI.HARVARD.EDU/NEWS/RECENT-NEWS/JAPAN-DISASTER-RESOURCES](http://HHI.HARVARD.EDU/NEWS/RECENT-NEWS/JAPAN-DISASTER-RESOURCES)

19 TELEVISION TOKYO



A man rides a bicycle at an area hit by earthquake and tsunami in Kesennuma, north Japan, March 17, 2011. COURTESY THE THOMSON REUTERS FOUNDATION – ALERTNET AFTER REUTERS/KIM KYANG

The country also has a high internet and mobile penetration rate; statistics show that 80 percent of the population are internet users with around 84 percent using mobile phones.²⁰ However, Japan also has the world's most rapidly ageing population, with 24 percent over 65 years old.²¹

20 WWW.NEWMEDIATRENDWATCH.COM/MARKETS-BY-COUNTRY/11-LONG-HAUL/54-JAPAN

21 MINISTRY OF INTERNAL AFFAIRS AND COMMUNICATIONS, STATISTICS REPORT NO.63, SEPT 2012

Before the disaster, the coastal regions of Iwate, Miyagi and Fukushima were predominantly fishing and rural areas with declining populations where 30 percent of locals were over 60.²² The earthquake and the tsunami highlighted the extreme vulnerability of that group: they accounted for around 65.8 percent of the total deaths.²³ Due to the magnitude of the earthquake and the short period of time before

22 MINISTRY OF INTERNAL AFFAIRS AND COMMUNICATIONS/WORLD BANK REPORT KNOWLEDGE NOTE 3-6, P7

23 CABINET OFFICE WHITE PAPER ON AGEING SOCIETY, 2012 (JAPANESE ONLY)



Ishinomaki Saigai FM Station signs, Ishinomaki, November 2012. LOIS APPLEBY

tsunami hit the area, elderly locals had both physical and psychological difficulties with evacuation.²⁴

So how did the communities in the most disaster-affected areas -namely Iwate, Miyagi and Fukushima - get their information? Which communication channels were used before, during and after the earthquake and tsunami?

Broadly, the means of communication used to gather disaster-related information changed as the disaster unfolded. They also varied according to geography, particularly in the most affected areas.

According to a survey conducted by the Information Support pro bono Platform (iSPPP), a volunteer platform for internet support formed after the disaster, TV was the most used medium in daily life (87.2 percent) followed by the internet accessed on a personal computer (81.3 percent) and then mobile phones (63.6 percent). But these media could not be relied upon during the disaster or after it, due to power shortages, problems with the telecommunications networks and other technical failures.

While only 46.6 percent of the respondents used the radio in daily life, during the crisis it became the most used medium (67.5 percent). This compared to the use of mobile phones (37.5 percent), television (33.4 percent), and internet on a computer (19.5 percent).²⁵

Another study shows that only about half of the respondents (52.3 percent) in areas that experienced immense devastation were aware of the tsunami alert.

24 NHK, 巨大津波その時ひとはどう動いたか (TELEVISION PROGRAMME, AIRED ON 2ND OCTOBER, 2011)

25 ISPP, 「東日本大震災 情報行動調査」について

ALERTS ON 11.03.11

- 14:46 EARTHQUAKE ALERT** issued seconds before major tremors began.
(Sent to mobile phones, public facilities, government offices, interrupted TV and radio programmes)
- 14:49 TSUNAMI WARNING 1** – Miyagi: expect 6 meter waves, Fukushima: 3 meters.
(TV, radio and government offices → community speaker announcement)
- 15:14 TSUNAMI WARNING 2** –Iwate and Fukushima: expect 6 meter waves, Miyagi: expect waves over 10 meters.
(TV, radio and government offices → community speaker announcement)
- 15:30 TSUNAMI WARNING 3** –Iwate, Miyagi, Fukushima: expect waves over 10 meters
(TV, radio and government offices → community speaker announcement)

1.2 IN CRISIS, THE JAPANESE, A NATION OF TV WATCHERS, TURNED TO THEIR RADIOS

In these areas, the extensive network of public address systems - using a system of wireless speakers - was the most used means of communication. Other media were only used rarely for tsunami alerts. There were also instances where the public address systems were destroyed by the earthquake. In these cases, people were left to make their own decisions based only upon their own past experiences and disaster drills.²⁶

The Japanese disaster highlights the problem of the information divide between those who are digitally literate and with internet access, and those who cannot access resources online for various reasons.

In the weeks and months following the disaster, more channels of communication opened up and people in the affected areas started to be able to choose where they got their information from again. Still, due to the problems at the Fukushima nuclear plant and the scale of the devastation, there was still the issue of “mismatching” – where mainstream media coverage focused on the nuclear crisis and didn’t provide the information that people in evacuation centres needed most. This is why local initiatives - including community radio stations, community and

local newspapers (also known as hyper-local media), newsletters and announcements at evacuation centres - remained the main source of information for many.

In areas where internet connectivity was available, those with internet-enabled mobile phones could search for news of the dead and missing, access official announcements, read news. Those without the technology or know-how could not.

Government reports indicate that although internet usage is rising among the elderly in Japan, many over-65s are still internet illiterate.²⁷ The Japanese disaster highlights the problem of the information divide. On one side of this divide are the digitally literate with internet access. On the other side are those who cannot access resources online for various reasons. For example, they may be older and unaware of digital resources or they may not be able to afford the required technology or training. There may also be issues to do with connectivity. In addition, due to the scale and number of crises following the Great East Japan Earthquake, there was the problem of “mismatching” with media coverage.

The following sections will focus on three areas to assess what worked and what didn’t, what we can learn from the cases for future natural disasters. These areas are 1) the Early Warning System, 2) National and Local Media Initiatives and 3) Digital Communication.

26 NAKAMORI, NAKAMURA, FUKUDA 2011 「平成23年3月11日『東日本大震災』における津波被災地アンケート調査」

27 MINISTRY OF INTERNAL AFFAIRS AND COMMUNICATIONS, TRENDS IN COMMUNICATION USAGE SURVEY 2011(JAPANESE ONLY)

2 EARLY WARNING SYSTEMS: CAPABILITIES AND CHALLENGES

Japan is a world leader in earthquake preparedness measures. In the Great East Japan Earthquake, countless lives were saved by earthquake-resistant architecture, automatic safety shutdown measures, the culture of disaster preparedness education and early warning systems across multiple mediums. Depending on how far people are from the epicentre of any earthquake, Japan's early warning system is able to send an alert before the tremors or after effects reach a location. Such a warning could potentially provide enough time for someone to take cover, turn off the gas cooker or stop the car before a major earthquake occurs.

2.1 EARTHQUAKE EARLY WARNING SYSTEM: HOW IT WORKED

The JMA, the national authority tasked with issuing earthquake and tsunami warnings via multiple channels, has undoubtedly saved hundreds of thousands of lives.²⁸ Due to Japan's long history of earthquakes, the country invested around US\$500 million to create Japan's Earthquake Early Warning System, launched in October 2007. More than a thousand JMA seismographs monitor seismic activity across the country to provide the nation with lifesaving warnings seconds before the major tremors begin.²⁹

On March 11, 2011, the JMA detected powerful seismic tremors and sent an automatic earthquake



Japan's public broadcaster NHK announces an earthquake in the Tohoku region on March 11, 2011.

alert to interrupt programming on national television channels and radio desks seconds before the major earthquake struck. Subscribers to three major mobile phone providers also received warning messages. The JMA also sent an alert directly to schools and local disaster prevention offices and local government so that they too could warn residents of the earthquake danger through the public address system. Several critical companies also received the alerts, which meant that high-speed trains, elevators in high-rise buildings and heavy machinery operations were able to be stopped seconds before the major earthquake struck.³⁰

Then within three minutes of the earthquake, the first of three official tsunami warnings was issued through the same media and through governmental channels; all of these advised people near the affected coastline to move to higher ground.³¹

The second and third announcements were issued within 44 minutes, and each upgraded the forecast

28 AMERICAN RED CROSS [HTTP://RELIEFWEB.INT/REPORT/JAPAN/JAPAN-EARTHQUAKE-AND-TSUNAMI-ONE-YEAR-UPDATE-MARCH-2012](http://reliefweb.int/report/japan/japan-earthquake-and-tsunami-one-year-update-march-2012)

29 YAMASAKI, ERIKA (2012) "WHAT WE CAN LEARN FROM JAPAN'S EARLY EARTHQUAKE WARNING SYSTEM," *MOMENTUM*: VOL. 1: ISS. 1 ARTICLE 2.

30 YAMASAKI, ERIKA, *IBID*, P12

31 WWW.JMA.GO.JP/JMA/EN/ACTIVITIES/EARTHQUAKE.HTML

for the height of the incoming waves.³² Helicopter cameras showed live footage of the waves approaching on television news, reinforcing the need to evacuate.

Despite the success of much of the early warning system, it should also be noted that the Great East Japan Earthquake also showed that it is not possible to rely solely on technology. The first warning underestimated the height of mega-tsunami's waves, which may have caused those who received only the first warning to take inadequate precautions.

Early warnings were wrong: tsunami waves were ten storeys high.

Japanese academic, Mitsuru Fukuda, who has authored a book about the earthquake and its effects, points out that the first alert issued by the early warning system underestimated the size and height of the mega-tsunami's waves. Secondly, the damage those waves eventually caused went "beyond the scope" of the disaster planning.³³

Within approximately half an hour of the earthquake, the mega-tsunami had reached its peak height at around 40 meters (that's higher than a ten-storey building) – and that is when it hit Miyako, Iwate.³⁴

Although evacuation drills are common practice for most coastal towns, local governments are responsible for disaster preparedness and the standards of this and the levels of engagement vary between towns.

The size of the tsunami was unexpected and took many by surprise. Those who heard the warnings and acted quickly often made it to safety. However, many locals did not receive the additional warnings, or they underestimated the size of tsunami and did not make it to safety.

A survey by the Japan Commercial Broadcasters Association showed that, respectively, wireless public address systems, radio and television broadcasts and word of mouth were the most useful channels



Earthquake alert on mobile phone, November 2012.
LOIS APPLEBY

for warnings. Car and battery-powered radios also proved useful during the power cut as people fled to higher ground.³⁵

Radio and television were effective but only if the target audience had them switched on at the time. If there was an earthquake when these devices were mostly switched off – for example, at night – then mobile phones were an alternative for alerting people in at-risk areas. The JMA use a Short Message Service Cell Broadcast (SMS-CB) system to send mass alerts to mobile phone users in specific geographic locations. Earthquakes affect areas in different ways, so alerting phone users based on location enables region-specific alerts to be sent. The system does not need to know specific phone numbers so privacy is protected and the risk of counterfeit emergency alerts is reduced.

As of 2009, 21 million mobile phones in Japan are capable of receiving earthquake early warning messages and three of Japan's major mobile phone carriers offer the service free of charge.³⁶

32 DISASTER DAMAGE IN JAPAN FROM THE TOHOKU DISTRICT, GOVERNMENT OF JAPAN III.1 [HTTP://WWW.KANTEI.GO.JP/FOREIGN/KAN/TOPICS/201106/IAEA_HOUKOKUSHO_E.HTML](http://www.kantei.go.jp/foreign/kan/topics/201106/IAEA_HOUKOKUSHO_E.HTML)

33 大震災とメディア-東日本大震災の教訓, MITSURU FUKUDA (2012), P. 11

34 [HTTP://WWW.YOMIURI.CO.JP/SCIENCE/NEWS/20110717-OYT1T00152.HTM](http://www.yomiuri.co.jp/science/news/20110717-oyt1t00152.htm) (JAPANESE ONLY)

35 SURVEY OF THE ROLE OF MEDIA IN THE GEJE, JAPAN COMMERCIAL BROADCASTERS ASSOCIATION, OCTOBER 2011, P.4. (JAPANESE ONLY)

36 YAMASAKI, ERIKA (2012) "WHAT WE CAN LEARN FROM JAPAN'S EARLY EARTHQUAKE WARNING SYSTEM," *MOMENTUM*: VOL. 1: ISS. 1, ARTICLE 2.



Wireless Community Speakers, November 2012 LOIS APPLEBY

A smartphone application such as Yurekuru Call, meaning “Earthquake Coming”, can also be downloaded and it will send warnings before an earthquake, details of potential magnitude and arrival times depending on the location.³⁷

2.2 WORD OF MOUTH: VOLUNTEERS RISKED OWN LIVES TO RAISE THE ALARM

The Japanese volunteer fire fighter corps is trained in disaster management and is credited for its valuable role warning communities of the incoming tsunami. Local civil servants, fire brigades and volunteers used loud speakers, fire bells and sirens to warn residents in affected areas. Some of them risked their own lives by going from house to house and helping those in need to evacuate to higher ground.³⁸

“TSUNAMI TENDENKO.”

