THE STUDY OF RECONSTRUCTION PROCESSES FROM LARGE-SCALE DISASTERS
- JICA’s Support for Reconstruction –

FINAL REPORT

NOVEMBER 2013

Japan International Cooperation Agency (JICA)

Capital Region Comprehensive Planning Institute Co., Ltd.
Regional Planning International Co., Ltd.
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Preface

The Great East Japan Earthquake (the 3.11 Earthquake) brought unprecedented devastation to Japan. Japan International Cooperation Agency (JICA) has been providing various kinds of assistance to developing countries challenged by mega-disasters through all stages of the process from emergency relief / rescue to the reconstruction stage. Providing assistance in this field will continue to be an important task for JICA in the future. In order to keep improving the effectiveness of the assistance methods, it is useful as well as important for JICA to learn from the experiences of disasters in Japan including the 3.11 Earthquake.

With this background, the object of this study was to firstly, review the knowledge acquired from the actual and concrete recovery and reconstruction processes from past disasters in Japan; secondly, gather the knowledge gained from the reconstruction process from the 3.11 Earthquake which is presently underway; thirdly, analyze several cases of JICA assistance in the reconstruction of developing countries after disaster; and finally, in conclusion, make recommendations for JICA’s future assistance for developing countries recovering from disaster.

Regarding the methodology, case studies about past disasters as well as JICA’s overseas assistance were mainly carried out by collecting and analyzing related documents, while reconstruction from the 3.11 Earthquake was analyzed using literature review, field visits, and interviews with those involved. Limitations of the study, however, include the difficulty in obtaining the whole picture of problems resulting from the nuclear accident at Fukushima Daiichi Nuclear Power Plant that occurred as a result of the 3.11 Earthquake. The study team only obtained partial information about the actual situation, found from the viewpoint of long-term evacuation.

The study team compiled standard processes and desirable assistance to facilitate reconstruction after disaster into a “Reconstruction Process Standard Book,” as an additional volume of this report, based on the lessons learned from the experience of disasters in Japan. It is expected that the book will be used as a guidebook for JICA staff in charge of support for reconstruction from disaster.

The study team will be pleased if the results of this study contribute to a further increase in the effectiveness of JICA assistance for reconstruction from mega-disasters by serving as a guide for JICA staff to deepen their understanding of past experiences and reflect on future assistance projects.

November 2013

The JICA Study of Reconstruction Processes from Large-scale Disasters
Team Leader,
Jinzaburo HAMADA
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## Abbreviations

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<tr>
<td>3.11 Earthquake</td>
<td>Great East Japan Earthquake</td>
</tr>
<tr>
<td>ADB</td>
<td>Asian Development Bank</td>
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<tr>
<td>AFAD</td>
<td>Disaster and Emergency Management Presidency of Turkey</td>
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<tr>
<td>BRR</td>
<td>Rehabilitation and Reconstruction Agency for Ache and Nias of Indonesia</td>
</tr>
<tr>
<td>CBO</td>
<td>Community-Based Organization</td>
</tr>
<tr>
<td>CFW</td>
<td>Cash for Work</td>
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<tr>
<td>Disaster VC</td>
<td>Disaster Volunteer Center</td>
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<td>DMAT</td>
<td>Disaster Medical Assistance Team</td>
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<td>DRM</td>
<td>Disaster Risk Management</td>
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<td>FAO</td>
<td>Food and Agriculture Organization</td>
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<td>FURE</td>
<td>Fukushima Future Center for Regional Revitalization</td>
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<td>GFDRR</td>
<td>Global Facility for Disaster Reduction and Recovery</td>
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<td>GOJ</td>
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<tr>
<td>MOFA</td>
<td>Ministry of Foreign Affairs of Japan</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-Governmental Organization</td>
</tr>
<tr>
<td>NIED</td>
<td>National Research Institute for Earth Sciences and Disaster Prevention</td>
</tr>
<tr>
<td>NIRA</td>
<td>National Institute for Research Advancement</td>
</tr>
<tr>
<td>NISA</td>
<td>Nuclear and Industrial Safety Agency</td>
</tr>
<tr>
<td>NPO</td>
<td>Non-Profit Organization</td>
</tr>
<tr>
<td>NPS</td>
<td>Nuclear Power Plant</td>
</tr>
</tbody>
</table>
OIP: Quick Impact Project
PDNA: Post Disaster Needs Assessment
PFI: Private Finance Initiative
PPP: Public Private Partnership
RIETI: Research Institute of Economy, Trade and Industry of Japan
SBO: Station Blackout
SME: Small and Medium-sized Enterprise
SPEEDI: System for Prediction of Environmental Emergency Dose Information
TEC-FORCE: Technical Emergency Control Force
TEPCO: Tokyo Electric Power Company
UNDAC: United Nations Disaster Assessment and Coordination
UNESCO: United Nations Educational, Scientific and Cultural Organization
UNOCHA: UN Office for the Coordination of Humanitarian Affairs
UR: Urban Renaissance Agency
USAID: US Agency for International Development
WFP: United Nations World Food Programme
Summary

1. Purpose of the Study

The purpose of the study is as follows:

(1) To review the knowledge learned from the concrete recovery and reconstruction process from past disasters in Japan with careful attention to the countermeasures taken during each process;

(2) To monitor the reconstruction process from the 3.11 Earthquake which is presently proceeding to recovery and reconstruction from unprecedented damage and obtain new knowledge from the results;

(3) To analyze the cases of JICA reconstruction assistance in developing countries; and

(4) To consider and make recommendations for JICA's future assistance for reconstruction of developing countries after disaster by considering the above results.

2. Target of the Study

The target of the study is as follows:

(1) Review of cases of past disasters to learn lessons (see Chapter 3): The study team referred to the Manual for Reconstruction from Earthquake compiled by the Tokyo Metropolitan Government by learning from the experiences of, as well as lessons from, the Great Hanshin-Awaji Earthquake. This manual assembles various countermeasures taken in the process of recovery and reconstruction from past disasters in Japan. Additionally 6 cases of disasters that share similarities to the 3.11 Earthquake were selected and reviewed for the severity of devastation and recovery and reconstruction process.

(2) Review of damage from the 3.11 Earthquake to the present to learn lessons (see Chapter 4 to Chapter 7): The study team reviewed the countermeasures taken by the Government of Japan (the GOJ) and local authorities as well as the assistance provided by the private sector in the reconstruction process from the 3.11 Earthquake, while the distinguishing activities, major issues, and good practices of collaboration among various stakeholders found in the case of the 3.11 Earthquake were reviewed and analyzed. The results, though, are only tentative because of the delay in the reconstruction progress from the 3.11 Earthquake due to various constraints.

(3) Review of cases of JICA's overseas assistance to learn lessons (see Chapter 8): The report reviewed the 6 cases of JICA's past assistance for reconstruction of developing countries after disaster, i.e. the projects in Turkey (1998), Indonesia (2004), Sri Lanka (2004), the Maldives (2004), Pakistan (2005), and Haiti (2010).

Regarding the case of the 3.11 Earthquake, since the process is still in progress, the study collected as much literature as possible, made visits to the affected areas, and conducted interviews with those concerned in order to understand the actual situation. Targets (1) and (3) described above were, however, sought mainly by literature review and analysis. Another limitation of the study is about the countermeasures against a complex disaster with the nuclear accident at Fukushima Daiichi Nuclear Power Plant which is reviewed from the perspective of citizens’ long-term evacuation only.

3. Summary of the Study Results  - Mainly on the 3.11 Earthquake -

This section summarizes the definition of reconstruction process, the core issue of this study, the devastation from the 3.11 Earthquake, the progress in recovery and reconstruction, and lessons learned from the past experience of mega-disasters in Japan including the 3.11 Earthquake.

3.1 Definition of Reconstruction Process

The reconstruction process after a mega-disaster is often explained as following a timeline from the emergency relief stage to the recovery stage and then the reconstruction stage. This study, however, paid attention to the phenomenon that several stages, e.g. emergency relief stage and recovery stage, and/or recovery stage and reconstruction stage, often proceed simultaneously and defined the process, therefore, as a reconstruction framework consisting of 4 stages and 6 countermeasures (see Figure 1).
The 4 stages have a circular path starting from ordinary times, proceeding to an evacuation period after disaster occurrence, then to an inauguration period of reconstruction, to a full-fledged reconstruction period, and going back to ordinary times. The 6 countermeasures include 1) Rescue and First Aid, 2) System Setup for Recovery and Reconstruction, 3) Recovery of Livelihoods, 4) Building Safe Communities, 5) Recovery of Industries and Economy, and 6) Improve Preparedness.

3.2 Damages from Major Disasters and Current Status of the 3.11 Earthquake

(1) Damages from the 3.11 Earthquake

The 3.11 Earthquake was the most powerful earthquake ever recorded in Japan and also the fourth most powerful earthquake in the world since the turn of the 20th century. In January 2013, a Japanese National Police Agency report confirmed 18,649 deaths (including people missing) across twenty prefectures, as well as 129,724 buildings totally collapsed. The quake triggered powerful tsunami waves, which, along with the seismic damage, inflicted enormous damage along the coastline in Tohoku Region, the northeastern part of Japan, mainly in the Iwate, Miyagi and Fukushima Prefectures (Figure 2). The massive flood waters destroyed the Fukushima Daiichi Nuclear Power Plant of Tokyo Electric Power Company, resulting in a serious nuclear accident with the release of radioactive substances into the air and sea.
The 3.11 Earthquake differed greatly from other mega-disasters in that the major cause of fatalities was drowning, accounting for over 90% of the death toll. People over age 60 comprised 67.6% and 63.7% of the total dead respectively for women and men, indicating that many deaths occurred among elderly people regardless of sex. As for women, those over age 80 comprised less than 10% of the total population while more than 25% of the deceased women were over age 80.

In addition to the above, it was another specific feature of the 3.11 Earthquake that 2,688 deaths, as of the end of March, 2013, were attributed to the aftermath of the disaster and severe living conditions as evacuees.

Table 1 shows an overview of damage and the specific features of reconstruction work of the 3.11 Earthquake and other past mega-disasters in Japan. As mentioned above, the number of victims, as well as the extent of devastation, was enormous and led to large-scale countermeasures and assistance from all over the country.

<table>
<thead>
<tr>
<th>Major Features of Disaster</th>
<th>Great Kanto Earthquake</th>
<th>Sanriku Tsunami</th>
<th>Great Hanshin Earthquake</th>
<th>Eruption of Mt. Oyama on Miyake Island</th>
<th>Mid. Niigata Prefecture Earthquake</th>
<th>3.11 Earthquake</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Fatalities</td>
<td>99,331</td>
<td>3,064</td>
<td>6,437</td>
<td>43</td>
<td>0</td>
<td>68</td>
</tr>
<tr>
<td>No. of Totally Destroyed Buildings</td>
<td>128,266</td>
<td>Washed out by flood: 4,034, Collapsed: 1,817</td>
<td>104,906 (Destroyed by debris)</td>
<td>3,175 (Destroyed mainly by tsunami)</td>
<td>Less than 20,000 incl. missing</td>
<td></td>
</tr>
</tbody>
</table>

Notes 1): Numbers in the column for the 3.11 Earthquake are as of January, 2013. 
2): Information on Southwest-off Hokkaido Earthquake is found in the Study Report but omitted in this section, i.e. Summary.
Source: JICA Study Team
(2) Progress in Recovery and Reconstruction

Chapter 4 of the report assembled the related information on the recovery and reconstruction activities carried out by the Government of Japan and concerned local authorities in chronological order as shown in Figure 3.

Source: JICA Study Team

Figure S.3 Processes up to Recovery and Reconstruction from the 3.11 Earthquake

1) Rescue and First Aid Activities

Temporary shelters were opened based on prior emergency plans at public buildings such as schools and community centers. At the busiest time, approximately 2,400 centers accommodated more than 400,000 people. The shelters provided food, heating fuel and other essential commodities which were contributed from all over the country as well as abroad. Lack of proper information-sharing and severance of road networks hampered smooth distribution to cover the whole affected region.

Support for socially-vulnerable people such as children, women, the elderly and the disabled faced problems due to insufficient prior preparation for the devastating disaster. Actions were taken to improve prolonged life in the shelters including improvement of the inadequate areas, allocation of spaces exclusively for women, and provision of educational support for students in shelters.

2) Securing Houses and Livelihood

Provision of temporary housing especially for the tsunami victims was the most urgent agenda item for the government. Up to 120,000 accommodation units were provided either by building temporary houses or subsidizing private and public housing rentals. Thus, most shelters were closed by the end of September 2011.

Support for well-being in the temporary housing was the next item on the agenda. With a view to preventing the isolation of people having special needs and those who lost families, friends, relatives, or jobs, residents associations were organized, and meeting halls were utilized for mutual aid and communication to assist individuals and community activities.
Lifelines such as electricity, gas, and water supply were restored relatively rapidly within 1 to 3 months after the quake with support by inter-regional partnership agreements. Regarding removal of waste and refuse due to the tsunami disaster, i.e. debris, despite some delays in progress during the initial reconstruction phase, it is presently expected that all treatment will be completed as planned by March, 2014 by taking the measures of entire cost payment by the Government of Japan (GOJ) and of providing options for methodology to local authorities. The part of Fukushima Prefecture that is still suffering from the nuclear disaster is experiencing a delay in progress of debris removal and decontamination.

3) Reconstruction of Towns and Industries

Reconstruction of Towns

The Reconstruction Agency was established by the government in January 2012 as a “one-stop service body” for local authorities in the affected areas in regard to planning, design and coordination. It is expected to provide comprehensive governmental support for reconstruction and to facilitate smooth financial processes. However, the shortage of human resources as well as insufficient experience of local authorities impedes the progress of reconstruction work.

Recovery and reconstruction work is not simple for municipalities. Even before the 3.11 Earthquake, local municipalities had encountered problems with aging and decreasing populations. In compiling reconstruction plans including ideas for coastal land use, creation of new industries and relocation of houses to upland areas, the municipalities put an emphasis on building consensus among citizens to maintain and enhance their communities.

Legal procedures for group relocation for disaster prevention were completed in 325 areas to inaugurate the construction and 33% of them, in 106 areas, actually started land creation. 21,000 public houses for disaster victims are planned but construction has begun on only 10% of that total. A devastating delay is anticipated both in the progress of town readjustment projects in 59 areas and also in that for moves from temporary houses to permanent houses. It is considered impossible, even five years after the 3.11 Earthquake, in 2016, to accommodate the victims in permanent houses. It is therefore necessary to accelerate the progress.

Reconstruction of Industries

Salt removal and reconstruction of agricultural lands that suffered from tsunami and floods are progressing smoothly, except in the Fukushima Prefecture, with a 63% recovery rate, including the land that will or may be able to restart farming in 2013, and 50% of farming business offices reopened in six prefectures in the Tohoku and Kanto regions. Plant factories for strawberry and lettuce harvesting have also newly commenced in the areas affected by the 3.11 Earthquake.

Recovery of fisheries is also gradually but steadily progressing as a major local industry for the affected areas especially the offshore area around Sanriku which is well-known as the world’s leading fishing spot with a large amount of catches and highly advanced fish processing as well as marine culture facilities. The fish catch in 2013 in the three affected prefectures recorded approximately 73% of the amount in the same period before the 3.11 Earthquake. The fishery in Fukushima Prefecture, though, is voluntarily prohibiting catches as of September, 2013.

According to the index of mining and industrial outputs, only a slight gap is found between the output of the affected areas and that of other areas with industrial recovery in the former up to the level before the 3.11 Earthquake. Still, again, a relatively large gap is seen between the figure for the offshore of Fukushima Prefecture and that for the whole country.
4) Long-term Evacuation from Nuclear Disaster

More than 150,000 people in total have been displaced from their homes in Fukushima Prefecture. The population of the prefecture fell from 2.02 million in March 2011 to 1.95 million by September 2013, and this number includes voluntary relocation to avoid radiation effects. There are cases in which some family members have been forced to live apart from other members living in the prefecture. There is a growing need to provide care and support to such long-term evacuees.

Recognizing the necessity of long-term evacuation for some areas, the GOJ constructed a plan for a “Temporary Town set outside the original location.” This is a measure to guarantee a safe and secure living environment for evacuees outside the original locations of their hometowns with provision of accommodation mainly from public houses for reconstruction and various necessary services for living, for which prefectural governments, affected municipalities, and recipient municipalities have started consideration of concrete implementation plans. Besides this, it is also necessary to provide assistance both from the public and private sectors suitable to their conditions by responding individually to the various needs of the victims since there are some who have already decided not to return, those who cannot decide if to return or not, and others.

3.3 Lessons Learned from Past Mega-Disasters, especially from the 3.11 Earthquake

This section compiles valuable lessons learned in each step of the process, ranging from the evacuation period just after the incidents to the reconstruction period, based on the experience of the 3.11 Earthquake as well as other mega-disasters (Figure S.4).
The Study of Reconstruction Processes from Large-Scale Disasters

**Period of Full-fledged Reconstruction**

**Period of Starting Reconstruction**

**Period of Living in Evacuation Shelters**

**Period of Full-fledged Reconstruction**

**Period of Starting Reconstruction**

**Period of Living in Evacuation Shelters**

**Improving Preparedness**

- **Education of Children on Disaster Prevention**
  - Education geared to acquiring an “attitude” for protecting one’s own life.
  - 3 principles to survive: Do not rely too heavily on preconceptions; Do your best; Be the first evacuee.

- **Builds Safe Communities**
  - Relocation to upland areas or restoration of affected urban areas based on the local consensus and advice from experts.
  - Countermeasures for future tsunami disasters in line with local conditions, including infrastructure upgrades such as tidal walls (dikes) and breakwaters, physical damage mitigation with multiple defense measures, and evacuation measures to be emphasized more than physical enforcement.

- **Recovery of Industries and Economy**
  - Promotion of infrastructure rehabilitation for early recovery of economic activities to shift from temporary recruitment to long-term employment.
  - Providing subsidies and tax incentives in order to promote collaboration in which members help each other.
  - Creation of job opportunities in the affected area through utilization of social funds raised by voluntary citizens and companies, and promotion of community businesses.
  - Introductory support in agricultural, forestry and fishery industries for developing new products or improving existing products at all stages from production to marketing.

**Incorporation of External Expertise and Support**

- Establishing umbrella groups of various external organizations with expertise, such as volunteers, NGOs/NPOs, academics, experts, private companies, etc. to facilitate on-site information/knowledge sharing, and improving methods/contents of assistance.

**Providing Mental Care**

- Building systems to visit sufferers regularly by assigning counselors for their well-being.
-孵化washihon by assigning counselors for their well-being.

**Recovery of Livelihoods**

- **Assisting Children in Education**
  - Support for children’s learning, which is interrupted by evacuation, during the course of recovery.

**System Set-up for Recovery and Reconstruction**

- **Incorporating Sufferers’ Opinions into Reconstruction Plans**
  - Reconstruction planning for the primary subjects, i.e. the stricken residents, through town meetings, questionnaire surveys, and hearings.
  - Information dissemination and sharing in planning processes through seminars and newsletters.

- **Development of Temporary Houses and Communities**
  - Securing temporary housing with a view to maintaining personal relationships in the original community.
  - Introduction of public facilities like small shops and meeting places to create a cheerful atmosphere in the temporary housing communities.

- **Recovery / Creation of Employment**
  - The Job Creation Program related to reconstruction work for early transition from heavy reliance on relief supplies to self-reliance as consumers.
  - Resumption of public services to enhance self-reliance of sufferers.

- **Creating Safe Communities**
  - Relocation to upland areas or restoration of affected urban areas based on the local consensus and advice from experts.
  - Countermeasures for future tsunami disasters in line with local conditions, including infrastructure upgrades such as tidal walls (dikes) and breakwaters, physical damage mitigation with multiple defense measures, and evacuation measures to be emphasized more than physical enforcement.

- **Building Safe Communities according to Local Conditions**
  - Relocation to upland areas or restoration of affected urban areas based on the local consensus and advice from experts.
  - Countermeasures for future tsunami disasters in line with local conditions, including infrastructure upgrades such as tidal walls (dikes) and breakwaters, physical damage mitigation with multiple defense measures, and evacuation measures to be emphasized more than physical enforcement.

- **Providing Mental Care**
  - Building systems to visit sufferers regularly by assigning counselors for their well-being.
  - Provision of counseling service for supporters and municipal officials who also tend to be overloaded.

- **Recovery of Livelihoods**
  - **Assisting Children in Education**
    - Support for children’s learning, which is interrupted by evacuation, during the course of recovery.

- **System Set-up for Recovery and Reconstruction**
  - **Incorporating Sufferers’ Opinions into Reconstruction Plans**
    - Reconstruction planning for the primary subjects, i.e. the stricken residents, through town meetings, questionnaire surveys, and hearings.
    - Information dissemination and sharing in planning processes through seminars and newsletters.

- **Incorporation of External Expertise and Support**
  - Establishing umbrella groups of various external organizations with expertise, such as volunteers, NGOs/NPOs, academics, experts, private companies, etc. to facilitate on-site information/knowledge sharing, and improving methods/contents of assistance.

- **Recovery of Industries and Economy**
  - Promotion of infrastructure rehabilitation for early recovery of economic activities to shift from temporary recruitment to long-term employment.
  - Providing subsidies and tax incentives in order to promote collaboration in which members help each other.
  - Creation of job opportunities in the affected area through utilization of social funds raised by voluntary citizens and companies, and promotion of community businesses.
  - Introductory support in agricultural, forestry and fishery industries for developing new products or improving existing products at all stages from production to marketing.

Source: JICA Study Team

**Figure S.4 Lessons Learned from Past Mega-Disasters**
Period of Full-fledged Victims

3.3 Lessons Learned from Past Mega-Disasters, especially from the 3.11 Earthquake

※ Circles denote the major players in activities.
※ Other supporters denote NGOs/NPOs, private companies and the like.

Experience of the 3.11 Earthquake as well as other mega-disasters (Figure 4).

- Recover of Livelihoods
- Development of Temporary Houses and Communities
- Assisting Children in Education

Diversified Characteristics of
- View to maintaining personal relationships in the original community.
- Introduction of public facilities like small shops and meeting places to create a cheerful atmosphere in the temporary housing communities.
- Center operation with adequate consideration for special needs, other gender, privacy, elderly, socially disadvantaged people, etc.

Other Supporter
Local Victim
Conditions
Authoritative

- Relocation to upland areas or restoration of affected urban areas based on the local consensus and advice from experts.

Improve Preparedness

- Education of Children
- Providing Mental Care
- Recovery/Creation of community development experts and reconstruction professionals.

- Building systems to visit victims regularly by assigning counselors for their well-being.
- Countermeasures for future tsunami disasters in line with local conditions, including infrastructure upgrades such as tidal walls (dikes) and breakwaters, physical damage mitigation with multiple defense measures, and evacuation measures to be emphasized more than physical enforcement.

- Education geared to acquiring an “attitude” for protecting one’s own life.
- From heavy reliance on relief supplies to self-reliance as consumers.
- Avoidance of potential confusion during disaster through developing local disaster prevention plans and preparation of manuals for evacuation, rescue, and cooperation.

- Information dissemination and sharing in planning processes through seminars and newsletters.
- Reconstruction planning for the primary subjects, i.e. the stricken residents, through town meetings, questionnaire surveys, and hearings.

- Introductory support in agricultural, forestry and fishery industries for developing new products or improving existing products at all stages from production to marketing.
- Creation of job opportunities in the affected area through utilization of social movement and community participation.
- Better preparedness for mutual help through community evacuation drills by voluntary residents associations.
- Avoidance of potential problems such as overgrowth of public administration, overtaxation of municipal officials, or service for supporters and municipal officials who also tend to be overloaded.

- Promotion of infrastructure rehabilitation for early recovery of economic operation.
- Provision of subsidies and tax incentives in order to promote collaboration in reconstruction work for early transition from temporary recruitment to long-term employment.
- Incorporation of external expertise and support for disaster preventive community development.
- Establishment of umbrella groups of various external organizations with incorporation of external expertise, such as volunteers, NGOs/NPOs, academics, experts, private companies, etc. to facilitate on-site information/knowledge sharing, and improving methods/contents of assistance.

Participatory Approach

- Information dissemination and sharing in planning processes through seminars and newsletters.
- Reconstruction planning for the primary subjects, i.e. the stricken residents, through town meetings, questionnaire surveys, and hearings.
- Introduction support in agricultural, forestry and fishery industries for developing new products or improving existing products at all stages from production to marketing.
- Creation of job opportunities in the affected area through utilization of social movement and community participation.
- Better preparedness for mutual help through community evacuation drills by voluntary residents associations.
- Avoidance of potential problems such as overgrowth of public administration, overtaxation of municipal officials, or service for supporters and municipal officials who also tend to be overloaded.

- Promotion of infrastructure rehabilitation for early recovery of economic operation.
- Provision of subsidies and tax incentives in order to promote collaboration in reconstruction work for early transition from temporary recruitment to long-term employment.
- Incorporation of external expertise and support for disaster preventive community development.
- Establishment of umbrella groups of various external organizations with incorporation of external expertise, such as volunteers, NGOs/NPOs, academics, experts, private companies, etc. to facilitate on-site information/knowledge sharing, and improving methods/contents of assistance.

Source: JICA Study Team

Figure 4 Lessons Learned from Past Mega-Disasters
4. Ideas for JICA’s Future Assistance - Based on the Study Results -

This section introduces lessons learned from the study with indication of the corresponding authorities, and ideas for JICA’s future assistance obtained from lessons learned from 1) past disasters, 2) the 3.11 Earthquake, and 3) JICA’s overseas assistance program. “Authority” indicates the major source for each lesson and idea among the above 1), 2), and 3). A ✔✔ (double check marks) sign is placed next to the assistance areas that the study team recognized to be quite effective and should be given a high priority.

Some duplications were found among the lessons learned in the above 1), 2), and 3). Considering the duplication, the study team analyzed and pulled out 24 issues in total that should be provided with assistance by JICA regardless of the form and kind. Ideas for JICA’s future assistance amounted to 46 in total under each lesson (see Table 2 and Chapter 9 in the Study Report which show these recommendations in conjunction with cases for reference).

Lastly, “citizens’ active involvement” and “gender perspective” are specifically indicated as principles for effective reconstruction in the whole process of reconstruction and in a cross-sectoral manner.

