

DISASTER DURING A PANDEMIC

LESSONS FROM 2020 FLOODING IN SOUTH JAPAN



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Published by:

CWS Japan

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Shinjuku-ku, Tokyo 169-0051 Japan
<http://www.cwsjapan.org>
Tel: +81-(0)3-6457-6840

January 2021



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Please refer to this publication as follows: Das S., Shaw R., Kanbara S., Abe M., Komino T. (January 2021); “Disaster During a Pandemic—Lessons from South Japan Flood in July 2020”, CWS Japan, 40 pages, Tokyo, Japan

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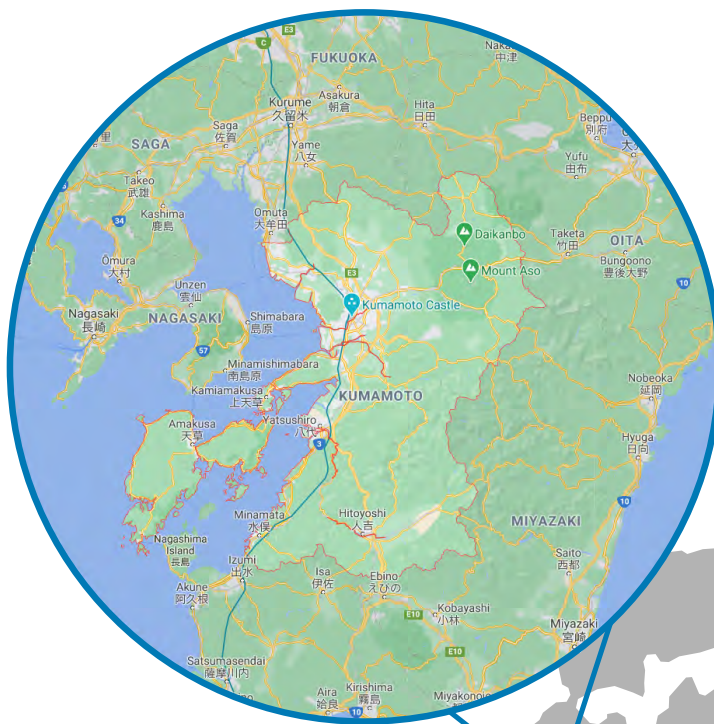
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LIST OF ABBREVIATIONS

AMDA	The Association of Medical Doctors of Asia
DMAT	Disaster Medical Association Team
FDMA	Fire and Disaster Management Agency
GEJE	Great East Japan Earthquake
JMA	Japan Meteorological Agency
JVOAD	Japan Voluntary Organizations Active in Disaster
KVOAD	Kumamoto Voluntary Organizations Active in Disaster
MHLW	Ministry of Health, Labor and Welfare
MLIT	Ministry of Land, Infrastructure, Transport and Tourism
NGO	Non-Government Organization
NHK	Nippon Hoso Kyokai or Japan Broadcasting Corporation
NPO	Non-Profit Organization
SFDRR	Sendai Framework for Disaster Risk Reduction
YMCA	Young Men's Christian Association
YWCA	Young Women's Christian Association

INTRODUCTION

On July 4th, 2020, the southern prefectures of Japan, particularly Kumamoto and Kagoshima, experienced record-breaking heavy rain, which caused devastating floods and landslides in many areas of these prefectures. The disaster, which was officially named as “Reiwa 2-Nen 7-Gatsu Gou” (meaning heavy rain of July 2020), killed 83 people, 65 of whom were in Kumamoto prefecture¹. There is a possibility that the number will increase with time because of disaster-related deaths². Beyond these most devastating losses of life, the latest data notes 15,335 buildings destroyed by this disaster.



KUMAMOTO
PREFECTURE

KAGOSHIMA
PREFECTURE

¹ From Fire and Disaster Management Agency data, [available online \(in Japanese\)](#).

² “Disaster related death” is death from indirect causes linked to disasters, such as illnesses exacerbated by difficult conditions in evacuation shelters, the heavy stress from the radically changed living environment, suicides among evacuees and so on.

Right: damage in the city of Aso in Kumamoto prefecture following the 2016 earthquake.
Below: flood damage in July 2020.

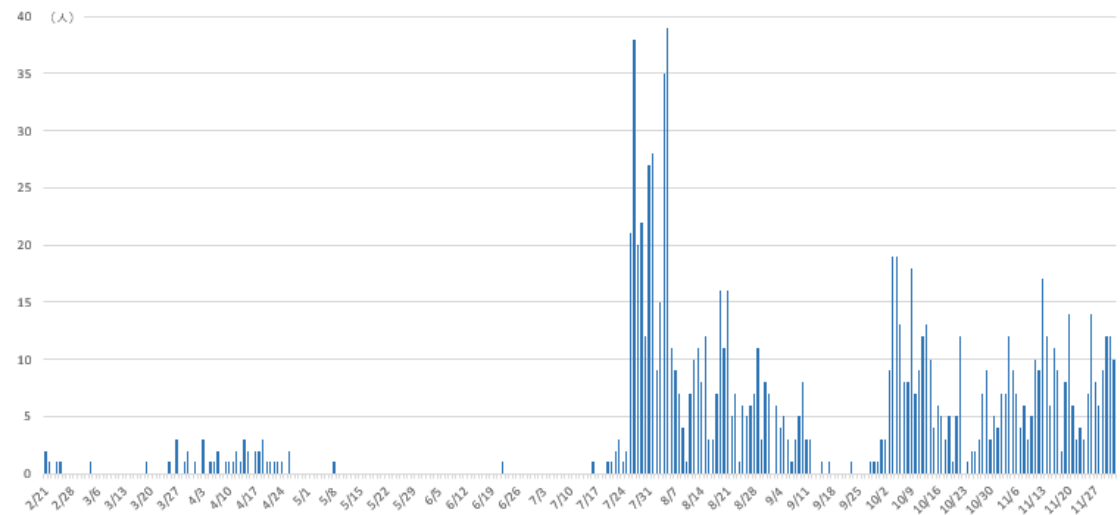
This report focuses on the affected areas of Kumamoto prefecture, which was most severely damaged by this disaster. The Kuma river of this prefecture has a history of repeated floods, most of which affected the areas that were affected this year. Moreover, Kumamoto was the prefecture that was hit by a damaging 7.0 magnitude earthquake in 2016, which caused widespread damage in and around Kumamoto city. Because of these past disasters, some of which happened within the last decade, there are many aspects in which Kumamoto is more prepared to manage a disaster than the neighboring prefectures. However, there is a number of other aspects where a lot more can be done.



The flood of July 2020, unfortunately, happened at a time when the whole country, as well as most other countries of the world, was fighting a pandemic. Japan has been relatively successful in keeping the spread of the Covid-19 virus somewhat in control compared to other developed countries, which could be related to its culture (such as non-touch greeting and sanitation practice since childhood), food habits and advance healthcare system³. However, Japan has been managing the response to COVID-19 under a separate structure from the one used for dealing with natural disasters, instead of adopting a multi-hazard approach recommended in the Sendai Framework for Disaster Risk Reduction (SFDRR, widely known as “the Sendai Framework”)⁴. The state of emergency that went into effect in April was declared on the basis not of the Disaster Countermeasure Basic Act that covers natural disasters but of the Special Measures Act to Counter New

Types of Influenza. As will be discussed in this report, the pandemic has affected both the preparation and the response of the July 2020 flood, highlighting the importance of a multi-hazard approach as called for by the Sendai Framework.