This is a well-known saying in the Tohoku region. Roughly translated it means: “if a tsunami comes, run to safety, don’t go to find others”. This local wisdom is passed down through generations and is considered to have saved many lives. Still, during the Great East Japan Earthquake, there were several cases where people ignored this, going back to help elderly residents or family members evacuate.

The disaster highlighted the importance of a reliable and timely earthquake warning system while also exposing potential areas for the system’s improvement.

Wireless public address systems are set up in residential areas along the Japanese coastline to issue warnings from local government offices and fire departments. Post-disaster studies show that while the speaker announcements were very effective in some areas such as Kesenuma and Rikuzentakata, there are clear limitations.

37 [HTTPS://ITUNES.APPLE.COM/US/APP/YUREKURU-CALL-FOR-IPHONE/ID398954883?MT=8](https://itunes.apple.com/us/app/yurekuru-call-for-iphone/id398954883?mt=8)

38 WORLD BANK, GOVERNMENT OF JAPAN: KNOWLEDGE NOTE 2-5 TSUNAMI AND EARTHQUAKE WARNING SYSTEMS, P.3

Systems in other towns were damaged in the earthquake or did not have back-up power supplies or could not be heard through closed windows and doors. Relying solely on the public address system was clearly not enough.

Ishinomaki city in Miyagi was one of the areas worst affected by the tsunami. Since the disaster, the city authorities have decided that all disaster warnings will also be broadcast on the local radio station, as well as over the public address system to ensure that the maximum number of people hears the warnings.³⁹

However, there is no fail-safe system. Once an earthquake strikes, infrastructure can be destroyed which could restrict the broadcast and reception of any subsequent alerts - such as those which may correct further inaccuracies - or emergency information.

“While Japan has developed the most sophisticated tsunami-warning system in the world, the system underestimated tsunami height on March 11 and may have misled the evacuees and increased human losses.”⁴⁰

WORLD BANK, GOVERNMENT OF JAPAN: TSUNAMI AND EARTHQUAKE WARNING SYSTEMS

Some local government offices received the initial 3-metre tsunami warning from JMA but power cuts then prevented them from receiving subsequent warnings that the waves would actually be over 10

meters high. The 3-metre warning continued to be broadcast to residents via the public address system and this resulted in many deaths among people who thought it sufficient to take refuge in a two-storey building rather than evacuate to higher ground.⁴¹

“During the GEJE (Great East Japan Earthquake), communication about the unfolding disaster could and should have been more interactive among local communities, governments, and experts. Distributing hazard maps and issuing early warnings were not enough.”⁴²

WORLD BANK/GOVERNMENT OF JAPAN: LEARNING FROM MEGADISASTERS (2012)

The JMA is now working to improve tsunami prediction technology to create more accurate warnings. The Japanese government have also recognised the need to better educate the public on the limitations of disaster management technology.⁴³

The national public broadcaster, NHK - in English, the Japan Broadcasting Corporation - is also amending its disaster warning scripts and training its presenters to announce warnings differently; that is, with a more urgent and authoritative tone when warning locals to evacuate. They are also being trained to stress the likelihood of a tsunami being greater than the official forecast.⁴⁴

39 RADIO ISHINOMAKI INTERVIEW, NOVEMBER 2012

40 WORLD BANK, GOVERNMENT OF JAPAN: KNOWLEDGE NOTE 2-5 IBID. P.3

41 IBID GOVERNMENT OF JAPAN III.1. DISASTER DAMAGE IN JAPAN FROM THE TOHOKU DISTRICT, P.8

42 THE WORLD BANK INSTITUTE, IBID. P.4

43 THE WORLD BANK INSTITUTE, IBID. P.4

44 WORLD BANK, GOVERNMENT OF JAPAN: KNOWLEDGE NOTE 2-5 IBID, P.3

3 THE NATIONAL AND LOCAL MEDIA RESPONSE



FNN TV station, November 2012. LOIS APPLEBY

The first 72 hours in any natural disaster are crucial to save peoples' lives. This is when fast, accurate and responsive communication is particularly necessary. Due to a high number of earthquakes and other natural disasters, Japanese media outlets tend to be well equipped both in terms of technology and a network of regional correspondents, reporting on the ground.

Yet, in the case of Great East Japan Earthquake, it was a big challenge for the mainstream media to provide a complete picture of what was happening. This chapter aims to give an overview of what worked well and what did not, in terms of media coverage at national and local levels.

3.1 TRIPLE-THREAT EARTHQUAKE: TV BROADCASTERS RESPOND TO THE DISASTER

After the initial JMA earthquake alerts were issued, public broadcaster NHK's extensive coverage of the disaster began within two minutes of the earthquake; all domestic channels switched to emergency broadcasts almost immediately.⁴⁵

As a public broadcaster, NHK is legally bound to provide disaster-related information in Japan and is the designated public institution for broadcasting disaster warnings and other lifesaving information during natural disasters. Its role comes as part of

45 NHK, WWW.JAMCO.OR.JP/2012_SYMPOSIUM/EN/003/INDEX.HTML

the Disaster Countermeasures Basic Act of 1961.⁴⁶ This is why NHK's headquarters are designed to be able to continue broadcasting even during a massive earthquake. It is also why the organisation has 460 robotic cameras stationed around the country as well as 14 helicopters at its disposal to record footage of natural disasters.

The NHK, Japan's public broadcaster, has earthquake resistant headquarters, helicopters and robotic cameras at its disposal.

NHK World, the international broadcasting arm of the Japanese broadcaster, provided earthquake-related information in 18 languages, and within two weeks of the earthquake, 5.4 million people had visited its website. The NHK homepage was amended for mobile phone access and it also linked to other information sources, donation pages and evacuee registers. The Google Person Finder was embedded directly on the homepage.

Commercial television networks were also quick to respond to the disaster and many ran special coverage of rescue operations and lifesaving information around the clock, without commercial breaks, for the first few days after the earthquake.⁴⁷

According to the study by JCC, on average all six major national broadcasters dedicated 91.5 percent of their airtime to coverage of the Great East Japan Earthquake between March 11 and 13. In detail, that saw TV Tokyo dedicate 95.2 percent of their airtime, NHK 92.5 percent, TBS 93.5 percent, Nippon TV 92.1 percent, TV Fuji 88.6 percent and TV Asahi 88.7 percent.

On the fourth day after the earthquake and tsunami, private broadcasters resumed their commercial breaks which meant that the percentage of total broadcast time devoted to the disaster dropped back to 70 percent. In fact TV Tokyo switched back to normal programming on March 15 and the total airtime it dedicated to disaster coverage declined by 39.5 percent.

Unlike private broadcasters though, the public

broadcaster NHK continued to focus on disaster-related topics, leading to over 60 percent of its coverage remaining disaster-related for over a month, up until April 17.

In terms of content, at first most coverage focussed on earthquake and tsunami-affected areas. But that focus changed after March 15, when the Japanese government issued a no-fly zone over the Fukushima Daiichi plant. According to the JCC's study, 39.1 percent of broadcast coverage between March 11 and April 30 centred on nuclear power plants and power generation, followed by the earthquake (32.9 percent), the tsunami (25.3 percent), the Tokyo Electric Power Company (24.7 percent) and evacuation (21 percent). Consequently, topics like recovery (13.5 percent) as well as rescue and aid (2.4 percent) were some of the least-reported. In other words, mainstream broadcasts shifted their focus to the Fukushima nuclear power accident and this resulted in less coverage of disaster-affected areas that were still struggling for recovery, and in need of aid.⁴⁸

Alongside all of this, came a uniquely positive development: Japanese broadcasters decided to stream their material online using private sector streaming services like Ustream, Niconico Live and Yahoo!⁴⁹

TV stations started live-streaming their programmes for free on the internet.

This started with a 14-year-old junior high school student who made a brave but risky decision to live stream NHK on Ustream using his iPhone camera. This was done within 17 minutes of the earthquake happening on March 11. And it was risky because it was also illegal. However instead of becoming litigious, a number of national and regional broadcasters decided to follow suit, putting their live coverage on the internet too and making it freely available to the public.⁵⁰ Even though the probability of those in the communities affected by the disaster seeing it was low, live streaming significantly widened access to relevant information, particularly for those based outside of the country.

46 NHK'S DISASTER COVERAGE: A VALUED ROLE OF PUBLIC SERVICE MEDIA, ANALYSIS OF THE TELEVISION COVERAGE OF THE GREAT EAST JAPAN DISASTER, TAKANOBU TANAKA, P1

47 JAPAN COMMERCIAL BROADCASTERS ASSOCIATION, JULY 2012

48 JCC, テレビ報道から見る「東日本大震災」: WWW.JCC.CO.JP/BUSINESS/DOCUANA_20110510.PDF

49 MINISTRY OF LAND, INFRASTRUCTURE, TRANSPORT AND TOURISM, 東日本大震災における災害情報提供について —メディアの特徴的変化と今後の課題— 岡村光章

50 GOOGLE CRISIS RESPONSE, 数多くの英断が生み出した、テレビ番組のネット配信: WWW.GOOGLE.ORG/CRISISRESPONSE/KIROKU311/CHAPTER_10.HTML



Vital donations: televisions carried safety messages and entertained in evacuation centres. NOBUYUKI KOBAYASHI/JAPANESE RED CROSS

3.2 AFTER THE EARTHQUAKE: JAPANESE TV DOMINATES AS THE KEY INFORMATION SOURCE

Although television's dominance was usurped by local radio during the disaster, afterwards it became one of the main sources of information again. In the communities most affected by the disaster, many people found themselves living in evacuation centres set up in schools, community centres and sports halls for up five months. Once generators were provided and conditions in the evacuation centres stabilised, private companies, NGOs and individuals donated televisions and radios.



The sets of essential electrical items donated by Japan Red Cross after the disaster. JAPAN RED CROSS

For example, the Japan Red Cross provided television sets to 29 evacuation centres and public broadcaster, NHK, provided 750 television sets and 760 radios to evacuation centres with the co-operation of various manufacturers.⁵¹

Once these television sets were donated, television broadcasting resumed its usual position as the primary source of people's information.

The Japan Red Cross provided 134,946 sets of household electrical goods, for all government-run shelters and for other temporary accommodation at a cost of US\$300 million.⁵²

These sets included six things - a fridge, a kettle, a washing machine, rice cooker, microwave oven and a TV. Each set cost around US\$2,200.⁵³

Televisions were included because they were considered an essential source of information for displaced people: they relayed JMA alerts and also provided entertainment.

Although national and regional television was able to provide a lot of information and helped inform those in the most remote areas about wider recovery efforts, mostly its focus was not local enough. In short, television really only complemented the efforts of local radio and newspapers.

3.3 JAPAN'S PRINT MEDIA DEALS WITH BREAKING NEWS IN CRISIS CONDITIONS

It is true that in everyday life printed newspapers often lag behind when it comes to breaking news, simply because of the nature of their medium – that is, they need time to prepare copy, to print and for

distribution. However most national newspapers in Japan made use of the internet to combat this. For instance, major national newspapers such as Nihon Keizai Shimbun and Mainichi Shimbun made some of their content available online, free of charge.⁵⁴

Live updates were available on a number of newspapers websites whenever there was breaking news or a development in the story. And most significantly, a number of national, regional and local newspapers used social media service Twitter to inform the public; this increased their Twitter followers by tens of thousands within the first few weeks.

While digital content expanded some newspapers' audiences, in other cases the printed version was severely hampered by issues like a lack of fuel or means of transport and damaged publishing houses or printing systems. As a result the Nihon Shinbun Kyokai, or NSK - in English, the Japan Newspaper Publishers and Editors Association - established a Special Committee on Disasters, involving both national and regional newspapers.

The Special Committee was formed to investigate how best to co-operate in the case of future disasters.⁵⁵ Another development was the launch of the ANY Liaison Council, which saw three major newspaper groups - Nihon Keizai Shimbun, Yomiuri Shimbun and the Asahi Shimbun Group come together. The council was established so that these publishers could co-operate better in any future disaster, allowing other media companies to use one another's facilities in emergencies.⁵⁶

Co-operation between the different media outlets was vital for better communication with disaster-affected communities. These kinds of examples reflect structural developments in this direction.

51 SETOYAMA, JUNICHI. (2011) INFORMATION AND COMMUNICATION PROJECTS AFTER GEJE. (JAPANESE ONLY)

52 JAPAN RED CROSS, JANUARY 2013

53 IBID.

54 総務省 参考資料4-2 震災時における主なメディアの動向: WWW.SOUMU.GO.JP/MAIN_CONTENT/000111331.PDF

55 NSK: WWW.PRESSNET.OR.JP/ABOUT/SHIMBUN_SHUKAN/MESSAGE/INDEX.HTML

56 財経新聞, 日経・朝日・読売が「ANY 連絡協議会」を来春に新設 読み比べサイト「あらたにす」は終了: WWW.ZAIKEI.CO.JP/ARTICLE/20111111/86304.HTML

4 LOCAL INFORMATION INITIATIVES: BY THE AFFECTED POPULATION, FOR THE AFFECTED POPULATION

While the national broadcaster, NHK, and others provided extensive coverage of the disaster, due to the scope of the emergency they were often unable to provide more localised information. According to a post-disaster survey conducted by NHK in the Tohoku region, the broadcaster failed to provide sufficient information about supplies of food, water, gasoline and electricity.

