

Survey Report:

Disaster Museums in Japan: Telling the Stories of Disasters Before and After 3.11

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Japan has an established tradition of museums commemorating its long history of disasters, which memorialize lives lost and convey the scientific mechanisms of natural hazards, disaster history, and people's experiences during and after disasters. The first part of this paper provides an overview of seven modern disaster museums in Japan established before 3.11, starting from the museum of the 1923 Great Kanto Earthquake. These seven museums commemorate disasters of different types, time, and scales of damages. Considering their shared commonalities and individual characteristics, it describes the components and approaches of exhibits that these museums use to convey experiences and stories of disasters, passing on local knowledge toward future disaster risk reduction. The second part of the paper provides an overview of new museums and exhibit facilities established to commemorate the 3.11 Great East Japan Earthquake, tsunami, and nuclear disaster of March 11, 2011. The scale of the devastation of 3.11, as well as an explosion of interest and support for activities of memorialization, documentation, and exhibition, has resulted in a variety and decentralization of new museums and exhibit spaces throughout the area affected by the 3.11 disaster. Spanning various combinations and types of exhibit facilities, this paper concludes by considering emergent trends compared to pre-3.11 disaster museums and potential future developments.

Keywords: disaster museum, Japan, 3.11, earthquake, tsunami

1. Introduction

Located at the convergence of four tectonic plates on the Pacific Rim of Fire and in a meteorological zone prone to severe weather events, the islands of Japan are at high risk not only of earthquakes and tsunamis, but also volcanic eruptions, typhoons, floods, and landslides. Along with Japan's long and repeated history of disaster experience and devastation, there are traditional as well as contemporary practices of commemoration and documenta-

tion throughout the country. Established in 1931, the first modern disaster museum in Japan was created to commemorate the 1923 Great Kanto Earthquake in Tokyo, and more disaster museums were established in the 1990s and the 2000s, commemorating historic as well as contemporary disasters.

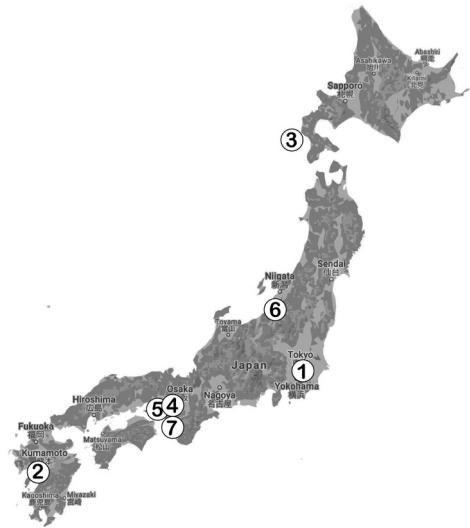
Before the 3.11 Great East Japan Earthquake and tsunami, there was a tendency for each disaster to be commemorated and represented by an individual disaster museum, at a meaningful location at or near the site of the disaster. The scale of devastation of 3.11, as well as an explosion of interest and support for activities of memorialization, documentation, and exhibition, has resulted in the geographical decentralization of an expanded variety of new museums and exhibit spaces throughout the areas affected by the 2011 tsunami.

Although disaster museums in Japan have an established history and are growing in number, no comprehensive description of Japanese disaster museums has been published for an international audience. This paper presents an overview of museums established to commemorate disasters in Japan over the past century, and introduces the history, functions, and activities of seven disaster museums that existed before 3.11. It describes their components and approaches of exhibits used to convey stories and experiences of disasters and considers commonalities as well as characteristics of each museum. It then provides an introduction to and overview of new museums and exhibit facilities established to commemorate the 3.11 disaster and considers how they represent emergent trends compared to pre-3.11 disaster museums.

Whereas there are many exhibits related to the scientific and historical aspects of natural hazards and disasters at various museums and facilities in Japan, the seven pre-3.11 museums introduced in this paper are dedicated to telling the stories of their specific and respective disasters that followed various natural hazard events including earthquakes, tsunamis, and volcanic eruptions. Exhibits and activities of each museum focus on explanations of unfolding disaster events and narrative explanations of what people experienced. Some include an emphasis on cultural contexts and/or connections to the local community.

The location of each museum is significant as a mean-





- ① Tokyo Reconstruction Memorial Museum
- ② Mt. Unzen Disaster Memorial Hall
- ③ Okushiri Tsunami Memorial Museum
- ④ Disaster Reduction and Human Renovation Institution
- ⑤ Nojima Fault Preservation Museum
- ⑥ Chuetsu Earthquake Memorial Corridor
- ⑦ Inamura-no-Hi no Yakata

Fig. 1. Map of seven pre-3.11 disaster museums in Japan.

ingful site related to the disaster. The exhibits in each museum include disaster artifacts; several include a connection to disaster artifacts or structures located within a larger site, with aspects of a field museum. They share the mission to raise disaster awareness; most museums offer various educational or outreach activities focusing on disaster education and increasing visitors' awareness of disaster risk reduction.

Many also include activities of disaster storytelling, the Japanese *kataribe* tradition of passing on lessons and experiences. Each of the museums includes a disaster memorial with separate or integrated commemorative functions to memorialize or pay respects to disaster victims.