The strict regulations because of the pandemic have affected the research of this report as well, since it was difficult to access the field from other parts of the country without an exclusive permit. This research was mostly done through published data and documents, interview of the affected people and leaders of organizations, and short visits to the field with special permission. The authors hope that the findings of this research, supported by CWS Japan, will bring to light the complex impacts and management implications of cascading disasters, and thus project the importance of a multi-hazard approach.



Covid-19 cases in Kumamoto prefecture between February and November, 2020. The highest numbers were in late July. [Source: website of Kumamoto prefecture.](#)

³ Tashiro A., Shaw R., “COVID-19 Pandemic Response in Japan: What is Behind the Initial Flattening of the Curve”; *Sustainability*, June 2020.
⁴ Mikio Ishiwatari, “Multi-hazard Approach to Compound/Cascading Disasters: Putting Experience in Developing Disaster Risk Reduction to Use in Pandemics”; JIIA, December 2020.

A damaged whitewater rafting facility along the Kuma river. The Kuma is one of three major rivers in Japan and has a history of flooding.



HISTORY OF FLOODS IN KUMAMOTO

As mentioned above the Kuma River basin has a history of flooding, the worst of which was in 1965. One of three major rapids in Japan, the Kuma is a 115-kilometer-long class A river⁵. Its course begins in the mountain range in Kyushu, and it runs through Hitoyoshi city, Kuma village, and Yatsushiro city before discharging into the Yatsushiro Sea. The river is prone to flooding almost every time there is heavy rainfall in the region, which, because of its geographic location, happens very often.

July 1965	The river overflowed along almost its entire length, flooding almost two-thirds of Hitoyoshi and breaking part of the Hagiwara levee in Yatsushiro.
July 1982	The same areas were affected along the river after a record rainfall. Over 5,000 houses were damaged, and 47 houses were washed away.
Aug. 2004	Heavy rainfall brought by a typhoon caused the river to overflow, forcing people in Hitoyoshi and the surrounding areas to evacuate.
Sept. 2005	The river overflowed following heavy rainfall caused by a typhoon. A total of 119 houses were inundated, and over 750 families had to evacuate.
July 2006	Continuous heavy rainfall raised the water level, which overflowed and inundated 80 houses. Over 900 families had to evacuate.
June 2008	Heavy rainfall caused the river to swell and overflow, inundating 33 houses. More than 1,000 families in Hitoyoshi, Yatsushiro and Ashikita had to evacuate.
June 2011	The water level of river crossed the danger limit after heavy rainfall, forcing residents of Hitoyoshi and surrounding areas to evacuate. At least eight houses were inundated.

Table 1: Major floods along the Kuma river since the 1960s

(Source: [Website of MLIT's Yatsushiro River and National Highway Office.](#))

⁵ The term "Class A River" is applied to rivers and waterways deemed to be important to the economy of the nation as a whole, as well as those deemed important to the conservation of nature within Japan (source: Wikipedia).

HALTED DAM PROJECT COULD REDUCE THE IMPACT OF FLOODING

After Kumamoto Prefecture was hit by heavy floods from the Kuma River for three years in a row from 1963 to 1965, the Construction Ministry, a predecessor of the Ministry of Land, Infrastructure, Transport and Tourism, announced in 1966 a project to construct a dam along the Kawabe River, the largest arm of the Kuma River, as a flood control measure. In 2008 the prefecture governor requested the Land Ministry to suspend the project and consider flood protection measures without dams, following which the project was canceled in 2009 by the central government. The MLIT, prefecture government, and local governments have established committees to examine measures without dams, but have been unable to find out any solution because of the costs and construction period required. Construction of water control structures like dams is always a difficult decision. They do protect settlements from floods, but often at

the cost of other sacrifices. Kuma River is famous for river rafting, and if the dam affects the water quality, the entire tourism industry of that area will suffer. However, an estimation compiled by the land ministry's Kyushu Regional Development Bureau after the July 2020 flood showed that the dam, which would be called the Kawabegawa dam, could have reduced the total area of inundation by 60.7% had it been constructed as planned (see **Table 2**). The areas that had an inundation of three meters or above could have been saved by nearly 89%, which means the seven lives that were lost in the second floors of buildings could have been saved. The prefectural government announced in mid-November, four months after the flood, that it has decided to restart the construction of the controversial dam⁶, and instead of a conventional reservoir-style dam, the state will build a flood retention dam that is environmentally friendly and stores water only in the event of flooding with open outlets.

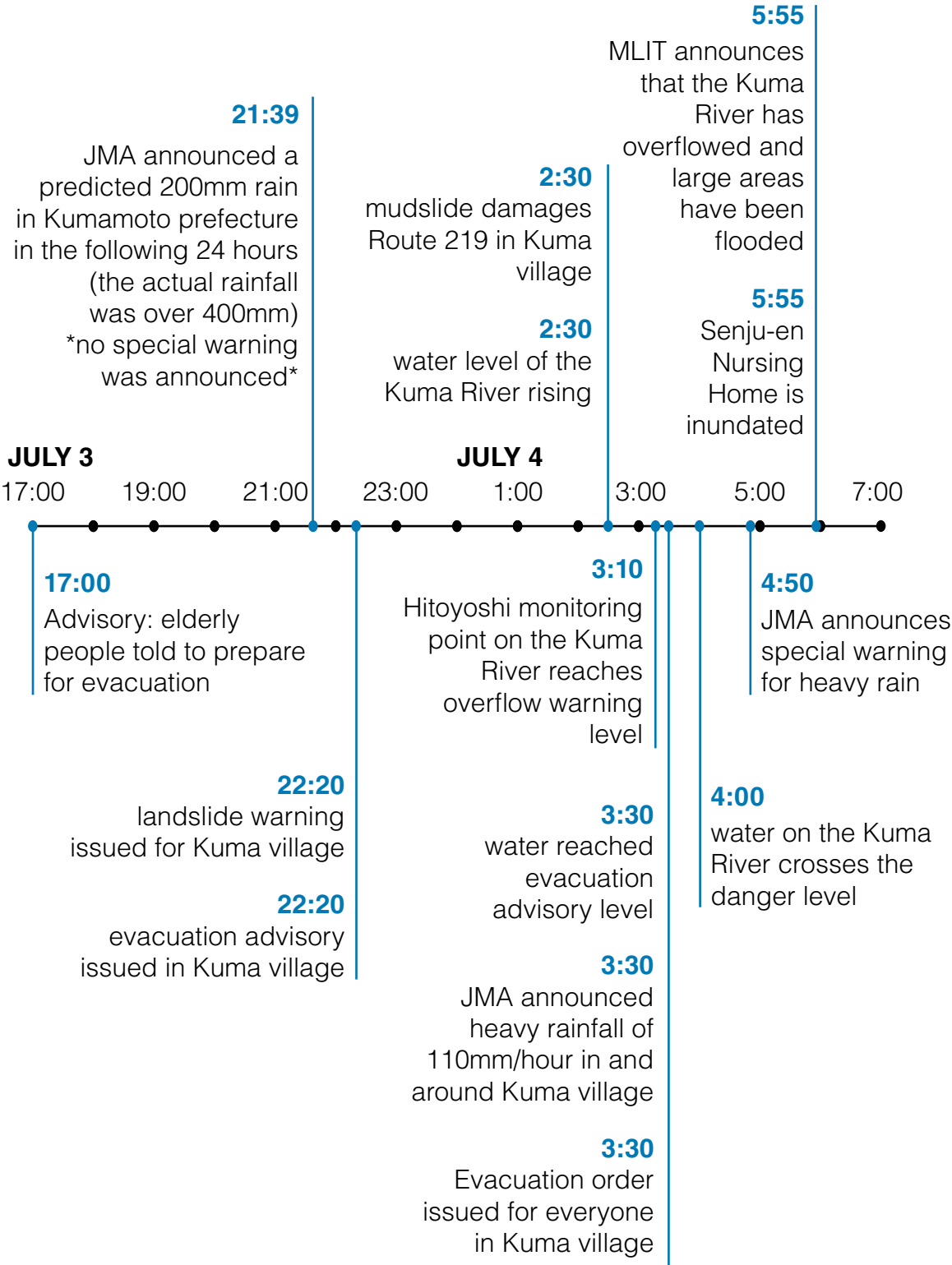
Depth of Inundation	Area of Inundation (ha) Without the Dam	Area of Inundation (ha) With the Dam	Percentage of the Area that Could be Saved
Below 0.5m	68.5	66	-4.0%
0.5 to 3m	275.9	132.1	-52.1%
Above 3m	224.2	25.2	-88.8%
Total	568.6	223.3	-60.7%