In response, NHK stated that, “in a broad-scale, complex disaster affecting wide areas in many different ways, television alone cannot meet the diverse needs of people.”⁵⁷ Even though live streaming undoubtedly increased the whole nation’s access to information, those without internet-enabled mobiles or internet connectivity were left in the dark.

After the earthquake, a vast area of the Tohoku region experienced power cuts, and therefore locals had no access to television broadcasts or internet via a computer. While mobile networks could be used from time to time, it was not the most reliable means for updating on disaster-related information.

On the other hand, not all radio and print media required grid based electricity. So for most disaster-affected communities, local initiatives such as community radios, community (or hyper-local) newspapers and word of mouth provided information evacuees wanted the most, including information on the safety of friends and family and other essential information.⁵⁸

It is worth noting that it was not only professional reporters who committed themselves to providing information, but also community volunteers and other actors - and that is despite the fact that they too were often victims of the disaster.

4.1 COMMUNITY RADIO STATIONS: ESSENTIAL FOR SURVIVAL

In the worst-affected fishing towns, many internet servers were damaged. And often even where the internet could still be accessed, many of those over-60 did not know how to. As a result, community radio stations were essential for survival and other information in these neighbourhoods. During the first fortnight of the disaster, when no other information source was available, the audience numbers for local radio stations peaked.

Japanese national radio, NHK, covered the disaster extensively but this was on a national level. Local radio stations could better address the needs of those seeking shelter, missing persons and relief supplies in their surrounding communities. People either listened to broadcasts on car radios until their fuel ran out or on battery-operated radio sets. More than 50,000 radio sets were donated to communities in the disaster zones by the government and Japanese electronics companies.⁵⁹

57 NHK'S DISASTER COVERAGE: A VALUED ROLE OF PUBLIC SERVICE MEDIA, ANALYSIS OF THE TELEVISION COVERAGE OF THE GREAT EAST JAPAN DISASTER, TAKANOBU TANAKA, P11

58 大震災とメディア-東日本大震災の教訓, MITSURU FUKUDA (2012), PP.19-21

59 MINISTRY OF INTERNAL AFFAIRS AND COMMUNICATIONS/WORLD BANK REPORT KNOWLEDGE NOTE 3-2 EMERGENCY COMMUNICATION, P10

COMMUNITY RADIO CASE STUDY #1: TOME CITY, MIYAGI

“In a disaster the most effective information channels are lots of small dedicated radio stations with strong community links. Mass media does not cover the local information needed.”

KEIICHI SAITO, DIRECTOR, H@! FM

H@! FM is a community radio station in Tome, Miyagi, that was set up by Keiichi Saito with an earthquake like that of March 2011 in mind. A major earthquake like this had been expected for years and Saito wanted a radio station that was earthquake resistant; he invested in solid foundations for the antenna, spare equipment and a generator.

Tome is not coastal so there was no tsunami here but the city was damaged in the earthquake and left without electricity for over a month. However H@! FM was ready. Tome's city hall was without power and unsure how best to communicate with local residents. H@! FM immediately began cooperating with the authorities and from day one, the station became the main voice for the city's authorities.

The mayor of Tome broadcast live on the station every day for three weeks after the disaster giving updates about food, water and other lifeline supplies. Without television or internet access, nobody was aware of the extent of the tsunami damage on the coast - even H@! FM couldn't get the internet for nine days. Initially many people were able to stream radio or television news on their mobile phones but as there was no power, phone batteries soon ran out. H@! FM bought 2,000 battery-powered radios and donated them to anyone in need, in local evacuation centres and in private homes. H@! FM later set up two additional disaster FM stations in the coastal towns of Kesenuma and Minami-Sanriku. The station supported these with spare equipment and training.



Mr. Keiichi Saito, H@! FM Director, Tome City, Miyagi – November 2012. LOIS APPLEBY

Information came from either Tome city hall or from a regional newspaper delivered from Sendai. Many locals visited the station with updates. A doctor told locals where to get medical help, shop owners told the station when they would be re-stocked. “There was no issue with verifying sources, as the sources themselves came in person and were well known in the community,” the station's staff say. The station even appealed for people with foreign language skills to translate disaster information into English, Chinese and Korean to assist any foreign listeners.

Once the internet was restored, H@! FM asked people to email them with information or requests. If certain themes were more popular, then radio programmes were adapted to meet the needs of the listeners.

Almost two years after the earthquake, the station still broadcasts recovery and reconstruction information and also caters to the over 3,000 residents from Minami-Sanriku who still live in temporary shelters in Tome. Each month H@! FM holds a disaster preparedness day and advises listeners to check their emergency supplies, radios, batteries and so on. And almost two years after the earthquake, the mayor still speaks on H@! FM three times a week.

Despite the fact that the station is run by a small team of seven, they broadcast 24 hours a day, seven days a week. Should another disaster strike, H@! FM will be ready.

COMMUNITY RADIO
CASE STUDY #2:
ISHINOMAKI CITY, MIYAGI

“When the power goes down, community radio stations are essential lifelines, particularly in the early stages of a disaster. Sadly in normal times it is not acknowledged and funding is very limited.”

MASAHIKO KONNO, TECHNICAL DIRECTOR, RADIO ISHINOMAKI

Radio Ishinomaki is a well-established local commercial radio station in Ishinomaki City, Miyagi. The city was badly damaged in the disaster and all power was lost. But the broadcast continued here using generators, which powered the station and its antenna on a hill. The power cut meant petrol station pumps were not working so the only option was for technician, Masahiko Konno, to ask locals for gasoline from their cars. After collecting about 20 litres, enough for one day’s broadcasting, the tsunami struck. This meant roads were blocked, which meant, in turn, that the station ran out of fuel for its generators – it went off the air for a day and a half. While it did, the Hibi Shimbun’s “wall paper” was the only operative media in the city.

On March 13, much of the city was still submerged under almost a metre of water. The Self Defence Force transported survivors to safety on the same hill as the antenna and although Masahiko tried to get on one of the evacuation vehicles, emergency services staff thought he was a journalist looking for a story and refused. After explaining that the radio station was transmitting lifesaving information, a soldier allowed him to travel. With a microphone, camera and gasoline tank Masahiko went to the antenna, restarted the generator and began broadcasting on the hill, in the bitter cold. For over a fortnight there was no electricity; car shop owners donated extra gasoline from the tanks of unsold cars.



Mr. Masahiko Konno, Technical Director of Radio Ishinomaki, Ishinomaki, Miyagi. LOIS APPLEBY

Eventually a temporary studio was set up in Ishinomaki’s city hall so that official information could be broadcast. The city’s mayor was on air regularly for over a month. The presenters took turns to read out 5,000 to 6,000 names each day, from lists of the deceased and missing persons; this saved people the effort of going to each evacuation centre searching for their loved ones. The radio station asked people with information to come directly to the studio and many locals, keen to help or to share their experiences, arrived with memos that were read out on air. The station donated 30 radios to the Ishinomaki Red Cross hospital.

The radio station is funded by commercials but the need to transmit lifesaving information was so great that no commercials were aired for weeks. As a result, the station had no revenue. Ishinomaki authorities later helped with the station’s running costs but the station has already had to make cutbacks. Ishinomaki’s city authorities have decided that future disaster warnings and announcements must be transmitted by radio, not just on the public address system. And Radio Ishinomaki is taking part in local government drills for broadcasting announcements.

According to a survey conducted by the Japan Commercial Broadcasters Association, radio was consistently ranked the most useful source of information from the day of the disaster right through until the end of the first week.⁶⁰

And after the disaster, while the general level of public trust in media and in social media increased, radio gained the most trust from locals. It was also cited as being a more personable source of information - and it may even have been the most suitable after events as traumatic as these because distressing images couldn't be seen.⁶¹

4.2 DISASTER FM: DEDICATED TO COPING IN CRISIS

One measure that supported the efficacy of local radio was the provision of temporary broadcast licences for Saigai FM stations - in English, "disaster FM" stations - dedicated to broadcasting disaster-related information. In response to 1995's Hanshin-Awaji earthquake, the Japanese Ministry of Internal Affairs and Communications created the temporary licence scheme to help encourage and increase the communication of local information in disasters. In March 2011, applications could be made over the phone and licences granted on the same day. Within one month of the earthquake 21 new disaster FM stations had received licences and started to broadcast emergency information.⁶²

The licences were granted to two categories of applicant. One category was for existing local, commercial radio stations that wished to become dedicated disaster information providers, and the licence meant they temporarily widened transmission areas. The second category was for new radio stations, created to assist during the disaster.⁶³

60 SURVEY OF THE ROLE OF MEDIA IN THE GEJE, JAPAN COMMERCIAL BROADCASTERS ASSOCIATION, OCTOBER 2011, P13 (JAPANESE ONLY),

61 IBID. P16 & INTERVIEW WITH MIKIO KIMURA, JBA.

62 JAPAN TIMES, 21 APRIL 2011

63 MINISTRY OF COMMUNICATIONS, TEMPORARY RADIO BROADCASTING STATIONS FOR THE GREAT EAST JAPAN EARTHQUAKE DISASTER CURRENT STATE AND CHALLENGES

It was not all positive though. Many community radio stations were already struggling to secure advertisers and had limited financial support. The temporary emergency licence allowed stations to broadcast commercials to cover running costs, but on a non-profit basis. But due to the situation some stations - such as H@! FM and Radio Ishinomaki - decided not to broadcast commercials for weeks. This resulted in zero revenue for them and others like them and strained the resources of already underfunded stations.

4.3 WRITING ON THE WALLS: NEWSPAPERS AND COMMUNITY NEWSLETTERS

Newspapers were also effective information sources in most devastated areas. Many evacuation centres began receiving newspapers within a week of the disaster, long before television services resumed again.⁶⁴

The town of Yamada, Iwate, was without a local radio station in the early stages of the disaster and many people there had no information whatsoever. For example, while news of the Fukushima nuclear incident, 335km away, was broadcast all over the world, the people in Yamada had no idea it was happening until a week later when regional newspapers were finally delivered to the evacuation centres.

Newspapers were also information lifelines in Ishinomaki, 90km from the epicentre of the earthquake. The local radio station was temporarily unable to broadcast due to a gasoline shortage so for a short period of time, the only information source in the city was a handwritten local newspaper, the Hibi Shimbun. This basic, low-cost, community initiative delivered essential information to people there.

64 SURVEY OF THE ROLE OF MEDIA IN THE GEJE, JAPAN COMMERCIAL BROADCASTERS ASSOCIATION, OCTOBER 2011 (JAPANESE ONLY),

COMMUNITY PRINTING
CASE STUDY #1:
ISHINOMAKI, MIYAGI

“When we went to the evacuation centres with the newspapers, big crowds gathered. People were so hungry for information we could barely stick the paper on the wall. If there is no information after a disaster people become even more stressed and anxious. Old media works best in emergencies.”

HIROYUKI TAKEUCHI, EDITOR, HIBI SHIMBUN

The Hibi Shimbun, or Daily Newspaper, is a well-established local newspaper in the Ishinomaki area. Before the disaster, it regularly sold 14,000 papers a day. But the tsunami flooded the company’s offices, breaking the printer and cutting off power. The paper’s six reporters immediately began to gather information from the city hall and by moving around on foot.



Hiroyuki Takeuchi, Editor, Hibi Shimbun, November 2012.
HIBI SHIMBUN



Hiroyuki Takeuchi, Editor, Hibi Shimbun, November 2012.
LOIS APPLEBY

The day after the earthquake, reporters handwrote headlines on a giant piece of paper. This was duplicated six times by hand, then taped to the walls in five evacuation centres and on one shop door. From March 12 to March 17, these newspapers were handwritten daily. They answered survivors’ most urgent questions. People were cold and hungry so the reporters wrote about the status of power and water supplies, hot food distribution and rescue efforts. The paper also advised locals to listen to Radio Ishinomaki for official notices about the dead and missing. These handwritten newspapers also dispelled rumours with a feature called “Act on the Facts”.

During their work, the reporters realised that people outside evacuation centres were in an information blackout and that they hadn’t received aid for almost a month. They relayed these needs to city hall and to the local volunteer centre.

After the sixth paper was handmade, a home printer and power source was found. After this 700 newspapers were printed on A4 and distributed around the city for the next month or so. Almost two years after the disaster, the newspaper continues to cover the recovery and reconstruction almost daily. Their “wall papers” are still on display for the public to see.