Figure 1 maps the locations of the seven museums. **Table 1** shows basic information about the disasters commemorated, year of establishment, location, management, and connection to local areas. **Table 2** provides a comparison of some of the key components and characteristics of each museum, explained in more detail in the following section.

2. Disaster Museums Pre-3.11

2.1. Tokyo Reconstruction Memorial Museum

Yokoamicho Park was already under construction in 1923 when the Great Kanto Earthquake struck Tokyo, causing widespread damage from fires that spread throughout the city. Although many people fled from the fires to this open park area, tragically it became the site where many perished. When the commemorative park was established here in 1931, it included the Earthquake Memorial Hall and Earthquake Reconstruction Memorial Museum. The Earthquake Memorial Hall was created as a mausoleum holding the remains of 58,000 people who died during the Great Kanto Earthquake, caring for

their remains in the place where many had lost their lives. The purpose of the Earthquake Reconstruction Memorial Museum was to "commemorate the devastation and misery caused by the Great Kanto Earthquake that occurred on September 1, 1923, and the subsequent restoration projects"; exhibits included materials that had been on display during the Imperial Capital Reconstruction Exhibition held in September 1929 as well as items donated by citizens [1, 2].

After the capital metropolis of Tokyo was again devastated by fires caused by U.S. bombing in World War II, the dual purposes of the commemorative facilities in the park were both expanded. The Earthquake Memorial Hall was expanded to include a memorial for WWII victims and the Earthquake Reconstruction Memorial Museum was expanded to include the story of Tokyo's post-war reconstruction. In 1951 the Earthquake Memorial Hall was renamed the Tokyo Memorial Hall, and the Earthquake Reconstruction Memorial Museum was renamed the Tokyo Reconstruction Memorial Museum [1, 2]. Museum exhibits include actual artifacts as well as documentation and explanation of the reconstruction processes. Managed by the Tokyo Metropolitan Government, the park also includes several other outdoor memorials, including one with artifacts from the 1923 Great Kanto Earthquake.

Although there are several other war reconstruction memorial buildings throughout Japan, the Tokyo Reconstruction Memorial Museum is unique as it combines the narratives of two fire disasters that devastated the metropolitan capital, resulting from the impacts of a natural hazard event and acts of war, respectively. As a museum focusing on fire disasters, there is less of an emphasis on scientific explanations of the hazard compared to other disaster museums that deal with mechanisms of earthquakes, tsunamis, and volcanoes. The primary focus on reconstruction is also unique compared to other disaster museums. Reflecting both the era of its establishment and

Table 1. Overview of Japan's pre-3.11 disaster museums.

Museum name (year established) <i>Disaster commemorated</i>	Museum location <i>Museum management</i>	Connection to disaster site
1) Earthquake Reconstruction Memorial Museum (1931) renamed Tokyo Reconstruction Memorial Museum (1951) <i>1923 Great Kanto Earthquake and fires; 1944-1945 WWII bombing, fires</i>	Yokoamicho Park, Tokyo <i>Managed by the Tokyo Metropolitan Memorial Foundation</i>	The site is the location where many people died after trying to escape fires in Tokyo after the Great Kanto Earthquake.
2) Mt. Unzen Disaster Memorial Hall (2002) <i>1991 Unzen Fugen volcanic eruption 1792 Shimabara Disaster volcanic eruption and tsunami</i>	Unzen Volcanic Area Global Geopark, Nagasaki Pref. <i>Managed by the Unzendake Disaster Memorial Foundation</i>	In the Unzen Volcanic Area Global Geopark. More realia is preserved in other areas of the park.
3) Okushiri Tsunami Memorial Museum (2001) <i>1993 Hokkaido Southwest Offshore Earthquake</i>	Okushiri Island, Hokkaido Pref. <i>Managed by Okushiri Town, Okushiri Board of Education</i>	Located in Aonae area, heavily damaged by tsunami, on former land of residents who relocated to high ground.
4) Disaster Reduction and Human Renovation Institution (2002) <i>1995 Great Hanshin-Awaji Earthquake</i>	Kobe City, Hyogo Pref. <i>Managed by Hyogo Pref.</i>	Located in HAT Kobe area, which was damaged by the earthquake and part of a larger redevelopment project area.
5) Nojima Fault Preservation Museum (1998) <i>1995 Great Hanshin-Awaji Earthquake</i>	Awaji Island, Hyogo Pref. <i>Managed by Hokudan Corp. (Hyogo Pref. and Hokudan Town)</i>	The museum and park were created on the actual fault, which is preserved, as is an actual house damaged in the earthquake.
6) Chuetsu Earthquake Memorial Corridor (2011) <i>2004 Niigata Chuetsu Earthquake</i>	Multiple villages in Nagaoka City, Niigata Pref. <i>Initially managed by the Great Chuetsu Earthquake Reconstruction fund, now facilities have separate operation management</i>	The decentralized Corridor includes 3 memorials and 4 facilities located within different disaster-affected communities.
7) Inamura-no-Hi no Yakata (2007) <i>1854 Ansei Tōkai Earthquake and Tsunami</i>	Hirogawa Town, Wakayama Pref. <i>Managed by Hirogawa Town</i>	The museum location includes the former home of Goryo Hamaguchi and has a walking tour to other related attractions throughout the town, including the Hiro Town Embankment.

the historic context of urban destruction and reconstruction that are the focus of exhibits, the museum emphasizes historical explanations and narratives of official reconstruction planning as well as individuals' experiences.