### Table S.2  Ideas for JICA’s Future Assistance

<table>
<thead>
<tr>
<th>Lessons Learned</th>
<th>Authority/Source</th>
<th>Ideas for JICA’s Future Assistance</th>
</tr>
</thead>
</table>
| (1) Operation of Evacuation Centers Considering Diversified Characteristics of the Evacuees | A & B            | ✔ To provide assistance for formulation of guidelines for evacuation center operations; necessary to involve citizens themselves in the process and to pay attention to gender and those in need of special care at the time of the disaster  
✔ To make recommendations on how to improve the operation of evacuation centers by implementing assessment of NGO as well as coordinating organizations activities at evacuation centers |
| (2) Provision of First Aid and Medical Services                                  | B                | ✔ To assist establishment of mechanism for emergency medical support/service  
✔ To conduct risk assessment on candidate locations in the instance of newly established medical facilities |
| (3) Provision of Necessary Emergency Supplies at Suitable Timing                 | B & C           | ✔ To confirm the methods/routes for distribution of emergency supplies from overseas in recipient countries  
✔ To obtain information on probability for not only central governments but also local authorities and NGOs to receive emergency supplies from overseas (since it would happen in some countries that those supplies do not reach to affected people/areas.) |
| (4) Immediate Provision of Necessary Information                                 | B                | ✔ To assist in strengthening capability of affected countries/areas to receive as well as distribute concerned information |

Authority/Source:
- A: Lessons learned from past disasters
- B: Lessons learned from the 3.11 Earthquake
- C: Lessons learned from JICA’s overseas assistance

✔✔: Assistance areas with priority (expected to be particularly effective)
## Lessons Learned

### (5) Appropriate Treatment of Waste and Human Excreta

<table>
<thead>
<tr>
<th>Authority / Source</th>
<th>Ideas for JICA’s Future Assistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>✔✔ To discuss appropriate ways for treatments at localities and provide necessary support to implement, in conjunction with consideration for the possibility of transferring Japanese technologies</td>
</tr>
</tbody>
</table>

### (6) Promotion of Local Production and Local Consumption of Energy and Water Resources

<table>
<thead>
<tr>
<th>Authority / Source</th>
<th>Ideas for JICA’s Future Assistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>✔ To examine possibilities for transferring Japanese technologies such as facilities to utilize renewable energy as auxiliary power ✔ To construct infrastructure, to seek possibility for maintaining and/or regenerate local traditional water resources such as well water</td>
</tr>
</tbody>
</table>

## <System Set-up for Recovery and Reconstruction>

<table>
<thead>
<tr>
<th>Lessons Learned</th>
<th>Authority / Source</th>
<th>Ideas for JICA’s Future Assistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Identification of Needs for Support from Comprehensive Perspectives at the Sites</td>
<td>B &amp; C</td>
<td>✔✔ To carry out Post Disaster Needs Assessment (PDNA) at the timing of termination of emergency relief and first aid or up to 3 months after occurrence of disaster</td>
</tr>
<tr>
<td>(2) Establishment of Integrated System for Reconstruction</td>
<td>B &amp; C</td>
<td>✔✔ To provide assistance to the integrated command structure</td>
</tr>
<tr>
<td>(3) Incorporation of External Expertise and Support</td>
<td>A &amp; B &amp; C</td>
<td>✔ To collect information on major NGOs in recipient countries (as much as possible) ✔ To prepare proper systems and an environment for assistance by collaborating with NGO’s with much experience in the field from the initial stage of assistance ✔✔ To make recommendations on and provide support for establishment of supporting organizations by local experts in affected areas</td>
</tr>
<tr>
<td>(4) Incorporating Sufferers’ Opinions into Reconstruction Plans</td>
<td>A &amp; B</td>
<td>✔ To give advice and provide technological assistance to formulation of “reconstruction plans” at municipality as well as community levels ✔ To recommend a guarantee to the “Citizens’ Initiative” as a principle for suitable recovery and reconstruction from disaster ✔ To promote and obtain stakeholders’ participation in the process of reconstruction planning ✔ To support “Participatory” community development for reconstruction in collaboration with NGO and other local partners</td>
</tr>
</tbody>
</table>
### <Recovery of Livelihoods>

<table>
<thead>
<tr>
<th>Lessons Learned</th>
<th>Authority / Source</th>
<th>Ideas for JICA’s Future Assistance</th>
</tr>
</thead>
</table>
| (1) Immediate Development of Temporary Houses and Communities                   | A & B              | ✔ To recommend “importance of development of temporary towns” as a principle for recovery and reconstruction from the disaster  
✔ To recommend “attention to continuity of community and personal ties” as a principle for recovery and reconstruction from the disaster (it is also important to understand cases were relatively scarce sense and ties as “community” exist) |
| (2) Recovery / Creation of Employment                                           | A & B & C          | ✔ ✔ To provide job assistance especially for women  
✔ To provide technological assistance to develop housing lots for those to reconstruct their own houses  
✔ To support NGOs that promote establishment of citizens’ organizations for decision-making  
✔ To support construction of public houses, e.g. by providing technological assistance in terms of earthquake-resistant and/or seismic isolation designs and structures |
| (3) Support for Reconstruction of Livelihoods of Suffers both in Physical and Mental Terms | A & B & C          | ✔ To make recommendations for support and implementation of identifying factors that interrupt reconstruction of livelihoods after disaster and countermeasures for these factors  
✔ To support NGO’s etc. which provide care to inhabitants in temporary houses  
✔ To collect information on Japanese NGOs and establish a network with them so that JICA can seek the possibility of collaborating with local NGOs in recipient countries through networks with Japanese NGOs  
✔ To make recommendations on directions for reconstruction based on ethnicity, locality and historical context of recipient country/area and support the implementation |
| (4) Assisting Children in Education                                             | B                  | ✔ To support NGOs which provide educational support for children  
✔ To improve workshop training for disaster-resistant community development through field visits and cross-fertilizing exchanges |
| (5) Obtaining Safe Locations for Development of Houses and Preparing the local Environment for Reconstruction of Houses with Citizens’ Own Resources | B                  | ✔ To provide technological assistance to develop housing lots for those to reconstruct their own houses  
✔ To support NGOs that promote establishment of citizens’ organizations for decision-making  
✔ To support construction of public houses, e.g. by providing technological assistance in terms of earthquake-resistant and/or seismic isolation designs and structures |

### <Building Safe Communities>

<table>
<thead>
<tr>
<th>Lessons Learned</th>
<th>Authority / Source</th>
<th>Ideas for JICA’s Future Assistance</th>
</tr>
</thead>
</table>
| (1) Building Safe Communities according to Local Conditions                    | A & B              | ✔ To support formulation of master plans for reconstruction and master programs in conjunction with support for implementation of priority projects within those plans  
✔ To improve workshop training for disaster-resistant community development through field visits and cross-fertilizing exchanges |
### Lessons Learned from Large-Scale Disasters

#### (2) Comprehensive Implementation of Countermeasures against Tsunami

<table>
<thead>
<tr>
<th>Authority / Source</th>
<th>Ideas for JICA’s Future Assistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>A &amp; B</td>
<td>✔ To make recommendations on countermeasures against tsunamis in conjunction with support for implementation of those measures</td>
</tr>
<tr>
<td></td>
<td>✔ ✔ To install facilities to promote evacuation or functioning of evacuation towers/centers etc. in construction of public facilities</td>
</tr>
</tbody>
</table>

#### <Recovery of Industries and Economy>

<table>
<thead>
<tr>
<th>Lessons Learned</th>
<th>Authority / Source</th>
<th>Ideas for JICA’s Future Assistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Reconstruction of Small- and Medium-sized Enterprises by Utilizing Local Potential</td>
<td>A &amp; B</td>
<td>✔ To support implementation of reconstruction works in collaboration with local enterprises in the affected areas (through Japanese enterprises as much as possible)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>✔ To further develop and improve mutual learning between local authorities on Future City Initiative (simultaneously promote participation of Japanese enterprises and Japanese NGO/NPO for further facilitation of cross-fertilizing communications on a private basis)</td>
</tr>
<tr>
<td>(2) Promotion of Regeneration and Revitalization of Local Industries such as Agriculture and Fishery</td>
<td>A &amp; B</td>
<td>✔ To support regeneration of local industries in collaboration with affected countries</td>
</tr>
<tr>
<td></td>
<td></td>
<td>✔ To support industrial promotion in conjunction with environmental education</td>
</tr>
</tbody>
</table>

#### <Improve Preparedness>

<table>
<thead>
<tr>
<th>Lessons Learned</th>
<th>Authority / Source</th>
<th>Ideas for JICA’s Future Assistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Education of Children on Disaster Prevention</td>
<td>A &amp; B</td>
<td>✔ ✔ To facilitate disaster education at schools</td>
</tr>
<tr>
<td>(2) Participatory Approach to Disaster Preventive Community Development</td>
<td>B</td>
<td>✔ ✔ To strengthen citizens’ capacity for dealing with disasters</td>
</tr>
<tr>
<td>(3) Development of Cities with Functions to Mitigate Large-scale Damage from Disaster</td>
<td>A &amp; B &amp; C</td>
<td>✔ ✔ To collect information and make assessment on disaster risks by country and by municipality</td>
</tr>
<tr>
<td></td>
<td></td>
<td>✔ To restructure training programs in Japan in the field of disaster management</td>
</tr>
<tr>
<td>(4) Communication of Disaster Experience for the Next Generation</td>
<td>B</td>
<td>✔ To support development of archives</td>
</tr>
<tr>
<td></td>
<td></td>
<td>✔ To make recommendations on communication methods</td>
</tr>
<tr>
<td>(5) Promotion of Various Forms of Collaboration amongst Local Authorities</td>
<td>B</td>
<td>✔ To coordinate collaboration amongst local authorities by making agreements among them and other methods for mutual support in the instance of a disaster and reconstruction from disaster, including provision of training as well</td>
</tr>
</tbody>
</table>

Source: JICA Study Team
Chapter 1  Introduction

1.1  Purpose and Methodologies of the Study

The purpose of the study was set as follows:

- To analyze the policies and the measures taken in recovery and reconstruction from past mega-disasters in Japan in conjunction with the process of cooperation, coordination, and decision-making on formulation of town reconstruction plans between local authorities and affected people, to monitor the reconstruction process from the 3.11 Earthquake, and to provide advice and recommended assistance from the analyses of these experiences.
- To determine and compile lessons learned from JICA’s past reconstruction assistance for developing countries recovering from mega-disasters to make recommendations as well as to develop guidelines for JICA’s future assistance for reconstruction after disasters.

In order to meet the above goals, the study team conducted surveys on the following four issues.

**Part 1: Determine and compiling experiences and know-how from the past mega-disasters in Japan**

Tokyo Metropolitan Government conducted a series of surveys on experiences in reconstruction from the Great Hanshin-Awaji Earthquake from 1996 to 2003 for the purpose of developing a Manual for Reconstruction from Earthquake. This study refers to the results of those surveys and newly-analyzed reconstruction processes from the Mid. Niigata Prefecture Earthquake in 2004 and other cases to determine and compile the lessons.

**Part 2: Monitoring of the reconstruction process after the 3.11 Earthquake and providing feedback with advice and experiences**

Reconstruction has been ongoing continuously since the occurrence of the 3.11 Earthquake on March 11, 2011. This study monitors the process and simultaneously provides feedback with advice and recommendations.

- 2-1 Review of lessons learned from reconstruction after the 3.11 Earthquake
- 2-2 Review of tasks ahead in methods of decision-making between disaster victims and local authorities, e.g. on group relocation to upland
- 2-3 Review of tasks ahead in enforcement and revision of concerned ordinances and bylaws
- 2-4 Study on desirable methods for setting restrictions on private rights such as building restrictions

**Part 3: Assembling and analyzing lessons on JICA’s overseas assistance for reconstruction after mega-disasters**

This study provides follow-up reviews of JICA’s overseas assistance for reconstruction after disasters by using several target examples, e.g. Banda Aceh City in Indonesia as the affected area from the Indian Ocean Tsunami in 2004, Sri Lanka, the Maldives, and Marmara Earthquake in 1999 in Turkey, and determine points that need further improvement.

**Part 4: Making recommendations for JICA’s assistance and formulating guidelines**

The goal is to implement the study by considering the introduction of not only successful cases but also cases with difficulties/constraints in conjunction with ideas for various activities to solve those difficulties/constraints in the guidelines.

Throughout the implementation of this study, sufficient attention was paid to people who are vulnerable during a time of disaster including the elderly, children, the disabled, and foreign residents, with the perspective of gender equality.
1.2 Approach of the Study

The overall flowchart of the study follows as Figure 1.1.

<1> Consideration of Methodologies for the Study
- Review accessible literature and information
- Consider basic policies/methods for the study and items/contents to be studied
- Consider implementation structure, schedule, etc.

<2> Preparation of Inception Report

<3> Collection and Analysis of Cases of Recovery and Reconstruction Processes in Japan
- Review and analyze the case of the Great Hanshin-Awaji Earthquake, etc. along the chronological stages of reconstruction from disaster

<4> Case Study on Process to Formulate Manuals for Reconstruction from Disasters in Japan
- Determine important issues for further discussion by referring to the experience of the Tokyo Metropolitan Government to formulate the manual, citizens’ awareness of problems obtained from training in town reconstruction, etc.

<5> Consideration of Methods for Identifying Tasks Ahead and Needs at the Sites of Reconstruction from the 3.11 Earthquake
- Properly incorporate methods to collect information directly from the affected communities/people and indirectly from the intermediaries in order to identify needs

<6> Collection and Analyses of Cases of Assistance for Reconstruction from the 3.11 Earthquake Provided by the Government of Japan, Local Authorities, and Other Stakeholders such as NGOs
- Make a cross-sectional review of assistance by ministries, local authorities, NGOs, universities/research institutes, private companies, etc., analyze them from the viewpoint of total optimization, and obtain lessons
- Collect and analyze information on long-term evacuees and process of assistance both from public and private sectors

<7> Updating Information on Reconstruction Activities in the 3 Prefectures in Tohoku, Collection of Cases, and Compiling Lessons Learned

Tasks Ahead and Needs (from <5>)
Countermeasures and Assistance (from <6>)

Review of Collected Information
(by month / by area / by issue)
Obtaining Lessons
Compilation of a Case Book

<8> Review of Measures for Reconstruction Implemented in Collaboration among Various Stakeholders in the 3.11 Earthquake
- Shinchi Town (Fukushima), Nagahora Commune in Rikuzen-takata City (Iwate), Higashi-matsushima City (Miyagi), etc.

<9> Participation in Internal Meetings of JICA and Conferences held by Other Organizations
Example: Liaison meetings for supporting reconstruction in JICA, liaison meetings of supporting organizations for inhabitants in temporary houses for the 3.11 Earthquake, etc.
- Expected issues to be reported: progress of the study

<10> Analysis of Cooperation by the GOJ and JICA for Recovery and Reconstruction of Developing Countries from Mega-Disasters
- Analyze and review several cases, e.g. Indonesia and Sri Lanka, on overviews of disasters, countermeasures and assistance taken by the central governments, local authorities, and other stakeholders such as NGOs, and assistance provided by foreign countries including Japan in both the period of occurrence of disasters and the reconstruction period. Compile lessons learned from the results.
- Survey in Japan, i.e. Literature Review and Interview
- Field visit to Turkey

<11> Consideration of Directions-to-Go for Japanese Overseas Assistance in the Field of Recovery and Reconstruction from Disaster
- Consider desirable methods for division of roles and cooperation with various stakeholders inside and outside of Japan
- Consider desirable mechanisms for cooperation with foreign assistance organizations
- Consider roles of JICA (including new functions)

<12> Consideration and Recommendation for JICA’s Future Assistance

<13> Preparation of Interim Report

<14> Preparation of Draft Final Report

<15> Preparation of Final Report

Figure 1.1 Work Flowchart
Chapter 2  Recovery and Reconstruction Processes in Manuals for Recovery from Disasters within Japan

The Great Hanshin-Awaji Earthquake showed local public bodies the importance of preparations prior to earthquake disasters. This led to the creation of documents such as disaster recovery manuals in each location, with Tokyo as a primary example. In this chapter, we will introduce the state of the creation of disaster recovery manuals in each location. We will also introduce parts of the Tokyo disaster recovery manual, which was the first such manual created. The parts of this manual that we will introduce are the basic recovery and reconstruction process and the ways of thinking about major issues considered therein.

2.1  State of the Creation of Disaster Recovery Manuals and Other Similar Documents

Tokyo created its “Disaster Recovery Manual” in 2003, but this was formed by the integration of two manuals that had previously been created, the “Urban Renaissance Manual” (1997) and the “Livelihood Reconstruction Manual” (1998). Currently, 19 wards within Tokyo have created a manual. The exceptions are Chuo ward, Koto ward, Ota ward, and Shibuya ward. To encourage each municipality to create a manual, Tokyo also created the “Disaster Recovery Standards Manual for Wards and Other Municipalities” in 2011.

The state of the creation of disaster recovery manuals and other similar documents outside of Tokyo is shown in Table 2.1.

<table>
<thead>
<tr>
<th>Local Government</th>
<th>Name</th>
<th>Year Created</th>
</tr>
</thead>
<tbody>
<tr>
<td>Osaka prefecture</td>
<td>Guideline on the Creation of Urban Areas in Recovery from Disasters</td>
<td>1998</td>
</tr>
<tr>
<td>Kanagawa prefecture</td>
<td>Disaster Reconstruction Measures Manual</td>
<td>2005</td>
</tr>
<tr>
<td>Nagoya</td>
<td>Town Area Recovery Plan Manual</td>
<td>2005</td>
</tr>
<tr>
<td>Wakayama prefecture</td>
<td>Action Program for Countermeasures Related to Earthquake Disaster Prevention</td>
<td>2012</td>
</tr>
<tr>
<td>Tochigi prefecture</td>
<td>Urban Renaissance Guideline</td>
<td>2012</td>
</tr>
<tr>
<td>Shizuoka prefecture</td>
<td>Efforts to Open the “Inland Frontier” (Overall Concept)</td>
<td>2013</td>
</tr>
</tbody>
</table>

Source: JICA Study Team
Compared with the disaster recovery manuals created outside of Tokyo, the manual created by Tokyo has the following features: it handles overall recovery policies including both the recovery of physical objects and the recovery of the human condition, it provides a more pragmatic outline of the recovery and reconstruction process from the period of living in evacuation shelters to the period of full-fledged reconstruction as learned from the lessons provided by the Great Hanshin-Awaji Earthquake, and it introduces the proper way of building consensus with the resident associations that are involved in local reconstruction. Therefore, as JICA considers this manual to be an appropriate reference for reconstruction support in developing countries, in the next section we will focus on the “Tokyo Disaster Recovery Manual” to consider the proper way of going about the recovery and reconstruction process.


2.2.1 Basic Recovery and Reconstruction Process in the Tokyo Disaster Recovery Manual

(1) Ways of Thinking about the Basic Recovery and Reconstruction Process

The Tokyo Disaster Recovery Manual consists of two editions: the “Recovery and Reconstruction Process Edition,” which provides citizens with a clear overall picture of the recovery and with the recovery and reconstruction process, and the “Recovery and Reconstruction Policies Edition,” which integrates the previously established Urban Renaissance Manual and Livelihood Reconstruction Manual to provide an overview of the concrete policies for each recovery and reconstruction field and is designed for staff member use.

The “Recovery and Reconstruction Process Edition” of the Tokyo Disaster Recovery Manual provides an overall picture of the recovery and reconstruction by way of the collaboration of three types of assistance: self-assistance, mutual assistance, and public assistance. This way of thinking about assistance—assisting oneself, mutual assistance, and public assistance—is a general rule that was defined in the Tokyo Disaster Countermeasure Ordinance revised in 2000. This way of thinking applies the lessons that we have learned from the Great Hanshin-Awaji Earthquake, which showed that there are limits to what can be accomplished with public assistance and, as such, strengthened the need for a combination of assisting oneself and mutual assistance in order to respond to disasters.

The Tokyo Disaster Recovery Manual states that in the event of a disaster, it is insufficient to only paint a picture of the future of urban renaissance in order to smoothly proceed with the recovery of Tokyo. It is necessary to proceed with the recovery with local cooperation by making use of the power of the community, that is, by using a structure of mutual assistance that is formed from a consensus built between the strong desires of local residents regarding recovery and the proper way of going about recovery.

This basic recovery and reconstruction process breaks the time before and after the occurrence of a disaster into four stages: (1) ordinary times, (2) the period of living in evacuation shelters, (3) the period of starting reconstruction, (4) the period of full-fledged reconstruction (see Figure 2.1).
First, regarding (1) ordinary times, attempts are being made at the urging of administrative bodies to organize the creation of areas that aim to improve the area's disaster prevention capabilities. The organizations thereby developed are constantly promoting the sharing of ideas with citizens in the area. These ideas are the ways of thinking in the grand design for disaster recovery that has been previously organized by Tokyo.

If a disaster occurs, the process shifts to (2) the period of living in evacuation shelters. The key point of this stage is the development of a recovery organization for the area at the point in time when its residents are living in temporary shelters. If there was an organization for the creation of the area during ordinary times, reorganize it into the recovery organization. If no organization was established during ordinary times, it is necessary to create a new recovery organization for the area.

Next, the process shifts to (3) the period of starting reconstruction. Here, it is important to proceed with the recovery with local cooperation by making use of the power of the community. As a first step to this end, have the citizens establish a council for the recovery of the area. Administrative bodies will recognize the area as a cooperative recovery ward when this council is established. Then move to step two by proceeding with the creation of a village with limited-period temporary housing (temporary houses) that is centered on the council for the recovery of the area. Discussions focused on the construction of the recovered area will be held in earnest at the village with limited-period temporary housing. The administrative body will provide full support for the construction of this village with limited-period temporary housing and for recovery discussions.

---

1 In the Urban Renaissance Manual, the term “temporary houses” is used, but this term has been changed to “limited-period temporary housing” in the Disaster Recovery Manual in order to clearly show that the indicated village is only intended for housing for a limited period of time. Therefore, both of these terms have the same meaning. For details, see page 2-9.
The final step of the period of starting reconstruction is the building of consensus regarding the creation of the area.

In the final step, (4) the period of full-fledged reconstruction, plan for the achievement of reconstruction by developing the reconstruction of the city, of houses, of citizens' lifestyles, and of industries.

This recovery and reconstruction process stresses the importance of performing the proactive reconstruction of the area on the basis of citizen leadership with full support provided by the administrative body.

This implies that if a recovery organization for the area cannot be established and the way of thinking about recovery cannot be shared among all individuals in the area, (A) urban renaissance will be performed under the leadership of the administrative body if the administrative body deems this necessary in order to proceed with the recovery of the entire city and (B) individuals may have to proceed with separate recovery by themselves.

(2) Policies Supporting the Basic Recovery and Reconstruction Process

Figure 2.2 shows the (draft) policies that should be implemented for each stage. These policies were determined according to the basic recovery and reconstruction process defined in the Tokyo Disaster Recovery Manual together with the “Cabinet Office Draft Guide to Disaster Recovery and Reconstruction Measures” organized in 2005 used as a reference.

There are 27 policies organized into the following 6 fields: 1) providing emergency first-aid, 2) constructing systems for recovery and reconstruction support, 3) rebuilding housing and lifestyles, 4) creating safe areas, 5) reconstructing industries and the economy, and 6) implementing countermeasures prior to disasters.

2.2.2 Major Issues of the Tokyo Disaster Recovery Manual

The Tokyo Disaster Recovery Manual defines a number of key topics for recovery as well as how to handle these topics, so we will introduce an overview of these topics here.

(1) Establishment and Support of the Council for the Recovery of the Area

The Disaster Recovery Manual is written under the assumption of the occurrence of a near-field earthquake (the four cases of an earthquake occurring directly under the special wards of Tokyo, directly under the western part of Tokyo, directly under the border of Kanagawa prefecture, and directly under the border of Saitama prefecture are discussed). In the case of the earthquake occurring directly under the special wards of Tokyo, an area of up to 9,575 ha is assumed to be destroyed by fire. A large number of scattered areas will be affected by the disaster, but these areas must be reconstructed. To do so, it is desirable to first unify the people of each disaster afflicted area. The parent organization for this purpose is the council for the recovery of the area. Once this council is established, the administrative body will provide it with the utmost support. Recovery performed in this manner is called “recovery with local cooperation.” If the people in an area cannot be brought together into a cohesive unit, the administrative body may have to perform the recovery (recovery under the leadership of the administrative body) for areas that the administrative body recognizes as being problematic. An example of such an area is one in which structures are built densely together and are made of wood in a manner that brings to mind the negative legacy of the 20th century. In other cases, we will have to leave citizens to perform the reconstruction work by themselves (separate recovery).

These three ways of recovering areas—recovery with local cooperation, recovery under the leadership of the administrative body, and separate recovery—have been considered, but Tokyo has expressed the stance of placing importance on recovery with local cooperation.

Regarding the concrete policies required to provide the support for this, work is ongoing regarding the following two items.

1) Support for the creation of ward and other municipality ordinances designed to rank councils for the recovery of areas and cooperative recovery wards
   - Regulation of the responsibilities of Tokyo for recovery organizations for areas in the “Tokyo Disaster Countermeasure Ordinance” (2000)
   - Creation of a model ordinance that regulates details such as the organization of, responsibility of, and work to be carried out by councils for the recovery of areas; the support provided by the administrative body for the work carried out by councils for the recovery of areas; and cooperative recovery wards

2) Establishment of structures for supporting the work carried out by councils for the recovery of areas
   - Forming “Agreements Related to Support for Town Development during Disaster Recovery” between “Support Organization for Town Development during Disaster Recovery” (composed of an organization of 19 experts such as lawyers, real estate appraisers, and accountants) and Tokyo

(2) Building Consensus for Town Development during Recovery

We believe that the aspects that play an important role in building consensus for town development during recovery are the establishment by sufferers of a council for the recovery of the area and the provision of appropriate information to this end by the administrative body.

In Tokyo, according to the plan for the promotion of building urban areas to protect from disasters, districts that have a high degree of danger—such as those in which structures are built densely together and are made of wood—are selected, and community-building to protect from disasters is expanded in the district. In order to plan for the implementation of such activities, there are a great number of cases in which district development councils are organized. In such cases where councils
have been organized, we believe that in the event of a disaster, there are no major problems with reorganizing the council that was put in place prior to the disaster into the council for the recovery of the area.

If a council for the recovery of the area has not been organized and a large amount of damage has occurred in the area, the administrative body must encourage the citizens in the disaster afflicted area to form the council for the recovery of the area and then proceed with the organization of this council.

The area in which town development during recovery can be proceeded with is believed to be in the range of a few hectares to a few tens of hectares, so it will be difficult to have all citizens participate in the council for the recovery of the area. Therefore, it will be necessary to use some sort of mechanism to build consensus. An example is to have representatives from town council groups participate in the recovery council and then convey to their group members the details discussed during the council.

Town development experts, who are positioned between citizens and the administrative body, play an important role in building consensus for town development during recovery. Experts should be able to explain in an easy-to-understand manner the blueprints and reconstruction support measures indicated by the administrative body, intermediate in communication with the administrative body, and bear the role of providing advice that consolidates the varying opinions of the citizens.

It is also necessary to bear in mind the confirmation of the whereabouts of individuals temporarily transferred outside of disaster afflicted areas and the need to grasp the intentions behind town development during recovery.