4.4 CAMP NEWSLETTERS: RECONNECTING THE COMMUNITY

Newsletters also proved to be a cost-efficient and effective way to inform communities living in evacuation centres, temporary shelters and in their homes.

Within a week of the disaster, the city hall in Rikuzentakata, Iwate, began to issue a daily newsletter. Initially it gave details about medical facilities and how to register for assistance. As the emergency situation stabilised, the newsletter's content changed to include information about temporary shelters and financial assistance. About 2,400 copies of the newsletter were distributed across the 70 evacuation centres daily.⁶⁵

Often friends and neighbours were separated because they had sought refuge in different evacuation

centres. As a result, these kinds of newsletters became a tool to strengthen communities. In Yamada, Iwate, a group of three evacuation centres decided to create their own newsletter to help reconnect the community. CARE International supported the newsletter project and 1,200 copies were distributed to evacuation centres every ten days.

People staying in the centres contributed articles about the town, local events, community notices and even poems, all of which were collated by a volunteer editor.

Then communities were divided once again as people moved into various temporary shelters. So CARE created another similar newsletter focusing on the local recovery. Around 2,000 copies were delivered to temporary shelters and public facilities in Yamada for over 18 months, until December 2012.⁶⁶

65 MINISTRY OF INTERNAL AFFAIRS AND COMMUNICATIONS/WORLD BANK
REPORT KNOWLEDGE NOTE 3-2 EMERGENCY COMMUNICATION, P7

66 CARE INTERNATIONAL JAPAN, NOVEMBER 2012

5 COMMUNICATING DURING DISASTER IN THE DIGITAL AGE

Prolonged power cuts and damage to infrastructure caused significant disruption to communications in the affected region but people in some areas could still connect to the internet. For those who could access it, digital media played an important role. It also played an important role for those based outside of Tohoku.

Social networks such as Twitter, Mixi and Facebook provided a way for survivors to locate friends and family and let people know that they had survived. A few hours after the earthquake, Google's Person Finder, a platform to trace and reunite the missing, was launched. Telecommunications companies also created ways for customers to connect with friends and relatives. Audio-visual content sharing platforms like YouTube and Ustream were used not only by established organisations and broadcasters, but also by survivors in the disaster-affected areas to share their experiences. There were also a number of volunteer initiatives, such as the crowdsourced disaster map, Sinsai.info, established to support the affected communities.

This chapter looks at how digital resources were used to communicate during and after the disaster, with a view to identifying best practice in this realm for the future.

According to leading Japanese journalist, Daisuke Tsuda, who specialises in media and technology, the social media boom took place in Japan in 2010. For example, the then-Prime Minister, Yukio Hatoyama, became the first ever Japanese Prime Minister to tweet after he created his own Twitter account in January 2010.

In more general terms, social media is revolutionising the way the world receives and reacts to information; it provides a platform for real-time, transparent and

participatory communication. Because it is based on "collaboration" and "interactivity", there is often no clear distinction between the senders of information and the recipients. Traditional media only allows one-way communication.⁶⁷

5.1 TWITTER: FUELLING ASSISTANCE AND DEBATE

With approximately 35 million account holders in Japan, Twitter is the most popular social networking site in that country. This makes Japan the third largest Twitter user in the world behind the USA and Brazil.⁶⁸ Official statistics show that the number of Twitter messages grew exponentially during the earthquake.

	AVERAGE BEFORE EARTHQUAKE	AFTER 2.46PM, MARCH 11, 2011
Tweets-per-minute in Japan	3,000	11,000
Direct messages per minute from Japan to world *	200	1,000

* 69

In a 2011 report on how Twitter was used, researcher Akihito Kobayashi points out that collaboration was key as Twitter use grew during the Great East Japan Earthquake. For instance, a Twitter hash tag - #j-j-helpme - created at 16:03 on March 11 by a user in southern Japan became a focal point for requests for assistance and was quickly re-tweeted.

67 WWW.YOUTUBE.COM/WATCH?V=O9_9VU6TUTS&FEATURE=YOUTU.BE

68 [HTTP://SEMIIOCAST.COM/PUBLICATIONS/2012_07_30_TWITTER_REACHES_HALF_A_BILLION_ACCOUNTS_140M_IN_THE_US](http://SEMIIOCAST.COM/PUBLICATIONS/2012_07_30_TWITTER_REACHES_HALF_A_BILLION_ACCOUNTS_140M_IN_THE_US)

69 JAMES KONDO, COUNTRY MANAGER, TWITTER JAPAN PRESENTATION, TEDEX TOKYO, MAY 2011



A screenshot of the Japanese PM's Office's Twitter account in 2012

In response to the grass-roots movement to create disaster-specific hash tags, Twitter Japan (@twj) sent a tweet summarising the most popular hash tags on March 12. Later they also published a blog that outlined the most used hash tags for different purposes and contained links to official disaster information sources.⁷⁰ The most popular hash tags included: #anpi (for finding people) and #hinan (for evacuation centre information) as well as #jishin (earthquake information).

Twitter was not only used to contact friends and relatives; it also became a source of disaster-related news.

As previously outlined, many media outlets, at national, regional and local level, used Twitter. One of the main regional newspapers in the disaster-affected region, Kahoku Shimpo in Sendai, used Twitter to update residents while they were unable to print. Various public bodies including the government, their ministries and local municipalities also used Twitter to circulate information and updates.

Four days after the earthquake the Japanese government set up its first ever Twitter account - @Kantei_Saigai, which means Prime Minister's Office, Disaster - and within days it was being followed by 200,000 users. The account's most re-tweeted message in the weeks after the disaster was the Chief Cabinet Secretary's announcement on March 15, 2011:

"There is a severe shortage of gasoline, fuel and oil in the disaster affected areas, but supplies are stable in the rest of the country. Please refrain from panic buying or hoarding supplies." (Translated from the Japanese).⁷¹

70 災害とソーシャルメディアー混乱、そして再生へと導く人々の「つながり」、AKIHITO KOBAYASHI (2011), pp. 32-41

71 https://twitter.com/kantei_saigai/status/47856739210629120
<http://twiplomacy.com/info/asia/japan/>

Six days after the disaster the Tokyo Electric Power Company, the owner of the crippled Fukushima nuclear power plant, also set up a Twitter account - called @OfficialTEPCO - and this got over 117,000 followers within the first six hours.⁷²

The move was not without controversy especially as the Japanese public had begun to distrust official announcements from TEPCO and the government about the risks of radiation at the reactor.

The ever-changing advice about evacuation zones, public health guidance and the overall lack of information led to accusations that the government and the power company were withholding information.⁷³ Meanwhile Twitter was allowing users to access information from various sources and engage in discussions and debates with others online, whether they knew them personally or not. By using the disaster-related hash tags, users could take part in a global discussion, in real-time.

Twitter was also used as a platform for a variety of social movements created in response to the disaster. Yashima Sakusen, or Operation Yashima, called for electricity conservation⁷⁴ and similarly, Ueshima Sakusen, or Operation Ueshima, asked the public not to engage in panic buying.

72 www.google.com/hostednews/afp/article/ALEQM5IOAHBWPQMKIUN41FS_CG3UGVJD0Q

73 http://www.nytimes.com/2011/08/09/world/asia/09japan.html?pagewanted=all&_r=0 http://www.huffingtonpost.com/2012/11/27/fukushima-nuclear-accident_n_2198060.html

74 <http://www.itmedia.co.jp/news/articles/1103/12/news017.html>

DIGITAL CASE STUDY #1: THE TWITTER ROOF TOP RESCUE

Along with over 400 others, Naoko Utsumi, 59 (pictured), fled from the tsunami and the oil tank fires that engulfed Kesennuma to the rooftop of a community centre. She was unable to make calls or send an SMS but she could still use the e-mail function on her mobile phone. She e-mailed her husband about her situation, who then e-mailed their son in London.

After seeing shocking images of Kesennuma ablaze on TV, Naoko's son sent a direct message via Twitter to the Deputy Governor of Tokyo with a detailed description of the situation and a request for help.

The Deputy Governor read the message, called the Tokyo Fire Department and arranged for a helicopter to fly from Sendai. Within two days everyone had been airlifted to safety.



Mrs. Naoko Utsumi, November 2012. LOIS APPLEBY

When asked whether she now uses Twitter though, Naoko says: "Oh no, I still don't use Twitter myself. I'd have to get a young person to show me how!"

5.2 FACEBOOK AND MIXI: WHEN DID YOUR FRIENDS LAST LOG ON?

Facebook is rapidly becoming more popular in Japan and already has over 17 million users.⁷⁵ Until relatively recently, a Japanese social networking site called Mixi had had the highest penetration rates in the country but the number of Facebook users is growing.

Within 12 days of the earthquake, due to overwhelming international interest, the Prime Minister's Office created a Facebook page that published English translations of official press briefings and updates.⁷⁶

According to technology site TechCrunch, Facebook's strength in disaster situations is the filtered feed that

only shows updates from people close to the account holder. That means if you post "I am okay" people you know are most likely to see it. Whereas if the comment was posted on Twitter, the update could well be swept away in the usual "torrent of tweets".⁷⁷

Still the Japanese site, Mixi, was cited as the most used social media in the affected Tohoku region⁷⁸ and that should not be underestimated. In areas where there was limited network connectivity, Mixi users could easily check the last time fellow users had logged in by viewing their profile page; this was a way to confirm whether that user was safe. On March 16, 2011, Mixi released a new application that enabled users to view friends' login history.⁷⁹

75 SOCIAL BAKERS STATISTICS, JANUARY 2013

76 [HTTP://ASIAJIN.COM/BLOG/2011/03/23/13535/](http://asiajin.com/blog/2011/03/23/13535/)

77 [HTTP://TECHCRUNCH.COM/2012/10/30/FACEBOOK-THE-REASSURANCE-MACHINE/](http://techcrunch.com/2012/10/30/facebook-the-reassurance-machine/)

78 YOUTUBE: [HTTP://YOUTU.BE/O9_9VU6TUTS](http://youtu.be/O9_9VU6TUTS)

79 災害とソーシャルメディア—混乱、そして再生へと導く人々の「つながり」, AKIHITO KOBAYASHI (2011), P. 78

5.3 YOUTUBE: SHARING THE EXPERIENCE, ASKING FOR AID, WATCHING NUCLEAR BOY

YouTube was also used after the disaster. Countless amateur videos of the incoming tsunami as well as fundraising appeals and educational videos were uploaded and viewed around the world. In fact, the Great East Japan Earthquake is thought to be the most recorded natural disaster in history and recordings of the disaster uploaded onto YouTube shocked the world.

Mobile phone penetration is high in Japan and survivors wanted to share their experiences with the rest of the world. After the earthquake, a number of blog posts and YouTube playlists⁸⁰ collected the footage recorded by the survivors of the disaster together.

A locally produced children's animation, Nuclear Boy, described the nation's nuclear disaster in an accessible way by using the metaphor of a boy (the nuclear power plant) with a stomach problem and perilously smelly faeces (the radiation problem). The story of Nuclear Boy originated on Twitter, was converted into an online animation and translated into English. It went viral with and was viewed over 1.8 million times.⁸¹

YouTube also served as a channel for requesting assistance. The most notable appeal came from within the Fukushima evacuation zone, where the mayor of Minami-Soma city made a desperate plea for volunteers and relief supplies. The video had almost half a million views.⁸² According to the newspaper, The Japan Times, the video resulted in truckloads of relief supplies and international media coverage and prompted apologetic phone calls from government officials and TEPCO.⁸³



Screenshot of Nuclear Boy, animated cartoon explaining the Fukushima nuclear threat

5.4 LIVE STREAMING: WORLD WATCHES DISASTER UNFOLD

While YouTube was mainly used for pre-recorded content, Ustream was used to broadcast real-time updates. As indicated in the previous section, a number of broadcasters live streamed their television coverage by using private sector services like Ustream. However, individuals also did this using recording devices such as smartphones.

One of the most famous examples is a series of live TEPCO press conferences that were streamed live by Yasumi Iwakami, an independent journalist and the founder of Independent Web Journal.⁸⁴ Viewers were able to watch the press briefings and Q&A sessions wherever they were located.

Social media became a platform for people to voice concerns and share information and another significant use of Ustream came after the Fukushima nuclear plant blast. Geiger counter radiation readings were streamed by dozens, if not hundreds, of individuals based in the area.

Ustream also allowed live chats between viewers using their Twitter, Facebook and Instant Messenger accounts; this service was called "Social Stream".

80 EXAMPLE: WWW.YOUTUBE.COM/PLAYLIST?LIST=PLFD50B4177D523453

81 WWW.YOUTUBE.COM/WATCH?V=5SAKN2HSVXA

82 WWW.YOUTUBE.COM/WATCH?V=70ZHQ--CK40

83 WWW.JAPANTIMES.CO.JP/TEXT/NN20120308F2.HTML

84 WEBSITE: [HTTP://IWJ.CO.JP/](http://IWJ.CO.JP/)

5.5 THE LIMITATIONS OF SOCIAL MEDIA

While social media was an effective way for ordinary people to search for the missing and to get updates about the emergency online, it was less useful to humanitarian responders trying to identify needs in the various disaster affected areas.