2.2. Mt. Unzen Disaster Memorial Hall

In 1792 the eruption of Mt. Unzen resulted in the Shimabara Disaster, the most devastating volcanic disaster in Japan's history, when the collapse of the lava dome caused a mega-tsunami that killed more than 15,000 people. The Mt. Unzen volcano was very active again in the early 1990s, and 43 people were killed by pyroclastic flow during a major eruption of Unzen Fugen in September 1991. Opened in 2002, the Mt. Unzen Disaster Memorial Hall was renovated in 2018 and renamed the Gamadasu Dome [3]. The exhibits at the Mt. Unzen Disaster Memorial Hall focus on volcanic activity between 1990 and 1995, including scientific explanations using 3D projection mapping on a diorama, aerial photos, and an immersive theater experience. The exhibit includes narratives about life in the area before and after the eruption, and

thoughts as well as experiences of residents [3]. Other exhibits teach about the science of volcanoes and disaster prevention through interactive technology. The story of the 1792 Shimabara Disaster eruption is also presented, using a mechanized adaptation of the traditional Japanese paper-play *kamishibai* format. With a strong focus on explaining the science of volcanoes, the Mt. Unzen Disaster Memorial Hall provides various educational opportunities, including disaster storytelling by people who have experienced disasters. Located within and as part of the Unzen Volcanic Area Global Geopark, other objects are also preserved for viewing within the geopark, including houses buried by lahar in the eruption.

Defined by UNESCO as "single, unified geographical areas where sites and landscapes of geological international significance are managed with a holistic concept of protection, education and sustainable help to convey the reality of the disaster including not only objects within the museum itself, but also nearby development," geoparks have been gaining recognition in recent decades and have been promoted globally by UNESCO since 2001 [4].

Table 2. Comparison of key components and characteristics of pre-3.11 disaster museums.

Museum name	Connection to local community	Representation of history/science	Presentation of disaster education	Unique characteristics
1) Tokyo Reconstruction Memorial Museum	As an exhibit with historical focus, less connection to current community. However, the memorial hall preserves a strong connection for families of victims.	Primary focus is telling history of disaster, war, and reconstruction. Science is not a main focus; as disasters caused by war, bombing, fire, not mainly natural hazard mechanism.	With a focus on a historical event, less emphasis on disaster prevention education.	Strong focus on reconstruction. Unique combination of war recovery and disaster recovery.
2) Mt. Unzen Disaster Memorial Hall	Disaster storytelling by people who have experienced disaster.	Including recent volcano, and historic volcano/tsunami. Strong scientific focus on the mechanism of volcano and pyroclastic flow.	Focusing on volcano safety based on understanding the science of volcanos.	In a geopark, the museum relates to the large scale of volcano disaster.
3) Okushiri Tsunami Memorial Museum	Local management, including local board of education, but main focus on outside visitors. Some scientific explanation about earthquake impacts.	Focus on the tsunami, documentation and portrayal of related events.	The focus is more on the story of what happened.	Strong focus on memorial function and the local story.
4) Disaster Reduction and Human Renovation Institution	Exhibits include objects donated by local residents and their stories. Local volunteers play a main role. Less connection to other local areas.	Strong focus on scientific explanations of earthquake, disaster mechanism, and liquefaction.	Disaster education is a major function of the museum; many programs for school children.	Part of larger disaster research organization; one of the largest disaster museums in Japan.
5) Nojima Fault Preservation Museum	Local people involved in storytelling.	Focus on scientific earthquake explanation, showing actual damage, earthquake mechanism, and experience of a shaking table.	Disaster education approach based on scientific knowledge.	Preservation of the actual earthquake fault within the museum.
6) Chuetsu Earthquake Memorial Corridor	Strong connections to the local community; beyond exhibit space, promotes various interactions.	Strong focus on local culture and history.	The special focus of one of the facilities, the Son-aikan, which teaches disaster prevention.	Community oriented; decentralized facilities with specialized focus.
7) Inamura-no-Hi no Yakata	Connecting a historical event with a local place.	Focusing on historical events, commemorating the actions of Goryo Hamaguchi.	Goryo Hamaguchi is a key tsunami education story; exhibits include disaster risk reduction games and explain tsunami mechanism.	Unique focus on historical event, connected with tsunami awareness.

According to the non-profit Japanese Geoparks Network, there are currently 9 UNESCO Global Geoparks in Japan, and more than 30 Japanese National Geoparks [5].

In addition to the Unzen Volcanic Area Global Geopark on the Shimabara Peninsula in Nagasaki Prefecture, which includes the Mt. Unzen Disaster Memorial Hall, other UNESCO Global Geoparks include the volcanic sites of Aso in Kumamoto [6] and Toya-Usu [7] in Hokkaido; both of these sites include various volcano museum facilities and disaster remains, as well as the Masao

Mimatsu Memorial Hall in Usu, which commemorates the citizen scientist who documented the volcanic eruption in 1944 [8]. A Japanese National Geopark in Gunma Prefecture, the Asama Volcano Museum tells the story of the eruption of Mt. Asama and explains disaster science and local nature [9]. Similar to science museums throughout the country that include exhibits on natural hazards, these museums focus on the scientific explanation of volcanic hazards rather than the stories of the disasters.

