

# On the Studies of the Disaster Recovery and the Business Continuity Planning for Private Sector Caused by Great East Japan Earthquake

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**Abstract.** Japan has been heavily damaged by Great East Japan Earthquake on this March. In this paper, we will report the damage on this earthquake. Particularly, this disaster is characterized by the enormous damage caused by a tsunami, and the extensive damage suffered by the fisheries and related industries due to their location close to the sea. This paper addresses the subject of how the fishing industry should be restored and rebuilt. We will discuss how to do the Business Continuity in Japan attacked by this disaster.

**Keywords:** Great East Japan Earthquake, Private Sector, Disaster Recovery, Business Continuity, Tsunami, Fisheries Cooperative Associations, Fishery Rights, Special Zone for Reconstruction.

## 1 Introduction

Japan has been heavily damaged by Great East Japan Earthquake on March, 2011.

We have never experienced such a big one and Northeast Japan was hit by a tsunami that's following an earthquake, thought have measured 8.9 on the Richter scale. Houses, buildings, cars and even ships were swept away. Communication links were paralyzed making it difficult to confirm levels of damages or injuries. The Japanese government and Tokyo Electric Power Company (TEPCO) together are making every effort to cool down the nuclear reactors and eliminate radioactive contamination to regain complete control. It will take some time, but we Japanese believe they will succeed in solving the problem with the help of the specialists and special equipment dispatched from the United States and France.

As a Japanese, we regret that the broken nuclear power plant have bothered and worried people all over the world. We hope that we will be able to overcome the difficulties as soon as possible and that people across the world will be kept informed of what is happening here and what we have learned from this tragedy.

In this paper we will report the disaster outlines, the damages, the movements toward restoration, reconstruction and how to do the Business Continuity.

## **2 Context**

### **2.1 Disaster Outlines**

According to the Government report, around 14:46 on March 11, a massive earthquake with a magnitude of 9.0 struck Sanriku Coast, Japan. The ensuing tsunami swept across many cities and villages along the Pacific coast of the Tohoku district, causing tremendous human and structural damage. In Miyako City, Iwate Prefecture, tsunami waves of over 8.5 meters high (maximum) were observed. Tokyo also observed tremors with a seismic intensity of 5-strong, but damage there was relatively modest. Aftershocks still persist, particularly in the Tohoku district. On April 7, an earthquake of magnitude 7.1 (preliminary estimate) occurred, with its epicenter off the coast of Miyagi Prefecture. On April 11, a 7.0-magnitude earthquake (preliminary estimate) struck, with its epicenter in the Hamadori area, Fukushima Prefecture.

Immediately after the earthquake, the Government of Japan set up its emergency headquarters with Prime Minister Kan at the helm, making all-out efforts for search and rescue, assisting evacuees, and reconstructing various lifelines, in liaison with all government bodies and local governments. Efforts have also been being made by the whole government to support the early recovery of people's lives and economic activity. On March 17, for example, the Cabinet Office set up the Headquarters for Special Measures to Assist the Lives of Disaster Victims. On April 11, the Cabinet decided to assemble the Reconstruction Design Council in Response to the Great East Japan Earthquake.

Sympathies have been expressed and assistance offered from around the world. So far, rescue teams and medical assistance teams from 21 countries and regions as well as the United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA), an International Atomic Energy Agency (IAEA) team of experts, and the United Nations World Food Programme (WFP) have arrived Japan and have been in operation. Also, the U.S. Forces in Japan are extending assistance.

The earthquake and tsunami resulted in emergency situations including failure of the reactor-cooling systems in TEPCO(Tokyo Electric Power Company)'s nuclear power stations in Fukushima Prefecture. Responses have been taken with regards to these situations.

On April 1, the Government of Japan decided, in the form of a Cabinet approval, to use the name "Great East Japan Earthquake" to refer collectively to the disasters due to the Tohoku - Pacific Ocean Earthquake on March 11, 2011 and the resultant nuclear plant accidents.