Local officials and NGOs commented that the content of the tweets or Facebook messages requesting assistance were often not relevant because many of the messages were based on secondary information or were simply being re-tweeted. According to one evacuation centre manager in Yamada town, the government's response was so efficient that calling for help by social media was too slow. "I heard that some people in the region were sending tweets requesting relief items, but representatives from the local government or Self-Defence Force came to the evacuation centres each day and if something was lacking, it would usually be provided within hours," the manager said. "What use is a tweet if the information is old?"⁸⁵

The Japanese Red Cross (JRC) was the main humanitarian organisation responding in the disaster and the organisation used the global reach of social media for fundraising and external communications through the International Federation of the Red Cross network. The JRC did not have its own official Twitter or Facebook account during the disaster but a staff member used her personal Twitter account to relay information in English about the situation and response.

"What use is a tweet if the information is old?"

However the organisation itself was not in a position to respond to individual requests via social media. The JRC received some direct messages requesting help, but after checking the situation on the ground, it became clear that many of these messages were, for instance, re-tweets of aid requests or were no longer relevant, some being over a week old.

"Ultimately the opportunities (of social media) outweigh the risks. Social media is here to stay and non-engagement is simply not an option."⁸⁶

PATRICK FULLER, COMMUNICATIONS MANAGER, IFRC ASIA PACIFIC ZONE

The JRC teams were solely focused on their mandate - providing medical support - and because many of the worst affected areas were without internet or mobile connectivity for weeks anyway, it was clear that social media was redundant for them.

The JRC also had direct experience of false information going viral; the organisation became the subject of a rumour falsely accusing it of deducting administration fees from cash donations. The rumour originated online and quickly spread across social networks, causing the JRC to invest in a nationwide advertising campaign confirming that 100 percent of the donations went to the affected people.⁸⁷

5.6 POST-DISASTER DEVELOPMENTS IN DIGITAL MEDIA

Since 2011 the use of social media in disasters has become a common topic of discussion in Japan. Many local governments in the affected areas now consider social networks to be a valuable communication tool in disasters.⁸⁸

Many local governments in the affected areas now consider social networks to be a valuable communication tool in disasters.

According to the J Government platform, there are now over 104 official twitter accounts run by national and local governmental bodies as well as other independent public authorities.⁸⁹ The number of official Twitter accounts held by local authorities in Tohoku has tripled; five of them used Twitter to send out the JMA tsunami advisory after an earthquake

85 LOIS APPLEBY, INTERVIEW, NOVEMBER 2012

86 IBID.

87 WWW.REDCROSS.INT/EN/MAG/MAGAZINE2012_2/10-11.HTML

88 MINISTRY OF INTERNAL AFFAIRS AND COMMUNICATIONS (SEPTEMBER 2011), 2011 WHITE PAPER INFORMATION AND COMMUNICATIONS IN JAPAN

89 [HTTP://TWINAVI.JP/GOV](http://TWINAVI.JP/GOV)



Screenshot of Google Person Finder's website

in the Philippines in August 2012.⁹⁰ Within hours of the 7.3 magnitude earthquake that struck Japan on December 7, 2012, Twitter Japan recommended hash tags for those wanting to follow news or discuss that earthquake.⁹¹

In February 2012 Facebook tested their Disaster Message Board, where users mark themselves and friends as “safe” after a major disaster. The service will only be activated after major emergencies.⁹² And although it was not activated during Hurricane Sandy in the USA in October 2012, Facebook’s statistics during that emergency showed that the most common post was “we are okay”.⁹³

5.7 GOOGLE'S PERSON FINDER PLATFORM

Google's Person Finder was launched at 16:32PM on March 11, around an hour and 46 minutes after the earthquake⁹⁴. The site was soon translated into Japanese and adapted for mobile phone access; people began to search and upload information about missing people. While national broadcasters, including NHK, displayed rolling lists of the deceased and missing during their live coverage, Google's Person Finder seemed to be a more suitable tool

because it allowed the public to search for specific information about a particular person.

Effective co-operation between Google, media outlets, government departments and volunteer communities made the Google Person Finder the standard platform in Japan for searching for missing friends and family.

Provided they had internet access, hundreds of thousands of users were able share and search for information. Official data such as the list of fatalities issued by National Police Agency was added to the data bank. A new feature was added when it became clear that one of the most useful information sources was the evacuee register, posted in each evacuation centre. Using mass media, Google asked the public to photograph the lists with their camera phones and upload the images to an online album. Over 10,000 photo files were uploaded and Google staff and 5,000 volunteers input the data into the Person Finder platform.

In addition, the platform's partnership with local broadcasters and print media was another positive development; data collected by national newspapers like Mainichi Shimbun and broadcasters like NHK, TBS and TV Asahi was integrated into the Person Finder.⁹⁵

The result was significant: 90 days after the platform was launched, over 610,000 personal records had been uploaded. This compares well to the 55,000

90 KAHOKU NIPPON NEWSPAPER, 5 NOVEMBER 2012 (JAPANESE ONLY)

91 [HTTP://BLOG.JP.TWITTER.COM/2012/12/5-12-119-TENKIJPISHIN-TENKI.HTML](http://blog.jp.twitter.com/2012/12/5-12-119-tenki.jpishin-tenki.html)

92 [HTTP://TECHLAND.TIME.COM/2012/02/29/NEW-FACEBOOK-FEATURE-LETS-YOU-MARK-YOURSELF-AS-SAFE-AFTER-MAJOR-DISASTER/#IXZZ2DPX1PCWN](http://techland.time.com/2012/02/29/new-facebook-feature-lets-you-mark-yourself-as-safe-after-major-disaster/#IXZZ2DPX1PCWN)

93 [HTTP://MASHABLE.COM/2012/10/30/FACEBOOK-SANDY-STATUS-OK/](http://mashable.com/2012/10/30/facebook-sandy-status-ok/)

94 GOOGLE CRISIS RESPONSE, パーソンファインダー、東日本大震災での進化 1: [WWW.GOOGLE.ORG/CRISISRESPONSE/KIROKU311/CHAPTER_06.HTML](http://www.google.org/crisisresponse/kiroku311/chapter_06.html)

95 MINISTRY OF LAND, INFRASTRUCTURE, TRANSPORT AND TOURISM, 東日本大震災における災害情報提供について —メディアの特徴的变化と今後の課題— 岡村光章, P.57: [WWW.NDL.GO.JP/JP/DATA/PUBLICATION/REFER/PDF/072803.PDF](http://www.ndl.go.jp/jp/data/publication/refer/pdf/072803.pdf)

records recorded after the earthquake in Haiti.⁹⁶ Within a few hours, Google also created a Crisis Response page for the Japan disaster in Japanese, English, Chinese and Korean.

The page listed links to valuable resources such as emergency hotlines, electricity blackout schedules and maps and included links to relief organizations receiving donations.⁹⁷

The Person Finder was established shortly after the disaster struck and relationships between the media outlets and the public administrators were created in the early stages. However if the relationships had been well established before the emergency the flow of information would have been faster from the start.

The Person Finder is an example of a valuable online resource. But obviously without access to the internet it cannot be used. It also relies on users having some level of digital literacy. Google has recognised that many elderly survivors and people without internet access were unable to use this resource.

As a result the company is exploring ways of better supporting elderly groups in future emergencies. One idea is to use evacuation centres as information hubs, providing computers and support for people who are less familiar with technology.⁹⁸

5.8 TECHNOLOGY VOLUNTEERS: CRISIS MAPPING THE DISASTER

Following on from the Haiti earthquake of 2010, the volunteer technical community raced to map messages from the disaster zone. And within four hours of the earthquake, Japan's version of the Ushahidi crisis map, **sinsai.info**, meaning "disaster info", had also been created.⁹⁹



Screenshot of the sinsai.info disaster map. In English the motto below says the map was created by everyone, similar to open source.



Volunteers verified, categorised and mapped 12,000 tweets and emails from the affected regions for over three months; this allowed the public to see what kinds of information and requests were coming from which areas. Content was categorised into topics including official announcements, missing or dead persons, aid or support and evacuation. All of this was in Japanese.

After three months, fewer volunteers were available to maintain the site and the number of reports via Twitter decreased. More than a million people viewed the website which also had links to other resources, such as the Google Person Finder and disaster message boards. Most page views came from the disaster-affected city of Sendai where internet penetration is higher than in surrounding rural areas.¹⁰⁰

It is recommended that an evaluation be undertaken to work out whether the resource was also used by humanitarian responders. And it is worth noting that none of the survivors interviewed during field research in Miyagi and Iwate were aware of this crisis map.

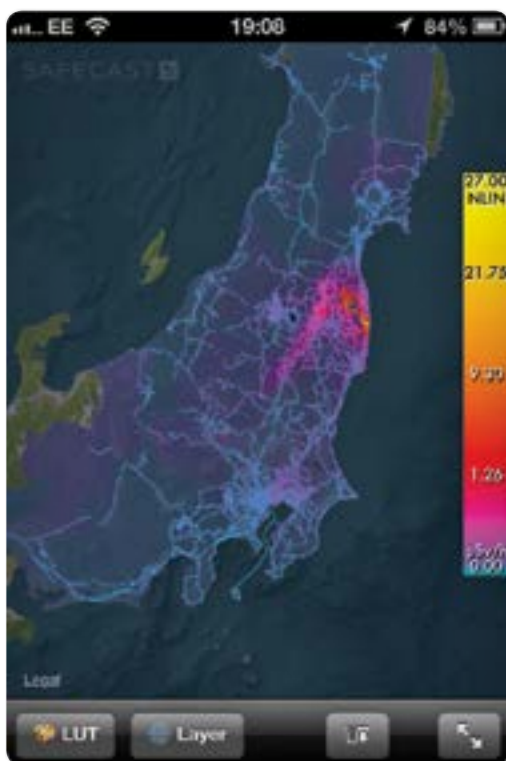
96 WWW.NYTIMES.COM/2011/07/11/TECHNOLOGY/QUICK-ACTION-HELPS-GOOGLE-WIN-FRIENDS-IN-JAPAN.HTML?PAGEWANTED=ALL&R=0

97 WWW.GOOGLE.CO.UK/CRISISRESPONSE/JAPANQUAKE2011.HTML

98 INTERVIEW WITH KEI KAWAI, GOOGLE, NOVEMBER 2012

99 WWW.SLIDESHARE.NET/INOUEMAK/SINSAI-INFORUBYKAIGI

100 SINSAI.INFO PRESENTATION



Screenshot of Safecast mobile app showing a radiation map in Japan

Hal Seki, Managing Director of *sinsai.info* wrote the following blog post on 20 April 2011:

*"I am still not sure how many people are being helped by *sinsai.info*. However, when I talk to NGOs and people who have been to disaster-affected areas, it appears certain that information gaps have become a serious issue. Therefore I believe that platforms like *sinsai.info* may be of help at a time like this when electricity and communication infrastructure are recovering."¹⁰¹*

OpenStreetMap volunteers also created a map with 500,000 roads that was shared on the National Research Institute for Earth Science and Disaster Prevention's website, All311.¹⁰² Further research would be needed to analyse how the map was used.

Shortly after the tsunami, the Japanese government began producing regular situation updates in Japanese, but little humanitarian information was



A man looks for his photographs at a collection centre for items which were found in the rubble of an area devastated by the March 11, 2011 earthquake and tsunami in Sendai, Miyagi prefecture March 9, 2012, ahead of the one-year anniversary of March 11, 2011, earthquake and tsunami. More than 250,000 photographs and personal belongings are displayed at the centre for owners to recover. REUTERS/TORU HANAI, COURTESY THE THOMSON REUTERS FOUNDATION – ALERTNET

available in English. UNOCHA produced situation reports in English for the international humanitarian community and the volunteers at **CrisisCommons** supported information sharing efforts by creating a comprehensive wiki listing relevant resources. This was referenced in the UNOCHA situation reports.¹⁰³

101 [HTTP://BLOG.USHAHIDI.COM/INDEX.PHP/2011/04/20/CRISIS-MAPPING-JAPAN/](http://blog.ushahidi.com/index.php/2011/04/20/crisis-mapping-japan/)

102 [HTTP://ALL311.ECOM-PLAT.JP/](http://all311.ecom-plat.jp/)

103 [HTTP://WIKI.CRISISCOMMONS.ORG/WIKI/JAPAN_DATA_PROFILE](http://wiki.crisiscommons.org/wiki/Japan_data_profile)
[HTTP://RELIEFWEB.INT/REPORT/JAPAN/JAPAN-EARTHQUAKE-TSUNAMI-SITUATION-REPORT-NO-16](http://reliefweb.int/report/japan/japan-earthquake-tsunami-situation-report-no-16)



In response to the growing concerns about radiation and the huge variation in radiation readings on the ground, a volunteer-led project to collect and share radiation measurements called **Safecast** was also created within a week of the disaster. Assigned volunteers took radiation readings across Japan using specialised Geiger counters. The readings were then mapped and made available so that the Japanese public knew the level of radiation in their locales. Over 3.5 million data readings have already been mapped, making Safecast the biggest radiation monitoring project in the world.¹⁰⁴

Although volunteer technical communities around

the world responded to the Japanese disaster, it was a smaller international response than that to the 2010 earthquake in Haiti.