2.3. Okushiri Tsunami Memorial Museum

The Hokkaido Southwest Offshore Earthquake occurred at 10:17 pm on July 12, 1993, causing a tsunami that struck Okushiri Island a few minutes later, killing 230 people including 198 people on Okushiri Island alone. 80 houses were washed away in the Aonae and Misaki areas of Okushiri; recovery projects included collective housing relocation for these families to high land areas. A cape jutting out into the ocean, the low-lying Aonae area became the site of the Okushiri Tsunami Memorial Museum, which opened in 2001 in the Norihiro Memorial Ryokuchi Park.

The Okushiri Tsunami Memorial Museum is operated by Okushiri Town and managed and staffed by the Okushiri Board of Education. The focus of the museum is on sharing the memories and lessons from the disaster, especially with visitors and tourists who significantly contribute to the local economy. The exhibits tell about the experiences of local residents at the time of the tsunami disaster, including compositions written by children at that time, and photo documentation of the phases and process of recovery. The museum includes a strong memorial function both inside and outside the building. Inside, there is a memorial designed with glass squares for each of the 198 people who lost their lives; outside, the building is designed to align with the angle of the sun on the July 12 anniversary of the tsunami [10].

2.4. Disaster Reduction and Human Renovation Institution

On January 17, 1995, the Great Hanshin-Awaji Earthquake caused devastation in Kobe City and in Hyogo Prefecture. The Great Hanshin-Awaji Earthquake struck along a fault line that passed through the rural Awaji Island, south of Kobe City, also within Hyogo Prefecture. Killing 6,434 people and damaging or destroying more than 249,000 houses, this earthquake was the largest disaster to devastate an urban center in Japan since World War II.

Established in 2002 as part of the Hyogo Earthquake Memorial 21st Century Research Institute, the mission of the Disaster Reduction and Human Renovation Institution (DRI) is to promote a culture of disaster awareness and support the improvement of policies and local capacities for disaster management and disaster risk reduction by sharing the experiences and lessons from the Great Hanshin-Awaji Earthquake [11]. Managed by Hyogo Prefecture, along with museum exhibits, DRI also includes a resource library and a department of researchers who provide support to disaster-affected areas. The museum exhibits include explanations about what happened at the time of the earthquake in Kobe, from the immediate aftermath to long-term recovery. Other museum exhibits focus on scientific explanations of mechanisms of earthquakes and other hazards, and practical measures for disaster risk reduction actions by individuals. Volunteer guides and disaster storytellers, who convey their own experiences

during and after the earthquake, play a significant role in visitors' museum experience.

2.5. Nojima Fault Preservation Museum

Communities on Awaji Island also experienced the Great Hanshin-Awaji Earthquake directly. Located in the Hokudan Earthquake Memorial Park on Awaji Island, established in 1998, the Nojima Fault Preservation Museum has preserved a section of the actual fault, as well as a damaged house and a surviving wall that was relocated from Kobe City. Exhibits describe what happened during the earthquake, and the museum includes a shaking table so visitors can understand what an earthquake feels like. Towards the goals of disaster education and awareness, the museum also supports an active disaster-storytelling network.

2.6. Chuetsu Earthquake Memorial Corridor

On October 23, 2004, the Niigata Chuetsu Earthquake caused severe damage in rural mountainous areas of Niigata Prefecture. Established seven years later in 2011, the Chuetsu Earthquake Memorial Corridor is comprised of four facilities and three parks, located across multiple communities. The facilities include: the gateway center of Nagaoka Earthquake Disaster Archive Center (*Kioku-mirai*) in Nagaoka City; Ojiya Earthquake Disaster Museum (*Sonaekan*) disaster prevention education center in Ojiya Village; the Bonds/Ties (*Kizuna*) Center, a community space in Kawaguchi whose purpose is to build stronger connections; and the Yamakoshi Restoration Exchange Center (*Orataru*) in Yamakoshi that tells about local history, culture, and earthquake reconstruction.

Along with these four facilities, the Memorial Corridor includes three memorial parks – the “Park for Prayer” in Myoken, “Park for Remembering” in Kogomo, and “Park for Beginnings” at the earthquake epicenter [12]. As Hayashi explained, with the full involvement of the local community, not only does the Chuetsu Earthquake Memorial Corridor function as a way to support local communities, but through its unique structure and decentralized organization of networked facilities, visitors have the opportunity to customize their visit, and as they travel to the multiple sites they can encounter local history and culture as well as disaster facts and records [12].

2.7. Inamura-no-Hi no Yakata

The last in this section on pre-3.11 disaster museums, Inamura-no-Hi no Yakata was established in 2007 but commemorates a famous story of disaster mitigation from 150 years ago. On December 23, 1854, a large earthquake struck Hiro Village, on the Kii Peninsula in present-day Wakayama Prefecture, causing what is now known as the Ansei Tōkai Tsunami. The story of the actions of a local village chief, Goryo Hamaguchi, became a famous legend used to teach disaster awareness for Japanese elementary school children starting in the 1930s and 1940s. According to the story, which combines fact and fiction,

understanding the danger of a tsunami, Goryo set his rice sheaves located in a high land area on fire; as the townspeople rushed to high land to help extinguish the fire, they were saved from the tsunami. After the tsunami, Goryo employed townspeople to build an earthen levee, which still exists today and protected the town from a tsunami that struck a century later in 1946 [13].