Table 2: Estimates compiled by MLIT showing percentage of area that could be saved if the dam was built as planned.

(Source: Ministry of Land, Infrastructure, Transport and Tourism, October 6, 2020)

⁶ Kyodo news via The Japan Times, November 19, 2020, "[Kumamoto approves controversial dam after deadly July flooding](#)"

TIMELINE OF THE FIRST FEW HOURS





FOCUS 1: EVACUATION

As soon as the heavy rain forecast was announced by the Japan Meteorological Agency in the evening on July 3rd, the local news media started to relay the forecast asking people to take early action. This was the first time the new evacuation guideline was to be applied, and the possibility of confusion among the people could not be ruled out. As discussed in CWS Japan's report "Lessons from Mabi"⁷, there are various reasons why people are often reluctant to evacuate, such as inadequate risk communication, underestimation of danger, physical inability, lack of information about where or how to go and so on. Because of the COVID-19 pandemic, the dilemma and confusion regarding where and

how to evacuate, or whether to evacuate at all, had intensified manifolds.

The capacity of the designated evacuation shelters dropped to nearly one-fourth to accommodate social distancing among the evacuees, and people were advised to follow the Dispersed Evacuation guideline⁸ to avoid the Three C's⁹. Many people did take early action to evacuate after hearing the warning, but there were also many who could not move to a safe place before the river overflowed. Of the 83 deaths reported so far, 58 died inside a building, seven of whom were found in the second floor, which, unfortunately, is one of the options often advised by experts for emergency evacuation.

⁷ See Issue 4 of CWS Japan's report "Six Months Since Western Japan Flood: Lessons From Mabi."

⁸ NHK online special page on COVID-19; (in Japanese). [Available online.](#)

⁹ The Three C's: Closed spaces, Crowded places, Close-contact settings. See Ministry of Health, Labor and Welfare's (MHLW) poster [available online.](#)

CONFUSION EVERYWHERE: TO GO OR NOT TO GO?

5-Level Warning System			
Warning Level	Action to take	Information provided by local government	Weather alerts issued by JMA
5	People must take measures to protect lives	Disaster information	Emergency warning
4	All residents must evacuate	Evacuation order / instruction	Landslide alert information etc.
3	Elderly people must evacuate	Evacuation preparation information	Rain / flood / storm surge warnings etc.
2	You should check evacuation procedure	Advisories	Rain / flood / storm surge advisories etc.
1	You should stay on alert for disasters	Early warning information	-

The 5-point warning system used by the Japan Meteorological Agency.

When a danger approaches, it becomes challenging to walk or drive even to the most familiar places of one's neighborhood. Without a good evacuation plan, one can only try to go to one of the facilities, if there are any nearby, or a friend or relative's house in a safer place. All the while, confusion and mental stress caused by the approaching danger take a toll. With the designated evacuation shelters filled within hours due to their significantly reduced capacity, many were completely lost of options as the heavy rain started. Many went back to their homes, stayed put in the upper floor, if there was any, to save themselves from the worst. Many did not leave their homes at all because they saw their neighbors and friends leave for an emergency center, then come back after not finding anything. People with pets, especially, try to avoid going out, since pets are usually not allowed inside the same space as people at most evacuation shelters.

The biggest dilemma, however, about whether to look for an emergency shelter or to just stay put during the July 2020 flood, was faced by families that had one or more members who needed special care (such as elderlies or persons with disabilities). Evacuation itself could pose a risk to those members, as the moves could cause injury or destabilization of long-term care plans. Besides, the conditions in evacuation shelters, quite understandably, fall short of those in clinics and nursing homes by far—especially in terms of ensuring the protection against a deadly virus. It was a tough decision for those who provide care to those people, and hence they took their time in making the move. When it became clear that they were not safe where they were, people tried to move to the upper level of the building, which in many cases, including the case of Senju-en¹⁰ Nursing Home, is not a safe place to evacuate.

¹⁰ The Asahi Shinbun online edition, July 6, 2020, "Male nurse racked by guilt at failure to save elderly residents"

VOICES FROM THE FIELD

“The rain was really heavy in the night of July 3rd. Around the time of the sunrise I heard the sound of some sort of announcement, but I was sleeping, and the rain was too strong. I could not figure out what the announcement was about. At around 5 in the morning when I looked outside, I was shocked to find the whole area under water. I live within the compound of a shrine, which is thankfully located on the high ground. Many people from the surrounding areas had come for shelter, but we had no idea about what was going on.

Because of the altitude we cannot catch radio or NHK transmissions, and there was no information from the local residents' association. I called my daughter who lives in the greater area to seek her advice, and it was then that I got to know about the flood. She sent detail information about which areas had been inundated, which roads had been damaged, by cell phone messages with pictures, from hundreds of miles away! I was thankful for my daughter's help, but this experience made me realize how risky it is to not have access to local information in times of disaster.”