Partly this can be attributed to Japan's own ability to respond to domestic disasters. Where emergency services and support structures are available, affected communities turn directly to them rather than going online. If no services are immediately available, online resources may be the next option, provided the individuals seeking them have internet connectivity.

The international volunteer technical communities' involvement may also have been limited by the language barrier, as much of the emergency related information was only released in Japanese.

104 [HTTP://VIMEO.COM/51823402](http://vimeo.com/51823402)

5.9 TELECOMMUNICATIONS COMPANIES: INNOVATION SPURRED BY CRISIS

Months of continuous power outages, damage to infrastructure and congestion on landlines and mobile phone networks affected telecommunications across northeast Japan. Phone carriers restricted traffic by up to 95 percent to allow emergency calls to go through.¹⁰⁵

With telephone lines down, an alternative communication method was a mobile email service known as “**packet communication**”. Packets are short messages of up to 128 bytes that are broken into mini data “packages” and sent separately across the internet. The data in the message is reassembled when it reaches its destination, the recipient. Dividing the data allows many packages to be sent simultaneously via the 3G Network. During the earthquake, packet communication was not restricted in the same way as telephone traffic so many people could still send short emails.¹⁰⁶

The major mobile phone providers in Japan created emergency messaging services known as “**disaster message boards**” for people to type, or record messages, on their phones for relatives and friends to access.

This involved two types of message boards. One was text based, where people could input a message on the provider’s website that would be stored online or automatically forwarded to pre-registered email addresses. The other was a voice recording that could be emailed to a recipient just like an answer phone message.

The various disaster message boards were used 14 million times after the earthquake and they significantly reduced congestion on the network - especially if the same number of people had to make a direct call.¹⁰⁷

In the weeks following the disaster, telecommunications companies played a key role in providing mobile base stations as well as a limited number of handsets to evacuation centres.

This allowed centre managers to communicate with local authorities and people in the centres were also able to make one outgoing call a day, for free. All the public payphones that were still operational in Miyagi, Iwate and Fukushima were able to be used free of charge for one month after the disaster. Where all telephone networks were down, the International Committee of the Red Cross also provided stations where survivors could make calls via satellite phone to let family members know that they were safe.

After the disaster, telecommunications companies have been developing ways to strengthen their infrastructure networks in natural disasters. Since 2011 various smartphone applications for disaster message board services have been created, making the process more user-friendly.¹⁰⁸

In response to the fact that personal radiation monitoring devices were selling out as people across Japan started taking radiation readings in their own neighbourhoods because of the nuclear power crisis,¹⁰⁹ one Japanese mobile phone company Softbank also launched the world’s first mobile phone with a built-in radiation monitor in the summer of 2012.¹¹⁰

All major mobile phone providers in Japan have also agreed to send out tsunami warnings as well as earthquake warnings in the future.¹¹¹

It is also worth mentioning that mobile-based, digital terrestrial television broadcasting – usually referred to as “one-seg” in Japan - was a feature that helped people to watch television on their smartphones without an internet connection.

105 THE WORLD BANK, EMERGENCY COMMUNICATION, OP.CIT., P.4..

106 IBID.

107 IBID. P.5.

108 [HTTPS://PLAY.GOOGLE.COM/STORE/APPS/DETAILS?ID=JP.SOFTBANK.MB.DMB](https://play.google.com/store/apps/details?id=JP.SOFTBANK.MB.DMB) [WWW.SAGAJET.COM/LIVING-IN-SAGA/DISASTER-MESSAGE-BOARDS](http://www.sagajet.com/living-in-saga/disaster-message-boards)

109 [WWW.REUTERS.COM/ARTICLE/2011/05/25/US-JAPAN-GEIGERCOUNTER-IDUSTRE74O0WE20110525](http://www.reuters.com/article/2011/05/25/us-japan-geigercounter-idUSTRE74O0WE20110525)

110 [HTTP://EDITION.CNN.COM/2012/05/31/BUSINESS/JAPAN-RADIATION-PHONE/INDEX.HTML](http://edition.cnn.com/2012/05/31/business/japan-radiation-phone/index.html)

111 KDDI, SOFTBANK HOMEPAGE, NOVEMBER 2012

6 DIGITAL ARCHIVES, BIG DATA SHARING AND MEMORY INITIATIVES

Data that was collected after the earthquake is also being mined in other research projects to see if any of the various trends could help develop tools to help in future crises. Digital archives are being created to record the experiences of people impacted by the Great East Japan Earthquake as part of the recovery process and to help with disaster preparedness efforts in the future.

6.1 STORING MEMORIES: LOCALS CREATE DIGITAL ARCHIVES, PHOTO LIBRARIES

The Centre For Remembering 3.11 is a citizen-led archiving project in Sendai for Tohoku residents that allows them to create videos, audio files and photographs. The project's aim is to share information, promote recovery and preserve the existing multi-media content that came out of the disaster.

The centre provides all equipment and editing facilities for volunteers, who can produce whatever content they wish. Some survivors have produced audio files and in them, they voice strong opinions or narrate difficult experiences anonymously. Over 14,000 videos, photos and audio files have been collected so far. Creating and sharing content has proven successful in letting locals express themselves and encouraging communities to talk about the past.¹¹²

Another effort to remember the past is the **Memory Salvage Project** in Yamamoto, Miyagi, 40km south

of Sendai. About half of Yamamoto was flooded by the tsunami, and as in many coastal towns in the region, countless personal belongings were swept away.

Remarkably, the armed forces, police and fire fighters managed to salvage millions of photographs as they cleared debris. In Yamamoto, volunteers set out to clean, dry and digitally enhance the photographs, and hopefully return them to their owners. Photographs were uploaded to an online image archive service where survivors could look for their lost images using facial recognition software or keyword searches.

About 750,000 photographs were found and out of those 19,200 have been claimed by their original owners.¹¹³ Two of the original volunteers have since taken 1,500 of the photographs considered too badly damaged to be claimed on a worldwide tour in an exhibition called Lost and Found.¹¹⁴

Many town halls and volunteer centres along the affected coastline have also preserved hundreds of thousands of photographs and invited locals to search through them.

Google has also begun a project to remember what the communities were like before the disaster as well as preserving images of the devastation. The company created a website, Mirai e no Kioku, meaning Memories for the Future, which allows people in disaster-affected areas to upload and share videos and photographs that survived the tsunami.

Thousands of miles of Google Street View images are also being recorded in disaster zones, which allows

113 WWW.PLANET-MAG.COM/2012/ART/AIYA-ONO/LOST-AND-FOUND/

114 [HTTP://FRAMEWORK.LATIMES.COM/2012/03/23/JAPAN-TSUNAMI-EARTHQUAKE-RECOVERED-PHOTOS/HTTP://LOSTANDFOUND311.JP/EN/ABOUT/](http://FRAMEWORK.LATIMES.COM/2012/03/23/JAPAN-TSUNAMI-EARTHQUAKE-RECOVERED-PHOTOS/HTTP://LOSTANDFOUND311.JP/EN/ABOUT/)

112 [HTTP://RECORDER311-E.SMT.JP/](http://RECORDER311-E.SMT.JP/)

COMMUNITY PRINTING CASE STUDY #2: MY HOMETOWN – A MEMORY CHANNEL BETWEEN ADULTS AND CHILDREN

Mayumi Kudo, 39, lost her home in the tsunami and lived



Mayumi and Yusuke read their story, November 2012.
LOIS APPELBY

in an evacuation centre in Miyagi with her 5-year-old son, Yusuke, for five months. Thanks to advice passed on through her family, Mayumi knew to flee to high ground immediately even before the tsunami struck.

Recognising the importance of educating children about what to do in an earthquake or a tsunami, Mayumi wrote and illustrated a children's book, *Boku no Furusato*, or *My Hometown*. The book tells her own story, from when she received an earthquake alert on her phone to running for higher ground to seeing the destruction. It also details daily life in a makeshift evacuation centre and how one remembers the dead.

"I wrote the book in a way that acknowledges the realities of a disaster, but in a positive way, in the hope that parents will read it to their children regularly. I also hope that the children who survived the 2011 tsunami can discuss their experiences while reading the book," she says. The book has sold over 6,000 copies in four months and is regularly read to children in local schools.¹

1 MAYUMI KUDO INTERVIEW, NOVEMBER 2012

for "before and after" comparisons of neighbourhood streets. The images will document life before the disaster, current recovery efforts and the progress of reconstruction.

According to Google: "Seeing the street-level imagery of the affected areas puts the plight of these communities into perspective and ensures that the memories of the disaster remain relevant and tangible for future generations."¹¹⁵

To see the images, visit <http://www.miraiikioku.com/streettelevisioniew/en/about>

6.2 TRACING THE TRAIL OF DISASTER DATA

The International Research Institute of Disaster Science (IRIDE) at Tohoku University partnered with

Harvard University to create a digital archive on the disaster. This will be used in supporting recovery and for education and disaster preparedness measures. A wide variety of data is being collected, including seismological data, maps, simulations, official records, multi-media content, news scripts, anecdotes and personal case studies.

Records from previous natural disasters in Japan are also being included to enable comparisons and further study. For example, initial text analysis of articles published by the Kahoku newspaper after the 1995 earthquake near Kobe showed that, in the first three months, the main shortages were food, medicine, water, blood and manpower. However, in the Great East Japan Earthquake the greatest needs were gasoline, temporary shelters, electricity, relief items and information.¹¹⁶

By using advanced software and cooperating with private sector companies, the project is creating 3D

115 WWW.MIRAIKIOKU.COM/STREETTELEVISIONIEW/EN/ABOUT

116 MICHINOKU SHINROKUDEN, [HTTP://BETA.JDARCHIVE.ORG/EN/HOME](http://BETA.JDARCHIVE.ORG/EN/HOME)

images, footage and online maps of the disaster zone. The project also aims to record the recovery and reconstruction process and share that information, in what will almost be real-time.

6.3 PROJECT 311: SHARING BIG DATA FOR BETTER DISASTER UNDERSTANDING AND PREPAREDNESS

The Great East Japan Big Data Workshop - Project 311¹¹⁷ is a major post-disaster initiative designed to help improve preparedness for future natural disasters through technology. The main focus of the project is to share data sets owned by leading organisations including Google, Twitter Japan, NHK, Asahi Shimbun, Honda, and the mapping company Zenrin.

While today's technology allows us to visualise and assess the disaster situation from various perspectives, it is crucial for academics and tool developers to have the access to data.

Project 311 aimed to solve this issue by bringing together public and private stakeholders who could contribute their data. The shared data varied from tweets during the first week of the earthquake to NHK's news scripts and road traffic data. For instance, the data sets shared by Honda illustrate how automobile company can contribute to disaster management: using Honda's car satellite-navigation system, drivers were mapped on where they drove and where they didn't. This provides insights into which roads may have been destroyed or blocked as a result of the earthquake and tsunami.

While a number of projects were set up by the academics, researchers and developers, two projects, namely Project Hayano and Mass Media Coverage Map should not be ignored. **Project Hayano¹¹⁸** aims to understand the risk of thyroid cancer among children in Fukushima and nearby areas through data visualization and simulation. By combining different data sets provided by the 311 Project and other released data from SPEEDI and JAMSTEC,



A woman looks at her mobile phone as she rests at an evacuation centre for people affected by the March 11 earthquake and tsunami in Ishinomaki, northern Japan April 3, 2011. Japanese engineers grappling on Sunday to control the world's worst nuclear crisis since Chernobyl tried to seal a crack leaking radiation into the Pacific sea from a crippled reactor. REUTERS/CARLOS BARRIA, COURTESY THE THOMSON REUTERS FOUNDATION - ALERTNET

Professor Ryugo Hayano from Tokyo University aims to establish the foundation of a legally sound evidence base if cases of thyroid cancer arise in the future.

Another project that came out from this workshop was **Mass Media Coverage Map¹¹⁹** that was developed by Hidenori Watanabe, an Associate Professor at Tokyo Metropolitan University. This project mapped out mainstream media's data including NHK's breaking news coverage scripts and crowdsourced data such as geo-tagged tweets and crowd information gathered by the WeatherNews' Gensai Report.¹²⁰

Evidence suggests that there were a number of areas that had only limited stories broadcast about their communities. A review of geo-located tweets and crowd-sourced information showed that social media and user-generated content appeared to be a primary source of information in these areas.