This Story of the Rice Sheaves, or *Inamura no Hi*, became a famous story of disaster prevention in Japan and also around the world, and has been translated into many languages [14]. “Inamura-no-Hi no Yakata,” which includes the Goryo Hamaguchi Archives and Tsunami Educational Center, was established in April 2007 with the goal of handing down the lessons of disaster preparedness embodied in this story. Located in Hirogawa Town (former Hiro Village), where Goryo was born, the museum includes historic information about his life, as well as the scientific explanation of tsunami mechanisms.

2.8. Summary of Pre-3.11 Disaster Museums

These seven museums commemorate disasters of different types, times, places, scales, and impacts. They share several commonalities yet have their own individual characteristics. The location of each has a significant connection to the disaster site, most overtly at the Nojima Fault Preservation Museum, which is an entire facility created around an earthquake fault. There are several decentralized museums, most notably the Chuetsu Memorial Corridor which intentionally links multiple facilities with individual purposes, themes, and management to the respective communities in which they are sited.

All seven of the pre-3.11 museums make connections beyond their walls to significant objects within the larger field of the disaster area. Examples include preserved memorials and objects (buildings) along with the Mt. Unzen Memorial Hall in the geopark; a preserved house near the Chuetsu Earthquake Memorial Corridor; and a preserved section of the actual fault, a damaged house, and a wall relocated from Kobe in and near the Nojima Fault Preservation Museum. Inamura-no-Hi no Yakata makes the connection to the Hiro Town levee that was built more than a hundred years ago.

Exhibits in each of the seven museums convey the reality of the disaster using the power of showing tangible impacts on physical objects and artifacts. Each museum includes various narratives set before, after, and at the time of the disaster, and interpretation by guides or additional information conveyed by *kataribe* (disaster storytellers). In these ways, each museum presents narratives about the disaster event, peoples’ contemporary experiences of it, and lessons for disaster mitigation conveyed through a combination of real objects in a meaningful location interpreted by people.

As well as disaster event narratives, the museums emphasize historical and/or scientific aspects to varying degrees. In the oldest, the Tokyo Reconstruction Memorial Museum takes a historical approach to curation and display including exhibits from the 1930s that explain stories of reconstruction; this museum is also unique in that

it combines historical narratives of post-earthquake reconstruction and post-war recovery, after Tokyo was destroyed by fires in both cases. Inamura-no-Hi no Yakata connects and applies lessons from disaster response and mitigation after a historical earthquake and tsunami more than a century ago to contemporary disaster education, as does the story of the mega-tsunami from the Shimabara Disaster featured in the Mt. Unzen Memorial Hall.

The strong focus on science at the Mt. Unzen Memorial Hall is related to explanations about volcano mechanisms. The two museums about the Great Hanshin-Awaji Earthquake also both emphasize science education; DRI includes an entire floor of exhibits dedicated to teaching about disaster risk, including hands-on activities and demonstrations of structural reinforcement as well as liquefaction, while the Nojima Fault Preservation Museum includes the shaking table experience.

Except for Inamura-no-Hi no Yakata, the other six museums share a core identity as memorials for those who lost their lives in the disasters. In the case of the Tokyo Reconstruction Museum, this takes the form of an actual mausoleum of remains within the Memorial Hall. In Okushiri, the memorial makes up a strong element within the museum itself, while in Chuetsu, the Chuetsu Earthquake Memorial Corridor includes three memorial parks. Museums in Tokyo, Okushiri, and Nojima are also part of or sited in memorial parks.

3. Museums After 3.11

3.1. Context of Telling the Stories of 3.11

On March 11, 2011, the 3.11 Great East Japan Earthquake, tsunami, and nuclear meltdown that followed, became the most complex disaster in Japan in living memory and caused severe and varied devastation across a vast area. As a massive tsunami disaster, the scale of damage exceeded what most people had imagined possible; efforts to memorialize losses and pass on lessons to reduce impacts of future disasters emerged early on throughout the affected area. Unlike disasters commemorated by the seven museums discussed previously, devastation from the 3.11 disaster affected communities throughout many municipalities and multiple prefectures.

New and strengthened commitment after 3.11 to the importance of passing on the stories and lessons of disasters can be seen both on the part of official government support as well as in the explosion of activities that emerged throughout the disaster area. In “Towards Reconstruction,” the publication released by the national Reconstruction Design Council in June 2011, the first of the Seven Principles of reconstruction included the statement “*there is no other starting point for the path to recovery than to remember and honor the many lives that have been lost. Accordingly, we shall record the disaster for eternity, including through the creation of memorial forests and monuments, and we shall have the disaster scientifically analyzed by a broad range of scholars to draw lessons*