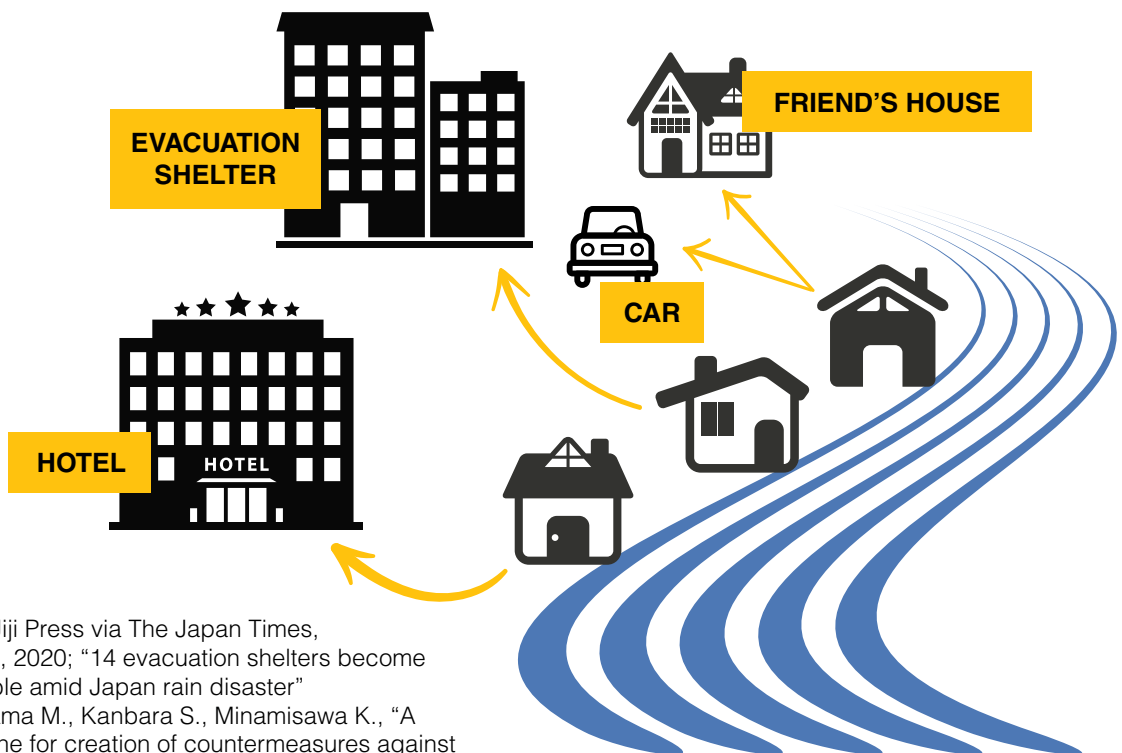
- A Woman in her 60s from Sakamoto town of Yatsushiro city



DISPERSED EVACUATION: HOW WELL DID IT WORK?

Evacuation shelters of Japan are mostly multipurpose halls of public schools, which usually accommodate a few hundred people. In case of the July 2020 flood, as has been mentioned above, they could only accommodate one-fourth of their usual capacity. For example, if a hall can typically accommodate 200 people, because of social distancing it will only be able to accommodate 50 people now. Not only that, as many as 14 designated shelters were submerged in three prefectures because of the heavy rain, making the situation much worse¹¹. There were also some places like the severely

affected Kuma village, where there was no designated emergency shelter. Therefore, the very limited number of spaces that could actually be managed within the evacuation shelters were mainly for people who want to or have no choice but to seek shelter there, and it was in a way expected that most others would opt not to go to a designated emergency shelter for fear of getting infected¹². It was advised that people find other options, such as accommodation facilities like hotels or inns, or friend and relative's houses and so on in the safe zones as an alternative.



¹¹ The Jiji Press via The Japan Times, July 13, 2020; "14 evacuation shelters become unusable amid Japan rain disaster"

¹² Koyama M., Kanbara S., Minamisawa K., "A guideline for creation of countermeasures against flood disaster during a pandemic situation (COVID-19)", 2nd Edition, March 27, 2020

A Good Example of a Lesson Applied

When typhoon Hagibis hit in October last year, the shelters of Tokyo's Tama city became overcrowded, and there were cases where some families had to look for alternatives in the middle of the night. The city authorities took this matter seriously, and collaborated with a local IT company to develop an app in August this year, with which the residents can check how crowded the shelters are on the map of their cell phones or computers.



Unfortunately, the evacuation shelters registered people based on who came first. People started pouring in there as the warnings were announced repeatedly, and they filled within a matter of hours leaving the rest, including many elderly residents, with no place to go. Some were denied access, some were allowed under special consideration, but the rest went back home finding no other option. In an open hall within a sports facility called "Sakura Dome" in the higher land of Kuma village, 200 people took shelter for two nights, even though it had no wall or proper floor. The accommodation facilities in Hitoyoshi and Yatsushiro city filled very fast by people who could afford them. Many residents did not have cars or a valid license, and many hesitated to trouble their friends or relatives without prior plans. The advisory about Dispersed Evacuation was to save people from the COVID-19 pandemic while evacuating, and it is safe to say that the plan worked, since there has been no report of outbreak as of October 20, but because such a large number of people had to evacuate at the same time, it ended up causing more confusion and dilemma to a process that was already quite challenging for many.

Thankfully, the TV channels aired the latest updates on which shelter was full, which could take some more and so on in real time. This helped people take informed decision about where to evacuate, at a very critical time.

THE FIRE DEPARTMENT ITSELF WAS UNDER WATER

When the Kuma river overflowed on the morning of July 4, the first floor of Shimokuma Fire Department's office in Hitoyoshi city went under water. The office had been receiving calls for help and rescue since 2 AM from people who could not evacuate, or were stuck in their cars in areas close to the water. They continued doing their duty for as long as they safely could, but after the office went under water, they were ordered to save their own lives. The trucks and rescue equipment, including the generators to produce electricity in emergency, were all inundated. There was nothing they could do anymore,

although they kept receiving calls from people under water "up to the neck"¹³. They also received a few calls from Senju-en Nursing Home, where 14 lives were lost.

The Chief of the Shimokuma Fire Department's office reported that their office is located in the flood-risk zone. During the worst flooding, it can be under five meters of water (up to the second floor). They did periodic evacuation drills for this situation, but on July 4 the floods came faster than drills had prepared even these professional rescuers for, forcing them to evacuate to save their own lives.



¹³ "Water up to the neck, 191 SOS calls, Fire Department under water, phones constantly ringing: The case of Hitoyoshi Shimokuma" (in Japanese)

IMPORTANCE OF A GOOD EVACUATION PLAN & PERIODIC DRILLS

The importance of a good evacuation plan and periodic drills cannot be overstated. Especially families that have disabled or elderly members, and facilities that provide care for such people, must have a plan in place for all kinds of emergencies. It has been repeatedly seen in the recent years that those who do these drills have been able to pull it through the worst of disasters without any fatality. During typhoon Hagibis in October 2019, as a power outage rendered elevators inoperable at a nursing home in Saitama prefecture, 24 caregivers who had rigorously planned and drilled were able to move all 120 residents to the second floor in the middle of the night. The following day, all of the residents—most in their 80s and 90s and many suffering from dementia—were rescued by local firefighters, prefectural police officers and national Self-Defense Forces troops.

The caregivers of Senju-en Nursing Home, where 14 residents died, also conducted periodic drills, as reported later by its director Ms. Aki Goto, but around midnight on July 3rd, they were more worried about mud slide from the hills on the other side of the facility. A very unfortunate case of poor risk communication. By the time

they noticed the rising water of the river, it was too late for the six workers to carry all 60 residents, most of whom could not move by themselves, to the upper floors. Senju-en is situated near a small river that branches off from the Kuma River. The area falls in the high-risk zone, and in the event of a flood, water levels were expected to rise up to 20 meters, or about five floors. Which means, if the water rose to the worst level, neither the residents nor the caregivers could be saved even if they moved to the upper floors.