Cooperation among different actors is crucial in order to have a bigger picture of complex disasters and to be prepared for the future emergencies. The 311 Project has contributed significantly in providing analysis and making linkages amidst the complexity that would not have been possible otherwise.

117 [HTTPS://SITES.GOOGLE.COM/SITE/PRJ311/](https://sites.google.com/site/prj311/)

118 [HTTP://SPEEDI.MAPPING.JP/](http://speedi.mapping.jp/)

119 [HTTP://MEDIA.MAPPING.JP/](http://media.mapping.jp/)

120 [HTTP://WEATHERNEWS.JP/TOHOKU_QUAKE2011/MAP/](http://weathernews.jp/tohoku_quake2011/map/)

7 COMMUNICATION BETWEEN AID AGENCIES

Although Japan is one of the world's major donors, the unprecedented scale of the disaster challenged existing response mechanisms. More than 200¹²¹ towns and cities were affected along a 650km stretch of coastline, which posed major challenges for national and local authorities. As in many natural disasters, the Great East Japan Earthquake highlighted the importance of communication and co-ordination of the aid effort.

Municipal governments and social welfare organisations became local response coordinators, yet many were inexperienced in major disaster response. Additionally their capacity was already reduced as many staff and buildings were lost in the disaster.

Awareness of NGOs was comparatively low in Japan before the disaster. As a donor, rather than a recipient of aid, Japan's national disaster response plan did not take into account the role of NGOs. Numerous national and international NGOs began relief operations to support the Japanese government but the common perception was that they were "volunteer groups". This hindered their efforts in the early stages of the disaster.

Although Japan is home to some of the best information technology in the world, there was little information sharing between humanitarian responders. While there were some localised efforts to co-ordinate government and civil society efforts – for example, in Ishinomaki - there was no systematic approach to the sharing of information. This caused duplication and inefficiencies in the response.

As one survivor in Otsuchi said, "I was often asked for the same information by the Self Defence Force, police, NGOs, local officials and volunteers. I appreciate that it was a confusing situation but it was also exhausting and I wish we could have been given personal information cards to complete and show to anyone who needed information."

The United Nations' UNOCHA, the Japanese Red Cross and the NGO network, Japan Platform, are in discussion with the Japanese government about how best to utilise experiences from the disaster and from overseas emergency responses to create a more efficient system for co-operation and co-ordination.

121 THE WORLD BANK, RECONSTRUCTION POLICY AND PLANNING: KNOWLEDGE NOTES, CLUSTER 4: RECOVERY PLANNING, NOTE 4-2, P.3

8 CONNECTING THE “LAST MILE”: LOW TECH, HIGH TECH?

Nearly two years later, the long-term impact of Great East Japan Earthquake is still being felt. Around 305,000 people are still in temporary accommodation and although the specifics have changed, the need for information is still there.¹²²

There is also no doubt that digital technology is providing new insights and information that can be shared around the world to help the vulnerable in future disasters and crises. The rise in the number of smart phones, mobile internet and access to social media is transforming the world in an unprecedented manner. And there’s no doubt that – as the experiences of Japan’s survivors demonstrates - that the internet can play a crucial role in the aid effort during a natural disaster.

However, as this report has shown, the reality of the digital divide in these situations must not be underestimated either.

Information and communication are a form of aid – although unfortunately, historically, the aid sector has not always recognised this. Getting information to people on the side of the digital divide, where there is no internet, may help them survive in times of crisis and help communities rebuild after immediate danger has passed.

Timely and accurate information for disaster-affected people as well as effective communication between local populations and those who provide aid also improve humanitarian responses to disasters. Using local media – such as community radio or print media – is one way to achieve this and it is an approach that should be embraced by humanitarian organisations.

Media, Information Systems and Communities: Lessons from Haiti produced by Internews, the Communicating with Disaster Affected Communities (CDAC) Network and the Knight Foundation in 2011, looks at how local radio, short message services, or SMS, and crowd-sourcing was used in the aftermath of Haiti’s 2010 earthquake to communicate with disaster affected communities.

Despite the fact that Japan is one of the richest countries in the world and Haiti one of the poorest, there are many similarities in the ways in which communication channels were used during disaster and why they were chosen. Japan is a highly advanced society in terms of technology – but when rudimentary infrastructure is all that remains, back-to-basics solutions are essential.

Japan’s disaster, like Haiti’s, demonstrated that local radio - providing community-specific information that directs people to food, aid and shelter - is essential. Radio doesn’t require literacy or proficiency with digital technologies and is a resource that government agencies, aid organisations and NGOs can use to ensure accurate, life saving information is reaching those who need it most.

“For people who are caught up in conflict and other emergencies, the need for information is often acute. Frequently, they are separated from their families, lack shelter and adequate food, and are scared and confused by the events occurring around them. Media programming tailored to the needs of such people can provide an essential information lifeline.”¹²³

WORKING WITH THE MEDIA IN CONFLICTS AND OTHER EMERGENCIES, UK DFID, 2000

122 GOVERNMENT OF JAPAN, 25 DECEMBER 2012

123 DFID, 2000, WORKING WITH THE MEDIA IN CONFLICTS AND OTHER EMERGENCIES, P.4

In both Japan and Haiti, mobile phones were also used to access information and contact friends and family. In Haiti, SMS were used, whereas in Japan social media became a lifeline for many. This builds on the findings that digital media and information technology can also significantly improve humanitarian responses.¹²⁴

Our current understanding of smartphones is that they are expensive and unaffordable for many. However, Google has developed a US\$80 smartphone that has been trialled successfully in Kenya. At a meeting of Tony Blair's Faith Foundation in London in November 2012, Jimmy Wales, the founder of Wikipedia, acknowledged the significance of this phone and its potential to bring the next billion human beings online. With plans for a US\$50 smartphone in the pipeline¹²⁵, the international humanitarian

community needs to prepare for a transformation in the way that information flows in disaster zones.

This report's clear message is that the more channels of communication available during a disaster the better. In times of emergency it is simply not possible to rely on only one, or even three or four kinds, of communication. Both low tech and high tech methods of communication have proven themselves equally important in a crisis.

In 2015 Japan will host the Third World Conference on Disaster Risk Reduction. One challenge for the international humanitarian community is to use this conference to examine the role of communications during the Great East Japan Earthquake and the crises that followed, and decide how the lessons learned there can be used to ensure that the 'last mile' is reached and effectively covered.

124 MEDIA, INFORMATION SYSTEMS AND COMMUNITIES, LESSONS FROM HAITI (2011), ANNE NELSON AND IVAN SIGAL WITH DEAN ZAMBRANO, INTENREWS AND THE CDAC NETWORK, P.6

125 IT NEWS AFRICA, 23 OCTOBER 2012

9 RECOMMENDATIONS

FOR ALL ACTORS

- » All involved in humanitarian response need to **recognise the role of, and need for, effective information and communication in disaster response**, particularly with and within disaster-affected populations. From an emergency management perspective, this also includes the flow of information between the host country government, other state agencies, NGOs, aid organisations, Volunteer & Technical Communities (V&TCs), and affected populations.
- » In crises and emergencies, there is a need for **multi-sectoral, coordinated, communications strategies with disaster-affected communities**. Multiple information channels and platforms including traditional media outlets, social media, public address systems, community mobilisers, posters, brochures, word of mouth and so forth should be used, depending on the context. There is no one silver bullet.
- » All actors in the response should **make use of existing co-ordination mechanisms**, such as the humanitarian clusters under UNOCHA, to integrate new technology into responses. Where the UNOCHA clusters are not activated, an alternative system should be established.
- » All actors, including the V&TCs, must ensure they have **well-established mechanisms for co-ordination**. Humanitarian response coordination mechanisms must include measures to strategically engage with local media and existing communication channels. This is crucial to ensure that the “last mile” is covered and connected.

FOR THE HUMANITARIAN COMMUNITY

- » Incorporate **information for, and communication with, disaster-affected communities as core components within disaster preparedness, emergency response and resilience strategies** is vital—information saves lives and communication is aid.
- » Aid agencies must allocate **specific resources** to recruit and include humanitarian communication specialists within their teams and train existing humanitarian staff on humanitarian communications (i.e. two-way communication with disaster-affected communities). This also includes specific budget allocations for programs on communication with local populations.
- » The Great East Japan Earthquake highlighted the importance of effective communication and coordination of the aid effort. This includes the need to device and roll out coordinated **multi-sector humanitarian communication strategies and monitor its implementation and impact**. These strategies are by definition multi-platform and multi-channel and both low tech and high tech channels and tools are equally important.
- » Aid organisations need to **make a greater investment in assessing local information ecologies**, this includes understanding the local media and telecommunications landscape, conduct information needs assessments and develop research, monitoring and evaluation of humanitarian communication initiatives.
- » Japan’s disaster, like Haiti’s, demonstrated that **local radio** -providing community-specific information that directs people to water, food, shelter and health facilities- is essential. Assisting local radio stations to resume

broadcast and work with radio and other local media initiatives is vital. This may include providing technical and financial support and brokering emergency broadcast licenses, as required. Media development organizations can be key partners.

- » The dramatic rise in mobile internet access and social media usage is transforming the world in an unprecedented manner. However, the **reality of the digital and age divide** in crisis situations must not be underestimated and must be effectively planned for and addressed in disaster preparedness, emergency response and resilience strategies.
- » From an operational perspective, **evacuation centres**, displacement camps and other interim locations for people displaced by crises (e.g. city halls, schools, medical facilities, markets, parks...) must effectively become information hubs/one-stop-shops for people affected by the disaster. Aid agencies must ensure survivors are able to access timely and accurate information about the disaster and aid services available for them, and, equally important, that they are also able to inform relief operations with their feedback and opinions. Plug points to recharge e.g. mobile phones, access to wind-up or battery-powered radios, TVs, computers, megaphones and satellite phones, as required, to enable better communication within affected communities, and coordination among aid responders, must be considered.
- » Distribute **wind-up radios**, preferably, or battery-powered radios, in the early stages of a disaster, and mobile phones and (solar) chargers as part of Non-Food Items (NFIs) kits, as assessed/required.
- » Aid agencies must **work with the technology sector and V&TCs** to ensure that potential technology solutions are aligned to local populations and humanitarian agencies needs. This includes, for example, the use of user-generated content as a resource to gain better situation awareness and potentially address urgent humanitarian needs.
- » As the number of (non-traditional) humanitarian players increase and the humanitarian

communication sector itself expands, the **need for effective coordination** in communicating with local communicates is growing and becoming even more vital.

FOR THE TECHNOLOGY SECTOR

- » There is a need to ensure that **efforts** are not only **aligned** to the needs of the disaster-affected communities and the humanitarian sector, but that they **avoid duplication**. Initiatives like the Digital Humanitarian Network (DHNetwork)¹²⁶ or the launch of Guidelines for the Use of SMS in Natural Disasters¹²⁷ by GSMA Disaster Response, Souktel and the Qatar Foundation are certainly important.
- » There is a need to create a **standard central information portal** for all relevant resources that can be used by all actors. Currently, agencies, governments and private companies all run their own systems and there is limited standardisation and coordination. The revamp of the Humanitarian Response portal¹²⁸, a specialised digital service of UNOCHA, and the launch of the Humanitarian Kiosk¹²⁹ mobile app are interesting developments.
- » **Partnerships and coordination** are vital, and it is critical to have them in place ahead of crises. Having well-established relationships among all sectors and actors involved, including V&TCs, before emergencies improves the flow of information and coordination of relief efforts.
- » Telecommunications companies need to continue developing ways to strengthen their infrastructure networks in natural disasters. **Restoring connectivity is paramount.**
- » As the number of smartphone and social media users increases worldwide, the use of social media in emergencies will continue to grow and become more critical. However, **provisions** must also be made **for those without access**

126 [HTTP://DIGITALHUMANITARIANS.COM](http://digitalhumanitarians.com)

127 [WWW.GSMA.COM/MOBILEFORDEVELOPMENT/TOWARDS-A-CODE-OF-CONDUCT-GUIDELINES-FOR-THE-USE-OF-SMS-IN-NATURAL-DISASTERS](http://www.gsma.com/mobilefordevelopment/towards-a-code-of-conduct-guidelines-for-the-use-of-sms-in-natural-disasters)

128 [WWW.HUMANITARIANRESPONSE.INFO](http://www.humanitarianresponse.info)

129 [HTTP://KIOSK.HUMANITARIANRESPONSE.INFO/](http://kiosk.humanitarianresponse.info/)

or with limited digital literacy. Internet-based resources should also be developed with mobile phone users in mind to accommodate those without access to computers.