### **2.2 Damages of the Economy and Industry**

The earthquake and tsunami devastated the Tohoku and other regions. Damages were inflicted in Kanto region, too. The number of deaths was 14,704, the number of injured is 5,278, and the number of missing is 10,969 (as of May 1 according to the National Police Agency). The number of those evacuated is 168,901 (as of April 28 at 11:00 according to the Fire and Disaster Management Agency).

In the Tohoku and other regions, electricity, gas and water were disconnected in many areas. Roads, railways, airports, and other infrastructure were also severely

damaged. Currently, the whole nation is working for the post-disaster rehabilitation, and lifelines and infrastructures are gradually recovering, including a partial resumption of operation, from April 13, of Sendai Airport, which had been closed due to the earthquake and tsunami damages.

Most Japanese companies close their books at the end of March. Individual companies described the effects of the disaster in their year-end financial reports. Regardless of the line of trade, the affected companies have all posted reduced profits.

Regarding the automotive industry, since many of the parts makers located in the Tohoku region were hit by the disaster, automakers were forced to suspend production in March and even though they resumed operation in mid-April, the number of vehicles produced remains at 50 to 70 percent of normal levels. They were also forced to cut back production overseas and Toyota expects to resume operation in September at the earliest, while Nissan expects to do so in October at the earliest.

Also, many electrical appliance makers have stopped operation at many plants in the Tohoku and Kanto regions and the big five appliance makers expect that their combined sales will drop by some /350 billion.

The Fukushima Daiichi NPS is having wide-ranging effect and planned blackouts were implemented at companies and households that use electricity supplied by the affected power company. In addition, the government is calling on companies and households to cut electricity consumption by 15-20% as summer is about to set in when demand for electricity usually jumps with the use of air conditioners. Companies and homes alike have started to take various measures to save power to the extent possible.

Japan's economy has been on the way back to recovery since the middle of 2009, following a plunge caused by "the Lehman Fall" of 2008. However, the disaster has caused direct damage totaling some /20 trillion and torn parts supply chains to pieces forcing many companies to suspend operations, which has resulted in a huge drop in the overall demand level. In addition, factors led by the breakdown of the NPS created a power shortage and lowered capability utilization rates of a number of plants. While preliminary GDP reports show a decline of 0.9% for the Jan-Mar period of 2011 from the previous quarter with effects of price fluctuations excluded, the annual GDP for April 2010 to March 2011 is expected to grow 0.9% in nominal terms (3.0% in real terms) and post a positive growth – albeit somewhat lower than initially forecasted (Norinchukin Research Institute Co., Ltd.).

### **2.3 Movements toward Restoration and Reconstruction**

Even through many residents in the affected areas are still forced to live in schools and other evacuation centers, construction of temporary housing by the government has accelerated. This housing totaling 72,000 units is scheduled to be complete by August. The quantity of rubble from structures, houses, and other due caused by collapsing from the earthquake or swept away by the tsunami is said to be as large as what is generated in three years under normal circumstances, and its removal is a top priority.

It is a role of local financial institutions to support reconstruction initiatives from the monetary standpoint. The Financial Services Agency announced a special measure on the day of the disaster and sent an 11-point request to financial

institutions, securities institutions, and life as well as casualty insurance companies to help disaster victims. The Agency called on them to allow disaster victims to withdraw money without their passbooks, to withdraw deposits prior to maturity dates, to provide consultation services concerning lost government bonds, etc., and to provide off-hours services, among other things. Under the circumstances, regional banks and credit unions, even though they have also suffered heavy damage, are trying to service their respective communities by setting up temporary offices or making other emergency arrangements. With restoration of head and branch offices advanced one month after the disaster, these institutions will start to respond to financial needs for restoration/reconstruction of their customers. The Bank of Japan announced April 6 “monetary operation to assist financial institutions of the disaster area” and established a credit line of /1 trillion in total in an effort to establish a support system.

In light of the enormous damage caused by the Great East Japan Earthquake, the government plans to make supplemental budgets early to implement measures for restoration /reconstruction. The first supplemental budget was approved and passed May 2 in the Diet. The total amount is /4 trillion (as opposed to /1 trillion allotted in the first supplemental budget for the Great Hanshin Earthquake) and included in this budget are expenditures for building temporary houses, supporting people’s lives, repairing and developing rivers, roads, ports, and airports as well as removing rubble.