(3) Process for Building Consensus regarding Items such as the Land Readjustment Project during Recovery

For districts that have been heavily damaged, the city and the ward or other municipality will enter into negotiations to implement primary building restrictions. Districts that have suffered particularly large amounts of damage such that infrastructure is not being maintained and it is judged that there is a need to proceed with overall reconstruction will be ranked according to the reconstruction maintenance ordinance of the ward or other municipality and will thus be identified as important reconstruction districts (within approximately one month).

Next, the ward or other municipality will make a city planning decision on the important reconstruction district as an affected area to promote reconstruction for as defined in the Act on Special Measures for Reconstruction of Disaster-stricken Urban Areas, and will then implement secondary building restrictions (within two months).

Concurrently to these administrative affairs, the ward or other municipality will encourage the formation in areas such as important reconstruction districts of a council for the recovery of the area. At the same time, the ward or other municipality will consider the introduction of the land readjustment project and urban redevelopment project in order to hurry the creation of a draft for the plan of town development during recovery. The ward or other municipality will recognize areas in which these councils have been established as cooperative recovery wards.

The ward or other municipality will introduce the above-mentioned draft to the council for the recovery of the area and shall then make corrections to the draft as deemed necessary from discussions carried out by the council. The end result of this process will be the building of consensus between the ward or other municipality and the council for the recovery of the area. Land readjustment project and other city planning decisions will then be performed according to the finished document (in general, within six months).

(4) Forms of Councils for the Recovery of Areas and Various Support Organizations

The following organizational forms can be considered for the council for the recovery of the area: a form in which officials from each field (an organization) hold regular discussions but in which each field works independently (separate type), a form in which multiple fields proceed with their work in collaboration with each other (joint type), and a form in which the council for the recovery of the area
grows as an organization for the comprehensive creation of the area such that the council expands into NPOs and companies formed for the creation of the area (comprehensive type).

Similarly, regarding organizations that include the experts, NPOs, and other bodies that support the council for the recovery of the area, support organizations for the recovery of the area can also be considered in terms of the level to which various fields collaborate with each other, which means that there are also separate-type, joint-type, and comprehensive-type support organizations in the same manner as the councils for the recovery of areas.

(5) Creation of Ward and Other Municipality Ordinances Designed to Rank Councils for the Recovery of Areas

To rank councils for the recovery of areas as bearers of responsibility for recovery and to support the creation and work of these organizations, Tokyo regulates its responsibilities for recovery organizations for areas according to the Disaster Countermeasure Ordinance. Also, the Area Recovery Promotion Ordinance for Wards and Other Municipalities has been created within the Disaster Recovery Standards Manual for Wards and Other Municipalities. Details such as the organization of, responsibility of, and work to be carried out by councils for the recovery of areas and the support provided by the administrative body for the work carried out by councils for the recovery of areas are regulated by the above ordinance.

(6) Process for Creating Limited-period Temporary Housing

Limited-period temporary housing has been developed from the idea of securing temporary living spaces in order to proceed with the creation of the recovery area by the citizens of the area. Limited-period temporary housing is composed of structures such as temporary housing and shops and usable remaining buildings. The creation of limited-period temporary housing is established by the council for the recovery of the area. If the council's work zone has been recognized by the administrative body as a cooperative recovery ward, this process will proceed with support provided by the administrative body for the securing of plots of land and buildings. The council for the recovery of the area will work to perform town development during recovery while having discussions with the administrative body and experts at the limited-period temporary housing.

The concrete policies for the creation of limited-period temporary housing are: (1) the system for the support of leasing land for temporary buildings (a system for enabling the temporary leasing of private lots) and (2) the system for the support of constructing temporary buildings (a system for supporting acts such as the clearing of debris with priority and the constructing of self-made shared temporary housing).

(7) Process for Housing Reconstruction

The ward or other municipality will promptly proceed with a housing damage survey, will ascertain what housing can be repaired, and will provide (as emergency housing) temporary housing, self-made temporary housing, and temporary housing for use in business.

For full-fledged reconstruction in line with the town development during recovery, support will be provided for the rebuilding of housing by individuals themselves and public housing will be provided for those disaster victims for whom the rebuilding of their own housing is difficult.

(8) Process for Industry Promotion

The administrative body will first determine an industry promotion plan that makes clear the emergency and mid-term actions to be performed. Next, the administrative body will provide support for the securing of temporary workspaces (as part of the creation of limited-period temporary housing) until the appropriate buildings can be rebuilt. Also, the administrative body will proceed with the creation of a comprehensive industry promotion plan that encompasses aspects such as small- to medium-sized businesses; tourism; local farming, forestry, and fishing; and employment.
The administrative body will promote this plan while planning for items such as financial support for the reconstruction of facilities, mediation in business deals and the like, and stable distribution.

The Great East Japan Earthquake (the 3.11 Earthquake) made us clearly recognize the urgency of rebuilding people's livelihoods such as farming and fishing. We must pay attention to the fact that the importance of concurrently rebuilding both housing and people's livelihoods has been questioned.

**Process for Lifestyle Reconstruction**

In order to reconstruct peoples' lifestyles in the early stages of reconstruction, the administrative body will, if necessary, secure places for emergency healthcare, medical treatment, social welfare, and education and will plan for the full-fledged rebuilding of facilities and for the implementation of activities.

Also, the administrative body will plan for the construction of an environment in which it is easy for volunteers, NPOs, and other similar organizations to do their work.

**Collaboration between administrative bodies of wards and other municipalities, citizens, and NPOs**

As a basic rule, the local government of the ward or other municipality is at the heart of recovery with local cooperation. It is important to plan for recovery in the manner that best matches the individual situation of the area, and, from this point of view, Tokyo takes the stance of supporting the ward or other municipality (Figure 2.3).

Also, the recovery of the area is focused on the disaster victims, and this recovery consists of the participation of experts and volunteers from a variety of fields and the work of NPOs. From the importance of all these factors working together, efforts are underway to build an environment for collaboration and cooperation between a variety of participants. In addition, private businesses (as members of the area) are required to establish cooperation for the comprehensive recovery of each area through the mutual cooperation with a variety of other participants such as the citizens of the area, the administrative body, and NPOs.
Chapter 3 Rehabilitation and Reconstruction Process in Japan


The reason we have profiled these 6 cases is the similar features that each disaster has to the 3.11 Earthquake outlined below: case 1) shares similarity in severity of the devastation with almost the entire affected areas burned or washed away; case 2) occurred in the same geographical areas as the 3.11 Earthquake; support for promoting group relocation for disaster prevention was utilized in both case 3) and the 3.11 Earthquake, though the geographical location was not the same for those two disasters; scale of the devastation in case 4) is fairly close to that of the 3.11 Earthquake with 105,940 and 104,906 of totally collapsed houses for the 3.11 Earthquake and Great Hanshin-Awaji Earthquake, respectively1; case 5) required the victims to evacuate to distant locations similar to the 3.11 Earthquake; and reconstruction of the communities to ensure basic functions for maintaining victims livelihood was necessary in both case 6) and the 3.11 Earthquake.

Figure 3.1 Location of 6 Cases of Past Disasters

Source: JICA Study Team

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1 The number is coming from documents prepared by the Disaster Countermeasures Office, Fire Defense Agency.
3.1 Overviews of Past Mega-Disasters and Noteworthy Features in the Respective Policies for Reconstruction

3.1.1 Great Kanto Earthquake in 1923

(1) Overview of Process from Disaster Occurrence to Rehabilitation and Reconstruction

1) Overview of the Damage

At 11:58 A.M. on 1st September, 1923, the Great Kanto Earthquake with a magnitude 7.9 hit the metropolitan area of Tokyo and its surrounding areas. The death toll numbered 105,000 with 110,000 totally collapsed houses (see Table 3.1).

<table>
<thead>
<tr>
<th>Date and Time</th>
<th>At 11:58 A.M. on 1st September, 1923</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epicenter</td>
<td>Located northwestern part of Sagami Bay</td>
</tr>
<tr>
<td>Intensity of Earthquake</td>
<td>6 in Shindo with magnitude 7.9</td>
</tr>
<tr>
<td>No. of Deaths</td>
<td>99,331</td>
</tr>
<tr>
<td>No. of Injured</td>
<td>43,476</td>
</tr>
<tr>
<td>No. of Houses Totally Collapsed</td>
<td>128,266</td>
</tr>
<tr>
<td>No. of Houses Half Collapsed</td>
<td>126,233</td>
</tr>
<tr>
<td>No. of Houses Destroyed by Fire</td>
<td>447,128</td>
</tr>
<tr>
<td>Damaged Area</td>
<td>Tokyo with approximately 3,830 ha</td>
</tr>
<tr>
<td>Total Amount of Damage</td>
<td>Approximately 5.5 billion JPY at that time</td>
</tr>
</tbody>
</table>

The earthquake caused fires which spreading simultaneously at many locations in the downtown areas of Tokyo and Yokohama. Most of the urban areas were burned to the ground. In Tokyo, the fire spread along both sides of the Sumida River from east to west. On the east bank, the fire destroyed Honjo and Fukagawa wards and finally ended at Yoko- jikken River, while on the west bank, it burned the entire wards of Asakusa, Shitaya, Kanda, Nihonbashi, and Kyoubashi and part of Shiba Ward and Kojimachi Ward with the exception of the Imperial Residence, everything along the Sumida River was reduced to ash.

People's livelihood was threatened since the earthquake destroyed various social infrastructures such as the transportation network, water supply, electricity, communications, bridges, and other facilities.

Most of the evacuees from the spreading fire, numbering approximately 1 million, went to empty lots in the outer circle of the burned areas, e.g. Ueno Park and the foreyard of Imperial Palace. Many survivors who were evacuated to the vacant lots were met with easily usable water from ponds or so for extinguishing the fire and/or with trees which could arrest the spreading of the fire. Another 40,000 who evacuated to the open spaces in Hifuku-sho-ato, a vacant ground previously used as a garment factory for the Japanese Army, were driven into a corner by the blazes from 3 sides simultaneously and burned to death.

2) Emergency Relief

Fire Fighting

The Fire Department of Tokyo City at that time was equipped with advanced and high quality technologies and fire brigades\(^2\). Still, some unexpected conditions existed, e.g. cuts in the water supply as well as the spreading of fires at various locations simultaneously. Actually, in Tokyo City

\(^2\) In terms of machinery/equipment the Fire Department in Tokyo City was equipped at the time of the earthquake with 38 fire engines, 1 fire motorcycle, 1 hand-controlled gasoline pump, and 25 vehicles with hose pipes and in terms of human resources 824 full-time fire brigades and 1,402 fire crew in 40 backup units. (Source: “Great Kanto Earthquake – Verified from the perspectives of fire fighting, medical aids, and voluntary works,” p.60, 2004, published by Chikuma-shobo)
The fire broke out at 134 locations, with 57 small fires which were extinguished rather easily and another 77 which spread widely throughout the city. Among the 357,000 houses and buildings in Tokyo City at that time, 219,000 was burned to the ground by the fire with the scorched areas totaling 34.7km² equivalent to 43.6% of the total city area of 79.4km².

**Medical Aid**

The provision of medical aid to the victims in Tokyo, 86 teams of rescue crews were organized by Tokyo City, Metropolitan Police, Japanese Red Cross Society, university hospitals and medical associations in surrounding prefectures etc.

Among 1,575,000 people in need of medical aid, more than 0.5 million were given aid by the rescue teams of Tokyo City, while more than 0.3 million, slightly less than 0.24 million, and also slightly less than 0.2 million victims were rescued by the teams of Metropolitan Police, Japanese Red Cross Society, and university hospitals and medical association respectively.

In some cases medical agencies outside the affected areas individually decided to dispatch rescue teams to the sites without waiting for orders from the central government. At a ministerial meeting held 4 days after the disaster occurred it was decided to invite the health and sanitary facilities of the Japanese Army, as well as the rescue teams of Japanese Red Cross Association, from all over the nation which further improved the mechanism for providing emergency rescue services to the victims.

**Measures Taken by the Central Government**

Around the time of the disaster, Mr. Gompei Yamamoto was in the middle of organizing his Cabinet following the passing of former Prime Minister Tomosaburo Kato a week prior to the earthquake. The leaders of the central government recognized the seriousness of the damage on the evening of the day and some countermeasures were determined and implemented in the establishment of a Temporary Rescue Office for Disaster Victims, an official announcement of an urgent requisition order for acquiring necessary emergency supplies, and the introduction of martial law for maintaining safety and security in the areas. Still, it was in the morning of Monday 3rd September that these countermeasures got into full swing after seeing the establishment of the Yamamoto Cabinet in the evening of 2nd September, with decisions on the mechanism for food distribution on the 5th and on the moratorium of payment to avoid monetary disorder as the basis for handling the situation at hand.

The Metropolitan Police contributed significantly as the first and most responsible body for rescue and maintenance of safety, but still with operated under a number of constraints with the loss of their office building, cuts in telecommunication, and insufficient human resources.

The Japanese Army started dispatching rescue teams shortly after the occurrence of the disaster with individual decision-making made by each troop unit. They also contributed significantly in rescue and emergency rehabilitation activities by widely allocating troops, including those invited from other prefectures to the affected areas following the earthquake.

**Measures Taken by Local Authorities**

Since the evening of 1st September Tokyo City Authority began the acquisition of food, provision of hot meals, and establishment of evacuation centers. However, the activities were not sufficient to cover all the evacuees and volunteers contributed a lot to complement this insufficiency in assistance.

Tokyo City Authority started began systematic distribution of emergency supplies from around 6th September. Army troops transported those supplies to the district offices for further distribution to the victims. Local residents’ organizations were responsible for needs assessment, transportation and distribution of the goods.

Simultaneously, Tokyo City began to recover remains on the 2nd, reconstructing roads and bridges on the 4th, water supply provision on the 5th and completed rehabilitation of the water supply in Yamanote areas that did not suffer loss from the fire and also began waste and human waste treatment on around the 7th September. Supporting organizations such as the association of military personnel in reserve duty and the young men’s association took an active part in implementing those activities.

Electricity supply was returned and railway transportation was reopened on 4th September to connect
the affected areas to other locations while the reopening of the Chuo line and Tokaido line was delayed until late October.

**Supply of Temporary Houses**

The Metropolitan Police, Tokyo-fu Prefectural Authority at that time, and Tokyo City discussed and determined measures for accommodating the victims in meetings held at the Temporary Rescue Office for Disaster Victims following the 4th September. With these decisions countermeasures started to be taken by utilizing public facilities as well as patio covers for temporary accommodation, collection of construction materials and inviting cooperation from the young men’s associations and the association of military personnel in reserve while receiving general applications for laborers.

The plan for constructing “barrack” was also discussed in the meetings, which resulted in formulation of the following plans for construction:

- To accommodate approximately 150,000 victims (estimated)
- To entrust the actual construction to Tokyo-fu Prefectural Authority, Tokyo City Authorities, and Department of Construction in Metropolitan Police
- To establish construction sites at Shiba-rikyu Garden, Shiba Park, outer and inner courtyards of Meiji Shrine in Aoyama, Ueno Park, Asakusa Park, Sarue-goryo-ike (memorial pond of Emperor’s grave), Koishikawa Botanical Garden, Midori-cho Park, Fukagawa Park, Suzaki reclaimed land, front garden of Yasukuni Shrine, and Hibiya Park.

Tokyo City adopted the policy for barrack operation on 24th September, clearly mentioning the construction of additional facilities such as 1) nursery rooms, 2) libraries, 3) medical clinics, 4) public baths, and 5) consultation offices.

In addition to the above, further barracks were constructed by Tokyo City on the empty sites of former elementary schools and small parks within the city as well, with another built by voluntary helpers and social welfare organizations. Accommodations aside, several medical facilities were constructed, e.g. a facility to separate the people with infectious diseases from the public in the campus of Tokyo Imperial University, camps built in Mikawashima and Komatsugawa for the injured, medical clinics in the courts of Senso-ji Shrine and Hongan-ji Shrine etc. At the end of February 1924, a total of 170,639 barracks had been constructed.

Construction sites were found in large parks that had escaped damage from the fire, courtyards of villas including those of the Mitsui’s and Yasuda’s, vacant grounds adjacent to the affected areas and elementary schools and shrines.

The aggregation of barracks were known as “housing complexes for sufferers” and installed with public toilets, spaces for washing clothes, public kitchens, and public baths for supporting the victims’ reconstruction of livelihood. In the large complexes, other additional facilities were installed such as management offices, medical clinics, nursery rooms, shops, and beauty salons. Counseling offices as well as libraries were also set up in the management offices.

**3) Actions for Rehabilitation and Reconstruction**

**Formulation of “Reconstruction Plan of Imperial Capital”**

Preceding the formulation of “Reconstruction Plan of Imperial Capital,” the Imperial Capital Reconstruction Department was established as the main body responsible for the formulation. Originally, it was envisaged to conduct not just rehabilitation but a radical and fundamental conversion of the city with the basic policies for the reconstruction of Tokyo as noted below, which was developed by Mr. Shimpei Goto, Minister of Interior and a key person for the plan formulation conducted on 2nd September. The basic policies read as follows:

---

3 Simple buildings for temporary location of evacuees with publicly built barracks and self-built barracks.
4 Simple and cheap buildings that were not covered by any law.
5 Millionaires constructed barracks for the victims who evacuated to their courts of villas and donated those buildings to the Temporary Rescue Office for Disaster Victims.
The Study of Reconstruction Processes from Large-Scale Disasters

i) To deny the capital relocation
ii) To provide 3 billion JPY for reconstruction
iii) To apply the newest and highest levels of technologies in urban development in Europe and the USA
iv) To realize desirable urban development with firm attitudes and in consultation with landowners

After a series of discussions and many twists and turns, the original plan was diminished and reduced in its content and size and finally determined on 31st January. Mr. Shimpei Goto had compiled “the Outline for Renovation of Municipal Administration in Tokyo,” known as “0.8 billion yen plan” 2 years prior to the quake as the mayor of Tokyo City. This experience assisted him greatly in making immediate responses to the mega-disaster as Minister of Interior at that time.

The Minister of Interior Shimpei Goto envisaged that the central government would directly conduct all the tasks for reconstruction, ranging from urban reconstruction, emergency relief and reconstruction of livelihood to industries. However, duties of the Imperial Capital Reconstruction Department were limited to urban reconstruction in the fire ravaged areas after considering the financial conditions and conflicting opinion among various groups. Tokyo City and Yokohama City were placed in charge of the implementation of most projects subscribed in the Plan. This indicates the original planning for reconstruction following a disaster in Japan, which remains in place till this day, with the role of the central government limited only to road reconstruction and preparation of housing sites.

Overview of Imperial Capital Reconstruction

The central government, i.e. Department of Reconstruction, Ministry of Interior, was in charge of development of only limited infrastructure such as arterial roads, canals, and large parks all of which influenced and connected geographically to outlying areas. Other responsibilities were entrusted to Tokyo City and Tokyo-fu Prefectural Authority in order to complement the work of the central government.

Although it was decided in the Diet that land readjustment projects were fundamentally to be implemented by Tokyo City, part of the projects were carried out by the central government. Tokyo City offered municipal loans in order to obtain necessary funding for reconstruction works, which directly resulted in the deterioration of the financial situation further down the track.

(2) Noteworthy Specific Policies and Activities

1) In Rehabilitation Process

Construction of Temporary Social Welfare Facilities

As temporary social welfare facilities the following were installed in the temporary housing sites:

1) Simplified baths, nursery rooms and child consultation centers for securing basic facilities for maintaining the evacuees’ livelihood in the aggregation of barracks
2) Vocational bureaus, public eating places, pawn brokers, vocational aid centers, simplified markets, etc. necessary facilities for maintaining livelihoods in the devastated urban areas

Construction costs for those facilities were paid for from donations and the general-account budget of Tokyo City.

- Temporary Vocational Bureaus
  In the rehabilitation the reopening of 9 original bureaus and another 15 were newly opened in parks that housed a large number of evacuees.
- Simplified Eating Places
  In addition to the 4 locations that started business prior to the quake, Tokyo City planned and built another 6 new eating establishments which increased the total to 10.
- Temporary Bathing Places Mainly in Aggregation of Barracks
There were 971 public bathes in Tokyo City prior to the disaster and 340 of these survived damages from the fire. For the purpose of maintaining hygiene and sanitation among the citizens, Tokyo City built and operated 29 temporary baths mainly in the aggregation of barracks, shrines, and parks in the fire ravaged areas.

- Temporary Simplified Accommodation
  With 30 prefabricated barracks donated by Osaka City shortly after the occurrence of the earthquake, 11 vacant locations such as parks, courts of shrines, and reclaimed areas were built with temporary simplified sleeping places to accommodate the single laborers who were suffering from the disaster and living in cheap lodging.

2) In Reconstruction Process

Realization of Urban Development in the Fire Devastated Areas
The devastation caused by the Great Kanto Earthquake had 2 very contrasting meanings: one was literally the unprecedented “devastation” by the earthquake and fire, and the other was a golden opportunity to radically and fundamentally implement urban reconstruction of Tokyo City as a whole which had not been possible except for partial rehabilitation until then. Reconstruction work after the Great Kanto Earthquake was therefore an ideal opportunity to plan and implement large-scale projects backed up with the Urban Planning Law that was had been enacted 4 years prior to the quake.

The works were carried out from 1923 to 1930. With the reconstruction of streets, channels, parks, and land readjustment projects in the fire ravaged areas where streetscapes that had remained since the Edo period were completely remodeled into modern urban areas.

Moreover, experts that were fostered and experienced in the process of reconstruction then contributed to the development of urban planning on many levels in Japan following completion of the reconstruction.

Development of Houses by Judicial Foundation
Dojunkai was the judicial foundation established by Social Welfare Bureau, Ministry of Interior, with 10 million JPY from donations for reconstruction in May 1924, as an implementing body for housing policy and reconstruction of the imperial capital. The Dojunkai can be considered the predecessor of Japan Public Housing Corporation which was established after World War II.

The original responsibilities of the Dojunkai were: 1) supply of small houses for victims to seek stability in livelihood, 2) provision of accommodation, vocational training, and places for vocational aid for severely disabled persons.

Specific details on implemented projects were as follows:
- Complete buyout of low quality houses and rebuilding of them into sanitary housing complexes
- Construction and operation of detached houses for working people in suburbs that were not affected by the disaster
- Construction and operation of modern apartment buildings for the middle class in urban areas in Tokyo
- Construction and operation of collective housings for working ladies
- Follow-up studies on the constructed houses and research on housing programs

The Dojunkai constructed approximately 3,000 wooden-built houses and approximately 2,200 collective houses of reinforced concrete on 16 sites in Tokyo and Yokohama.
Public Subsidy for Promoting Fire-Resistant Buildings

Supporting Building Reconstruction Co., Ltd. was established to promote construction of fire-resistant buildings by providing preferential loans to citizens who built such homes with their own resources.

The business commenced in 1926 with 2 different schemes for assistance: one was the loan for construction costs and another was an installment sales plan where the company built the houses and sold them to the citizens. In Nihonbashi ward, Kanda ward, and Kyobashi ward, where some progress in land readjustment projects was being made, the company provided subsidies for almost half of all newly built fire-resistant houses by 1931. The company had high expectations and took an active role in the initial period of reconstruction. However, as the process proceeded and the number of newly built houses decreased in the City the size of the projects undertaken by the company gradually diminished.

Although the company actively promoted the increase of fire-resistant housing complexes in micro residential sites found in fire-protective areas, only part of the projects e.g. in Kudanshita, were actually implemented.

3.1.2 Sanriku Tsunami in 1933

(1) Overview of Process from Disaster Occurrence to Rehabilitation and Reconstruction

1) Overview of the Damage

At 2:31 A.M. on 3rd March, 1933, the towns on the Sanriku coast in the northeastern part of Japan were hit by an earthquake of Magnitude 8.1 and by a tsunami approximately 30 minutes following the initial quake. The tsunami devastated 18 and 36 municipalities in Miyagi Prefecture and Iwate Prefecture respectively, with complete washout and collapsing of houses, farm lands, buildings, and a huge number of vessels and fishing equipment. The human death toll totaled 3,008 with 1,008 injured and the total number of collapsed houses numbered 6,542 with 4,933 damaged by flooding (see Table 3.2).

Table 3.2 Overview of Damage by Showa Sanriku Tsunami

<table>
<thead>
<tr>
<th>Date and Time</th>
<th>At 2:31 A.M. on 3rd March, 1933</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epicenter</td>
<td>Approx. 200 km off the Sanriku coast</td>
</tr>
<tr>
<td>Intensity of Earthquake</td>
<td>Maximum of 5 with a magnitude of 8.1</td>
</tr>
<tr>
<td>No. of Deaths</td>
<td>3,064 in total</td>
</tr>
<tr>
<td>No. of Injured</td>
<td>n/a</td>
</tr>
<tr>
<td>No. of Houses Totally Collapsed</td>
<td>4,034 washed out and 1,817 collapsed</td>
</tr>
<tr>
<td>No. of Houses Half Collapsed</td>
<td>n/a</td>
</tr>
<tr>
<td>No. of Houses Destroyed by Fire</td>
<td>n/a</td>
</tr>
<tr>
<td>Damaged Area</td>
<td>n/a</td>
</tr>
<tr>
<td>Total Amount of Damage</td>
<td>n/a</td>
</tr>
</tbody>
</table>


Half of the population and households in the coastal areas were devastated by the tsunami in Miyagi Prefecture, while those victims of the disaster reached approximately 80 % of the total population in Iwate Prefecture. The tsunami reached a height of 28.9 meters around Nesaki, Hirota Village, and Kesen District Iwate Prefecture which is presently known as Rikuzen-takada city. This area was also hit by a tsunami in 1896, called “Meiji Sanriku Tsunami.” The area had been quite slow to act in implementing prevention policies to mitigate the risk of disaster which led to a repeat of the devastation.
The Study of Reconstruction Processes from Large-Scale Disasters

2) Emergency Relief

At 4:00 A.M. on 3rd March, the Governor of Iwate Prefecture went to his office and immediately held an emergency meeting to decide the establishment of a Head Office for Emergency Call and Security. All the policemen were called out and departed for the devastated areas promptly.

The Governor, on the one hand, reported to the central government on the occurrence of the disaster, while he made a request to the army and the navy for emergency relief for the affected peoples. The army dispatched its officers by both truck and even on foot with forced marches into the devastated areas and arrived in the some areas in the evening of the same day of the tragedy. The navy as well sent its officers from Oominato and Yokosuka who arrived to the devastated areas on the morning of 4th March and started landing and distributing relief supplies.

In parallel, the Iwate Prefectural Government implemented relief activities using its own resources. However the progress was far too slow with lots of constraints such as heavy snow and destroyed roads which halted the smooth transportation of supplies by truck. Therefore, most of the relief goods were transported in by horse.

Ministries at the central level commenced provision of emergency relief assistance in close collaboration with the affected prefectures, while the Parliament made decisions on exemptions, reductions and extension of tax payments, provision of food, cloths, and bedclothes, and prompt rehabilitation and reconstruction of roads and harbors in the Diet session.