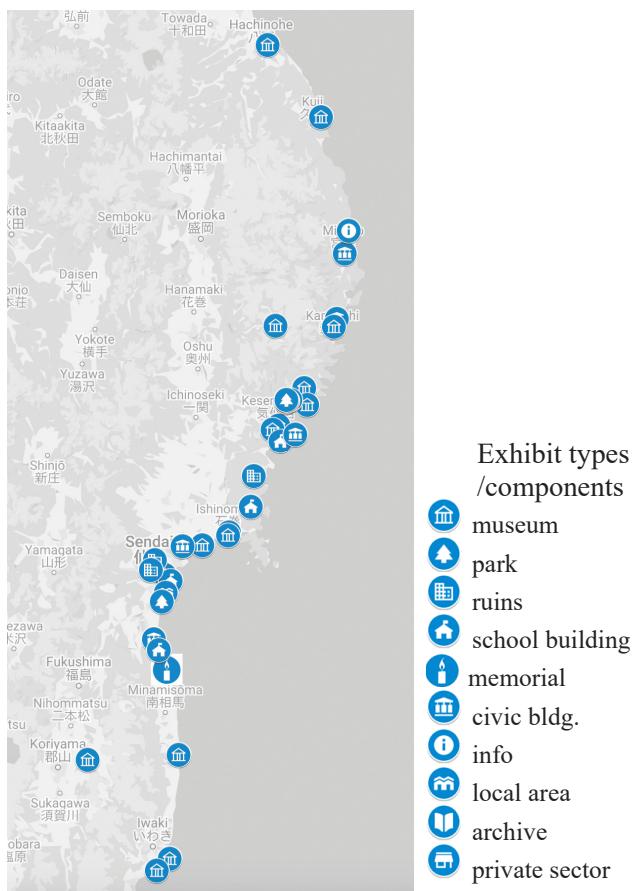


Fig. 2. 3.11 Museums and exhibit facilities in Tohoku.

that will be shared with the world and passed down to posterity” [15].

3.2. An Expanded Field for 3.11 Exhibits

With policy and funding support, combined with a broad motivation and/or feeling of obligation to share the experiences of 3.11, many facilities, memorials, exhibits, and museums have been created throughout the Tohoku area to document, explain, teach, and convey the experiences of local people and places, and lessons for future disaster risk reduction (Fig. 2). Within the three most severely damaged prefectures of Iwate, Miyagi, and Fukushima, more than 10 new museums have already been dedicated specifically to the 3.11 disaster (Table 3); even more facilities include exhibits related to 3.11 (Table 4).

Unlike past disasters that primarily affected residents of a single community, local municipality, or at the largest scale, multiple cities within the same prefecture, the impact of 3.11 extended beyond the boundaries of local and even regional (prefectural) governments. Museums, facilities, and exhibits established across the disaster area include various degrees of localization; while related to the same massive and complex disaster of 3.11, disaster experiences were unique within each prefecture, municipal-

ity, and community. Many museums are organized and/or managed by municipal governments; some focus more on the experiences of specific communities (especially those that were independent towns in the past before municipal mergers), such as the facilities in Arahama in Sendai City, Unosumai in Kamaishi City, and Taro in Miyako City. Prefectural level museums have also been created or planned: the Iwate Tsunami Museum in Rikuzentakata opened in 2019; the Great East Japan Earthquake and Nuclear Disaster Memorial Museum in Futaba, Fukushima opened in Sept. 2020; and a new museum will open in 2021 in Ishinomaki in Miyagi Prefecture. However even ten years after 3.11, there has been no attempt to commemorate this disaster through centralized representation of the disaster in a museum or exhibit on a national scale.

Similar to pre-3.11 museums, many new disaster museums in Tohoku include or are connected to memorials. Many are located in parks similar to the Okushiri Tsunami Memorial Museum, where coastal land devastated by the tsunami and acquired by the government as part of reconstruction projects was used for parks commemorating the disaster, as is the case in Ishinomaki, Rikuzentakata, and Iwanuma cities.

New 3.11 exhibits have been created within existing museum facilities, including in the Rias Arc Museum, Kesennuma Shark Museum, and Mogurania in Kiji City. Many exhibit facilities/spaces have been created within municipal buildings, such as in Oshacchi in Otsuchi Town and the 3.11 Memorial Community Center in Sendai. Other exhibits have also been organized by the private sector, including NEWSee in Ishinomaki, Miyagi Co-op’s Great East Japan Earthquake Learning and Data Room, and NHK Sendai’s Base Station. A smaller number are managed by non-profit organizations, such as the Tsunagukan and Minami Hama Tsunagukan managed by 3.11 Mirai Support in Ishinomaki City, and Memoirs of Yuriage in Natori City.

Several tsunami-damaged buildings preserved as monuments as part of the expansion of a new category of disaster heritage, *shinsai iko* [17], have also become museums, accompanied by interpretive text and/or exhibits. These disaster ruins attract a large number of visitors, such as the damaged Disaster Management Headquarters in Minami Sanriku Town or the former Police Box in Onagawa Town. Privately-owned *shinsai iko* include the Taro Kankou Hotel and Takano Kaikan wedding hall building in Minami Sanriku. The ruins of several school buildings have been transformed into museums, including the former Arahama Elementary School in Sendai, former Nakahama Elementary School in Yamamoto Town, and Ruins of the Great East Japan Earthquake Kesennuma City Memorial Museum in the former Koyo High School. Similar projects are planned for the Kadonowaki Elementary School building in Ishinomaki City and Ukedo Elementary School in Namie Town. The preservation of these buildings is not without controversy, especially in places where people had lost their lives. The former Okawa Elementary school in Ishinomaki is one such contested site, and the former Otsuchi Town Hall has already been de-

Table 3. New museums dedicated to the 3.11 disaster (*: managed by).