What is most concerning is that cases like Senju-en are not rare at all in Japan. According to the Ministry of Land, Infrastructure, Transport and Tourism, as many as 67,000 nursing homes and clinics across the country for people who require special care are located near rivers and are at risk of flooding¹⁴. All of these facilities are obliged to prepare an emergency evacuation plan and conduct emergency drills, but according to MLIT, only 35.6 percent of facilities nationwide had such plans in place as of March 2019. In the southern prefectures of Japan, the percentage was even lower at 24.2 percent, with the ratio in five of the seven prefectures lower than the nation's average.

¹⁴ The Japan Times, July 24, 2020, "Japan's nursing care facilities face challenge of safely evacuating during disasters"

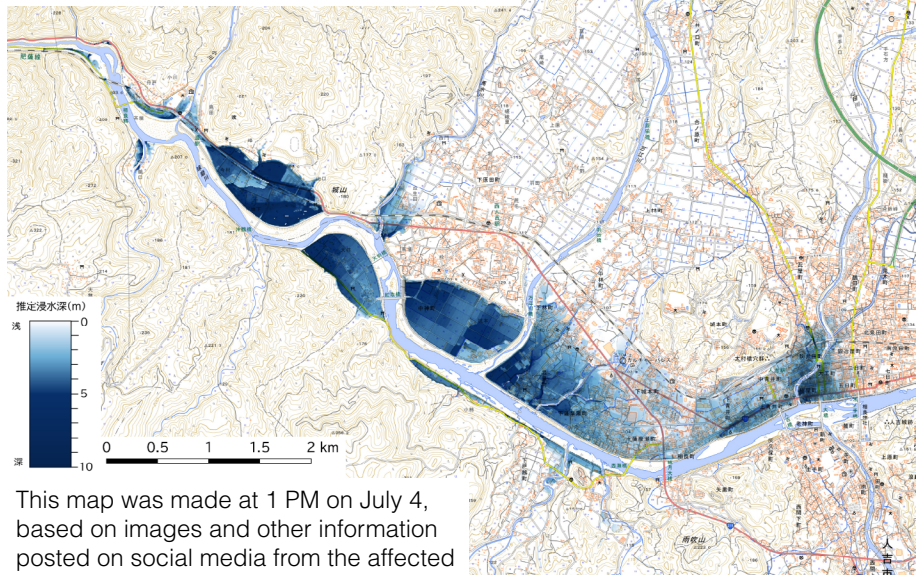
HAZARD MAPS ARE UNDER-UTILIZED

About 80% of the casualties happened in areas that were already marked as high risk in the hazard maps or the flood risk maps¹⁵.

This has been a very critical matter, and a common occurrence, in all the recent water-related disasters. The hazard maps are still a work in progress, especially in South Japan, where only 23.1 percent of municipalities have

finished making the maps as of November 2019, with Kumamoto being the second lowest at 9.5%¹⁶, but almost all the areas that were affected by the July 2020 flood were marked as high risk. It has become clear yet again that the flood risk maps are not being carefully checked by the residents and the communities. These maps are usually issued on paper, and are often very difficult to understand for the common people. There have been talks about making them more comprehensive and easily available, although no significant step has been taken yet. Understanding disaster risk is the first Priority for Action in Sendai Framework for Disaster Risk Reduction and is essential for prevention of fatalities

July 2020 flooding of the Kuma river:
Area of inundation in and around Hitoyoshi city

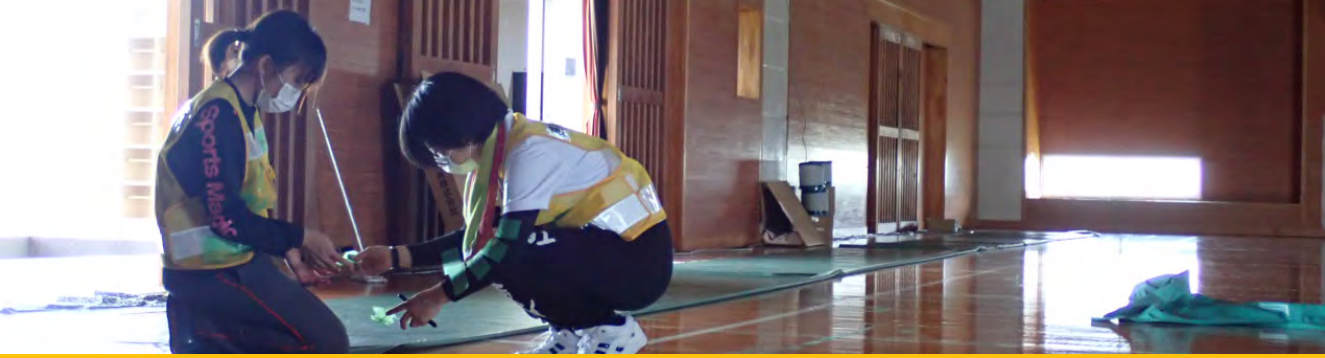


This map was made at 1 PM on July 4, based on images and other information posted on social media from the affected areas in real time, and may not fully reflect the real depth and areas of inundation.

and damage. There are about 5000 buildings along the Kuma river, from the upstream to the downstream, and most of them are located in Kuma village and Hitoyoshi town, where the damages were the most severe. In other words, the damages could be significantly reduced if the residents had better understanding of the risk. To leave the judgement of whether to build in those areas or not on the owner or the developer is clearly not enough. With the intensity of water-related disasters increasing with time because of the climate change, it has become essential to make strong policies against building in the areas that are clearly marked as flood-risk zones in the Hazard Maps.

¹⁵ NHK News Web, September 28, 2020, "What we saw from the death of 83 persons" (in Japanese)

¹⁶ The Japan Times; November 22, 2019; "Less than a quarter of Kyushu Municipalities have up-to-date flood risk maps"



FOCUS 2: SHELTER MANAGEMENT

An evacuation shelter is not merely a safe building to provide shelter for people at risk of being affected by a disaster—it is also a place that provides the evacuees with all kinds of help and support till they are able to manage on their own. Management of evacuation shelters, where several hundred people might be taking shelter during an emergency, requires a team of people with varied experience and expertise. Under normal conditions the management team follows a set of guidelines issued by the government. Because of the pandemic, a new set of guidelines has been issued, that covers various aspects of managing an emergency shelter, including how to open it at the wake of a disaster and what to prepare, details on what to do with people who show symptoms of the disease, how to maintain the cleanliness and sanitation, how to manage and report about relief goods, what to be careful about while distributing food, and what to do with people who come with pets. However, each disaster is different, so is each shelter, and not everything can be instructed through a common guideline. A good amount of instant decision-making, therefore, is always left on the

people who manage the shelters—a task that can be extremely stressful during the first few weeks after a disaster. The government officers dispatched to the shelters to look over the management, as well as local volunteers with previous shelter management experience, who themselves may be affected by the disaster, are often over-worked. There have been cases of serious stress-related illnesses, and even suicides in the past among the officers who were on emergency duty after disasters. The complexity, severity and longevity of the COVID19 pandemic has brought this issue back to light.