3) Actions for Rehabilitation and Reconstruction

Formulation of Reconstruction Plan

The central government firstly tabled 10 different potential safeguards against tsunami, which reads as follows: 1) relocation of the communities to upland areas, 2) bank raising in the residential areas, 3) construction of seawalls/tide preventive breakwaters, 4) construction of tide preventive buildings, 5) development of streets, 6) land reclamation and bank protection, 7) construction of refugee roads, 8) development of forest as a means of protection against storm surges, 9) building breakwaters, and 10) installation of tsunami forecasting equipment. As a next step, the central government divided all the municipalities into 2 groups, i.e. urban areas such as Kamaishi, Yamada, Ootsuchi, and Oofunato, and other fishery and agricultural communities; and developed planning policies for each group in terms of selection of sites, composition of community members, road construction, and building protection facilities from tidal waves. Under the policies set as above, reconstruction plans were formulated in 60 communities in 15 municipalities in Miyagi Prefecture and 42 communities in 20 municipalities in Iwate Prefecture. Furthermore Miyagi Prefecture enforced a prefectural bylaw to restrict building construction in some areas in order to guarantee the smooth and effective reconstruction of the affected areas.

Projects for Reconstruction

The rehabilitation of streets and construction of desirable residential areas were subsidized by the central government. The latter covered relocation of communities to upland areas, bank raising in residential areas and such, which was implemented in 60 communities in 15 municipalities in Miyagi Prefecture and 38 communities in 18 municipalities in Iwate Prefecture. Among the 60 communities in Miyagi Prefecture, 11 relocated upland as a group while another 49 choose an individual relocation method, while all 38 in Iwate selected a group relocation method.

Methods for Implementation of Reconstruction Projects

- State Subsidy

The total cost for street reconstruction was estimated at 100,000 JPY, 85% of which was subsidized by the central government, while that for construction of desirable residential areas was calculated at 539,000 JPY. Low-interest loans were provided with state subsidies for the interest payments in both cases. Implementation was entrusted to the municipal authorities.

- Method for Construction of Qualified Residential Areas

Construction of desirable residential areas was the scheme were firstly municipalities registered
targeted land lots as public land, in some cases arranging for the purchase of private property and then the municipalities constructed housing lots while the actual construction of houses was to be carried out by industrial guilds or housing cooperatives.

Municipalities allocated the costs used for site preparation, land purchase, and other related activities to those who moved into the housing as payment duties for a total of 15 years after a 5 year extension following relocation. The ownership of lands and houses were transferred from municipalities to the inhabitants after the full refunding had taken place.

(2) Noteworthy Specific Policies and Activities

Implementation of Comprehensive Countermeasures against Tsunami

Comprehensive countermeasures in relation to tsunami were taken broadly in the affected areas, which were exemplified by relocation to upland areas, construction of breakwaters for tide protection, protection forests for tidal waves, refugee roads etc. as almost the same areas were hit by a tsunami in 1896 were people had learnt the absolute necessity for these actions.

Taro Village, which suffered severe damage by devastating tsunamis on two occasions, decided to construct a super breakwater for tide prevention with a height of 7.7 meters and a length of 1,350 meters. However, the facility was completed 25 years after the Showa Sanriku Tsunami in 1933. It was added too with ongoing extension works and grew into a great seawall measuring 2,433 meters in length and containing an X-shape structure in 1966. Approximately 500 meters of this great structure was along the coast. However this was completely wiped out by the tsunami generated by the 3.11 Earthquake.

Implementation of Construction Works by Local Private Enterprises/Organizations

Kiri-kiri area and Ootsuchi Town carried out reconstruction works for developing an ideal fishery village both in economic and social terms.

The implementing bodies were Ootsuchi Town Authorities, the industrial association of Ootsuchi Town, fishery association, agricultural cooperation, sericulture cooperative, youth organization and other related organizations. Among the above, the industrial association and fishery association took a major role in the reconstruction of the town.

While the Town Authority took the initiative in site preparation and housing construction for relocation to upland areas, the credit cooperation worked to purchasing houses in Kiri-kiri, constructed and sold these while operating and maintaining residences and public facilities on the relocation sites. Details are not clearly known at this stage in regards to the effectiveness and results of the policies. Still, it has been considered effective to some extent in revitalizing the circular flow of the local economy as the local bodies themselves took initiatives for their own economic recovery.

3.1.3 Southwest-off Hokkaido Earthquake in 1993

(1) Overview of Process from Disaster Occurrence to Rehabilitation and Reconstruction

1) Overview of the Damage

The Southwest-off Hokkaido Earthquake occurred around 10:17 P.M. at local time on 12th July, 1993 with a magnitude of 7.8 and devastated areas along the Japan Sea coast in Hokkaido such as Okushiri Island, Taisei Town, Setana Town, and Suttsu Town. Okushiri Island in Hokkaido suffered severely from the tsunami with the total amount of damage reaching 66.4 billion JPY and a total of 198 dead and missing (see Table 3.3). Most of the dead and missing drowned or burnt to death by the tsunami and resulting fires.
Table 3.3 Overview of Damage by Southwest-off Hokkaido Earthquake

<table>
<thead>
<tr>
<th>Date and Time</th>
<th>10:17 P.M. on 12th July, 1993</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epicenter</td>
<td>On the seabed approximately 60 km west of Oshima peninsula in southern Hokkaido</td>
</tr>
<tr>
<td>Intensity of Earthquake</td>
<td>Maximum 6 with a magnitude of 7.8</td>
</tr>
<tr>
<td>No. of Deaths</td>
<td>172</td>
</tr>
<tr>
<td>No. of Injured</td>
<td>26</td>
</tr>
<tr>
<td>No. of Houses Totally Collapsed</td>
<td>437</td>
</tr>
<tr>
<td>No. of Houses Half Collapsed</td>
<td>88 with another 827 partly collapsed</td>
</tr>
<tr>
<td>No. of Houses Destroyed by Fire</td>
<td>n/a</td>
</tr>
<tr>
<td>Damaged Area</td>
<td>n/a</td>
</tr>
<tr>
<td>Total Amount of Damage</td>
<td>66.4 billion yen</td>
</tr>
</tbody>
</table>

Source: JICA Study Team based on the table by referencing “Documents on information and lessons learned from Southwest-off Hokkaido Earthquake,” 2005, the Cabinet Office and other documents

The first tsunami wave reached Okushiri around 2 to 3 minutes after the earthquake and repeatedly hit the island. A maximum run-up of 29 meters was recorded in the Mouchi area.

The earthquake caused fires in 2 vessels, 1 building, and 1 vehicle in the Aonae area and the fire continued to expand burning a wide area of 100 meters from east to west and 500 meters from north and south until it was extinguished at 9:20 A.M. the following day. The urban area with inhabitants of more than 500 households was almost totally devastated.

Furthermore arterial road destruction and electrical power outages placed heavy constraints on information gathering and transportation.

2) Emergency Relief

Emergency Relief Activities
A minor Air Self-Defense Force base was located in the town and provided emergency assistance, which was a unique feature of this disaster and very advantageous to the victims. On the flipside, limited access/transportation to the island placed heavy constraints for receiving voluntary support from outside the island. This resulted in delays for accepting volunteers except those dispatched by the Japanese Red Cross Society.

Construction of Temporary Houses
Temporary houses were promptly constructed for the disaster victims within one and a half months and all applicants were moved into the 330 temporary residents by 27th August, 1993. The houses were semi-detached and consisted of one floor with one dining room, kitchen, bathroom and toilet. After 3 years, the temporary residents moved out and the houses were withdrawn by December, 1996.

3) Actions for Rehabilitation and Reconstruction

Formulation of Reconstruction Plan
The Okushiri town authority set up the Reconstruction Office in response to the disaster on 1st October, 1993 and formulated “Reconstruction Plan from the Earthquake in Okushiri Town” with technical support from the central government as well as Hokkaido Prefectural Government. The plan was developed with “improving safety,” “upgrading prosperity,” “developing a comfortable and delightful town,” as visions for the future town complemented by 3 basic concepts being the “reconstruction of livelihood,” “building safe communities,” and “reconstruction of communities.”

Implementation of Reconstruction Works
(a) Aonae area: This area suffered from both tsunami and fire and placed a focus on construction of disaster resistant facilities in the reconstruction process. In the old town, housing plots for 180 residents were developed with construction of a 6 meter high embankment behind the seawalls for
receiving support from Fisheries Agencies, MAFF, for the improvement of local fishing village environs. In the Misaki area all 120 households moved upland and the affected site was redeveloped into a park with the support of the National Land Agency for the promotion of group relocation for disaster prevention. The area adjacent to the site consisted of sprawling farmland with a gentle incline, which contributed to a relatively easy implementation of the relocation to upland areas.

(b) Hatsu-matsumae area: The Okushiri Town Authority provided support for local community environment improvement and facilitated the development of housing lots with a 3 meter high embankment behind the seawall. 26 plots were developed while another 4 public houses were also constructed.

(c) Inaho area: The area also received support from the Fisheries Agency for the improvement of the fishing village environs. A 5 meter high embankment was constructed behind the seawall for the reconstruction of houses for the affected people as well as 4 public houses and 5 residences for school teachers.

Facilitation of Reconstruction of Houses by Utilizing Contribution

The disaster gathered support from a broad base and 19 billion JPY was donated to help the victims. This contribution was utilized effectively in the reconstruction of houses, resulting in approximately 380 constructed or purchased houses in 5 years.

For those whose houses were totally destroyed, 7 million JPY and 0.5 million JPY were provided for the reconstruction of houses, purchasing furniture and household goods respectively, complemented by 7 million JPY of relief money totaling 14.5 million JPY from the contribution. In the case of purchasing fishing vessels under 5 tons, the individual was responsible for 1/9 of the total cost with another 8/9 from the contribution.

(2) Noteworthy Specific Policies and Activities

Assistance from Hokkaido Prefectural Government in Planning

Since Okushiri Town was a small local authority with rather scarce resources and experience in planning works, a project team was set up consisting of Okushiri Town Authority as the principal organization with the Hokkaido Government as a technical advisor to the team to support the Town in its formulation of a reconstruction plan.

Large-scale Implementation of Public Works

Again, since Okushiri Town is a small local authority on a remote island the Hokkaido Prefectural Government as well as the central government provided much technical and financial assistance for the implementation of public works and reconstruction, such as the construction of seawalls, protective gates from the tsunami, decks for evacuation, refugee roads, and relocation to upland areas.

Utilizing Support from the Central Government

In the Aonae area, similar assistance from the Ministry of Land and that of the Fisheries Agency, i.e. support for the improvement of fishing village environs by the former and that for the promotion of group relocation for disaster prevention by the latter, were applied to the same single community in order to meet the different needs of the victims, i.e. relocation to upland areas.

Wide Coverage of Activities with Reconstruction Fund

The Town Authority, according to local ordinances, established the Reconstruction Fund with 13.2 billion JPY, 70% of the total contribution for the people affected by the disaster. The Fund aimed to facilitate relief for the victims, support self-reliant activities for the victims seeking to return their livelihoods, and contribute to a comprehensive reconstruction of the town. By utilizing the funds a large number of projects were carried out ranging from improving self-reliance, developing agriculture, fisheries, commerce and other industries.
### 3.1.4 Great Hanshin-Awaji Earthquake in 1995

#### (1) Overview of Process from Disaster Occurrence to Rehabilitation and Reconstruction

##### 1) Overview of the Damage

The Great Hanshin-Awaji Earthquake is known as “the largest and most terrible disaster in urban areas following World War II” which exposed weaknesses in modern and huge metropolitan cities toward natural disasters. The form as well as the scale of the earthquake was significantly beyond anything anticipated and the complexity of the disaster, i.e. damage due to the collapse of buildings, devastation of infrastructure and lifelines such as railway transportation and roads, and deprivation by fire spread following the quake, hit and destroyed areas along the coast.

The earthquake occurred at 5:46 A.M. on 17th January, 1995. The focus of the earthquake was located 16 kilometers beneath the epicenter on the northern end of Awaji Island and the quake recorded a level 7 in intensity and a magnitude of 7.3 (see Table 3.4).

<table>
<thead>
<tr>
<th>Date and Time</th>
<th>At 5:46 A.M. on 17th January, 1995</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epicenter</td>
<td>16 km below the ground near the northern part of Awaji Island</td>
</tr>
<tr>
<td>Intensity of Earthquake</td>
<td>Maximum 7 with a magnitude 7.3</td>
</tr>
<tr>
<td>No. of Deaths</td>
<td>6,398</td>
</tr>
<tr>
<td>No. of Injured</td>
<td>3</td>
</tr>
<tr>
<td>No. of Houses Totally Collapsed</td>
<td>104,906 / 187,228 households (H/Hs)</td>
</tr>
<tr>
<td>No. of Houses Half Collapsed</td>
<td>144,274 / 259,246 H/Hs</td>
</tr>
<tr>
<td>No. of Houses Destroyed by Fire</td>
<td>6,558</td>
</tr>
<tr>
<td>Damaged Area</td>
<td>n/a</td>
</tr>
<tr>
<td>Total Amount of Damage</td>
<td>9,926 billion JPY</td>
</tr>
</tbody>
</table>

Source: JICA Study Team based on the table by referencing the “History of Reconstruction from Great Hanshin-Awaji Earthquake (in Japanese)” 2000, Prime Minister’s Office, and other documents

Features unique to the disaster are as follows: Firstly, it caused tremendous damage, equivalent to approximately 10,000 billion JPY just in tangible devastation of building structures and facilities. Secondly, the scale of the damage prolonged the process of the reconstruction of peoples’ livelihood. The third unique feature was damage concentrated in the old town areas on the line called “linear array of devastated areas” which were located on soft and weak ground and/or reclaimed land with a shallow ground water zone. The fourth feature, nearly 90% of the deaths could be attributed to crushing by collapsed houses/buildings in the wooden constructed areas in the old towns, closely followed by loss of life due to burns. The last reason was those who suffered were mostly elderly and other socially vulnerable people.

##### 2) Emergency Relief

**Opening of Evacuation Shelters**

Evacuation Shelters were provided through the utilization of public facilities such as schools at 1,077 sites in the prefecture with approximately 310,000 evacuees on the third day following the earthquake. There were some victims without shelter even at evacuation centers and many lived in tents set for evacuees in parks and surrounding public facilities or came to government offices seeking shelter. As temporary houses were constructed, the number of evacuees living in evacuation shelters decreased and were finally all closed on 25th August, 1995. The centers remained and were utilized as temporary sites for those who did not have a place to live by the end of March 1997.

**System Set-up and Implementation of Survey**

The Kobe City Authority set up the Disaster Countermeasures Office on the day of the earthquake and the Reconstruction from the Quake Office headed by the mayor on the 10th day following the disaster.

Besides this surveys were conducted, i.e. survey on outline of damage, implemented on 18-22 January, assessment of urgent risks from 18th January to 9th February, survey on the afflicted areas/people from...
The Study of Reconstruction Processes from Large-Scale Disasters

29th January to 28th February, and urgent study on damage from 1st February to the end of March were carried out almost simultaneously. Still, the City could not obtain a precise number on the total houses requiring reconstruction.

**Basic Policies for Reconstruction and Restriction of Construction**

The Kobe City Authority made its basic policies for reconstruction of the affected areas and urgent development of residences on 31st January, 15 days following the earthquake. The major content of those policies is outlined as follows:

i) In areas of significance urban planning projects were to be implemented for the entire area. For this purpose, the City applied article 84 of the building code to restrict new construction of structural buildings that interrupted the implementation of concerned projects.

ii) The City established a local ordinance for urgent reconstruction from disasters. This concretely set down “reconstruction facilitation zone” in most of the affected areas to supervise construction works through the application process, guidance and executing the projects targeting the entire area in the set priority areas for reconstruction.

In addition to the above, the City began applying article 84 of building code to the 6 areas totaling 233 ha in the most heavily affected areas of the city.

**Adoption of Reconstruction Plan**

The draft plan for reconstruction prepared by the City Authority was not supported by a number of citizens mainly due to the town redevelopment projects and land readjustment projects in the areas with restrictions on new construction. Despite disagreement on the plan, the draft reconstruction plan the City prepared was adopted on 17th March and on 27th of the same month guidelines were established to indicate basic policies for implementation of the reconstruction plan.

**Construction of Temporary Houses**

The responsible body for constructing temporary houses was the Hyogo Prefectural Government, but Municipalities took the initiative in preparation of the land. 21 enterprises, consisting of 14 under an umbrella organization of the Association of Prefabricated Buildings and another 7 private companies, took on the actual role of constructing houses. A decision was made on the 18th January, the first order of construction was made on 19th January and the first tenant moved in on 2nd February. As seen above, temporary houses were constructed and provided at a rapid pace. Despite this the construction of 48,300 temporary houses was completed on 11th August of the same year taking more than a 6 months due to difficulties in preparing land and a lack of construction materials and human resources.

In the linear affected areas on the coast from Higashi-nada Ward to Suma Ward with a width of approximately 3 km, a number of self-built temporary houses totaling an estimated 5,000 were found.

**Removal of Debris**

A horrendous amount of debris scoured the affected sites and placed heavy constraints on the progress of reconstruction activities. Furthermore, many houses that could be rebuilt for use were also tore down due to the measures taken for progressing debris removal by subsidizing the scrapping of the damaged houses if carried out within a year following the occurrence of the earthquake.

3) Actions for Rehabilitation and Reconstruction

**Implementation of Reconstruction Projects in “Black,” “Grey,” and “White” Areas**

It was necessary for the City to place priorities on applications and implementation of reconstruction works due to the vast number of afflicted areas including those heavily damaged in the key areas and other areas which sustained only isolated damage. Considering this complicated situation, the City divided the areas into 3 categories depending on the severity of damage, i.e. “Black” to implement full scale reconstruction by applying article 84 of the building code, “Grey” as prioritized areas for reconstruction with rehabilitation projects to be carried out, and “White” as areas for facilitating reconstruction of projects only in some selected areas.

The “Black” areas under article 84 of the building code were transferred to zones under the restriction of article 53 of the urban planning law on the timing of its decision on 17th March to apply land
readjustment projects and urban redevelopment projects. In the “Grey” prioritized areas, reconstruction proceeded not by applying decisions made under the urban planning law but along the implementation guidelines for the comprehensive development of residential areas and the promotion of environmental improvement in densely built-up areas etc. The “White” area was left without almost any assistance except partial application of the promotion of construction of qualified buildings.

**Reconstruction of Houses Focusing on Those Covered by Public Welfare**

Regarding the reconstruction of houses, the basic policy on the public side, i.e. local authorities, was to prepare a linear direction going up from evacuation centers, then public temporary houses, and lastly public housing for reconstruction, mainly for those who were covered under public welfare schemes. For others, provision of accommodation was left to self-help activities by the private sector.

This approach produced 2 problems. Firstly, most of the tenant movement from evacuation center to public housing was conducted through ballets at various stages, resulting in the destruction of communities twice. The public housing for reconstruction brought exceptionally difficult circumstances for the tenants due to the distance from prior residents and also the scale of huge housing complexes both of which forced the suffers to be separated from their own communities mentally and physically. The second shortfall of this approach was its insufficiency in the content of assistance for those who were not covered under public welfare schemes, resulting in many victims having to obtain multiple loans for construction of their residences.

(2) **Noteworthy Specific Policies and Activities**

1) **In Rehabilitation Process**

**The First Year for Active Volunteer Activities in Japan**

More than 1 million volunteers gathered at the devastated areas of the Great Hanshin-Awaji Earthquake within 2 months following the disaster. 1995 is referred to as “the first year for active volunteer activities in Japan” by the mass media. 60-70% of those volunteers were “freshmen” for voluntary work, meaning that volunteer activities rapidly increased on this occasion and were activated quickly following this in Japan.

The activities by volunteers ranged widely from preparing hot meals, sorting and distributing relief supplies, waste collection and removal, assistance in evacuation centers, safety check-up of the victims, information provision to the affected people, support and transportation for the vulnerable people such as the elderly, night patrol activities and traffic control.

2) **In Reconstruction Process**

**Introduction of a Two-Step Decision-Making Method for Urban Planning with Sufficient Consideration for the Victims**

Hyogo Prefecture and Kobe City introduced two-step decision-making method for urban planning in the chaotic period following the disaster.

Under typical circumstances, the public administrative bodies take time to discuss future visions with the concerned people/organizations to decide implementation of some necessary projects for a shared future vision by applying the urban development law. In times of emergency like this shortly after the huge disaster occurred, many people suffered and were evacuated and it became quite difficult for the administrative side to identify who should be consulted to discuss a future vision for the towns. In order to cope with this difficult situation, the administration side first identified areas for

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*Great Hanshin-Awaji Earthquake was the largest disaster to occur in urban areas since World War II. Due to the unique characteristics of the quake, mass media such as TV broadcasting and newspapers reported the damage widely. It assisted significantly with encouraging a large number of people, including working people, and students to visit the affected sites and provide assistance as volunteers. The year of the quake was then known as “the first year for active volunteer activities in Japan.”*
reconstruction in terms of zones, schemes to be applied, arterial roads and large parks etc. Those components were closely related to livelihood, such as residential roads and small community parks, were to be discussed in close collaboration with the concerned citizens and determined at the second stage of the urban planning process.

**Facilitation of Community/Citizen’s Participation in Planning Process**

Before the disaster, there were 10 Associations for Promoting Community Development officially registered under the municipal bylaw for community development in Kobe city. With the intention of utilizing these activities as a basis for promoting consensus building for reconstruction, the administration side took the initiative of establishing the association in 100 communities. Discussion was initiated and resulted in the realization of reconstruction projects.

**Construction of Temporary Houses for the Elderly**

Miyagi Prefecture proposed to provide group home-type temporary houses and Ashiya City accepted those facilities. 56 dwelling units in 4 buildings were constructed with the gifted facilities. This triggered further development of temporary houses for the elderly with provision for nursing care in Hyogo Prefecture, resulting in the construction of 238 dwelling units in Amagasaki, Nishinomiya, and Takarazuka. The building was installed with 10-14 dwelling units and a living room of approximately 10 square meters, a toilet, a washbasin, and a closet, further supplemented with common spaces, a kitchen, living/dining room, and bathroom. Also, staffs were stationed 24 hours a day to provide regular and emergency support for the residents. This was the first instance in Japan of construction of temporary houses specifically for the elderly.

**Reconstruction for All Including House-Renters**

House-renters were not considered right holders in discussion and implementation of town readjustment projects and they had no other way but to move out from the project target areas in most cases. To overcome this problem, in the Tsukiji area of Amagasaki City, it was decided to implement a residential area improvement project in conjunction with the town readjustment project, which enabled the City to construct qualified houses for rent and also allowed 90% of house-renters to continue living in their previous communities.

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3.1.5 Eruption of Mt.Oyama on Miyake Island in 2000

(1) Overview of Process from Disaster Occurrence to Rehabilitation and Reconstruction

1) Overview of the Damage

Mt. Oyama, located in the center of Miyake Island, has repeatedly erupted since 1920, approximately once every twenty years.

Volcanic eruptions started on 26th June, 2000 and temporarily settled down but in August, large-scale summit eruptions were observed 3 times after a series of flank eruptions around that time. On 29th August, a pyroclastic flow of low temperature as well as emissions of toxic sulfur dioxide gas occurred. With those incidences the evacuation of all communities on the island was carried out and residents were displaced for 4 years and 5 months from 2nd September till 1st February, 2005 when the mayor of Miyake Village lifted the evacuation order. Presently, volcanic gas is still being discharged and part of village has been identified as an “area with high density of gas” and is off limits to habitation.

During the evacuation period, many villagers made frequent day trips to the island to maintain their houses and property. This resulted in only an 8% collapse of houses among the affected 340 residences who applied for damage assessment after the disaster.

A number of households lost their means for obtaining income through the evacuation, with more than approximately 20% of the evacuated families, and 300 households identified as poor and needy (see Table 3.5).
Table 3.5  Overview of Damage by Eruption of Mt. Oyama on Miyake Island

<table>
<thead>
<tr>
<th>Date and Time</th>
<th>On 26th June, 2000, a seismic swarm occurred. In August, large-scale summit eruptions were observed. On 2nd September, evacuation of the entire village started.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal Suffering</td>
<td>Nobody suffered. 1,650 households with a total of 3,200 people evacuated.</td>
</tr>
<tr>
<td>Building Damage</td>
<td>Approx. 340 houses applied for damage assessment after the disaster. 8% of structures were totally collapsed with other damaged buildings.</td>
</tr>
<tr>
<td>Total Amount of Damage</td>
<td>n/a (undisclosed)</td>
</tr>
</tbody>
</table>

Source: JICA Study Team based on the table by referencing the “Brief History of Eruption of Miyake Island (in Japanese)”2000, Tokyo Metropolitan Government and other documents

2) Emergency Relief

Immediate Initial Response
The Miyake Village Authority picked up on an emergency volcanic alert from the Meteorological Bureau on 26th June and immediately established the Disaster Countermeasures Office on the same day. The central government promptly decided to apply the Disaster Relief Law to Miyake Village at 8:45 P.M. on the same day. The Tokyo Metropolitan Government set up the Disaster Countermeasures Office at their headquarters and branch office on Miyake Island on the day following the eruption. All these actions contributed to establishing a system for the immediate initial responses in collaboration with Miyake Village, Tokyo Metropolitan Government, and the central government.

Evacuation of All Island Inhabitants
Based on the unified view of the Coordinating Committee for Prediction of Volcanic Eruptions released on 31st August, the governor of Miyake Village, at 7:00 A.M. on 2nd September, ordered all the inhabitants except those who worked for disaster prevention and lifeline facilities such as roads and water supply to evacuate from the island. Evacuation was proceeded by packet boats for 3 days since the 2nd September, following the evacuation of 1/3 of the residents who had recognized the risk and moved out prior to the order being issued.

The evacuees were inhabited in accommodation in the National Olympics Memorial Youth Center in Tokyo. They were permitted to live there until 9th September and assigned to vacant public houses, 857 owned by the Metropolitan Government, 146 in public-owned property, 46 in municipality-owned property, 29 in other prefectures or municipalities and 39 in property of the Housing Cooperation. 90% of the evacuees were in Tokyo, as of August 2004, while the remaining 10% were displaced to 17 prefectures where they lived together with relatives until the end of the evacuation. This is the reason temporary houses were not constructed in this case.

Those who left the island prior to the evacuation order and were settled with their relatives/friends and those who were given public support for evacuation moved into vacant public houses. Therefore there was no way to maintain community and personal ties during the evacuation period.

Evacuation of School Children
360 students of the elementary and junior high school on Miyake Island, 80% of all the students, lived in dormitories of the Akikawa High School in Tokyo that was scheduled to be closed in 2001.