- » **Digital archives, big data sharing and memory initiatives** are crucial to supporting people's recovery and helping with disaster preparedness efforts and education in the future.
- » It is critical to conduct **external evaluations** to assess and improve how V&TCs (e.g. through crowdmaps or social media initiatives) contributed and can better assist local communities and humanitarian responders.

FOR ACTORS IN JAPAN

- » Establish an **information sharing system** between humanitarian responders that includes governmental channels, UN agencies, international and national NGOs, the Self Defence Force, the National Police Agency, the Social Welfare Association, the private sector and volunteer technology groups.
- » Evaluate and address the **specific information needs of the elderly and other vulnerable groups** at times of crises who may fall off through the digital and/or age divides.
- » Local governments should recognise the **vital role local radio** plays in early warning and disaster management systems and create a joint emergency communication strategy that integrates them. Local governments should also ensure that local radio stations in critical areas have adequate means to operate.
- » All Japanese residents should be encouraged to have a **wind-up or battery-powered radio and batteries in their homes as part of their emergency kit.** Government offices should also have access to satellite phones and wind-up or battery-powered radios.
- » Even as disaster management systems and early warning technologies continue to develop, the general public should also be made aware of their limitations. **Public education** on the

limitations of disaster management technology and continued work on risk awareness and disaster preparedness is needed.

- » **Develop an early warning public address system that could be controlled remotely** allowing officials to evacuate rather than staying behind and making announcements, in effect, endangering their own lives.

FOR NATIONAL GOVERNMENTS AND DONORS

- » **Restoring connectivity and communication networks** must become a humanitarian priority. This includes re-establishing mobile communication networks, support existing local media to resume operations as soon as possible and consider wind-up/battery-powered radios and mobile phones and solar chargers as part of Non-Food Item (NFI) kits.
- » Donors and national governments must include **local media and telecommunication companies as integral components** within their early warning, disaster response and resilience strategies. They must encourage implementing partners and local government offices to broker strategic partnerships to maximize the coverage and impact of those strategies. Creating emergency broadcast licence schemes can be of critical importance.
- » Donors must develop **rapid funding mechanisms** to finance the provision of emergency information to and communication with disaster-affected communities during the immediate aftermath and in the reconstruction and early recovery phases. The UK's Department for International Development (DFID) Rapid Response Facility (RRF) is certainly a groundbreaking development. Coordination among donors is key.
- » Ensure that implementing partners and local governments prioritise community information and communications needs of the most hard-to-reach and vulnerable in the development and implementation of emergency and reconstruction efforts.

10 TIMELINE

OCTOBER 2007

Japan Meteorological Agency (JMA) invests US\$500 million to create the JMA Earthquake Early Warning system

11 MARCH 2011

14:45 JMA detects tremors and automatically disseminates alerts seconds before the earthquake strikes

Alerts interrupt national TV and radio broadcasts

A Short Message Service Cell Broadcast (SMS-CB) system sends mass JMA alerts to mobile phone users in specific geographic locations

Direct lines of schools and disaster prevention and local government offices receive JMA alerts to announce warnings by community wireless speakers

Companies operating critical infrastructure receive JMA alerts, enabling high-speed trains, elevators in high-rise buildings and heavy machinery to be stopped

14:46 Magnitude 9.0 earthquake strikes off the coast of Tohoku, North East Japan

14.48 NHK starts its coverage of the disaster – All domestic channels switch to emergency broadcast

14:49 **TSUNAMI WARNING 1**

(Miyagi 6m, Fukushima 3m)

15:03 A 14 year-old student starts to live stream NHK's programme on Ustream using his iPhone camera

15:12 Tsunami strikes first coastal city

15:14 **TSUNAMI WARNING 2**
(Iwate 6m, Miyagi 10m+, Fukushima 6m)

15:30 **TSUNAMI WARNING 3**
(Iwate 10 +, Miyagi 10 +, Fukushima 10 +)

AROUND 15:50 A tsunami of 10m+ hit the coasts of Fukushima

16:03 A Twitter hash tag "#j-j-helpme" is created by a user in Southern Japan as a focal point for requests for assistance

16:32 Launch of Google's Person Finder

1700 – 2400 Google creates a Crisis Response page in Japanese, English, Chinese and Korean

Japan's version of the Ushashidi crisis map, Sinsai.info, is created by tech volunteers

Twitter usage soars to 11,000 tweets per minute in Japan

Commercial TV stations started to broadcast without commercial breaks

12 MARCH 2011

Twitter Japan sends a tweet summarising the most popular hash tags used for different purposes as well as links to official disaster information sources

14 MARCH 2011

The Government of Japan sets up its first disaster-related Twitter account: @Kantei_Saigai

15 MARCH 2011

Private broadcasters resume to air commercials, decreasing the air time dedicated to information about the disaster

The government issues a no-fly zone over the Fukushima Daiichi Nuclear Plant

16 MARCH 2011

Social media network, Mixi, releases a new application enabling users to view their friends' login history

17 MARCH 2011

The Tokyo Electric Power Company (TEPCO) sets up a Twitter account (@OfficialTEPCO)

WEEK 1

Twitter Japan publishes a blog outlining the most used hash tags for different purposes as well as links to official disaster information sources

UNOCHA begins producing situation reports

Telecommunication companies create disaster message boards

Community radio stations becomes the main provider of lifesaving information

Basic newsletters and newspapers become information lifeline

The city hall in Rikuzentakata, Iwate, begins to issue a daily newsletter

Safecast, a volunteer-led project to collect and share radiation measurements, is created

All public payphones that are still operating in Miyagi, Iwate and Fukushima are made free of charge for one month after the disaster

WEEK 2

Local Radio, newsletters, newspapers continue to provide essential information

Volunteer led Safecast radiation map and project to collect and share radiation measurements across Japan is created

The Prime Minister's Office creates a Facebook page with translation of official press briefings and updates in English

1 MONTH

TVs donated to many evacuation centres

21 new disaster FM stations receive licenses and began to broadcast emergency information

3 MONTHS

Over 610,000 personal records have been uploaded on Google's Person Finder

6 MONTHS

Most evacuees move into temporary shelters provided by the Government, equipped with TV sets

FEBRUARY 2012

Facebook creates a Disaster Message Board and ran a national test

SUMMER 2012

Japanese mobile company Softbank launches the world's first mobile phone with built in a radiation monitor

OCTOBER 2012

Project 311, led by Google and Twitter, analyses how information from news and social media circulated in the first week of the disaster

7 DECEMBER 2012

Within hours of the 7.3 earthquake, Twitter Japan releases recommended hash tags to use to follow and share information about the earthquake

2 YEARS ON- 2013

Over 305,000 survivors live in temporary accommodation in Tohoku.

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DIGITAL ARCHIVES

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Digital Archive of Japan's 2011 Disasters: <http://www.jdarchive.org/?la=en>

Google's Memories for the Future: <http://www.miraikioku.com/streettelevisioniew/en/about>

VIDEOS

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Japan's tsunami early warning system: how news broke on live Japanese television

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INTERNEWS' HUMANITARIAN COMMUNICATION PROGRAMS

OUR OBJECTIVE

Save lives, reduce suffering and enable people in the midst of a disaster to take an active role in their own survival and recovery

WE BELIEVE #COMMISAID

People affected by unfolding tragedy need more than physical necessities: **They have an urgent need for information.** ↗

"We have no sources of information at all. ... We don't know what is happening in Syria, what is happening to our families. We don't even know if it is Friday or Thursday."

REFUGEE INTERVIEW DURING
INTERNEWS' ASSESSMENT IN
JORDAN'S ZAATARI CAMP,
SEPTEMBER 2012

Historically, **the aid sector has failed to realize that communication is one of the most powerful forms of aid.**



Local Broadcasters can be a life line for critical news, a battery powered radio should be in everyone's kit Ready.gov #Sandy

Timely and accurate information for disaster-affected people, as well as effective communication between populations and aid providers are still omitted during humanitarian responses.

The potential of local media in emergency response is largely underutilized and untapped by humanitarian organizations.

The single piece of technology that has proved to work the best in emergency response is still local radio.

ON THE GROUND

We respond to crises and emergencies around the world, supporting local media initiatives to meet information and communication needs of disaster-affected people

We provide surge and technical support to existing Internews in-country projects.

We document our work and share it across sectors

We advocate to increase the understanding of communication as aid and the vital role of local media

OUR STRATEGY

Strengthen the power of local media to play a vital role in establishing two-way communication channels between aid providers and local communities, harnessing Information and Communication Technologies (ICT) and social media

Equip humanitarian responders to implement state-of-the-art communication strategies that use ICT effectively to position local communities at the center of their programs

Innovate, exploring how introducing and combining new ideas (including through the private sector), can improve humanitarian preparedness and response

OUR TOOLS

- Humanitarian Communications Roster ↗
- Emergency Media Standby Kits ↗
- Humanitarian Reporting Module for journalists and trainers
- Templates & methodologies for rapid information needs assessments
- Standard Operating Procedures (SOPs) for emergency response

OUR OPERATIONS IN 2012: ASSESSMENTS, SUPPORT AND STUDIES

Between 2011 and 2012, Internews conducted **7 Information and Communication Needs Assessments** in response to major humanitarian crises in Sri Lanka, Tunisia, Liberia/ Cote d'Ivoire, Libya, Kenya/ Somalia, South Sudan/ Ethiopia and Syria/Jordan.

In 2012 we supported **strong, innovative humanitarian projects in 6 countries across 3 continents**, including Haiti, Chad, Central African Republic (in partnership with Ushahidi), Kenya/Somalia, South Sudan, and Pakistan.

In 2012 we also worked on a **media landscape study on Syria**, and conducted a study in **Japan** on the role that media played in responding to the triple disaster of March 2011.

POLICY AND ADVOCACY

Internews is co-founder an active member of the **Communicating with Disaster-Affected Communities (CDAC) Network**, a groundbreaking initiative that brings together humanitarian, media development, and technology sectors. **Internews set up and run CDAC Haiti** during the 2010 earthquake.

Internews Europe, Internews' sister organisation, is pre-qualified to the **British Government's Rapid Response Facility (RRF)**.

PARTNERSHIPS & COLLABORATIONS

ASSESSMENT CAPACITIES PROJECT (ACAPS)

FOR the Global Emergency Overview (GEO), a mobile app to improve decision making in humanitarian responses, also in partnership with the Internews Center for Innovation & Learning

GOOGLE CRISIS RESPONSE

FOR a media and information ecologies assessment of Indonesia

INFOASID

WITH BBC Media Action

A project to improve how humanitarian agencies communicate with local populations

ABOUT INTERNEWS' HUMANITARIAN INFORMATION PROJECTS

Since the 2004 Indian Ocean tsunami, Internews has been present in major humanitarian crises around the world, establishing critical links between affected populations, local media, and humanitarian agencies to provide life-saving information and set up effective two-way communication platforms.

Internews has responded to:

- the Pakistan earthquake (2005)
- internally displaced people (IDP)/refugee crises in Darfur and Chad (since 2005)
- post-election violence in Kenya (2008)
- large-scale displacement in South Sudan (2006-2012)
- conflict in Sri Lanka (2007-2010)
- war in Gaza (2009)
- ethnic violence in Kyrgyzstan (2010)
- the earthquake in Haiti (2010-2011)
- Tunisia and Libya uprisings (2011)
- Horn of Africa, Liberia/ Cote d'Ivoire South Sudan/ Ethiopia refugee crisis and Syria/Jordan (2012).



Internews is one of the founding members of the Communicating with Disaster Affected Communities (CDAC) Network (www.cdacnetwork.org), a ground breaking cross-sector initiative between aid agencies, UN organizations, the Red Cross Movement, media development organizations and technology providers that recognizes information and two-way communication as key humanitarian deliverables.

CDAC Network Members believe that information to, and communication with, affected people are essential life-saving interventions, key to helping people take greater ownership of their own recovery, and critical to accountability and genuine participation.

CDAC Network Members believe that communication is aid.

Current Full Members of the CDAC Network are: BBC Media Action; International Committee of the Red Cross (ICRC); International Media Support (IMS); International Organization for Migration (IOM); Internews; Merlin; the United Nations Population Fund (UNFPA); Office of the United Nations High Commissioner for Refugees (UNHCR); the United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA); Plan UK; Save the Children; the Thomson Reuters Foundation; and World Vision International.

INFORMATION SAVES LIVES COMMUNICATION IS AID

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Internews set up and run CDAC Haiti during the 2010 earthquake until late 2011. Internews Europe is the current financial and legal host of the CDAC Network in London.

Internews Europe is pre-qualified to the UK's Department for International Development (DFID) Rapid Response Facility (RRF) and it is also a partner of the Humanitarian Aid department of the European Commission (ECHO).

Internews Europe is an international development organization specialising in supporting independent media, freedom of information and free expression around the globe. Since 1995, the vast majority of our programmes are targeted at crisis-hit populations, emerging democracies and some of the world's poorest countries.

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