As discussed in the previous chapter, evacuation shelters could only accommodate a quarter of their usual capacity during the July 2020 flood because of social distancing. This reduced the number of evacuees but did not necessarily make the responsibility of management any easier. This chapter examines various aspects of evacuation shelter management after this disaster and tries to understand the lessons that were learned.

FOOD DISTRIBUTION

The distribution of food was contracted to one local company since there was no other within the area that could supply such a large number of packed food each day for an indefinite time. Unlike other disasters, restaurant owners from within or outside the prefecture were not allowed to open soup kitchens to distribute warm food to prevent the virus. For a short stay this may not

seem like a big problem, but in a perspective of several months, this affects the nutrition level of the evacuees, making them vulnerable to chronic diseases. There is also a long-term psychological impact of not having any variation of food that is often overlooked. The situation started changing slowly towards the end of September, when other companies were included in the contract.

CLOTHES & EVERYDAY ITEMS

The designated shelters receive huge amounts of relief goods from all over the country, including clothes and everyday items. Sometimes people send used items, which may, in turn, pose a threat of infection for the evacuees. Used items, in general, are usually separated and

disposed of by the managing body, and only fresh, necessary items are offered to the evacuees. This has been a widely talked about issue during the 2018 Western Japan flood¹⁷. This year the goods are being checked with consideration about the pandemic as well.

CLEANLINESS & HYGIENE

In terms of cleanliness and hygiene, however, the evacuation shelters are doing far better compared to other disasters—thanks both to the new guidelines and increased awareness and action on the evacuees' parts. After the Western Japan flood two years ago, many evacuees and volunteers reported of untidy environment within the shelters, where entrances were often filled with shoes covered in mud and dirt, which could easily be borne inside by anyone coming in. This time only the designated people are allowed inside, after a temperature check and sanitizing of hands. The separate

areas for people who need special care are off limits for everyone except the caregivers, and they follow a strict level of sanitizing process before entering the area. As of mid-October, there has been no report of an outbreak—COVID-19 or otherwise—at the evacuation shelters.



¹⁷ NHK online; July 11, 2018, "Hold on before you send that relief!" (in Japanese)

PHYSICAL & MENTAL CARE

The medical care for the first 48 hours is usually given by medical associations such as Disaster Medical Association Team. Kumamoto DMAT, which is based at the Japanese Red Cross Kumamoto Hospital, has nine doctors, 10 nurses and seven coordinators in its emergency team. These specialized teams often have to brave bad weather conditions to reach out to the people who need various types of emergency treatment. Their duties do not end with the initial phase, which may last from 48 to 96 hours. They visit the shelters from time to time to provide medical support after the initial phase as well. There are several other medical associations that provide healthcare at the shelters by joining the Health Department. The Association of Medical Doctors of Asia, for example, was present with its team of one doctor, two nurses and one coordinator at the Dai-ichi Junior High School in Hitoyoshi city, where, as of July 10, 116 people were staying.

Because of the restriction on people from outside the prefecture due to the pandemic, many other medical professionals, such as disaster nurses, who could offer help in various ways, were not able to visit inside the shelters. The members of these additional teams reach out to the evacuees and can detect a case of stress or fatigue related illness simply by looking at a person



or exchanging greetings. People often evacuate without taking their medicines and healthcare items, and their condition often deteriorates irreversibly at the shelters by the time the necessary medicines arrive. Left undetected and untreated, these cases may end up in disaster-related deaths, which are not small in number even if only the reported cases are considered¹⁸. The shelter management does provide health-related support, with instructions from the Health Department, but without the presence of a healthcare professional in the team they do that only after a problem is reported—by when it is usually quite late. The health-care volunteers, on the other hand, reach out to people, talk to them or give them a massage, for example, and can detect a problem before a person recognizes it himself or herself. Their visit and services are also important for the mental health of the evacuees, as discussed in CWS Japan's report "Towards Mabi's Recovery: Lessons One Year On."¹⁹

¹⁸ Disaster related deaths from typhoon Hagibis of 2019, for example, went up to as many as 21 a year after the disaster. Source: NHK World news, October 12, 2020, "One year since Typhoon Hagibis struck Japan".

¹⁹ See 3.1.2 Health (pg. 8) of CWS Japan report "Towards Mabi's Recovery: Lessons One Year On"

INTERNET CONNECTIVITY

Evacuation shelters are required to have telephones and internet connectivity, because the shelter management has to keep in constant touch with various departments of the city office and other stakeholders. There may also be situations where the management may need to send or receive urgent information using the internet. The importance of internet connectivity is even more for the evacuees, who depend on online sources to receive the support to rebuild their lives. All the information and applications—starting from temporary shelters to reconstruction subsidies—are available online. Since the evacuation shelters are usually multipurpose halls of public schools, they are not supposed to have internet connectivity under normal conditions. According to the guideline, the shelter management needs to ensure that before it is opened, usually by borrowing the internet equipment from the school office. Cell phone providers often provide wireless connection and charging station at the shelters, although only for their respective customers.

In case of the July 2020 flood, however, since people were dispersed over a large area in non-designated shelters, most places do not have internet equipment as of October



2020. Especially at gathering places, where important information is exchanged among the affected people, an internet connection is almost indispensable. It is usually the local committee or disaster support from large companies that provide internet in these places, but unfortunately this time no one seems to be ready to take the responsibility. This will definitely affect the recovery process at individual level, especially in case of older adults, who need support to even operate their devices. When this report was written, some volunteer organizations were bringing in wireless routers to the gathering places, but they were not sure whom they could ask for the cost. It is worth mentioning here that the government App designed for COVID-19 contact tracing will not function without good internet connection at all gathering places.



CONSIDERATION FOR PEOPLE AT OTHER EMERGENCY SHELTERS

It is essential to provide all kinds of support to the evacuees including the ones discussed above, but what needs to be kept in mind is that many affected people are living in all kinds of difficult conditions, including cars and partially damaged houses, since July. The new government guideline talks about considering ways to help these people (for example, page 18 section 7(3) about food distribution), but there is no further guideline. According to some volunteer organizations, people who stayed in

non-designated emergency shelters after the July 2020 flood, including those who stayed at home and in the cars, were three or four times more than those who stayed inside the evacuation shelters. Therefore, focusing all the support within the evacuation shelters is not enough. It is very difficult for many people to go there seeking food, clothes and healthcare every day. Attention must be paid, and efforts must be made to reach out to these people before it is too late.

FOCUS 3:

VOLUNTEER MANAGEMENT

The restriction on people coming in from outside the prefecture because of the pandemic caused a serious shortage of volunteers during the first six weeks after the disaster. There was a four-day long weekend about three weeks after the flood, and it was expected that a good number of spontaneous volunteers would register, but the actual number was far less. The first responders were mainly organizations that were already active inside the prefecture, most of whom formed after the 2016 Kumamoto earthquake. Organizations like Kumamoto Young Women's Christian Association started their activities right after the disaster, and played the important role of connecting organizations from outside the prefecture, including CWS Japan, to the affected people. Large organizations that have the capacity to handle volunteer management joined much later, towards the third week of August. Volunteers willing to help needed to clear certain conditions that confirmed that they neither carried the virus nor came in close contact with it, and were asked to follow a series of preparatory health routine, such as checking temperature at regular intervals. Moreover, they were expected to follow the guidelines published by JVOAD²⁰ at all times,



and were given a simple orientation after their registration was confirmed. Each volunteer had to maintain a record of their activities and locations and share it every day via Google Doc.