Creation of Special Assistance for Disaster Evacuees
The relevant evacuees were provided consolation payments through application to the Natural Disaster Victims Relief Law in 2000 while others who did not meet conditions of the law were provided similar assistance by the Tokyo Metropolitan Government using its own resources. In summary, a “special assistance for disaster evacuees” pursuant to the livelihood protection subsidy was created to support those households in poverty.

Interest payment support was provided to those who carried debt prior to the disaster.
3) Actions for Rehabilitation and Reconstruction

**Reconstruction of Roads**
Roads on the island were segmentalized at many locations by mudflow and the reconstruction works took some time. It was not easy to acquire the sufficient labor and construction materials due to the geographical conditions of the island, while volcanic gas continued to be emitted interrupting the progress of the reconstruction works. It wasn’t until 2005 that almost all of the reconstruction works were completed on roads and erosion control.

**Maintenance of Houses**
One of the most serious and difficult problems for the evacuees was how to maintain their houses as they would have fallen into decay if not properly maintained. Therefore many evacuees made frequent day trips to the island for this purpose. This worked effectively to avoid their houses from rotting away.

**Announcement of Plan for Returning to the Island**
The Miyake Village Authority considered and discussed the procedures, constraints and countermeasures for returning to their home island and compiled them into a final report submitted at the preparatory meetings of the program for returning to Miyake Island” in March 2004. 2 months later on May 2004 the survey on the intention for returning to the island was carried out and discovered almost 70% of the evacuees wished to do so. In June of the same year, the Coordinating Committee for Prediction of Volcanic Eruptions made an announcement that the evacuees could begin to return to their homes on the island provided the reconstruction of necessary infrastructure had occurred. On 20th July, the village authority made its “basic policy for returning” public mentioning the possibility to lift the evacuation order in February 2005 while the plan was publicly announced in September.

**Lifting of Evacuation Order and Going Back Home**
In February 2005 the Miyake Village Authority lifted its evacuation order as planned. 70% of all the evacuees returned home by April after approximately a 4 and a half year absence from the island. Another 30% of the evacuees decided not to return so as not to interrupt the continuity of their children’s education by needing to transfer schools, not to disturb their children’s exam preparation for higher schools, due to current employment situation and no concrete ideas/ways to earn a living on the island etc.

**Implementation of Rehabilitation Works**
At the onset of returning to the island, almost all road reconstruction and erosion prevention works were completed and rehabilitation of fishery harbors and farmlands were also finished except for those in high density areas.

In regards to property, it was almost 1 year later that reconstruction of private houses and construction of village-owned houses was completed. The Tokyo Metropolitan Government provided a maximum of 1.5 million JPY per household as “consolation money for supporting the reconstruction of the evacuees’ livelihood” for assisting the rehabilitation of their livelihoods.

Schools were also reopened. There was a decrease in the number of schools, i.e. from 3 to 1 for both elementary and junior high schools, and total student numbers were 1/3 prior to the disaster.

(2) Noteworthy Specific Policies and Activities
1) In Rehabilitation Process

**Utilization of Vacant Public-Owned Houses for Accommodating Evacuees**
Instead of constructing temporary houses, vacant public-owned houses were utilized for receiving evacuees in this case. This had several advantages such as the full utilization of existing property infrastructure, sufficient space for living and no or little problems with excessive community noise. However, on the other hand the evacuees had no choice but to live separately and lost their
community and personal ties during the evacuation period. Moreover, it made it difficult for others to notify and gain a complete understanding on the actual situation the evacuees faced.

**Introduction of “Special Assistance for Disaster Evacuees from Miyake Village” by Tokyo Metropolitan Government with Its Own Resources**

The survey implemented by the village authority in November 2002 clarified that the majority of the evacuees hoped to go back to the island despite being of the island for such a long time and also that there were some households with low income equivalent or below that of families on social welfare while they possessed a similar amount of savings. The Tokyo Metropolitan Government learned this situation from the above survey and decided to create a “special assistance for disaster evacuees” to support them to return with their existing savings in reconstructing their livelihoods.

The subsidy was provided pursuant to social relief for the families who wished to return home and possessed savings of between 2 million to 5 million JPY but were under the welfare standard in terms of income. The implementation body was the Miyake Village Authority which set up the fund with 60 million JPY, while the Tokyo Metropolitan Government provided technical advice as well as financial assistance to manage the fund. The assistance was provided until February 2005 when the evacuation order was lifted and 83 people in 54 families applied for the assistance.

**Implementation of Emergency Employment Promotion**

By utilizing the emergency local job creation subsidy from the central government, a special subsidy for promoting emergency local employment was provided to the evacuees who lost income following the evacuation. The money was used to develop and open the “Genki (cheerful) Farm” of approximately 1.3 hectares in Hachioji City in 2001 and “Yume (Dream) Farm” of approximately 2.6 hectares on the artificial island of “Yume-no-shima” in Koto Ward in 2002 to support the smooth and prompt restart of farming after returning home. This contributed to maintaining the evacuees’ willingness to farm after returning to the island and also in creating jobs for the evacuees during the period of evacuation.

**Maintenance of Community and Personal Ties among Evacuees**

For the purpose of effectively transferring guidance and information from local authorities to the evacuees, a kind of community-based organization or information network among the evacuees was set up for each location they moved into. It tried to maintain community and personal ties among the evacuees while contributing to the exchange of information among the group. Another was to rent personal computers for the applicants to activate “information exchange among evacuees” with the support of private enterprises in Tokyo.

Beside the above, “reunion meeting of Miyake villagers” was held 9 times by the liaison office for evacuees between 2000 and 2004 to prepare venues for the villagers to have direct and personal contact with each other. Almost 1/3 of evacuees participated on each occasion and enjoyed the meetings very much. The Tokyo Volunteer Action Center and other supporting organizations also provided assistance and participated by setting up refreshment stands.

2) In Reconstruction Process

**Preparation of Program for Returning**

In preparations for returning to the island, the Central, Metropolitan, and Village Governments established “meetings for preparing program for returning to the island” in October 2003 and compiled the final report in March 2004. Based on the report, Miyake Village developed “plan for returning to Miyake island” and “guidance for returning and reconstruction of livelihood (manual for Miyake villagers to return to their home island)” in September of the same year.

The village authority carried out measures mentioned in the program for preparing a suitable environment for villagers to restart their livelihood on the island by reopening guest houses, shops, banks etc, restarting waste disposal and constructing and restoring village-owned houses etc.

**Creation of Assistance for Returning Evacuees to Reconstruct Livelihood**

The Natural Disaster Victims Relief Subsidy of the central government was only applied to cover the
costs for moving, scrapping and removal of houses, and other house-related activities but not for reconstruction of houses. Still, it was deemed indispensable for the evacuees to reconstruct houses as a bases for restarting their livelihoods and it was absolutely necessary to provide support for the reconstruction of homes. The Tokyo Metropolitan Government created an assistance package with its own resources by enacting the ordinance for assisting returning evacuees to Miyake island to reconstruct their livelihoods in December 2004. A maximum subsidy of 1.5 million JPY per family was provided to those families who inhabited personally-owned property on the date the disaster occurred and intended to return to the island for the reconstruction, renovation, and rehabilitation of houses and for purchasing additional facilities for houses.

This local assistance contributed to a revision of the former Natural Disaster Victims Relief of the central government into the more suitable and preferable support program for victims.

3.1.6 Mid. Niigata Prefecture Earthquake in 2004

(1) Overview of Process from Disaster Occurrence to Rehabilitation and Reconstruction

1) Overview of the Damage

Mid. Niigata Prefecture Earthquake occurred at 5:56 P.M. on 23rd October 2004 with a magnitude of 6.8 and an earthquake intensity of level 7. Over the next 2 months up until 28th December, 18 aftershocks of level 5- to 6+ hit the affected areas (see Table 3.6).

<table>
<thead>
<tr>
<th>Date and Time</th>
<th>5:56 P.M. on 23rd October, 2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epicenter</td>
<td>Approximately 13 kilometers under the ground of Kawaguchi Town</td>
</tr>
<tr>
<td>Intensity of Earthquake</td>
<td>7 of shindo standard with a magnitude 6.8</td>
</tr>
<tr>
<td>No. of Deaths</td>
<td>68</td>
</tr>
<tr>
<td>No. of Injured</td>
<td>n/a</td>
</tr>
<tr>
<td>No. of Houses Totally Collapsed</td>
<td>3,175</td>
</tr>
<tr>
<td>No. of Houses Half Collapsed</td>
<td>13,810</td>
</tr>
<tr>
<td>No. of Houses Destroyed by Fire</td>
<td>10</td>
</tr>
<tr>
<td>Damaged Area</td>
<td>n/a</td>
</tr>
<tr>
<td>Total Amount of Damage</td>
<td>1,654.2 billion JPY</td>
</tr>
</tbody>
</table>

Source: JICA Study Team based on the table by referencing the “Chuetsu (Mid. Niigata prefecture) earthquake (volume 1 and 2) (in Japanese)” 2007, Editing Committee for Records of Niigata Chuetsu Earthquake, and other documents

47 municipalities at the time and presently 16 by synoecism, saw damage to property. Urban areas on the plains were heavily damaged, and mountaineous areas also suffered considerably damage with the collapse of roads in 61 communities that isolated 1,938 families including all 14 communities in the former Yamakoshi Village. On the contrary the Great Hanshin-Awaji Earthquake caused significant damage in the urban areas, the Mid. Niigata Prefecture Earthquake occurred in aged communities in the rural and mountainous areas.

These regions see heavy snow so the houses were built to high snow-resistant levels and were also earthquake-resistant structures. Still, this devastating quake destroyed many houses.

The Joetsu-shinkansen bullet train had never been derailed since its inauguration until the earthquake and it took almost 2 months to resume service on the line due to hang ups with various issues. This transportation had a significant impact on the local economy and tourism in the areas.

The amount of direct damage was estimated by Niigata Prefecture at 1,133.8 billion JPY for buildings including houses, 193.4 billion JPY for public civil engineering facilities such as roads and river structures, and 130.5 billion JPY for agricultural fields such as channels for irrigation and farmland. The total cost amounted to 1,654.2 billion JPY in total.
2) Emergency Relief

**Rescue of Isolated Victims**

The concerned organizations such as the prefectural government, municipalities, police and fire stations as well as the mass media took a considerable amount of time to collect information on the damage in the mountaneous areas due to disconnections of the telephone and mobile phone lines. No information was able to be passed on to those organizations from Yamakoshi Village until the day following the disaster. All the villagers were routinely evacuated out of the village by helicopters flown by the Self-Defense Force from 24th October. There were some instances of isolation where some of the affected people walked several kilometers out of dangerously collapsed mountaineous roads during a spate of aftershocks in seek of assistance.

**Bypass of Blockade in River to Avoid Landslides**

Several small and medium-sized rivers such as the Imo River in Yamakoshi Village were blocked by landslides. The debri avalanche risk was also high especially in the lower river areas. Temporary drainage channels were urgently constructed to avoid landslides.

**Opening of Evacuation Centers**

Evacuation orders and recommendations were issued for approximately 80,000 people in 23 municipalities due to the possibility of landslides etc.

More than 100,000 people moved into 603 evacuation centers despite their houses being neither collapsed nor damaged significantly but as a precaution as a series of minor quakes kept occurring.

**Construction of Temporary Houses**

It was determined that temporary houses would be constructed before the snow started falling to accommodate all those applicants in these residences. This was completed by 25th December with 3,460 houses on 64 sites in 13 municipalities. In the process of assigning residences to applicants, much consideration was made to enable the affected people to move in together with as many former community members as possible in order to maintain community and personal ties during evacuation period. This was done after the lessons learnt in the Great Hanshin-Awaji Earthquake which severed community ties among the affected peoples through the proces of assigning temporary houses through a ballot system.

The period of habitation in temporary houses was prolonged from the original plan of 3 years to 4 years, but all the residents eventually moved out and the houses were removed by the end of 2007.

**Voluntary Assistance for Disaster Victims**

Many volunteers came from all over Japan to visit the devastated areas. Some persons came as individual volunteers and others were sent by private enterprises, schools and various other organizations to assist. The number of volunteers who worked in 11 affected municipalities such as Ojiya City, Kawaguchi Town, and Nagaoka City numbered approximately 80,000 by the end of December.

Volunteers originally provided support at the evacuation centers and assisted in the removal of debris at the affected houses etc. As time passed, their activities were shifted toward support for relocating to temporary houses, snow removal, visits to the elderly who lived alone and educational assistance for students, especially those who were preparing for entrance examinations etc.

Private enterprises also provided various support such as meal services at convenience stores and free distribution of emergency supplies.

3) Actions for Rehabilitation and Reconstruction

**Formulation of Reconstruction Plan**

The round-table conference consisting of academics and other concerned stakeholders compiled “Visions for Reconstruction after Mid. Niigata Prefecture Earthquake” in March 2005. The visions indicated both successful and failed cases after a ten year period. Besides this, the affected 8
municipalities developed their own reconstruction plans and the prefectural government compiled them into one entitled “reconstruction plan from Mid. Niigata Prefecture Earthquake” in August 2005. The plan aimed at the reconstruction of all the affected people’s livelihoods by October 2006 with 246 actions to be taken for this purpose. A slogan of “creative rehabilitation” was employed in the plan and sought to create and implement the “Niigata model” for reconstruction in mountaineous areas that covered almost 70% of the national territory.

**Operation of Reconstruction Fund**

The reconstruction fund for the Mid. Niigata Prefecture Earthquake exceeded 300 billion JPY and 2% interest to provide further assistance of 60 billion JPY in ten years.

The organization responsible for its operation was Niigata Prefecture with the staff in charge of reviewing the plans submitted by municipalities and modifying them if necessary into appropriate forms.

The mechanism created some assistance programs unique to mountaineous areas such as that for recovery and improving small-scale rice fields not covered by the national subsidy, for providing reverse mortgages by lending loans to the elderly with contracts to sell the land and buildings and pay back the capital borrowed after their mortality, and subsidies for reconstruction of community meeting spaces and shrines as emotional props within the communities.

(2) **Noteworthy Specific Policies and Activities**

1) **In Rehabilitation Process**

**Assignment of Temporary Houses with Consideration of Maintaining Community and Personal Ties**

The Municipality Office of Nagaoka City paid due consideration at the onset of assignment of temporary houses to the affected people with a view to maintaining community and personal ties even after the relocation into temporary houses. For this purpose, the construction sites were found and selected as close as possible to the originally affected residential areas to enable people to continue their day to day lives such as commuting to schools, purchasing commodities at familiar stores and participating in community activities like they had done prior to the earthquake.

2) **In Reconstruction Process**

**Establishment of Reconstruction Fund**

This fund was the fifth such fund established for reconstruction from natural disaster, following the Fund for Disaster Countermeasures of Mt. Unzen, Fund with Monetary Donation in Shimabara City, Fund for Reconstruction from Southwest-off Hokkaido Earthquake in Okushiri Town, and Fund for Reconstruction from Great Hanshin-Awaji Earthquake. This fund prepared various programs for assistance and contributed to progress the implementation of reconstruction initiatives by utilizing local advantages and strengths.

**Facilitating Community Reconstruction by Assigning Full-Time Supporters in the Field**

Full-time supporters in the field of community reconstruction were assigned to each affected locality by using money from the Fund mentioned above. Their assignment was a temporary measure from 2007 to 2012 to enhance the activities of the intermediate body for supporting reconstruction, “Citizens’ meetings for reconstruction of Chuetsu region”. It aimed at providing assistance in more

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7 Intermediate organizations mentioned here indicate universities, NPOs, CBOs, volunteers, and such and mean those who implemented activities for solving problems by effectively connecting local authorities and citizens. Their coverage for activities ranged widely from environmental conservation, education, social welfare, and community development to disaster management.

8 “Citizens’ meetings for reconstruction of Chuetsu region” were set up with 2 full-time staff and 29 committee members from industry, public administrative, and academic sectors in May 2005, 7 months after the earthquake occurred for the purpose of facilitating the smooth coordination among volunteer centers at various
suitable forms with more flexible ways of thinking. As of August 2009, 9 support centers for community reconstruction were established throughout Chuetsu by the Fund with the assignment of 51 full-time supporters in community reconstruction who belonged to the centers from 2007 to 2014. Although their activities were originally commenced to seek more suitable forms of assistance one by one, they worked in the field and assisted the economic revitalization to improve the living environment and rebuild a safe and secure livelihood for the elderly.

This movement for supporting community reconstruction in full was a newly established mechanism for providing assistance in more suitable forms given local conditions/features by integrating community-based activities supported by CBOs into municipality strategies for reconstruction.

Mr. Murosaki of Kansai Gakuin University referred to the supporters in community reconstruction as follows:

“In the case of Great Hanshin-Awaji Earthquake, supporters for citizen livelihood contributed a lot to provide assistance in the victims’ daily lives and patrol activities to ensure their health and safety. In the case of Mid. Niigata Prefecture Earthquake, further development was made and the activities became community works integrated into the mechanisms for assisting community reconstruction. The youth after graduating from universities became actively involved in the communities, worked together with the local people and inturn found themselves growing individually through the activities as well” (quoted from volume 12, “Reconstruction Design Research,” 23rd October, 2009)

The assistance by supporters of the reconstruction is to be terminated at the end of fiscal year 2014. An evaluation will be then be made after assessing results from the program in near future.
Box 3.1  Flood Disaster by Typhoon No. 9 in Sayo Town in 2009  
<Overview of Process from Disaster Occurrence to Rehabilitation and Reconstruction>

(1) Overview of the Damage
At 9:00 P.M. on 9th August 2009, a tropical cyclone developed into typhoon No. 9 in the southern sea of Japan and unstablized the air over Hyogo prefecture. Sayo in Sayo town, Hyogo prefecture saw horrendous rainfall of 89 mm per hour and 326.5 mm per day, the highest ever recorded in the town. After 7:00 P.M. the rainfall got harder and the water level rose 36 cm in 10 minutes and devastating overflows occurred in many areas such as Sayo, Hirafuku, and Kuzaki.

The typhoon caused widespread flooding and severely devastated more than 1,700 houses and buildings, river structures, roads, farmland and agricultural facilities etc with 18 reported deaths and 2 people missing.

<table>
<thead>
<tr>
<th>Date and Time</th>
<th>At 7:00 P.M. on 9th August, 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Place</td>
<td>Sayo Town, Sayo District, Hyogo Prefecture and its surroundings</td>
</tr>
<tr>
<td>No. of Deaths</td>
<td>18</td>
</tr>
<tr>
<td>No. of Missing</td>
<td>2</td>
</tr>
<tr>
<td>No. of Totally Collapsed Houses</td>
<td>139</td>
</tr>
<tr>
<td>No. of Half but severely Collapsed Houses</td>
<td>269</td>
</tr>
<tr>
<td>No. of Half Collapsed Houses</td>
<td>483</td>
</tr>
<tr>
<td>No. of Houses with Flooding over Floors</td>
<td>156</td>
</tr>
<tr>
<td>No. of Houses with Flooding Under Floors</td>
<td>742</td>
</tr>
</tbody>
</table>


(2) Emergency Relief

Provision of Free Bathing Service
On the day following the flooding (10th August), bathing services were provided for the affected people at 11 public facilities in and around Sayo Town. In some cases water was obtained by water trucks due to cuts in the water supply. Services were provided up until 31st October.

Opening of Emergency Temporary Accommodations
On the day following the flooding (10th August), 4 emergency temporary accommodations were established and opened in the town as evacuation centers. The accommodations were provided to approximately 900 people in total up until 20th September when they were all closed. Besides the above, 36 evacuation centers were established and accommodated 2,000 people at their peak.

(3) Actions for Rehabilitation and Reconstruction

Establishment of Volunteer Center for Disaster Victims
On the day following the flooding (10th August), the volunteer center for disaster victims was established in the Social Welfare Council of Sayo Town. 16,760 volunteers in total were involved in assisting the victims. The center was originally setup in an office in the Nankou Community Welfare Center. Since this was located rather far from the affected areas, 2 satellite offices were set up on 14th August. As the requirements for reconstruction decreased in the affected areas, the volunteer center was closed on 31st August rearranged into the “Kirameki Reconstruction Support Center”.

3-23
Construction of Temporary Houses and Provision of Public Houses

The construction of temporary houses started on 19th August. 42 houses were built on 3 sites and accommodated up to 110 people at the peak. Temporary houses aside, prefecture-owned houses around the affected areas were temporary supplied while vacant public houses for maintaining stable employment were also provided to the victims. 7 were prefecture-owned, 5 for school teachers, and 39 for maintaining stable employment, totaling 51 at the peak utilized for this purpose.

<Noteworthy Specific Policies and Activities>
(1) Establishment of “Kirameki Reconstruction Support Center”
On the day volunteer center for disaster victim was closed (1st September), Kirameki Reconstruction Support Center was set up in the Social Welfare Council of Sayo Town. The Center was expected to promote reconstruction activities for the affected people while maintaining similar functions as volunteer centers, by supporting information exchange and personal contact, programs which were implemented in collaboration with local residents and volunteers. This was a mechanism for the victims to seek advice and assistance even after the closure of the volunteer center.

(2) Assistance for Reconstruction of Houses
The Natural Disaster Victims Relief Law was to be applied to the entire area of Hyogo Prefecture and 477 families whose houses were approved as “half destroyed” or totally destroyed” were provided financial assistance of a maximum of 3 million JPY for livelihood reconstruction. In addition to this, for supporting those who were not eligible under the national assistance scheme, as well as families whose houses experienced flooding over flooring, Hyogo Prefecture provided a subsidy for livelihood reconstruction to 776 families in total with 250,000 JPY for the former and 150,000 JPY for the latter.
Furthermore, benefits up to a maximum of 6 million JPY was provided to 194 approved member families from the mutual aid system for house reconstruction in Hyogo prefecture, i.e. Phoenix system, that was established and operated under a prefectoral bylaw.

(3) Residents’ Judge for Evacuation
In this case, 12 citizens of Sayo Town died in the process of evacuating. 9 out of the 12 were located in the Hongo area, all of who inhabited the Makuyama housing complex owned by the town. Following the disaster it was realized that they had potentially more chance of survival had they traveled upstairs in the accommodation they were located rather than being evacuated. Training for disaster management was implemented in the Hongo area but only for earthquake and the spreading of fire and not for flooding. Recommendations for evacuation were announced by the Town in hindsight of the flooding. As discovered, there was still plenty of room for further improvement in training and information dissemination on evacuations etc.

Sources:
“Report of Verification Results of Flood Damage by Typhoon No. 9 in 2009,” 2010, Committee for Verification of Flood Damage by Typhoon No. 9 in Sayo Town
(written all in Japanese)
3.1.7 Coordination, Information Dissemination, and Overseas Assistance in Past Cases of Mega-Disasters

Table 3.7 summarizes which organizations took responsibility for coordination, how information was disseminated outside of the affected areas, and how the response in assistance from overseas countries at various stages of the emergency relief occurred as well as rehabilitation and reconstruction.

While the role of coordination was taken by the central and/or local governments in the cases of Great Kanto Earthquake and Sanriku Tsunami in 1933, it has been transferred to municipalities and/or local governments in the affected areas since Southwest-off Hokkaido Earthquake in 1993 following World War II.

Regarding information dissemination, no significant change has been made since Great Kanto Earthquake and the mass media takes an important role in this field by receiving information from local authorities at either the prefectural or municipal level.

As for assistance from overseas, a large amount of support was provided especially in the case of the Great Kanto Earthquake and Great Hanshin-Awaji Earthquake both of which were terribly devastating and huge in their scale and impact of the affected areas.
3.1.8 Conclusion

Table 3.8 shows an overview of the 6 disasters and specific features in reconstruction policies for each case, while Figure 3.2 presents the process flows for rehabilitation and reconstruction in each case. Additionally, Figure 3.8 also indicates the overview of the 3.11 Earthquake, which discusses in detail in the following chapters.

According to the Figure 3.2, a reconstruction festival was held to celebrate the completion of the reconstruction 6 years and 7 months after the occurrence of the Great Kanto Earthquake, while in the case of the Great Hanshin-Awaji Earthquake all the land readjustment projects were finally finished with the completion of the last and largest case in the northern area of the new Nagata station after 16 years and 2 months. However, one redevelopment project is still under construction in the southern area of the new Nagata station.

The devastating Sanriku Tsunami hit the same locations as the 3.11 Earthquake and saw quick progress in the construction of housing lots for relocation to upland areas. All construction was completed within a year. In the case of the 3.11 Earthquake, however, construction of residential sites has only just started more than 2 years after the occurrence.