Regarding public support for restoration/reconstruction after the disaster, the state contribution for the immediate future is likely to be on the order of /10 trillion and additional supplemental budgets will be allocated as discussions at the Reconstruction Design Council advances. This view is based on the following elements; the government estimates the direct damage of the recent disaster at /16 to 25 trillion, and in the case of the Great Hanshin Earthquake, 30% of the reconstruction funds were born by the public sector, with the balance of 70% provided by the private sector.

The government’s Reconstruction Design Council is currently holding wide-ranging discussions and its intermediate proposals are scheduled to be released in late June. The following items are reportedly under discussion.

- Discussion on a temporary tax hike
- Discussion on issuance of reconstruction bonds – financial resources for redemption to be specified at the same time
- Future energy strategy
- Measures to deal with tsunami – to build houses on higher ground
- Community building through utilization of natural energies
- Discussion on establishing a special reconstruction zone, etc.

The premier, with a view to discussing reconstruction designs through making reference to the reconstruction plans for the 1995 Great Hanshin-Awaji Earthquake appointed a member of the Reconstruction Design Council for the earlier quake as head of the recent disaster. The basic ideal of the reconstruction of the Great Hanshin-Awaji Earthquake was “to build a society where people and nature, people and people, and people and society live in harmony”. These ideals are incorporated in the reconstruction plan for the recent Great East Japan Earthquake.

### 3 Extent of Damage to the Fishing Industry and Reconstruction Measures

#### 3.1 Extent of Damage

Most of these villages have been hit by tsunami many times in the past, and there were cases where some villages were entirely wiped out. Therefore, preparatory measures were taken with coastal levees built and houses constructed on high ground, among other things. However, since the recent tsunami was of such an unprecedented scale, villages along the coast were devastated and most of the fish markets and related facilities including ice-making plants, processing plants, and distribution centers were swept away. Furthermore, most of the offshore stationary nets and oyster-farming facilities set in the bays were also lost or damaged and so were most of the coastal fishing vessels.

Losses directly related to the fishing industry are shown below. Losses of such related industries as distribution and shipbuilding are not available but estimated to be substantial.

**Table 1.** Losses of the fishing industry (as of 5/19) Fisheries Agency

Main facilities damaged	Number of facilities damaged	Damage amount (/ million)	Main damaged areas
Fishing vessels	18,909	1,221	Devastating damage in Iwate, Miyagi, and Fukushima Prefectures. Damage reported in other prefectures from Hokkaido in the north to Kagoshima in the South
Port facilities	319	4,119	
Farming facilities		464	
Farmed products		544	
Common facilities like Markets, Processing facilities		184	
Total		6,531	

Notes: The number of amount of damage-as reported by each prefecture

#### 3.2 Measures to Restore/ Reconstruct the Fishing Industry

##### a. First Step toward Restoration

As June – the catch/harvest season of marine products such as bonito and wakame – is nearing and now that the country’s supplemental budget has been developed, initial activities including the removal of huge quantities of rubble and dismantling fishing vessel pushed ashore or moving them back to the sea are now being carried out. In addition, ground-elevating work is being swiftly done at some fishing markets since the quake caused ground subsidence and the markets are flooded at high tide. Also, using survey vessels to find rubble in the sea, fishermen have started to remove the rubble with stationary fishing nets. Under the circumstances, restoration and reconstruction will be concurrently undertaken in each fishing community.

##### b. Challenges Associated with the Reconstruction Measures

Most of the fishermen are engaged in coastal fishing, they are independent operators of small scale. Most are getting old and all of them do not have successors. Therefore,

from the viewpoint of medium-and long term reconstruction of their business, a question arises as to whether the conventional form of individual fishermen's operation should remain the center core of reconstruction.

Related to this problem, the government has presented a design to consolidate fishing markets and related facilities to create larger fishing centers and at the same time to establish special zones in order to reconstruct fishing industries and release fishing rights exclusively given to the fishermen's associations at the moment to processors and distributors of marine products as well to enlarge the scale of individual fishing businesses.