Prefecture	Municipality	Name of museum facility	Type of museum/exhibit	
Iwate	Kamaishi City*	Tsunami Memorial Hall	New local 3.11 museum/memorial	  
Iwate	Tono City*	3.11 Great East Japan Earthquake Tono City Logistics Support Museum	Museum about 3.11 disaster support	 
Iwate*	Rikuzentakata City	Iwate Tsunami Memorial Museum	New 3.11 museum, in memorial park	 
Miyagi	Kesennuma City*	Ruins of the Great East Japan Earthquake Kesenuma City Memorial Museum *managed by independent organization	New 3.11 museum using building ruins of Koyo High School	  
Miyagi	Ishinomaki City	3.11 Memorial Hall Minamihama Tsunagukan *managed by 3.11 Mirai Support NGO	Current temporary museum facility, future permanent museum, in memorial park	  
Miyagi	Higashi Matsushima City*	3.11 Disaster Recovery Memorial Museum	New 3.11 memorial and museum	  
Miyagi	Sendai City*	Former Arahama Elementary school	3.11 museum in ruins of former school building	    
Miyagi	Yamamoto Town*	Former Nakahama Elementary School	3.11 museum in ruins of former school building	    
Fukushima*	Futaba Town	Great East Japan Earthquake and Nuclear Disaster Memorial Museum	Museum about 3.11 and the nuclear accident at Fukushima Daiichi NPP	
Fukushima*	Miharu Town	Commutan Fukushima *managed by independent organization	Museum and research center on environment and disaster	
Fukushima	Soma City*	Traditional Requiem Memorial Hall	New 3.11 memorial and museum	 
Fukushima	Iwaki City*	Iwaki 3.11 Memorial and Revitalization Museum	New 3.11 memorial and museum	 

Key:  museum  park  ruins  school building  memorial  info  local area focus  archive  private sector

molished.

These museums and exhibit facilities throughout the tsunami-affected area are linked to efforts to convey experiences of the disaster, recovery processes, and future risk reduction through varied methods, especially activities of *kataribe* disaster storytelling, which has seen growth after 3.11 that parallels that of disaster museums themselves. Like pre-3.11 museums, many new post-3.11 museums in Tohoku incorporate *kataribe* activities as part of their standard services. Building ruins such as Taro Kankou Hotel and Takano Kaikan are closely connected to disaster storytelling, as is Okawa Elementary School, whose preservation is still contested. Many communities, municipalities and other organizations also support *kataribe* activities.

3.3. Telling the Stories of Nuclear Disaster

Beyond the massive scale of tsunami damage across a wide geographical area, 3.11 is a compound disaster of unprecedented complexity due to the nuclear accident and meltdown at the Fukushima Daiichi Nuclear Power Plant. With radioactive contamination, long term displacement

of residents, and uncertain futures of affected communities, the impacts of the nuclear disaster are far-reaching, and unresolved and unresolvable challenges remain for community recovery and life recovery of survivors. In addition to experiences shared by tsunami-affected communities along the Tohoku coastline, nuclear disaster survivors suffered additional impacts related to a chaotic evacuation, wide-spread displacement, fear of contamination, and various disruptions and concerns.

With the objective of presenting an overview of pre-3.11 and post-3.11 disaster museums and outlining key commonalities and differences among and across both groups, a detailed examination of how the experiences and lessons from the nuclear disaster are conveyed and presented in museums and exhibits is beyond the scope of this paper, however this is a critical topic for future investigation. The experiences of nuclear evacuees not only differ from tsunami survivors, but also vary across municipalities, communities, evacuation zones and evacuation statuses, from one household to another, and even within the same family. Contested narratives compounded by not only the complexity of the disaster itself but also issues of

Table 4. Facilities with 3.11 exhibits (*: managed by).

Prefecture	Municipality	Name of museum facility	Type of museum/exhibit	
Aomori	Hachinohe City*	The Hachinohe City Minato Experience & Learning Center: Minauchi	3.11 exhibit in existing museum, including the local disaster history	 
Iwate	Kuji City	Moguranpia*	3.11 exhibit in existing museum	
Iwate	Miyako City*	Miyako City Civic Exchange Center Disaster Prevention Plaza	3.11 exhibit in new municipal facility	 
Iwate	Otsuchi Town*	Oshacchi	3.11 exhibit in new municipal facility	 
Iwate	Ofunato City*	Ofunato Tsunami Museum	3.11 exhibit in Ofunato Disaster Prevention Tourism Alternating Current Center	 
Iwate	Ofunato City*	Ofunato City Museum	History museum with exhibits about 3.11 as well as past tsunamis	
Miyagi	Kesennuma City	Rias Arc Museum*	3.11 exhibit in existing museum	
Miyagi	Kesennuma City	Shark Museum*	3.11 exhibit in existing museum	
Miyagi	Kesennuma City* (Karakuwa)	Karakuwa Peninsula Visitor Center/Tsunami Experience Center	Pre-3.11 Tsunami Experience Center in Karakuwa Peninsula Visitor Center	 
Miyagi	Ishinomaki City	NEWSee *managed by in Hibi Shimbun	Exhibit in Hibi Shimbun of handmade newspapers after 3.11	  
Miyagi	Matsushima City*	Ishidazawa Disaster Prevention Center	Exhibit about 3.11 in disaster prevention center	 
Miyagi	Sendai City*	Sendai 3.11 Memorial Community Center	3.11 Exhibit in new municipal facility in Arai subway station	 
Miyagi	Sendai City	Great East Japan Earthquake Learning and Data Room *managed by Miyagi Co-op	Exhibit about Miyagi Co-op activities after 3.11 in Co-op facility	 
Miyagi	Sendai City	NHK Sendai base station *managed by NHK	Exhibit about 3.11 in NHK building	 
Miyagi	Natori City (Yuriage)	Memoire de Yuriage *managed by NGO	Exhibit and network to convey disaster memories	 
Miyagi	Iwanuma City*	Millennium Hope Hill Aino Kama Park	3.11 exhibit in a memorial park	 
Miyagi	Yamamoto Town*	Yamamoto Town Disaster Prevention Center	3.11 exhibit in a new municipal building	 
Fukushima	Iwaki Town*	Live Iwaki Museum	3.11 exhibit in a center for tourism and local products	