²⁰ JVOAD guideline for volunteers [available online](#).

SILVER LININGS

Due to all these restrictions, there has been a volunteer shortage since the beginning. This affected the initial cleaning severely. Most of the damaged buildings, roads and bridges had to be kept as they were for weeks. Many residents still do not know where to begin the cleaning and renovation of their damaged homes. However, as the days went by, it turned out that this situation has some positive sides, too:

- It was relatively easy to manage the volunteers because there were so few.
- Because of the strict health rules, there were no reported cases of sickness or heat stroke among the volunteers, which is often common during summer disasters. The volunteers are taking good care of their health. When they come to help, they come fed and rested.
- With so few volunteers, some needs were unmet. As a result, evacuees started doing many things by themselves. This can lead to a paradigm shift in how we perceive the need for volunteers, and can also result in better and stronger community resilience.

SOME CASES OF INFECTION

In spite of the strict precautions, there were some cases where infected people didn't know about the disease until they had worked in the area for several days. A city employee from Kagawa Prefecture in western Japan who was dispatched to Kumamoto for disaster relief efforts was found to be infected on July 13, a week after the flood. The same week, a Jiji Press photographer sent to cover the disaster in Yatsushiro and Hitoyoshi was also found to have Covid-19. According to a report from the Kumamoto government, both of the infected persons had been following the guidelines, and no further cases were reported from people who had come in contact with them. Regardless, these two cases made authorities rethink allowing help and support from outside the prefecture.

SPECIAL SKILL VOLUNTEERS

Although there were restrictions about non-skill volunteers (who usually are the largest in number), special-skill volunteers like masons, carpenters, heavy equipment operators and lawyers who specialize in house insurance were allowed to come and start their activities from an early stage. As mentioned above, organizations specializing in shelter management like Young Men's Christian Association and Peace Boat Disaster Relief, came in towards the third week of August. Lawyers, in particular, were quite fast to respond and become active this time compared to most previous disasters.

THE IMPORTANCE OF COORDINATION

Kumamoto Voluntary Organizations Active in Disaster has been playing an invaluable role of coordinating the response of all organizations by creating a common platform where each can share their own and can learn about the others' latest updates. KVOAD has been holding regular meetings, first every evening, then eventually each Tuesday and Thursday at 6 p.m., where not only NGOs and NPOs, but also government organizations, research bodies and the mass media have been taking part. They call these meetings “Hinokuni Kaigi”, which literally means “meeting for the country of fire” (i.e., earthquakes and volcanos). KVOAD was founded after the 2016 earthquake in Kumamoto, after its Director Mr. Tsutomu Higuchi realized the need for a form of intermediary

support organization while working on environmental improvements for 118 evacuation shelters around Japan. The meetings are held at Kumamoto Prefecture's Social Welfare Association office, but this year because of the pandemic the meetings have been taking place online. The online meetings, it turned out, had several positive sides too, other than protection from the spreading of the virus. The organizations can not only meet needs with support more quickly, they can also share information with members all over Japan in real time and receive advice immediately. People can even join while they are on the move in the disaster area using their smartphones. Meeting notes are kept in real time (in Japanese), date-stamped, and posted to the organization's website.



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THE KUMA RECOVERY PROJECT

To solve the problem of severe shortage of volunteers at least to some extent, a group of local organizations, including Hinokuni Kaigi, have started a project called “The Kuma Recovery Project”²¹. The model principally involves three parties: (1) areas where volunteers are needed (for cleaning work), (2) potential volunteers, who are mainly people who lost their business or jobs to the disaster, (3) contributors and fund-providers.

In this project the potential volunteers who satisfy the criteria can apply through the website for a particular date and place. When their work is done, they are given a small amount

of daily allowance from the fund created by the contributors. Bus rides are provided between major areas for their transport. Updates of the recovery work done under this project are posted regularly in the website. This project is a very good example of Adaptive Governance Mechanism²².

Experts suggest that time has come to examine at each disaster-prone area the minimum manpower required for the cleaning and reconstruction work, both from inside and outside the prefecture. Local businesses and private companies also need to actively contribute in the “manpower-bank”, the way they have done for the Kuma Recovery Project.



²¹ [Website of the Kuma recovery project](#) (in Japanese).

²² “Adaptive governance is an emergent form of environmental governance that is increasingly called upon by scholars and practitioners to coordinate resource management regimes in the face of the complexity and uncertainty associated with rapid environmental change” Chaffin B., Gosnell H., Cosens B., “A decade of adaptive governance scholarship: synthesis and future directions”; Ecology and Society, Vol.19, no.3, article 56. [Available online.](#)

BEYOND CLEANING WORK

It is often thought that the work volunteers help with after a disaster only involves cleaning of buildings and roads. While it is true that the large share of the work involves some sort of cleaning, in reality volunteers help in many other ways too— such as shelter management, distribution of food, clothes and other items and so on. There is also paperwork that gets done thanks to volunteers. Experience has shown that the victims of disasters need more than just daily supplies. Physical and mental health care is vital too. In fact, this care, which can be provided directly or indirectly while doing the cleaning or other types of work, often matters the most. The lives that survived a catastrophe and the hurdle of living in very difficult situation for days, even weeks, may lose to the harsh mental impact of the trauma and the feeling of being left behind. Volunteers like the owner of the restaurant “Himawari-Tei” in Hitoyoshi city, or organizations like “Minori”—who go from door to door to distribute food, or just to talk to people, ask if they need anything—are playing an extremely important role that is often overlooked.

The July 2020 flood showed that while much of the work inside the evacuation shelters could be done by the evacuees themselves, more hands and eyes are needed to reach out to the people who are dispersed over the entire affected area, who are still finding it very difficult to go from one day to another.





FOCUS 4: EARLY RECOVERY

As discussed in the previous chapters, the travel restriction to prevent the spread of COVID-19 has resulted in serious shortage of volunteers, which has eventually caused delay in the recovery efforts. The vast areas that were inundated needed to be cleaned, and the damaged buildings needed to be washed and repaired. Businesses had to be restored. It is not possible to take on such a vast scale of work without help from all over the country. River rafting, for example, around which a large part of the tourism industry is built along the Kuma river, cannot run unless the river is fully cleaned and the damaged facilities are reconstructed. Without adequate volunteer help, the owners and the

the local government will have no choice but to wait for support from the central government, which will take time. The early phase of the recovery is largely focused on relocating the displaced people from the emergency evacuation shelters to temporary shelters, and since Kumamoto has rebuilt from a massive earthquake four years ago, this part has progressed quite smoothly. The first six months is also the period during which the affected towns and villages publish their recovery plan based on opinions from the residents. This chapter summarizes the recovery plans published so far, and talks about the temporary houses built for the families that were displaced by this disaster.