On the other hand, the process flows for rehabilitation and reconstruction in cases of USA, Taiwan, and Turkey are presented in Figure 3.4. According to this figure, the reconstruction was almost completed within 6 or 7 years after the occurrence in USA and Taiwan. In Turkey, however, it took about 10 years for completion of reconstruction.
<table>
<thead>
<tr>
<th>Table 3.7 Coordination, Information Dissemination, and Overseas Assistance in Past Cases of Mega-Disasters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Great Kanto Earthquake</td>
</tr>
<tr>
<td>Magnitude</td>
</tr>
<tr>
<td>Coordination Body</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Rehabilitation and Reconstruction Stage</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Information Dissemination</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Assistance from Overseas</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

The Study of Reconstruction Processes from Large-Scale Disasters
Table 3.8 Overviews and Specific Features of Measures for Reconstruction in Past Mega-Disasters (1/2)

<table>
<thead>
<tr>
<th>Date and Time</th>
<th>Great Kanto Earthquake</th>
<th>Sanriku Tsunami in 1933</th>
<th>Southwest-off Hokkaido Earthquake</th>
<th>Great Hanshin-Awaji Earthquake</th>
<th>Eruption of Mt. Oyama on Miyake Island</th>
<th>Mid. Niigata Prefecture Earthquake</th>
<th>Great East Japan Earthquake</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:58 A.M. on 1st Sep. 1923</td>
<td>7.9</td>
<td>8.1</td>
<td>7.8</td>
<td>7.3</td>
<td>8.8</td>
<td>3.8</td>
<td>7.9</td>
</tr>
<tr>
<td>3,064 incl. the missing</td>
<td>99,331</td>
<td>172</td>
<td>6,598</td>
<td>0</td>
<td>68</td>
<td>15,871 including 2,778 missing</td>
<td></td>
</tr>
<tr>
<td>128,268 washed out by flood: 4,034</td>
<td>Collapsed: 1,817</td>
<td>104,906</td>
<td>43</td>
<td>Destroyed by debris</td>
<td>3,175</td>
<td>129,574</td>
<td>Destroyed mainly by tsunami</td>
</tr>
<tr>
<td>126,233</td>
<td>—</td>
<td>—</td>
<td>144,274</td>
<td>—</td>
<td>5,924</td>
<td>3,511</td>
<td>—</td>
</tr>
</tbody>
</table>

**Overviews of Damage**
- Mainly in Tokyo and Yokohama: Wide fire spread with 447,128 buildings burned out
- Loss of functions of infrastructure such as transportation, water supply and drainage, electricity, communications, and bridges
- 40,000 people burned to death in Hifugata-sho-ato
- Devastation by tsunami in three areas
  - 18 municipalities in Miyagi Prefecture and 36 in Iwate Prefecture devastated by tsunami
  - Houses washed out/collapsed, civil engineering structures destroyed, and fishing vessels and equipment lost
- Severe devastation by tsunami on Okushiri Island
  - Fire spread in Aomori area with 500 houses burned out
  - Several round arterial roads on the island
- The worst earthquake occurred in urban areas after World War II
  - Buildings collapsed, infrastructure and essential utilities destroyed, complex disaster of earthquake and fire with 6,558 houses burned out
  - Intensive damage in obsolescent wooden housing areas
- Pyroclastic flow of low viscosity event
- Washed out by flood: 4,034
- Collapse of houses in 47 municipalities
  - Evacuation of all the inhabitants
  - Isolation of some communities by road destruction
  - Severed transportation links due to the derailment of Shin-Kansen bullet trains and such
- Disaster in rural and mountainous areas
  - Collapse of houses in 47 municipalities
  - Isolation of some communities by road destruction
  - Severed transportation links due to the derailment of Shin-Kansen bullet trains and such
- The worst disaster on record which damaged vast areas
- Devastation by tsunami across vast area, i.e., 56,100 ha flooded, and loss of functions of infrastructure
- Complex damage by earthquake, tsunami, and an accident at Fukushima No. 1 nuclear power plant with level 7 radioactive contamination

**For Emergency Relief**
- **Fire Fighting**
  - 134 fires occurred in Tokyo City, with 57 extinguished and 77 spread widely
  - 3,470 ha, 44% of the entire area of Tokyo City burned out
- **Medical Aid**
  - 1.2 million people were rescued by Tokyo City, Metropolitan Police, Japanese Red Cross Society, university hospitals, and medical associations in other prefectures
- **Central Government**
  - Set up Temporary Rescue Office for Disaster Victims
  - Acquisition of emergency supplies, maintenance of safety and security, distribution of food, and measures for avoiding financial crisis
  - Rescue and first aid by Army
- **Local Authorities and Communities**
  - Tokyo City: supply of food and water to evacuation centers
  - Voluntary actions by citizens and assistance by the young men's association and the association of military personnel on reserve duty
- **Provision of Temporary Houses**
  - Construction of 170,000 barracks by Metropolitan Police, Tokyo-fu Prefectural Authority, etc.
  - Establishment of public facilities such as medical clinics, nursery rooms, shops, and public baths

**Emergency Support**
- **Central Government**
  - Close communication with the affected prefectures and implementation of rescue activities
  - Exemption and extension of tax payment, free distribution of food and clothing, etc.
- **Rescue by Army and Navy**
- **Local Authorities**
  - Set up of Head Office for Emergency Calls and Security
- **All the policemen in the prefecture were sent out for rescue**
- **Local Authorities**
  - Delays to transportation of emergency supplies due to destruction of coastal roads

**Opening of Evacuation Centers**
- **Initial Actions**
  - On 26th Jun., the Disaster Countermeasures Office was set up in Miyake Village
- **Evacuation of All Inhabitants of Island**
  - On 9th Sep., the mayor of Miyake Village announced an evacuation order from the island
  - From 2nd to 4th Sep. all the villagers evacuated.
- **Emergency Support**
  - Evacuees were accommodated first in the National Olympics Memorial Youth Center.
- **Basic Policies for Reconstruction and Restriction of Construction**
  - On the 15th day after the quake, started implementation of urban development projects by putting limitations on new construction in the target areas
- **Formation of a local ordinance for urgent reconstruction from disasters**
- **Formation of Reconstruction Plan**
  - Decisions after 2 months on land readjustment projects and redevelopment projects
- **Construction of Temporary Houses**
  - Municipalities prepared housing lots, while the prefecture constructed temporary houses.
  - Completed construction of all the 48,000 temporary houses after approx. 7 months
  - In addition, 5,000 self-build temporary houses were constructed.

**Evacuation of School Children**
- **Elementary and junior high school students were accommodated in the dormitory of Aikawa High School, which was about to be closed.**

**Introduction of Special Assistance for Disaster Evacuees**
- **Introduction of Special Assistance for Disaster Evacuees and provision of money pursuant to social welfare for supporting evacuees**
- **Evacuees**
  - 470,000 evacuees at most
  - Evacuees were accommodated in approx. 9 months
- **Rescue of Isolated People**
  - All villagers were brought from the village using helicopters flown by the Self-Defense Force starting 24th October.
- **Evacuation of Evacuation Centers**
  - 603 centers accommodated 100,000 evacuees at most.
- **Construction of Temporary Houses**
  - Construction of 170,000 barracks by Metropolitan Police, Tokyo-fu Prefectural Authority, etc.
  - Establishment of public facilities such as medical clinics, nursery rooms, shops, and public baths
The Study of Reconstruction Processes from Large-Scale Disasters
Table 3.8 Overview of Reconstruction Measures taken in Past Mega-Disasters (2/2)

<table>
<thead>
<tr>
<th>For Recovery and Rehabilitation</th>
<th>For Reconstruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;For Formulation of Reconstruction Plan for Imperial Capital&gt;</td>
<td>&lt;Redevelopment of All Affected Areas&gt;</td>
</tr>
<tr>
<td>&lt;Implementation of Countermeasures for Tsunami Protection&gt;</td>
<td>• With the reconstruction of streets, canals, parks, and land readjustment projects, Tokyo City was redeveloped into a modern city.</td>
</tr>
<tr>
<td>&lt;Construction of Houses by Judicial Foundation&gt;</td>
<td>&lt;Construction of Houses by Local Governments&gt;</td>
</tr>
<tr>
<td>&lt;Construction Works by Local Governments&gt;</td>
<td>• Dōjima Island: 3,000 wooden and 2,000 reinforced concrete houses in Tokyo and Yokohama.</td>
</tr>
<tr>
<td>&lt;Subsidies for Promotion of Fireproof Buildings&gt;</td>
<td>&lt;Subsidies for Promotion of Fireproof Buildings&gt;</td>
</tr>
<tr>
<td>&lt;Established Supporting Building Reconstruction Co., Ltd. and promoted the construction of fireproof buildings through the provision of subsidies&gt;</td>
<td></td>
</tr>
<tr>
<td>• Technical Assistance from Hokkaido Prefectural Government for Reconstruction Planning&gt;</td>
<td>• Comprehensive Assistance for Tsunami Protection</td>
</tr>
<tr>
<td>• Implementation of relocation to inland areas, construction of seawalls as well as protection forests for tidal waves, refugee roads, and such</td>
<td>• Implementation of relocation to inland areas, construction of seawalls as well as protection forests for tidal waves, refugee roads, and such</td>
</tr>
<tr>
<td>• Construction Works by Local Governments</td>
<td>• Construction Works by Local Governments</td>
</tr>
<tr>
<td>• Otsuchi Town: local industrial associations and the like took the initiative in the construction, sales, and operation and maintenance of houses and public facilities</td>
<td>• Otsuchi Town: local industrial associations and the like took the initiative in the construction, sales, and operation and maintenance of houses and public facilities</td>
</tr>
<tr>
<td>• Large-scale input for public works such as the construction of seawalls, evacuation towers, and refugee roads, and promotion of group relocation to upland areas for disaster prevention</td>
<td>• Large-scale input for public works such as the construction of seawalls, evacuation towers, and refugee roads, and promotion of group relocation to upland areas for disaster prevention</td>
</tr>
<tr>
<td>• 2 Step Urban Planning Scheme for Affected People</td>
<td>• 2 Step Urban Planning Scheme for Affected People</td>
</tr>
<tr>
<td>• 1st step: identification of zones for relatively large-scale development</td>
<td>• 1st step: identification of zones for relatively large-scale development</td>
</tr>
<tr>
<td>• 2nd step: detailed planning and decision making for urban development</td>
<td>• 2nd step: detailed planning and decision making for urban development</td>
</tr>
<tr>
<td>• Promotion of Citizens' Participation in Planning Process Supported by Local Administrations&gt;</td>
<td>• Promotion of Citizens' Participation in Planning Process Supported by Local Administrations</td>
</tr>
<tr>
<td>• Utilization of associations for promoting community development</td>
<td>• Utilization of associations for promoting community development</td>
</tr>
<tr>
<td>&lt;Preparation for Returning&gt;</td>
<td>&lt;Set-up of Reconstruction Fund&gt;</td>
</tr>
<tr>
<td>• Creating or renovating the initial, nominated by the affected area, maintenance and improvement of houses, shops, banks, and such, and starting provision and construction of village-owned houses.</td>
<td>• Facilitated reconstruction with a variety of assistance especially suited to local conditions</td>
</tr>
<tr>
<td>&lt;Introduction of Special Assistance for Reconstruction of Livelihoods with Local Authority's Own Resources&gt;</td>
<td>&lt;Promotion of Community Development by Assigning Full-time Supporters&gt;</td>
</tr>
<tr>
<td>&lt;Creation of assistance for reconstruction of houses as personal assets by reimbursement of taxpayer’s money&gt;</td>
<td>• Covering widely from economic revitalization to improvement of living environment from the point of safety and security.</td>
</tr>
</tbody>
</table>

Source: JICA Study Team based on the table by referring to “Great Kanto Earthquake in 1923,” 2008, Cabinet Office, “History of Reconstruction from Great Hanshin Earthquake,” 2000, Prime Minister’s Office, and other documents (all written in Japanese)
The Study of Reconstruction Processes from Large-Scale Disasters
### Great Kanto Earthquake in 1923
- Occurred on 1st Sep.
- **Emergency Relief** (Medical Actions and Rescue)
- **Recovery** (Roads, Bridges, etc.)
- **Recovery** (Temporary Houses)
- **Reconstruction** (Formulation of Reconstruction Plan)
- **Reconstruction** (Reconstruction Works)

### Sanriku Tsunami in 1933
- Occurred on 3rd Mar.
- **Emergency Relief** (Rescue, First Aid, Water Supply, etc.)
- **Recovery** (Temporary Houses)
- **Reconstruction** (Construction of Housing Lots)

### Southwest-off Hokkaido Earthquake in 1993
- Occurred on 12th Jul.
- **Emergency Relief** (Operation of Evacuation Centers)
- **Recovery** (Recovery of Water Supply and Drainage)
- **Recovery** (Temporary Houses)
- **Reconstruction** (Formulation of Reconstruction Plan)
- **Reconstruction** (Decision-Making on Reconstruction Works)
- **Reconstruction**

### Great Hanshin Earthquake in 1995
- Occurred on 17th Jan.
- **Emergency Relief**
- **Recovery** (Operation of Evacuation Centers)
- **Recovery** (Temporary Houses)
- **Reconstruction** (Formulation of Reconstruction Plan)
- **Reconstruction** (Return of All Villagers to Yamakoshi Village)

### Eruption of Mt. Oyama on Miyake Island in 2000
- Occurred on 26th Jun.
- **Evacuation of All Inhabitants on 2nd Sep.**
- **Emergency Relief**
- **Evacuation to Public Houses, etc.**
- **Lifting of Evacuation Order in Feb. 2005**
- **Reconstruction of Houses and Construction of Village-Owned Houses**

### Mid. Niigata Prefecture Earthquake in 2004
- Occurred on 23rd Oct.
- **Emergency Relief**
- **Recovery** (Operation of Evacuation Centers)
- **Recovery** (Temporary Houses)
- **Recovery** (Recovery of Electricity, Gas, and Water Supply)
- **Reconstruction** (Formulation of Reconstruction Plan)
- **Reconstruction** (Return of All Villagers to Yamakoshi Village)

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**Notes:**
1. Regarding the Sanriku Tsunami in 1933, the actions taken in the emergency as well as rehabilitation periods are not clearly known.
2. Recovery and reconstruction are usually carried out simultaneously. After the completion of the former, the latter moves into high gear.

**Source:** Same as that for Table 3.8

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**Figure 3.2 Process Flows of Rehabilitation and Reconstruction in Domestic Past Mega-Disasters**
3-33–34
### Great San Francisco Earthquake (1906)
- Occurred on Apr.18/1906
- **Emergency Relief**
  - Utility restoration
  - Resume of retail trade
  - Debris removal
  - Street railways established
  - Population in refugee camps starts to fall
- **Recovery**
- **Reconstruction**
- Source: JICA Study Team based on the presentation materials titled Perspectives on Disaster Recovery by Arnold M. Howitt of the Program on Crisis Leadership Harvard Kennedy School, February 18, 2013

### The 921 Central Taiwan Earthquake (1999)
- Occurred on Sept. 21/1999
- **Emergency Relief**
  - Establishment of Earthquake Reconstruction Committee (Sept 27/1997)
  - Emergency Decree (From Sept.25/1999 to Mar.2000)
  - Guideline of Post-Earthquake Recovery Plan (Nov.9/1999)
  - Earthquake Relief Foundation (Oct.13/1999)
- **Recovery**
- **Reconstruction**
- Source: JICA Study Team based on the website of National Science and Technology Center for Disaster Reduction (www.ncdr.nat.gov.tw)

### The 1999 Kocaeli Earthquake (also known as Izmit Earthquake) and Duzce Earthquake (1999)
- Occurred on Aug.17/1999
- Occurred on Nov. 8/1999
- **Emergency Relief**
  - Refugee Camp/Tents, Evacuation to public facilities
  - Formulation of Housing Restoration Plan
- **Recovery**
- **Reconstruction**
- Source: JICA Study Team based on the article titled the Comparative Study on Reconstruction/Recovery Process in Hanshin (Japan), Turkey and Taiwan in terms of Housing and City by Itsuki Nakabayashi (Sogotoshikenkyu Vol. 80, 2003) in Japanese

### Figure 3.3 Process Flows of Rehabilitation and Reconstruction in Overseas Past Mega-Disasters

Note: Analysis of the above mentioned article is mainly focused on recovery process of housing.
3.2 Lessons Learned from Past Mega-Disasters

Lessons learned from the 6 mega-disasters are summarized as follows.

3.2.1 Provide Emergency Relief

(1) Necessity of Consideration for Evacuees’ Health Maintenance

In the case of the Great Hanshin-Awaji Earthquake and Mid. Niigata Prefecture Earthquake, a huge number of evacuees were forced to live together at evacuation centers setup in school gymnasiasms etc. As a result, especially in the former case, there were quite a few cases of death due to the extremely stressful lives as evacuees.

Besides this there were some other problems/shortfalls at evacuation shelters for example privacy and a lack of exclusive changing areas for women. Although part of the evacuation centers took countermeasures to overcome these constraints by placing partition boards to divide spaces for individual use, similar measures were not widely taken in other sites.

3.2.2 Establish Mecanism for Rehabilitation and Reconstruction

(1) Importance to Maintain Community and Personal Ties among Evacuees

It is certainly ideal to support evacuees to move on to the next step, starting from living at evacuation centers, then temporary houses, and finally to permanent residences as the reconstruction process progresses while maintaining community as well as personal ties among the group all throughout the steps. Because community and personal relationships in many cases act as support/anchor for evacuees. Yamakoshi Village, after Mid. Niigata Prefecture Earthquake, was one good example of this practice in making steady progress in the reconstruction and successfully maintaining the existing community ties among the victims.

(2) Facilitation for Active Participation of Affected People

In all cases active participation of the affected persons is important for successful planning and implementation of reconstruction. A participatory approach should be taken in the planning process to facilitate citizen participation.

More than 100 associations for town reconstruction were established and contributed in the formulation of reconstruction plans in the case of the Great Hanshin-Awaji Earthquake.

(3) Importance of Construction of Temporary Town

Since the Great Kanto Earthquake saw total devastation of urban facilities, not only temporary houses but also nursery rooms, medical clinics, libraries, public baths and other facilities for providing services and comforts were constructed for the evacuees. After the Disaster Relief Law was enacted in 1947 which obliges municipalities to construct and provide temporary houses for evacuees, their were no other cases other than the Great Hanshin-Awaji Earthquake where construction of a community center per 50 households in principle was conducted in temporary housing areas. After Mid. Niigata Prefecture Earthquake, by examining lessons learned from past cases, some affected areas saw construction of public facilities for supporting livelihoods beside temporary houses, but still this was not nearly sufficient.

Therefore it is important to make a shift from the construction of temporary houses to the establishment of temporary towns with various public service facilities for the convenience of the evacuees. There was much improvement in this area in the case of the 3.11 Earthquake.

(4) Establish Intermediate Organizations

Although it is necessary for local authorities and citizens in the affected areas to be actively involved in the reconstruction process, it is also important to have intermediate bodies such as universities, experts not only in the field of urban planning but in other fields as well, NPOs, CBOs, and volunteers
in order to support the smooth communication between the 2 main contributors in the implementation of activities as shown in the cases of the Great Hanshin-Awaji Earthquake and Mid. Niigata Prefecture Earthquake.

In the latter case, “Citizens’ Meetings for Chuetsu (Mid. Niigata) Reconstruction” were set up and functioned as an intermediate supporting organization for reconstruction. It contributed significantly in facilitating communication between the disaster victims and the local administration offices, between the former and the supporters coming in from outside the local communities, and also among the community members themselves. This led to the establishment of the system for “allocation of support staff for community reconstruction” with the Fund for Reconstruction, which promoted communication and interaction between urban and rural areas with support staff who were always in close proximity to the victims.

(5) Set up Supporting Mechanism with Various Expertise

“Hanshin-Awaji Supporting Mechanism for Reconstruction” was the mechanism set up approximately 1 year after the occurrence of the quake, to provide advice to the victims on various matters related to the reconstruction through expertise from lawyers/attorneys, tax accountants, land and building investigators, estate surveyors, judicial scriveners, and architects.

3.2.3 Reconstruct Houses and Recovery Livelihood

(1) Precise Understanding of Actual Situation of Suffers’ Living and Priority and Recovery of Livelihood

Reconstruction of the afflicted areas can be started and progressed only after recovery of the victims livelihood has got under way. Victims cannot involve themselves actively in the reconstruction process without recovering their livelihood first. A good example is “the special assistance for disaster victims in Miyake Village” which placed first priority on the recovery of livelihood. This was set up by reviewing and understanding the actual situation of the victims’ living conditions and considering what kind of assistance should be provided to meet their needs.

(2) Importance of Paying Attention to Local Features and History

“Fund for Reconstruction” was set up in the case of the Great Hanshin-Awaji Earthquake and Mid. Niigata Prefecture Earthquake and contributed to providing suitable assistance for local needs with special consideration of local characteristics and history, which were essential in the devastated areas. It must have been difficult to sufficiently meet such localized needs with a mechanism developed on a nationwide model.

In summary, the Great Hanshin-Awaji quake utilized indirect support for the reconstruction of houses in urban areas, e.g. interest subsidies for reconstruction of the affected housing complexes, stabilization of the sufferers’ livelihood and assistance for the self-construction of houses etc. On the other hand, in the case of Fund for Reconstruction from Mid. Niigata Prefecture Earthquake, assistance was given to reconstruction of shrines, heavy snow-resistant residences, houses made of locally processed Japanese ceder, Echigo-sugi and rehabilitation of rice fields by hand etc.

3.2.4 Build Safe Community

(1) Necessity of Comprehensive Countermeasures for Tsunami

The Sanriku Tsunami in 1933 and Chile Tsunami both hit the same area as the 3.11 Earthquake. Despite a relocation to upland areas made after Sanriku Tsunami in 1933, this area was seriously devastated by the tsunami again. This is the result of a blurring of history as time passed and the steady resettlement of people to the coastal areas for living and work convinience, i.e. fisheries and related industries.
Therefore it is considered necessary to take comprehensive countermeasures against tsunami, not only a relocation to upland areas and some structural measures such as artificial ground constructed on Okushiri Island, seawalls, refugee roads and evacuation towers, but also strengthening unstructural measures such as formulation of evacuation plans based on lessons learned from previous disasters, implementation of evacuation training on a regular basis and enhancement of the disaster management mechanism through the installation of wireless stations for disaster prevention.

(2) Development of Fundamental Reconstruction Plan
In the case of the Great Kanto Earthquake, the reconstruction plan despite its reduction in scale, contributed significantly to the fundamental structure in all affected areas in Tokyo and reinvented the city from its historical old Edo city history into a modern metropolis.

After the Meiji period, Tokyo saw partial rehabilitation in its structure but it was not sufficient to meet the increasing needs for automobile transportation in the city. The reconstruction plan after the quake, consequently answered these needs by providing a fundamental reconstruction of the city.

Therefore it is important to conduct a fundamental reconstruction when required in the affected areas.

(3) Importance of Maintaining Communication Outside the Affected Areas
In the case of the Great Kanto Earthquake, the reconstruction plan recommended and initiated the construction of arterial roads to connect the city to areas outside the affected corridor in order to maintain a connection and communications between the affected areas and the outside areas. Similar measures were taken in the case of the Great Hanshin-Awaji Earthquake.

As seen above, structural measures should be taken to maintain networks with outlying areas and it is also important to carry out unstructural measures such as prepartion of a network for information exchange, e.g. mutual support agreement in the case of disaster between local authorities, fostering DMAT staff etc.

(4) Create New Models for Reconstruction
In the case of the Great Kanto Earthquake, a focus was placed on increasing fireproofing in the city by making public facilities such as schools fireproof and construction of fireproof buildings by Dojunkai, a foundation for housing supply established by the Ministry of Interior at the time. For the same purpose, large parks such as Sumida, Hama-cho, and Kinshi park and another 51 small parks adjacent to schools were developed in Tokyo.

All the above measures were recommended and implemented for creating a new model for reconstruction after a disaster, which is still effective today and important as a key concept for reconstruction.

3.2.5 Reconstruct Industries and Economies
(1) Utilization of Local Industrial Guilds/Associations
In the case of Sanriku Tsunami in 1933, the local industrial guild took the initiative to develop, sell, and operate and maintain houses as well as public facilities in the Kiri-kiri area in Ootsuchi Town, which triggered an industrial and economic reconstruction period after the disaster. Another example is the supply of temporary houses through the open recruitment of constrators from local enterprises in the case of the 3.11 Earthquake.

(2) Importance of Local Industries
In the case of Southwest-off Hokkaido Earthquake, Fund for Reconstruction provided sufficient assistance for purchasing fishing vessels for the victims who had them destroyed by the tsunami.

Especially in the instance that the boat was under 5 ton, which represented the majority of boats that were lost to the tsunami. The purchasers only paid 1/9 of the total cost as individuals with financial
support from the central and local government in conjunction with that from the Fund for the assistance for purchase of commonly shared fishing boats and interest subsidies for purchasing boats. Even for purchasing used vessels, similar assistance was provided by the Hokkaido Prefectural Government and the Fund for assistance.

This assistance helped local industries significantly to get back on the right track to recovery.

3.2.6 Improve Preparedness

(1) Necessary to Have Community Activities on Regular Basis

In order to respond immediately and appropriately in an emergency, it is indispensible for people to have community activities repeatedly in their daily lives. A community network is a key factor in weather the locality shall succeed or fail in consensus building following the disaster. Its importance was clearly recognized following the Great Hanshin-Awaji Earthquake and was widely understood in the reconstruction process after the 3.11 Earthquake as well.

(2) Importance of Preparedness

Disaster cannot be precisely forecasted in terms of time and place of occurrence. Importance of preparedness was clearly recognized following the Great Hanshin-Awaji Earthquake in order to mitigate damage and begin immediately a smooth start to activities for the recovery and reconstruction.

This is exemplified as by the Tokyo Metropolitan Government in its formulation of “the plan for promoting disaster preventive city” in 1997 to establish rehabilitation functions to enhance earthquake resilience in the priority areas, as well as its preparation of “the manual for reconstruction from disaster” in 2003 to show its positive attitude toward mitigation of disaster risk and improve preparedness.
Chapter 4  Support Plans of the Japanese National Government and Local Governments related to the Great East Japan Earthquake, Trends of the National and Local Governments during the Reconstruction Stage

In this chapter, a discussion of the recovery and reconstruction activities being performed by the national government and by local governments is arranged in chronological order and is separated into the following parts: the period of emergency measures (March 2011 to August 2011), the period of recovery activities (April 2011 to December 2011), the period of starting reconstruction (May 2011 to February 2012), and the period of reconstruction activities (February 2012 to August 2013 [current]).

Figure 4.1  Processes up to Recovery and Reconstruction from the 3.11 Earthquake

4.1  The Period of Emergency Measures Damages, Emergency Medical Care, and Emergency Measures (March 2011 to August 2011)

4.1.1  General Situation of Damages on the Largest Scale in the World’s Recorded History

(1)  Summary of the 3.11 Earthquake

The 2011 earthquake off the Pacific coast of Tohoku (so named by the Japan Meteorological Agency and hereinafter referred to as the “earthquake off the Pacific coast of Tohoku”), which brought about the Great East Japan Earthquake (the 3.11 Earthquake), was a magnitude 9.0 earthquake and was the largest earthquake ever observed in the history of Japan. Not only that, but this earthquake was the 4th most powerful earthquake in the world since 1900.

The hypocentral region extended from the coast of Iwate prefecture to the coast of Ibaraki prefecture. The fault had a length of 450 km and a width of approximately 200 km and is thought to have been destroyed over a period of 3 minutes. Therefore, the quake was observed over a wide area and a massive tsunami was generated. This tsunami reached heights in excess of 9 meters, had a run-up height in excess of 30 meters at its highest locations, and caused damage over a wide area containing various Pacific Ocean coastal areas that were assaulted (Table 4.1).

As the result of a cabinet meeting held on April 1, 2011, the damages caused by the earthquake off the Pacific coast of Tohoku and the damages caused by the accident at the Fukushima Daiichi Nuclear Power Plant collectively came to be referred to as the Great East Japan Earthquake (the 3.11 Earthquake).
Table 4.1 Summary of the 3.11 Earthquake

<table>
<thead>
<tr>
<th>Item</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time and date of occurrence</td>
<td>14:46 on March 11, 2011</td>
</tr>
<tr>
<td>Hypocenter and scale (estimate)</td>
<td>Off Sanriku coast (latitude 38°6' N, longitude 142°52'E, 130 km east-southeast of the Oshika peninsula), depth: 24 km, moment magnitude (Mw): 9.0</td>
</tr>
<tr>
<td>Hypocentral region</td>
<td>Length: approximately 450 km, width: approximately 200 km</td>
</tr>
<tr>
<td>Fault slip amount</td>
<td>Approximately 20 to 30 m or less</td>
</tr>
</tbody>
</table>

Source: Documents from a report presented by the Japan Meteorological Agency (in Japanese)

(2) Overall Picture of the Damages

1) Summary of Damages in Terms of Human Life and Buildings

The 3.11 Earthquake brought about extremely serious levels of damage with dead and missing persons seen in 12 administrative divisions of Japan in numbers of 15,871 people dead and 2,778 people missing (according to an announcement made by the National Police Agency on October, 17, 2012). In terms of damages, from the Meiji era of Japan, this disaster ranks with the Great Kanto Earthquake of 1923 (number of dead and missing: approximately 105,000 people) and the Sanriku Earthquake of 1896 (number of dead and missing: approximately 22,000 people). It has been confirmed that 90% or more of those dead from the disaster died of drowning (Table 4.2).