Fishermen's associations are strongly opposed to the idea of setting up special zones for reconstructing the fishing industry. Their reasons are: If this idea materializes, fishermen will become employees of companies and fishing rights made an item for trade, stable fishing cannot be conducted.

On the other hand, some fishermen's associations feel that each community should work as a unit toward restoration/reconstruction. Their idea includes such initiative as transferring the ownership of the remaining vessels in working condition (some 10% of the pre-quake total) to each association for joint operation by the members and equally sharing income from the catch among them; and acquiring new vessels in the name of the association to replace the ones lost in the tsunami. These associations are increasing in number and are likely to be a key in future reconstruction of the fishing industry.

Overall reconstruction designs and those for each prefecture will be advanced. However, since the importance and conditions of the fishing industry differs from prefecture to prefecture, such measures as blanket release of fishing rights are likely to materialize. Meantime, there may be some progress in the area of enlarging the scale of business.

### **c. Support for Reconstruction of Fisheries Cooperative Associations**

The damage of the disaster extended not only to fishermen but also to many of the fisheries cooperative associations in Iwate, Miyagi, and Fukushima with their offices/stores swept away. In addition to the damage to these associations, many cases have occurred where associations found it difficult to collect money loaned to their members, which is likely to negatively impact their management. For restoration/reconstruction of the fishing industry, government support will be necessary and the Ministry of Agriculture, Forestry and Fisheries intends to provide additional funds to fisheries cooperative associations and is about to revise acts accordingly. In line with such moves The Norinchukin Bank assumes that it will need /1 trillion for the next four years to provide support both to the agriculture associations and the fisheries associations so that they may advance loans to their members for restoration and reconstruction and another /30 billion to increase such associations' capital and reduce interests on loans made to their members. The Bank intends to be fully ready to cover these expected outlays. Furthermore, the computer system linking all the fisheries cooperate associations for information and transaction data processing (JF Marine System) was heavily damaged by the disaster with the loss of relevant offices as well as terminals and ATMs. Support for its early restoration is also an agenda for the Bank.

## 4 Conclusion

### Long-Term Reconstruction Design and State Support

In the case of the reconstruction design for the Great Hanshin-Awaji Earthquake, the basic format was that Hyogo Prefecture would play a key role in developing the reconstruction design with the assumption to create a society for the 21st century and the government will provide financial support. For the reconstruction design of the Great East Japan Earthquake, the same format will basically apply. As to financial resources to cover reconstruction programs, ideas to have the burden shared by the public are being considered, which includes raising the consumption tax (currently 5%) and issuance of extra government bonds.

### Review of Energy Policy

The 21st century calls for a society building with due consideration given to peace and the environment including natural energies. Drawing a lesson from the accident at the Fukushima NPS, the parties concerned have decided to suspend operations at the Hamaoka NPS of Chubu Electric Co., Ltd., until adequate safety measures are in place. The government has also promised to review the nuclear-based grand design of power supply held to date and place more emphasis on natural energies.

### Selection of Reconstruction Design Respecting Different Attributes of Each Region

In the Tohoku Region, a trait of the residents is patience, probably influenced by heavy snowfalls and seasonal winds in winter. People have developed the tradition and culture to live helping and comforting each other. In terms of restoration/reconstruction measures of the fishing industry there, maintaining the practice of granting the fishing rights mainly to the fishermen's associations should be given priority in the discussion of establishing a special zone for reconstructing the fishing industry since its advantage is demonstrated in joint operations already undertaken by some associations.

### Moving Residential Areas to High Ground

In Sanriku and other districts that have been hit by tsunami many times in the past, moving residential areas to higher ground is now under discussion. Securing and developing parcels of land suited for building houses in these districts with harsh topographies requires a considerable amount of money and support from the government and is essential. In addition, with the rapid aging of society, the concept of cooperative town-building based on community maintenance should be the guiding principle for construction of houses as was the case with the Great Hanshin-Awaji Earthquake.

Japan deeply appreciates the assistance offered from 146 countries and regions and 39 international organizations. Rescue teams were sent from 24 countries, regions, and international organizations.

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