Key:  museum  park  ruins  school building  memorial  civic bldg.  info  local area focus  archive  private sector

culpability for the human-made nuclear disaster mean that questions of whose stories are told and how are far from resolved.

With a different timeline for the disaster as well as recovery of nuclear contaminated areas compared to tsunami-affected areas, the role of nuclear disaster museums may also evolve over time. Important issues for future consideration include comparisons across not only pre-3.11 museums about disasters caused by natural hazard events, but also Japanese precedents of how experiences and lessons from other human-made disasters are conveyed, including by the Nagasaki Atomic Bomb Museum, Hiroshima Peace Memorial Museum, and Minamata Disease Municipal Museum, which tells the story of industrial pollution and poisoning of the local community.

As the only country whose people have suffered from both nuclear bombing and a nuclear meltdown, and with Japan's *kataribe* traditions deeply rooted in post-war disaster storytelling with the goals of passing on war experiences and promoting peace, future research on how stories are curated and presented at 3.11 nuclear disaster museums will benefit from considering these precedents and past examples of how contested narratives of disaster experiences have been negotiated and conveyed.

4. Comparing Pre- and Post-3.11 Museums and Future Directions

New museums after 3.11 have significantly swelled the ranks of disaster museums in Japan. Looking back to the similarities shared by pre-3.11 disaster museums, there are certain points of continuity between pre-3.11 and post-3.11 methods and approaches to telling the stories of disasters, including an emphasis on narratives of people's experiences. This is linked to a strong recognition of the importance of place, even while the post-3.11 museums are spread across a wide area and dedicated to telling both stories of localized experiences as well as the shared regional tragedy.

Having experienced a disaster that resulted from the same natural hazard events of earthquake and tsunami, 3.11 museum exhibits generally focus less on the scientific mechanisms of earthquakes and tsunami generation compared to the scientific emphasis of pre-3.11 museums. However, several museums in Fukushima include a strong focus on explaining the science of nuclear radiation and the functioning and failures of nuclear reactors, including both the Great East Japan Earthquake and Nuclear Disaster Memorial Museum in Futaba and Commutan in Mi-haru.

Few 3.11 museums and exhibits have a primary focus on local history; exceptions include historical exhibits at the Ofunato City Museum and within the 3.11 exhibit at the Rias Arc Museum. As much of the funding for museums' establishment and operation is linked to conveying the lessons of 3.11, the overall focus of exhibitions is on telling the story of what happened at the time of the disaster and afterward, with varying emphasis on education and awareness-raising for future disaster risk reduction.

With the majority of 3.11 museums managed by local governments, their long-term sustainability may become a crucial issue in the future. Considering that many pre-3.11 museums have faced declines in visitors and/or funding and related challenges for continuing operations, the even larger number of 3.11 museums spread across the disaster-affected area in towns with small municipal budgets will likely face similar issues and additional challenges to attract visitors. With each exhibition having its own content, there are questions of how to coordinate visits to multiple facilities, who may compete for visitors choosing to visit only one or two museums and unlikely to visit each exhibition facility throughout the region. At the same time, those visiting multiple facilities may become bored with repetitive content. Efforts such as 3.11 Densho Road, working across the region and together with local disaster-affected areas to create a database, maps, and categorized lists, contribute to clarifying and centralizing information about what exhibit and memorial facilities can be viewed and accessed [17].

Linking museum facilities with other activities such as disaster storytelling and local area tours is a crucial activity already underway. Efforts to connect activities of disaster storytelling and education regionally include the 3.11 Memorial Network [18]. The example of the

Chuetsu Earthquake Memorial Corridor, linking multiple decentralized facilities, each in a different community and presenting distinct types of information, may offer lessons for how to strengthen networks between disaster museums in Tohoku. Ten years after the Great East Japan Earthquake and tsunami, the new generation of post-3.11 disaster museums is still young and growing. As time passes and the Tohoku area receives less attention for the 3.11 disaster, the linkage and integration of disaster museums with other aspects of the daily life of local residents as well as activities of visitors will become even more important towards the goal of continuing to remember and convey experiences and lessons from 3.11.

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