The disaster also caused major damage to buildings, with 129,574 homes in 10 administrative divisions completely destroyed and 266,011 homes in 13 administrative divisions partially destroyed.

Table 4.2 State of Damages from the 3.11 Earthquake

<table>
<thead>
<tr>
<th>Damage classification</th>
<th>Administrative division of Japan</th>
<th>Damage to human life</th>
<th>Damage to buildings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Dead</td>
<td>Missing</td>
</tr>
<tr>
<td></td>
<td>Hokkaido</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Tohoku area</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Aomori</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Iwate</td>
<td>4,671</td>
<td>1,204</td>
</tr>
<tr>
<td></td>
<td>Miyagi</td>
<td>9,528</td>
<td>1,359</td>
</tr>
<tr>
<td></td>
<td>Akita</td>
<td>12</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Yamagata</td>
<td>2</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>Fukushima</td>
<td>1,606</td>
<td>211</td>
</tr>
<tr>
<td></td>
<td>Tokyo</td>
<td>7</td>
<td>117</td>
</tr>
<tr>
<td></td>
<td>Kanto area</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ibaraki</td>
<td>24</td>
<td>709</td>
</tr>
<tr>
<td></td>
<td>Tochigi</td>
<td>4</td>
<td>134</td>
</tr>
<tr>
<td></td>
<td>Gunma</td>
<td>1</td>
<td>38</td>
</tr>
<tr>
<td></td>
<td>Saitama</td>
<td>42</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>Chiba</td>
<td>20</td>
<td>252</td>
</tr>
<tr>
<td></td>
<td>Kanagawa</td>
<td>4</td>
<td>134</td>
</tr>
<tr>
<td></td>
<td>Negata</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Yamanashi</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Nagano</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Shizuoka</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Chubu area</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gifu</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Mie</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Tokushima</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Kochi</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>15,871</td>
<td>2,778</td>
</tr>
</tbody>
</table>

Source: Documents from a report presented by the National Police Agency Extreme Disaster Defense Headquarters (in Japanese) (October 17, 2012)
2) **State of Damages in Terms of Infrastructure and Similar Facilities**

Facilities such as roads and other parts of transportation infrastructure as well as river and coastal dikes and fishing harbors suffered great damages as did services such as electricity, gas, water, and other lifelines (Table 4.3).

Immediately after the disaster, the traffic network entered a state of paralysis with 15 highways and 171 sections of national roads shut down and 177 railway lines also stopped. River dikes were damaged in 2,115 locations and two thirds of the total length of coastal dikes (approximately 190 km) were also damaged, rendering a great number of fishing harbors and other harbors unusable. There were also temporary stoppages to lifelines such as electricity, gas, and water.

<table>
<thead>
<tr>
<th>Item</th>
<th>State of damages at the time of the disaster</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roads</td>
<td>15 highways, 69 sections of national roads administered by the national government, 102 sections of national roads administered by prefectural and municipal governments, and 540 sections of other prefectural roads were shut down due to damages.</td>
</tr>
<tr>
<td>Railways</td>
<td>Immediately after the disaster, operation was stopped for 42 companies and their 177 routes, including 6 Shinkansen routes (the Tohoku, Akita, Yamagata, Joetsu, Nagano, and Tokaido routes).</td>
</tr>
<tr>
<td>Airports</td>
<td>The tsunami made Sendai Airport unusable.</td>
</tr>
<tr>
<td>Harbors</td>
<td>Immediately after the disaster, 14 harbors used as bases for international shipping and other major harbors suffered damages and became unusable.</td>
</tr>
<tr>
<td>Rivers</td>
<td>Damage such as dike collapses occurred in 2,115 locations in rivers administered by the national government.</td>
</tr>
<tr>
<td>Coasts</td>
<td>Among the approximately 300 km of coastal dikes in Iwate prefecture, Miyagi prefecture, and Fukushima prefecture, approximately 190 km were completely or partially destroyed.</td>
</tr>
<tr>
<td>Fishing harbors</td>
<td>Nearly all of the 260 fishing harbors in Iwate prefecture, Miyagi prefecture, and Fukushima prefecture suffered catastrophic damage.</td>
</tr>
<tr>
<td>Electricity</td>
<td>The number of homes in the 3 prefectures of Tohoku without power was approximately 2,580,000 (on March 11). Approximately 4,660,000 homes under the jurisdiction of the Tohoku Electric Power Company and approximately 4,050,000 homes under the jurisdiction of the Tokyo Electric Power Company (TEPCO) were without power (on March 11).</td>
</tr>
<tr>
<td>Gas</td>
<td>The number of homes in the 3 prefectures of Tohoku to which the supply of city gas was stopped was approximately 420,000 (on March 11). The number of homes in the 3 prefectures of Tohoku to which the supply of LP gas was stopped was approximately 1,660,000 (on March 11).</td>
</tr>
<tr>
<td>Water</td>
<td>Water outages occurred in 19 prefectures due to water works projects and similar activities. The maximum number of homes to which water outages occurred (excluding those homes to which the supply of water had been recovered), which was understood after the disaster, was 1,800,000 (at 17:00 on March 16). Emergency water was supplied from, at maximum, 355 water trucks dispatched from 456 water utilities around Japan.</td>
</tr>
</tbody>
</table>

Source: Extracted from “State of Damages to Infrastructure and Similar Facilities (Primarily Focused on Iwate Prefecture, Miyagi Prefecture, and Fukushima Prefecture) (in Japanese),” prepared by the Cabinet Office on July 14, 2011 (current as of the time of this writing)
3) Flooded Area

Examining the tsunami damage caused by this earthquake, it can be seen that there were wide-spread damages to buildings (homes) in Aomori prefecture, Iwate prefecture, Miyagi prefecture, Fukushima prefecture, and Chiba prefecture. Miyagi prefecture, in which the flooded area was large (the flooded area was 327 km² in Miyagi prefecture), had a large number of homes completely destroyed with especially severe damage seen in Sendai city and Ishinomaki city (Table 4.4 and Figure 4.2).

Since homes and other buildings have congregated in the narrow lands of the ria coasts on the Pacific Ocean coast of the northern parts of Iwate prefecture and Miyagi prefecture, it can be seen that the tsunami flooded a large number of households and, as such, there are also municipalities that are dealing with devastated communities.

The municipalities for which over 70% of all households were flooded are as follows: Rikuzentakata city (71.8%) and Otsuchi-cho (81.1%) in Iwate prefecture and Ishinomaki city (72.8%), Higashimatsushima city (80.3%), Onagawa-cho (79.5%), and Minamisanriku-cho (82.6%) in Miyagi prefecture.

<table>
<thead>
<tr>
<th>Table 4.4 Flooded Area of Each Municipality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prefecture Municipality</td>
</tr>
<tr>
<td>-------------------------</td>
</tr>
<tr>
<td>Aomori</td>
</tr>
<tr>
<td>Hazesho city</td>
</tr>
<tr>
<td>Misawa city</td>
</tr>
<tr>
<td>Rikatsuyoshi village</td>
</tr>
<tr>
<td>Urakami town</td>
</tr>
<tr>
<td>Mikunihama town</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Iwate</td>
</tr>
<tr>
<td>Miyako city</td>
</tr>
<tr>
<td>Minamikanri city</td>
</tr>
<tr>
<td>Rikuzentakata city</td>
</tr>
<tr>
<td>Kamishi city</td>
</tr>
<tr>
<td>Watsunishi town</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Miyagi</td>
</tr>
<tr>
<td>Higashi-ward</td>
</tr>
<tr>
<td>Taihaku-ward</td>
</tr>
<tr>
<td>Sendai city</td>
</tr>
<tr>
<td>Natori city</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Ibaraki</td>
</tr>
<tr>
<td>Iboshina city</td>
</tr>
<tr>
<td>Togaho city</td>
</tr>
<tr>
<td>Shinminato city</td>
</tr>
<tr>
<td>Miharu city</td>
</tr>
<tr>
<td>Yuzangi city</td>
</tr>
<tr>
<td>Hama city</td>
</tr>
<tr>
<td>Igashimishima city</td>
</tr>
<tr>
<td>Watanabe city</td>
</tr>
<tr>
<td>Yamamoto city</td>
</tr>
<tr>
<td>Minamishima town</td>
</tr>
<tr>
<td>Higashimizu town</td>
</tr>
<tr>
<td>Minamisakaki town</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Chiba</td>
</tr>
<tr>
<td>Ishinomaki city</td>
</tr>
<tr>
<td>Kamaishi city</td>
</tr>
<tr>
<td>Iwaki city</td>
</tr>
<tr>
<td>Mito city</td>
</tr>
<tr>
<td>Hachinohe city</td>
</tr>
<tr>
<td>Tsuchiura city</td>
</tr>
<tr>
<td>Yanaka city</td>
</tr>
<tr>
<td>Fujiyama city</td>
</tr>
<tr>
<td>Daini city</td>
</tr>
<tr>
<td>Ichikawa city</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Note: The total values for the areas of the municipalities and flooded areas are for the 6 prefectures (Aomori, Iwate, Miyagi, Fukushima, Ibaraki, and Chiba) and 62 municipalities listed here.

Source: JICA Study Team based on “Summary of the Area Flooded by the Tsunami (Report #5) (in Japanese),” 2012, the Geospatial Information Authority of Japan
4) State of Damages to Agricultural Zones

Due to the 3.11 Earthquake, approximately 24,000 hectares of agricultural zone land was washed away, covered in water, and otherwise damaged. This land has also been damaged through other means such as the accumulation of debris, sludge, and similar objects over a wide area and the penetration into the ground of salt water. Furthermore, ground subsidence and liquefaction of landfill sites have occurred over a wide area of agricultural zones, primarily those in inland areas (Table 4.5).
The Study of Reconstruction Processes from Large-Scale Disasters

Table 4.5  Area of Disaster Afflicted Agricultural Zones (in Hectares; March 11, 2012)

<table>
<thead>
<tr>
<th>Prefecture</th>
<th>Area of disaster afflicted agricultural zones that arose from the 3.11 Earthquake</th>
<th>Area of other disaster afflicted agricultural zones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Area of disaster afflicted agricultural zones due to the tsunami</td>
</tr>
<tr>
<td>Aomori</td>
<td>107</td>
<td>77</td>
</tr>
<tr>
<td>Iwate</td>
<td>1,209</td>
<td>725</td>
</tr>
<tr>
<td>Miyagi</td>
<td>14,558</td>
<td>14,341</td>
</tr>
<tr>
<td>Fukushima</td>
<td>5,927</td>
<td>5,462</td>
</tr>
<tr>
<td>Ibaraki</td>
<td>1,063</td>
<td>208</td>
</tr>
<tr>
<td>Chiba</td>
<td>1,162</td>
<td>663</td>
</tr>
<tr>
<td>Totals of the 6 prefectures on the Pacific coast</td>
<td>24,026</td>
<td>21,476</td>
</tr>
<tr>
<td>Yamagata</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Tochigi</td>
<td>198</td>
<td>-</td>
</tr>
<tr>
<td>Gunma</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Satsuma</td>
<td>39</td>
<td>-</td>
</tr>
<tr>
<td>Niigata</td>
<td>117</td>
<td>-</td>
</tr>
<tr>
<td>Nagano</td>
<td>95</td>
<td>-</td>
</tr>
<tr>
<td>Totals of the 6 inland prefectures</td>
<td>451</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>24,477</td>
<td>21,476</td>
</tr>
</tbody>
</table>

Note: Regarding the area of disaster afflicted agricultural zones that arose from the 3.11 Earthquake:
(A) The area of disaster afflicted agricultural zones due to the tsunami is the area of disaster afflicted agricultural zones (agricultural zones that require recovery) of the “Reconstruction Master Plan for Agriculture and Farming Villages” (revised on November 21, 2011).
(B) In the area of other disaster afflicted agricultural zones, there is also included the area of minor disaster afflicted agricultural zones that arose from the tsunami. These minor disaster afflicted agricultural zones are not included in the area of disaster afflicted agricultural zones that require recovery according to the master plan, that is, they are outside of the area of disaster afflicted agricultural zones caused by issues such as cracks or fissures in the ground, liquefaction of landfill sites, burying in the ground, and sediment that are understood through visits to affected agricultural zones immediately after the disaster by the staff of the Ministry of Agriculture, Forestry and Fisheries on the basis of information collected from relevant organizations.
Source: Documents of the Ministry of Agriculture, Forestry and Fisheries (prepared by the Minister’s Secretariat, Statistics Department, Rural Development Bureau on April 20, 2012) (in Japanese)

5) State of Damages due to Liquefaction of Landfill Sites

According to a survey performed by the Ministry of Land, Infrastructure, Transport and Tourism, approximately 27,000 cases of residential land damage due to liquefaction of landfill sites occurred in 9 administrative divisions from the Tohoku to Kanto regions. Moreover, liquefaction of landfill sites has occurred in 96 municipalities among 7 administrative divisions.1 As shown in Figure 4.3, liquefaction of landfill sites is concentrated in the Tokyo bay area between Tokyo and Chiba and in the downstream section of the Tone River. Other occurrences are scattered in a variety of locations: in the vicinity of Kawasaki and Yokohama, in the mid-stream section of the Tone River, and in the basins of the Kinu and Kokai Rivers. Regarding the Tokyo bay area, the majority of the locations in which liquefaction of landfill sites has occurred coincide with those locations in which land was reclaimed in the Meiji era or later.

1 “Clarification of the Actual Condition of Liquefaction of Landfill Sites and other Ground in the Kanto Region Caused by the 2011 Earthquake off the Pacific Coast of Tohoku (in Japanese)” (as of September 27, 2011) created by the Kanto Regional Development Bureau of the Ministry of Land, Infrastructure, Transport and Tourism and the Japanese Geotechnical Society
In areas in which the damage caused by the liquefaction of landfill sites was large, there were incidents such as sinking and tilting of telephone poles, destruction of drainage systems and other underground structures, and dislodging of manholes.

Source: Shigenobu KAWASAKI (2011) “Issues and Lessons Learned from the Great East Japan Earthquake” (XXIVth World Roald Congress Mexico 2011)

Figure 4.3 Areas of Liquefaction (Tokyo Capital Area)

6) Cost of Damages (Estimate)

Regarding the total cost of damages attributable to the 3.11 Earthquake, the Cabinet Office has estimated the cost of damages to stocks (Table 4.6). From this information, it can be seen that the total cost of damages is 16.9 trillion yen, which is more than 1.5 times the estimated total cost of damages attributable to the Great Hanshin-Awaji Earthquake of 10 trillion yen.

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost of damages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buildings (such as homes and residential zones, stores and offices, factories, and machines)</td>
<td>Approximately 10.4 trillion yen</td>
</tr>
<tr>
<td>Lifeline facilities (water, gas, electricity, and communication and broadcast facilities)</td>
<td>Approximately 1.3 trillion yen</td>
</tr>
<tr>
<td>Facilities that make up the foundations of society (such as rivers, roads, harbors, drainage systems, and airports)</td>
<td>Approximately 2.2 trillion yen</td>
</tr>
<tr>
<td>Farming, forestry, and fishing (such as agricultural zones and farming facilities, forests and fields, and facilities related to fishing)</td>
<td>Approximately 1.9 trillion yen</td>
</tr>
<tr>
<td>Other (such as cultural and educational facilities, healthcare and medical treatment facilities, social welfare facilities, waste disposal facilities, and other public facilities)</td>
<td>Approximately 1.1 trillion yen</td>
</tr>
<tr>
<td>Total</td>
<td>Approximately 16.9 trillion yen</td>
</tr>
</tbody>
</table>

Box 4.1  State of Contamination due to the Fukushima Nuclear Accident

Radioactive substances were carried away by the winds blowing toward northwest and were brought back down to the ground with the rain. Not only those locations within the 20 km-radius evacuation area around the nuclear power plant but some areas further than 30 km away also have received high air doses of radiation (for information on the state of long-term evacuees who have left their homes due to the Fukushima nuclear accident, see chapter 6).

Notes
1): Monitoring was performed between the last third of October and the first third of November in 2011.
2): This map includes air dose rates attributable to natural radioactive nuclides.

Air dose rates at a height of 1 m above the ground at locations within 80 km from the Fukushima Daiichi Nuclear Power Plant

(3) Summary of Evacuees

Focused on Iwate prefecture, Miyagi prefecture, and Fukushima prefecture (which suffered heavy damages), the number of evacuees had reached approximately 470,000 as of March 14, 2011. This number is approximately 1.5 times that of the Great Hanshin-Awaji Earthquake, which at its peak caused 320,000 evacuees (Table 4.7 and Figure 4.4).

In addition to public facilities such as temporary shelters, evacuees also evacuated to Japanese-style inns and the residences of family members. In August, 5 months after the time when the above figures were taken, the number of evacuees had fallen to approximately 340,000. This disaster resulted in a large number of home evacuees, who remained in their own homes even though they had been flooded, and nation-wide evacuees, who evacuated to other prefectures and other far-away locations due to the effect of the nuclear power plant.
The Study of Reconstruction Processes from Large-Scale Disasters

Table 4.7 State of Evacuees

<table>
<thead>
<tr>
<th>Number of evacuees</th>
<th>The third day after the occurrence of the disaster (March 14, 2011; *1)</th>
<th>As of August 8, 2012 *2</th>
<th>Total</th>
<th>Individuals living in temporary shelters</th>
<th>Individuals living in homes and other similar buildings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Approximately 470,000</td>
<td></td>
<td>343,334</td>
<td>214</td>
<td>326,416</td>
</tr>
</tbody>
</table>

Notes 1): This is the total of all evacuees in Aomori prefecture, Iwate prefecture, Miyagi prefecture, Fukushima prefecture, Ibaraki prefecture, and Tochigi prefecture according to documents from the Extreme Disaster Management Headquarters.

2): These are the total of all evacuees in temporary shelters (such as community centers and schools), Japanese-style inns and hotels, other locations (such as the residences of family members and acquaintances), and homes and similar buildings (including publicly managed homes, temporary buildings, privately managed homes, and hospitals) nationwide, according to an investigation carried out by the Reconstruction Agency.


Figure 4.4 Changes in the Number of Evacuees over Time: A Comparison between the 3.11 Earthquake, the Great Hanshin-Awaji Earthquake, and the Mid. Niigata Prefecture Earthquake

Notes 1): The National Police Agency has totaled the number of evacuees with a focus on those staying in public facilities such as community centers and schools and those staying in Japanese-style inns and hotels.

2): The Cabinet Office’s Team for the Livelihood Support of Disaster Victims has totaled the number of evacuees living in (1) temporary shelters (such as community centers and schools), (2) Japanese-style inns and hotels, and (3) other locations (such as the residences of family members and acquaintances).

Source: Cabinet Office’s Team for the Livelihood Support of Disaster Victims (July 22, 2011). (For details on the 3.11 Earthquake, see the presentation materials and similar documents of the National Police Agency [Note 1] and the results of the survey performed by this team [Note 2]. For details on the Mid. Niigata Prefecture Earthquake, see the official website of Niigata prefecture. For details on the Great Hanshin-Awaji Earthquake, see “The Great Hanshin-Awaji Earthquake, 1 Year of Records from Hyogo Prefecture.”) (All are written in Japanese.)
4.1.2 Danger Management Performed by the Japanese Government, Emergency Measures of the Entire Country

(1) Extreme Disaster Management Headquarters of the Government

The government put into action an Emergency Meeting Team for the collection of information in the early period after the disaster, established at 15:00 on March 11 the first Extreme Disaster Management Headquarters on the basis of the Basic Act on Disaster Control Measures, and started emergency medical care and emergency measures in response to the earthquake and tsunami. Furthermore, on the basis of the station blackout of the Fukushima Daiichi Nuclear Power Plant of the Tokyo Electric Power Company (TEPCO), the government issued a declaration of a nuclear emergency situation, established the Nuclear Emergency Response Headquarters, and then endeavored to deal with the accident.

A total of approximately 200 officials from each ministry and agency assembled at the prime minister’s official residence (the danger management center) for the Extreme Disaster Management Headquarters, which were responsible for the general coordination of emergency measures, the application of the Disaster Relief Act, the application of the Act on Support for Livelihood Recovery of Disaster Victims, and emergency measures such as the specification of the disaster (Figure 4.5).

Source: Homepage of the Prime Minister of Japan and His Cabinet; http://www.kantei.go.jp/foreign/incident/outline_110509.pdf

Figure 4.5 Outline of Government Headquarters in response to the 3.11 Earthquake (as of 9th May 2011)
Immediately after the disaster, organizations such as the disaster assistance teams of the Self Defense Force, police, fire brigades, and Disaster Medical Assistance Teams (DMAT) were mobilized to the disaster afflicted areas to perform emergency activities and to search for missing persons. Groups for the dealing of problems were established in the Secretariat of the Extreme Disaster Management Headquarters, with the five leading groups being the groups for supplying and transporting materials (groups C1, C3, and C4), the group for transporting medical care over a wide area (group C5), and the group for receiving support from countries outside of Japan (group C7). However, because of the massive damages such as the enormous number of missing persons and the great number of lost homes and facilities; other problems such as power losses, water outages, and the destruction of roads and information networks; and on top of this the decrease in capabilities of administrative bodies due to damages being suffered by local governments themselves, the support activities performed for the (at one point) more than 400,000 evacuees were not sufficient.

Therefore, the government created a Team for the Livelihood Support of Disaster Victims on March 17. The government itself took on responsibility for activities such as the transport and supply of food and fuel to disaster victims, and provided support for disaster victims according to a scheme that exceeded the contents of the Disaster Relief Act. A characteristic of the support period is that it was not performed only by the government but that a variety of supplementary support for disaster victims was provided by volunteers from Japan and other countries and from corporations as well as between local governments.

On May 2, the first revised budget (approximately 4 trillion yen), which mainly covered recovery construction of temporary housing and public infrastructure, was approved (Table 4.8). Thereafter, support for disaster victims focused on the shifting of disaster victims from temporary shelters to temporary housing, so the government made an official announcement of striving to return normalcy to the lives of disaster victims within 3 months on May 20, 2 months after the occurrence of the disaster.

The end of August saw the termination of the dispatching of an organization of 100,000 members of the Self Defense Force who had been searching for missing persons and supplying food.
### Table 4.8  Summary of Reconstruction Budgets

(Unit: Hundred-million yen)

<table>
<thead>
<tr>
<th>Budget for the 2011 fiscal year</th>
<th>40,153</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost related to public programs in response to the disaster</td>
<td>12,019</td>
</tr>
<tr>
<td>Financing cost related to the disaster</td>
<td>6,407</td>
</tr>
<tr>
<td>Cost related to search and rescue and similar activities</td>
<td>4,829</td>
</tr>
<tr>
<td>Cost related to disaster recovery and rehabilitation of facilities and similar activities</td>
<td>4,160</td>
</tr>
<tr>
<td>Cost of programs for the clearance of debris</td>
<td>3,519</td>
</tr>
<tr>
<td>Other</td>
<td>9,219</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second revised budget for the 2011 fiscal year</th>
<th>19,106</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reserve funds for recovery and reconstruction from the 3.11 Earthquake</td>
<td>8,000</td>
</tr>
<tr>
<td>Cost related to support of disaster victims</td>
<td>3,774</td>
</tr>
<tr>
<td>Subsidiary aid for recovery support payments for the individual reconstruction of life of disaster victims</td>
<td>3,000</td>
</tr>
<tr>
<td>Cost related to the Act on Compensation for Nuclear Damages and similar laws</td>
<td>2,754</td>
</tr>
<tr>
<td>Other</td>
<td>1,578</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Third revised budget for the 2011 fiscal year</th>
<th>92,438</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tax allocation grant</td>
<td>16,635</td>
</tr>
<tr>
<td>The Grant for Reconstruction from the 3.11 Earthquake</td>
<td>15,612</td>
</tr>
<tr>
<td>Additional public programs and similar programs</td>
<td>14,734</td>
</tr>
<tr>
<td>Other</td>
<td>45,457</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Budget for the 2012 fiscal year</th>
<th>37,754</th>
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</thead>
<tbody>
<tr>
<td>Recovery and reconstruction of towns</td>
<td>11,854</td>
</tr>
<tr>
<td>Special tax allocations for disaster reconstruction</td>
<td>5,490</td>
</tr>
<tr>
<td>Additional public programs and similar programs</td>
<td>5,091</td>
</tr>
<tr>
<td>Cost related to reconstruction from the nuclear accident</td>
<td>4,811</td>
</tr>
<tr>
<td>Other</td>
<td>22,362</td>
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</table>

<table>
<thead>
<tr>
<th>Revised budget for the 2012 fiscal year</th>
<th>3,177</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recovery of infrastructure and similar items and town development</td>
<td>1,970</td>
</tr>
<tr>
<td>Industry promotion and securing of employment</td>
<td>502</td>
</tr>
<tr>
<td>Reconstruction from the nuclear accident</td>
<td>705</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Budget for the 2013 fiscal year</th>
<th>43,840</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recovery and reconstruction of towns</td>
<td>16,670</td>
</tr>
<tr>
<td>Reconstruction and rehabilitation from the nuclear accident</td>
<td>7,264</td>
</tr>
<tr>
<td>Special tax allocations for disaster reconstruction</td>
<td>6,053</td>
</tr>
<tr>
<td>Reserve funds for the acceleration of reconstruction and for the rebirth of Fukushima</td>
<td>6,000</td>
</tr>
<tr>
<td>Other</td>
<td>7,853</td>
</tr>
</tbody>
</table>

| Total | 236,468 |

Source: JICA Study Team based on documents of Reconstruction Agency (in Japanese)
(2) Emergency Measures Performed by the Ministry of Foreign Affairs

The Ministry of Foreign Affairs implemented actions such as the coordination of the reception of emergency support and similar assistance from countries outside of Japan, communication with diplomatic corps and the foreign press, and the confirmation of the safety of foreign nationals. Also, contributions from bodies such as non-governmental organizations in various foreign countries were received by the Overseas Establishments Division (Figure 4.6).

Source: “Reception of Support from Countries Outside of Japan (in Japanese),” 2011, Ministry of Foreign Affairs (October 2011)

Figure 4.6  System of the Ministry of Foreign Affairs for the Reception of Support from Countries outside of Japan
Inquiries and offers of support were made by countries all over the world. Assistance came to Japan from 23 countries and regions in the form of the activities of emergency aid groups, medical treatment support teams, recovery support teams, United Nations Disaster Assessment and Coordination (UNDAC) teams, the UN Office for Coordination of Humanitarian Affairs (UNOCHA), the Food and Agriculture Organization (FAO), a team of experts from the International Atomic Energy Agency (IAEA), and the United Nations World Food Programme (WFP) (Figure 4.7).