RECOVERY PLAN OF HITOYOSHI CITY



The recovery plan of Hitoyoshi city²³, which was published two months after the disaster, was prepared based on cooperation between the city, the prefecture, reconstruction experts, and above all the residents. The plan gives an overview of an expected schedule, and how activities will be coordinated with the overall planning of the city. It also outlines how the plan will be taken forward with interactions between the city and the residents.

The plan has three main components:

1. Rebuilding of community
2. Revival of the economy
3. Resilient town planning

²³ The recovery plan of Hitoyoshi city (in Japanese) can be downloaded from the [city's website](#).



RECOVERY PLAN OF KUMA VILLAGE

Kuma village had not yet published a recovery plan after the July 2020 flood when this report was written. With a population of little over 3,800 people, most of whom are over 65 years of age, Kuma village has been repeatedly affected by floods from the Kuma river over the last few decades. It became urgent to rethink the overall village planning from the perspective of disaster resilience, and a committee was established in December 2015 to work out a plan. The plan was published in September 2017, where the matter of absence of a full-functioning evacuation shelter was addressed with great importance. The issue came to the forefront after the July flood, when people had to move

miles away from the village in search of a safe evacuation shelter. An open structure called “Sakura Dome” located at a sports facility, which had neither finished floor, nor walls, nor usable toilets, served as an emergency evacuation center for the first few days. Most villagers who lost their homes had to stay far away from the village, and travel back and forth with great difficulty to take care of their damaged property. Many have already given up hope of coming back to the village. It is expected that Kuma village will emphasize this matter again when it publishes its recovery plan, which will no doubt call for adequate safe place for its aging population within its boundaries.

VOICES FROM THE FIELD

“The first floor of my house was completely damaged by the flood. There were about 20 families living in the area, but I heard only three will rebuild their homes here. Many have moved out of the village to live with their families. I don’t think that many people went to the evacuation shelters from this village.

I myself took shelter on the upper floor of my house in the beginning, but I decided to go to an evacuation shelter because it was difficult for me to prepare meals by myself. However, the road to the evacuation shelter where I am staying was damaged, and I had to take a two-hour detour just to reach my home every day to clean up. Now the road has been repaired, but it still takes an hour one-way. It is really difficult to make this one-hour journey every day to clean up at this age.

I have started to give up hopes of rebuilding my home at the same place... I can’t see any future for myself here. Even if I get an allocation of a temporary house, it will only be for up to two years. What will happen after that? An old fellow like me sees no hope. I’m thinking of talking to my family and moving to a town with a hospital nearby.”

- A 70-year-old farmer from Kuma village



TEMPORARY HOUSING

Arranging temporary housing for the displaced people where they can live temporarily till their houses are repaired and reconstructed, is an important part of the early recovery. According to the website of Kumamoto prefecture²⁴, 808 units of prefabricated temporary shelters at 24 group housing in seven villages and towns were constructed, starting since after the disaster in July till early December. The affected people started moving into these temporary shelters since as early as late-August. Compared to the 2016 earthquake in the same prefecture, when it took about 6 months for the evacuees to start moving into the temporary shelters, the progress of the construction was quite fast.

Apart from the prefabricated temporary houses, the affected families will be given rental subsidy for empty houses and apartments. The application process has started, according to a circulation in the prefecture's website on October 14, and the deadline for application is December 15th. Any affected family who satisfies the given criteria will be able to apply. Those who have already rented a house or apartment and moved in will also be able to apply, if they satisfy the same criteria. These families will only have to pay for the water and energy supplies, and not



pay any part of the rent during their temporary stay.

Since the prefabricated shelters are built in groups, it is easier for the government and non-government organizations to keep track of the updates and needs of the residents. With the rental subsidy, they will be scattered over a large part of area, often quite far from their original place of residence, and it will be difficult to keep track of each of their individual needs periodically unless they reach out. This was a serious problem in Mabi town of Okayama prefecture after the 2018 Western Japan flood, when almost 80% of the affected people moved into these empty houses and apartments with rental subsidy²⁵. Separately, plans are under way for a new group housing for people who need special care, where trained caregivers who lost their jobs because of the disaster will look after the residents. The construction is expected to start as soon as a suitable land is found.

²⁴ Source: [Official website](#) of Kumamoto prefecture's emergency response.

²⁵ See Issue 8: Temporary Shelter of CWS Japan's report "Lessons from Mabi".

MINNA NO IE: A HOME FOR ALL

“Minna no ie”²⁶ or “A Home for All” is a project initiated by a team of architects and designers, who call themselves the “Art-Police”²⁷. The team is led by Pritzker prize winner architect Toyo Ito. This project designs and builds wooden structures to be used as community spaces for the affected people within the temporary group housing areas. The project started in 2011 after the Great East Japan Earthquake by building these community spaces at the temporary housing sites of Sendai city in Miyagi prefecture. When Kumamoto was affected by a flood the following year, the team built 2 similar structures

for people to gather together and share ideas for the recovery process. After the 2016 Kumamoto earthquake they built 95 of these structures at 73 temporary housing sites. This year the Art-Police team has built 20 “Minna no ie” at various temporary housing sites in Kumamoto, and all of them were complete by the beginning of December. The Minna no ie structures are always built by local masons and carpenters with the best local materials. As has been seen after all recent disasters, these community spaces play a very important role in the recovery of the affected communities.



²⁶ See [the website of Kumamoto Prefecture](#) for details.

²⁷ See [the website of Kumamoto Prefecture](#) for details.



WAY FORWARD

As highlighted in the World Economic Forum's 2020 Global Risk Report²⁸, the world has been undergoing increasingly complex risk landscapes over the recent years. Cascading disasters are becoming common, and it is no more enough to have policies that only address one type of disaster at a time. Moreover, the growing climate change has presented new problems and aggravated the existing ones in all parts of the world. Living and decision making amid the new uncertainties of climate change have almost become the “new normal.” Cascading disasters like the South Japan flood of July 2020 during the COVID-19 pandemic, unfortunately, are no longer an event one may only see once in a lifetime. As such, the government guideline

that was published in June, just before the flood, and then revised in September, will remain as a valuable reference document for future complex disasters. Much of the management, including protecting the affected people from the virus—both before and after the flood—could be done largely because of the guideline. However, because of the added rules and restrictions, new issues and challenges, as cited throughout this report, have arisen. The lessons from the South Japan flood of 2020 show that the challenges of these complex risks can only be addressed through a multi-hazard approach. Therefore, time has come to build up international cooperation to enhance capabilities against multi-hazards across different sectors.

²⁸ See Figure 1: The Evolving Risks Landscape, 2007-2020

PEOPLE CONSULTED

The authors would like to express their sincerest thanks to the following people for their time and assistance:

Dr. Mikio Ishiwatari	Japan International Cooperation Agency, The University of Tokyo
Mr. Tsutomu Higuchi	Kumamoto Voluntary Organizations Active in Disaster
Mr. Katsumi Jimbo	Young Men's Christian Association, Kumamoto
Mr. Makoto Kakiki	Disaster volunteer
Mr. Kosuke Sasaki	Intern, Peace Winds Japan
Ms. Yukiko Maki	CWS Japan

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