Group C7 of the Extreme Disaster Management Headquarters acted as the liaison to these foreign groups, but it was difficult to coordinate all these groups due to the inability to understand the needs in the disaster afflicted areas.

Support from NGOs was handed over to Japan Platform (JPF), an NGO with experience performing coordination in countries outside of Japan. However, there were a variety of problems that arose in the reception of materials such as quarantine problems and delivery problems, which showed that the countermeasures made prior to the disaster were not sufficient.

Also, regarding the transmission of information to areas outside of Japan, to deal with problems such as insufficient and erroneous information regarding the disaster starting in the period immediately after the occurrence of the 3.11 Earthquake, (1) information was transmitted directly (such as through explanations, encouragements, and letters sent to individuals such as authorized individuals in the governments of partner countries and to experts), (2) transmissions designed for the media outside of Japan were made (such as through press conferences, press releases, and other submissions), and (3) transmissions were made by using information technology (such as websites and social media).

However, regarding the nuclear accident, the information from relevant nuclear power organizations outside of Japan was received as more credible than the information provided by the government within Japan. As such, it is necessary to rebuild trust, including the trust of the media, regarding the confusion related to the transmission of accurate information. Regarding this matter, there are hopes for efforts to be made to reduce harmful rumors in the future.
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Figure 4.7  Map of Sites where Rescue Teams from Foreign Countries, Regions, and International Organizations are Operating  (announced in 15th September 2011)

Source: Homepage of Ministry of Foreign Affairs as of October 2013; http://www.mofa.go.jp/j_info/visit/incidents/pdfs/map_operations.pdf#search='Map+of+Sites+where+Rescue+Teams+from+Foreign+Countries%2C+Regions%2C+and+International+Organizations+are+Operating'
Box 4.2  Reception of Support from Countries Outside of Japan

Regarding the reception of support from countries outside of Japan, regulations have been established on the basis of the lessons learned from the Great Hanshin-Awaji Earthquake. These regulations define the corresponding government office or agency and the reception procedure for each type of support. Regarding the 3.11 Earthquake, inquiries regarding the provision of support from countries outside of Japan had already been reported from the Ministry of Foreign Affairs as of the evening of March 11, 2011. At night on the same day, a group for the coordination of receiving support from countries outside of Japan (group C7) was established at the Extreme Disaster Management Headquarters located at the prime minister’s official residence. Starting from the next day, March 12, rescue teams began reaching Japan.

Group C7 implemented requests to the authorities in charge of the actual work (the Fire and Disaster Management Agency and the National Police Agency) for the reception of support and the coordination of the entry to Japan and transportation within Japan of these support groups. Also, group C7 performed matching with disaster afflicted local governments regarding the support of physical materials because it was difficult to carry the said materials along the supply and transport routes of the Extreme Disaster Management Headquarters. In fact, in many cases, requests were made to partner countries regarding transportation within Japan.

This disaster provided many lessons regarding how to deal with the reception of support from countries outside of Japan both in terms of support personnel and support of physical materials.

Firstly, regarding support personnel, immediately after the disaster it was extremely difficult to match the inquiries regarding the provision of support to the needs of disaster afflicted areas due to issues such as the vast scale of the disaster and stoppages in the means used to transfer information, which made it impossible to coordinate support according to the manual. In the future, it is necessary to assume that there will be difficulty in understanding the needs of disaster afflicted areas immediately after a disaster and to consider plans that will make it possible to smoothly dispatch to the disaster afflicted areas rescue teams from countries outside of Japan. Also, regarding the means of transport to disaster afflicted areas within Japan, keep in mind that the Self Defense Force and other authorities in charge of the actual work may not be capable of supplying means of transportation for relief work. Collaborate closely with the embassies in Tokyo of the countries that are supplying support in order to coordinate what sort of logistics can be supplied by the Japanese government. It is necessary to assume that in some cases, there will be a need to request that countries supplying support secure means of transportation by themselves. On the other hand, it is also necessary to support smooth activities by planning for the provision of conveniences to both rescue organizations within Japan and rescue teams from outside of Japan for the specification of emergency vehicles and distribution of fuel on a priority basis. Also, regarding coordination of communication with disaster afflicted areas, in the disaster, a staff member of the Ministry of Foreign Affairs participated with each team as a liaison officer to plan for smooth coordination of communications at the on-site level. However, there was confusion because the details of the work to be done by liaison officers were not clearly defined. Therefore, in the future, it is necessary to formulate the details of the work to be done by liaison officers in a format such as a manual. Moreover, the majority of support provided by the US Forces in Japan was initially coordinated directly and separately by the Self Defense Force and separate government offices and agencies. It is desirable to, in the future and in advance of disasters, establish a one-stop service body, that is, a framework for interacting with the US Forces in Japan.
Regarding support of physical materials, the first thing to note is that group C7 was forced to implement direct and separate matching with the needs of the disaster afflicted areas. Also, by the time the materials reached the disaster afflicted areas, it was often the case that the needs had been dealt with because of the time it took for the materials to reach their destinations. The reasons for this are as follows: in many cases, the specifications of the materials supplied from countries outside of Japan and of the materials distributed within Japan were different, which led to the Overseas Establishments Division being careful with the materials such as by tasting food before matching it to disaster afflicted areas. On top of this, it also took a long time to transport the materials within Japan. Furthermore, there were problems with the state of expenses sharing for transport within Japan. As a result, countries providing support paid for expenses. However, the government of Japan normally pays for expenses for transport to the hub airport when transporting emergency relief supplies to disaster afflicted countries. As such, there is a need to consider the state of expenses sharing should the same situation occur again in the future. Regarding the transport of certain materials within Japan, it was possible to receive support free of charge from United Nations organizations and from private businesses and to receive cooperation from Narita International Airport and from businesses for the storage of materials. As such, it is necessary to consider the use of such external resources in the future.

As shown above, a large number of problems and lessons remain, but, especially in terms of the receiving of support personnel, the importance of quick responses from the absolute earliest period after the occurrence of a disaster made clear just how incredibly important advance preparations such as securing systems and performing training are. Given this information, there are great hopes for the activities of staff such as JICA and other organizations that are versed in emergency relief work.

Source: JICA Study Team based on documents of Cabinet Office, Government of Japan (in Japanese)
(3) Actions of Government Offices and Agencies including the Cabinet Secretariat

The Cabinet Office, which is in charge of disaster prevention, made up the core of the Extreme Disaster Management Headquarters, and a summary of the actions performed by the government offices and agencies in the period immediately after the disaster and in the period of emergency measures is shown below (Table 4.9).

**Cabinet Secretariat**

The Cabinet Secretariat planned for the collaboration between NPOs, primarily through the development of the Volunteers Coordination Office. The Cabinet Secretariat also performed the first actions through the office such as establishing a system in April 2011 for conversations between citizens and the government.

**Ministry of Internal Affairs and Communications**

From March 11 to June 6, this ministry dispatched the emergency fire fighting and aid teams (with 30,000 individuals dispatched in total) of the administrative divisions nationwide. These teams participated in relief work and similar tasks together with local fire fighters, and as a result performed rescue and first-aid work for 5,064 people.

This ministry constructed the “Nationwide Evacuees’ Information System,” which is used to provide information such as the location of evacuees to the prefectures and municipalities from which the evacuees came and to provide information to evacuees.

**Ministry of Education, Culture, Sports, Science and Technology**

The Ministry of Education, Culture, Sports, Science and Technology understood the state of disaster afflicted areas in terms of items such as cultural properties and educational facilities, and then provided support for the recovery and restoration of education facilities. However, this ministry let down the citizens of Japan due to issues such as defects in its systems immediately after the disaster and the way in which the System for Prediction of Environmental Emergency Dose Information (SPEEDI) was made open to the public. The Ministry of Education, Culture, Sports, Science and Technology itself has made an official announcement that it will investigate its actions during recovery and reconstruction.²

**Ministry of Health, Labour and Welfare**

To urgently secure medical staff such as doctors and nurses, this ministry dispatched Disaster Medical Assistance Teams (DMAT) immediately after the disaster. The total number of team members that have been dispatched is 12,400 (among approximately 2,700 teams). However, there were mismatches between the emergency medical treatment that DMAT members expected to be providing and the medical treatment that ended up being required, such as the daily treatment of chronic medical conditions of elderly people.

According to the external evaluation report of the Ministry of Health, Labour and Welfare,³ in the Disaster Relief Act that the ministry has jurisdiction over, there are general standards and exceptional standards. The problem that has become clear is that the national government sent notifications to prefectural and municipal governments only by FAX, which is the same method used during normal times, and expected that to be sufficient, but it was difficult for local governments, which were in chaos, to adapt to these changing requirements.

**Ministry of Agriculture, Forestry and Fisheries**

The Ministry of Agriculture, Forestry and Fisheries established an Earthquake Disaster Management Headquarters, implemented quick quarantines and custom clearances for search and rescue dogs immediately after the occurrence of the earthquake, and used the fisheries research

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² “Investigation into Actions during Recovery and Reconstruction after the Great East Japan Earthquake (in Japanese)” (July 2012)
vessel to transport support materials for more than three weeks. The ministry also provided disaster-use emergency pumps for use in agricultural zones and farming facilities and greatly simplified the technical advice for the agricultural products of disaster afflicted agricultural zones and the assessments of disaster recovery and rehabilitation work.

Thereafter, the ministry was forced to implement countermeasures against harmful rumors related to the damage to agricultural products such as rice straw, beef, and wet-land rice due to the nuclear accident.

**Ministry of Economy, Trade and Industry**

The Ministry of Economy, Trade and Industry was the main ministry focused on measures related to the nuclear accident, but the actions of the Nuclear and Industrial Safety Agency both before and after the accident were sources of disappointment for the citizens of Japan. On the other hand, this ministry supported the distribution of items such as gasoline and daily goods, provided financial support for small- to medium-sized businesses, provided employment support, and took command of the activities to conserve power and the planned power outages. In June 2011, the Ministry of Economy, Trade and Industry presented a report from the government of Japan regarding an IAEA cabinet meeting relating to the safety of nuclear power. As a result of this report, the Nuclear and Industrial Safety Agency was abolished.

Thereafter, this ministry has aimed for the conclusion of the accident through the securing of the soundness of the Fukushima Daiichi Nuclear Power Plant. This ministry has taken on the responsibility for the processing of the accident over a previously unheard of length of time and for the nuclear decommissioning of the power plant.

**Ministry of Land, Infrastructure, Transport and Tourism**

The Ministry of Land, Infrastructure, Transport and Tourism worked to open transportation foundations—such as roads, harbors, and airports—over a wide area in order to enable emergency medical activities and the transport of relief supplies. As support for local governments during the initial stages after the disaster, this ministry dispatched liaisons (information communication staff sent to disaster management sites); secured means for communication and understood the support needs of local governments; dispatched, TEC-FORCE (self-sufficient contingents for emergency disaster management), teams consisting of individuals with specialized skills; and performed surveys and coordination.

Through the Ministry of Land, Infrastructure, Transport and Tourism, the Urban Renaissance Agency (UR), as requested by the governor of Iwate prefecture, started providing support in April 2011 to local governments of Iwate prefecture through means such as the placement of construction and civil engineering personnel in these local governments. In the same manner, some tens of personnel members have been placed in Miyagi prefecture and Fukushima prefecture for reconstruction support from June of the same year.

**Ministry of the Environment**

The total amount of debris produced by the earthquake and tsunami is 18,020,000 tons. In addition, the amount of sediment deposited by the tsunami is 9,560,000 tons. This means that there is a total amount of debris to be disposed of in the disaster afflicted areas of 27,580,000 tons.

Regarding the disposal of this large amount of debris, the Ministry of the Environment notified local governments of disposal guidelines for the disposal of private property such as vehicles and homes and for the handling of hazardous waste.

**Ministry of Defense**

The Ministry of Defense and the Self Defense Force formed an integrated task force, which included over 100,000 members—making it the largest such task force ever—and was the first of its

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4 At the Wide-area Regional Planning Conference for Tohoku in May 2012, the Tohoku Regional Development Bureau collected lessons learned into a document titled "Preparations for Wide-Area Major Disasters."
kind in response to a disaster. This task force contributed primarily to searching for missing persons and transporting relief supplies but also sprayed water on the Fukushima Daiichi Nuclear Power Plant and provided support in the evacuation of citizens from the surrounding area in response to the nuclear accident.

The US Forces in Japan carried out “Operation Tomodachi,” which included approximately 16,000 people and involved the use of aircraft carriers, to provide assistance in rescue operations performed in disaster afflicted areas and also to provide various forms of cooperation and support in response to the nuclear accident. Headquarters for the coordination between Japan and America were established, which enabled close collaboration between the Ministry of Defense, the Self Defense Force, and the US Forces, Japan.

The Ministry of Defense has organized the lessons learned from the 3.11 Earthquake and intends to use them to make preparations for future disasters.5

| Cabinet Secretariat | Coordination of the transportation of medical care over a wide area | Establishment in April 2011 of the Volunteers Coordination Office
| | | Creation of a variety of environments such as the elimination of highway tolls for disaster victims and volunteers and the encouragement of the authorization of post-secondary credits
| Cabinet Office | Coordination from the Extreme Disaster Management Headquarters of the supplying and transporting of materials
| | | Countermeasures for people having difficulties to reach home
| | | Estimating the cost of damages
| | | Operation of temporary shelters and implementation of gender equality measures
| National Police Agency | Rescue and relief work performed by emergency aid groups and riot police over a wide area | In June 2011, the dispatching of a maximum of approximately 4,800 individuals each day
| | | Activities such as inquests, identification of victims, transportation countermeasures, and the securing of safety and peace of mind for those in disaster afflicted areas
| Ministry of Internal Affairs and Communications | Understanding information related to damages to the public communications network | Construction of the “Nationwide Evacuees’ Information System” for providing location information of evacuees to the prefectures and municipalities from which the evacuees came
| | | Coordination of the dispatching of relief personnel to disaster afflicted local governments
| Fire and Disaster Management Agency | Providing of a response through the use of the F shift, in which all members fill various roles such as planning participation, information collection, information organization, and support over a wide area, at the Fire and Disaster Management Agency Disaster Management Headquarters | Dispatching of the emergency fire fighting and aid teams (approximately 30,000 individuals dispatched in total) of the administrative divisions nationwide

5 “Lessons Learned (Final Summary) from Activities in Response to the Great East Japan Earthquake (in Japanese)” (November 2012)
<table>
<thead>
<tr>
<th><strong>Ministry of Education, Culture, Sports, Science and Technology</strong></th>
<th><strong>Response immediately after the disaster</strong></th>
<th><strong>Emergency measures</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishment of the Extraordinary Disaster Management Headquarters along with the Nuclear Emergency Response Support Headquarters</td>
<td>Establishment of the Recovery and Reconstruction Management Headquarters one month after the disaster</td>
<td></td>
</tr>
<tr>
<td>Support for educational activities and the recovery of educational facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Portal Site to Help Affected Students’ Learning</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Ministry of Health, Labor and Welfare</strong></th>
<th><strong>Response immediately after the disaster</strong></th>
<th><strong>Emergency measures</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dispatching of Disaster Medical Assistance Teams (DMAT) of a total of 1,900 individuals (in approximately 380 teams)</td>
<td>Dispatching of a total of 12,400 people (approximately 2,700 teams) in DMAT</td>
<td></td>
</tr>
<tr>
<td>Notifying local governments of flexible applications of the Disaster Relief Act</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distribution to prefectures of donations from organizations such as the Japanese Red Cross Society and the Central Community Chest of Japan</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Ministry of Agriculture, Forestry and Fisheries</strong></th>
<th><strong>Response immediately after the disaster</strong></th>
<th><strong>Emergency measures</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishment of the Earthquake Disaster Management Headquarters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supporting emergency measures for the supplying of food to disaster afflicted areas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Providing disaster-use emergency pumps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implementation of quick quarantines and custom clearances for search and rescue dogs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Providing technical advice for the agricultural products of disaster afflicted agricultural zones</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implementation of countermeasures against the damage and harmful rumors related to agricultural products such as rice straw, beef, and wet-land rice due to the nuclear accident</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Ministry of Economy, Trade and Industry</strong></th>
<th><strong>Response immediately after the disaster</strong></th>
<th><strong>Emergency measures</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Activities at the Nuclear Emergency Response Headquarters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supporting of the distribution of items such as gasoline and daily goods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Providing financial support for small- to medium-sized businesses and providing employment support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Livelihood support for disaster victims of the nuclear accident</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Countermeasures against harmful rumors</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Ministry of Land, Infrastructure, Transport and Tourism</strong></th>
<th><strong>Response immediately after the disaster</strong></th>
<th><strong>Emergency measures</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening of transportation foundations over a wide area (Operation Comb)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dispatching of liaisons (information communication staff sent to disaster management sites) and TEC-FORCE (self-sufficient contingents for emergency disaster management)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implementing the quick recovery of national roads, harbors, rivers, and railways</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aerial photographs of disaster afflicted areas and the creation of maps</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Ministry of the Environment</strong></th>
<th><strong>Response immediately after the disaster</strong></th>
<th><strong>Emergency measures</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishment of Local Countermeasures Headquarters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notifying local governments of disposal guidelines for the disposal of private property such as vehicles and homes and for the handling of hazardous waste</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Ministry of Defense</strong></th>
<th><strong>Response immediately after the disaster</strong></th>
<th><strong>Emergency measures</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Forming an integrated task force, which included over 100,000 members—making it the largest such task force ever—and was the first of its kind in response to a disaster</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Searching for missing persons and transporting relief supplies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contributing to the response to the nuclear accident by spraying water on the Fukushima Daiichi Nuclear Power Plant, decontaminating radioactive substances, monitoring of items such as the airborne radiation dose, and providing support in the evacuation of citizens from the surrounding area</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: JICA Study Team based on documents from each government office and agency (in Japanese)
4.1.3 Grave State of Damages to and Responses from Local Governments

(1) State of the Three Main Prefectures in the Period of Emergency Measures

Damages from the disaster stretched from Aomori prefecture to Chiba prefecture, but this section summarizes the general situation of the damages to Iwate prefecture, Miyagi prefecture, and Fukushima prefecture, in which the damages were especially great, (Table 4.10) as well as the work performed during the period of emergency measures.

Table 4.10  State of Damages to and Characteristics of the Three Main Prefectures

<table>
<thead>
<tr>
<th></th>
<th>Iwate prefecture</th>
<th>Miyagi prefecture</th>
<th>Fukushima prefecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastal land form</td>
<td>Ria coast</td>
<td>Ria coast in the northern part of the prefecture, the Sendai plain continues from the southern part of Ishinomaki</td>
<td>Plains in the northern part of the prefecture, the southern part is a combination of plains and hills</td>
</tr>
<tr>
<td>Population</td>
<td>Decreasing population with a high aging society rate</td>
<td>Increasing population in Sendai and the surrounding cities and towns</td>
<td>Decreasing population</td>
</tr>
<tr>
<td>Damages</td>
<td>Washing away of entire communities and the causing of land subsidence due to the tsunami</td>
<td>Flooding of fishing harbors, agricultural zones, and homes due to the tsunami</td>
<td>In addition to flooding due to the tsunami, contamination of soil and ocean water due to radioactive substances</td>
</tr>
<tr>
<td>Primary industries</td>
<td>Washing away of all fishing boats and washing away of or damage to the majority of marine product processing facilities</td>
<td>Washing away of all fishing boats and catastrophic damage to more than half of all marine product processing facilities</td>
<td>Stoppage of all fishing work</td>
</tr>
<tr>
<td>Work can be seen towards the rebuilding of aquaculture</td>
<td>Flooding of rice paddy fields over a wide range</td>
<td>Harmful rumors concerning agricultural products</td>
<td></td>
</tr>
</tbody>
</table>

Source: JICA Study Team based on information such as that gathered from the websites of each prefecture (in Japanese)

1) State of Damages to Iwate Prefecture

Iwate prefecture has a ria coast and there were many locations in which the tsunami reached a height in excess of 15 m. Excluding those communities that saw the relocation of houses to upland areas due to past tsunamis, all the coastal fishing villages were devastated. As such, the majority of fishing boats and marine product processing facilities were also devastated.

The tidal walls (dikes) in Taro-cho of Miyako city, which had a height of 10 m and were called “The Great Wall of China,” were also destroyed, which led to the devastation of the community within these walls (Figure 4.8).

The tsunami penetrated widely across the town areas of Kamaishi and Ofunato, causing great damage to business districts and to coastal marine product processing facilities. In Rikuzentakata city, the damage was so great that there are not even any remains of the city center such as city hall.
Figure 4.8  State of Damages to Iwate Prefecture

2) State of Damages to Miyagi Prefecture

Among the three prefectures, the scale of damage was largest in Miyagi prefecture, which has a ria coast in the northern part of the prefecture. In Kesennuma city, there was great damage to marine product processing facilities due to land subsidence, and in communities such as Minamisanriku-cho, damages were suffered right to the very foundations of the communities. South of Ishinomaki city lies the Sendai plain, in which the tsunami progressed as far as 5 km inland, bringing a great deal of damage to coastal agricultural zones, farming communities, and new residential zones (Figure 4.9).
The Study of Reconstruction Processes from Large-Scale Disasters

Comparison of Flooding Range of Tsunami Caused by the 2011 off the Pacific Coast of Tohoku Earthquake and that Specified by Tsunami Hazard Map of Sendai City,  

Comparison of Flooding Range of Tsunami Caused by the 2011 off the Pacific Coast of Tohoku Earthquake and that Specified by Tsunami Hazard Map of Ishinomaki City,  

Flooding range of tsunami caused by the 2011 of the Pacific coast of Tohoku Earthquake (Geographical Survey Institute)  

Sendai City  

Tsunami Hazard Map  

Ishinomaki City  

Tsunami Hazard Map  

Source: “White Paper on Science and Technology 2012 - Toward a Robust and Resilient Society - Lessons from the Great East Japan Earthquake (GEJE)-,” Minister of Education, Culture, Sports, Science and Technology (June 2012)

Figure 4.9 Predicted Flooding Areas in Tsunami Hazard Maps and Actual Flooded Areas

3) State of Damages to Fukushima Prefecture (for details, see chapter 6)

It is obvious that the coastal area of Fukushima prefecture suffered the same damages from the tsunami as the southern part of Miyagi prefecture. Due to the earthquake, tsunami, and nuclear accident, in the area of Futaba-gun, in which is located the Fukushima Daiichi Nuclear Power Plant of the Tokyo Electric Power Company (TEPCO), the town and village offices were forced to evacuate due to evacuation orders from the nine local governments and established temporary offices in adjacent municipalities and in Saitama prefecture.

The evacuation order due to the nuclear accident originally indicated an area of 5 km around the power plant, which was then changed to 20 km, and finally to 30 km to the northeast of the power plant. Due to the evacuation, a total of 111,000 people were ordered to leave their homes. This signaled the start of a long period of living in evacuation shelters for, including independent evacuees, approximately 160,000 people.

Some people, primarily elderly people, have died as a result of various changes to their environments due to the evacuation, which has created the new problem of “deaths related to the disaster.”
4) The State of Each Prefecture during the Period of Emergency Measures

It was assumed that immediately after the disaster, each prefecture would establish Disaster Management Headquarters, endeavor to perform emergency medical activities and understand the state of damages, and perform emergency countermeasures such as providing of support and food for temporary shelters. However, because damages were so great, it cannot be said that all of these emergency measures were sufficient.

It is said that timely and appropriate information management could not be performed for a variety of reasons including the extremely large amount of information that arrived at the prefectural offices and that should have been transmitted, the inability or difficulty in using all means of communication from telephones and email to radio communications for disaster prevention and administration and information systems for integrated disaster prevention, and problems in communicating with and collecting information from relevant organizations.

In the Case of the Miyagi Prefectural Office

Regarding the headquarters system, the coordination of work among different departments was insufficient, which led to inefficient placements of personnel during the participation of the staff in the enormous amounts of emergency response work such as the supplying of fuel and other types of work that did not have advance plans. In addition, an inspection has shown that the prefectural office had a great number of problems (Table 4.11) such as providing insufficient support to municipalities and the inability to smoothly build a system for sharing external support.

Table 4.11 Problems during the Period of Emergency Measures after the 3.11 Earthquake
<from an Inspection Carried out by Miyagi Prefecture>

<table>
<thead>
<tr>
<th>Investigation subdivision</th>
<th>Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>The role of the prefecture in the 3.11 Earthquake</td>
<td>The advance countermeasures put in place due to experiences from past earthquakes were insufficient for the damages over an extremely wide area caused by the 3.11 Earthquake.</td>
</tr>
<tr>
<td>Understanding the state of disaster afflicted municipalities</td>
<td>It was difficult to understand the state of disaster afflicted municipalities from the prefectural office.</td>
</tr>
<tr>
<td>Information processing</td>
<td>An extremely large amount of information arrived at the prefectural office. Also, dealing with information such as unconfirmed information led to problems in the actual work within and outside the executive office of headquarters.</td>
</tr>
<tr>
<td>Information management</td>
<td>It was not possible to fully make use of the patterns for information collection and communication that were prepared in advance, which led to insufficiencies in required information for certain types of work. It was not possible to process the information pertaining to the state with which issues were being dealt, that is, the way that each representative department within the prefectural office was dealing with information thereafter, such as requests received from municipalities.</td>
</tr>
<tr>
<td>Public relations</td>
<td>There were times when the attitude of proactively engaging in public relations was not sufficient within the departments of the prefectural office.</td>
</tr>
<tr>
<td>General remarks</td>
<td>There was an enormous amount of emergency countermeasure work in the prefecture and among this work, there arose new items that did not have previously made detailed plans, such as the supplying of fuel.</td>
</tr>
<tr>
<td>Strengthening of the headquarters system</td>
<td>The relief personnel were frequently replaced and handover period was not sufficient, which made it difficult to smoothly continue work. The control of the great number of relief personnel members by the personnel of the crisis countermeasure department was not performed in a sufficient manner.</td>
</tr>
<tr>
<td>Executive office of headquarters</td>
<td>Although multiple departments were handling similar work, joint sessions for the coordination of some of the work between these multiple departments were not held continuously.</td>
</tr>
</tbody>
</table>
## The Study of Reconstruction Processes from Large-Scale Disasters

<table>
<thead>
<tr>
<th>Investigation subdivision</th>
<th>Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local branches</td>
<td>At local branches, it was difficult for staff members to come to work due to gasoline shortages and damages to public transportation. There were some staff members who responded to the disaster from the prefectural office or the local institution closest to their home. It was impossible for local branches to get a general outline of the state of damages to the entire prefecture, which made it difficult for them to make wide-range decisions such as where to prioritize the placement of personnel. Not only immediately after the disaster but regarding the placement of personnel over a long period of time, there were two cases for the collection of information and performing of support activities by bodies such as local branches: the case in which they moved within the framework of the local branch of the Disaster Management Headquarters and the case in which they moved according to instructions from the appropriate department of the prefectural office. As such, this was a dangerous situation that invited the duplication of information transmissions and confusion in the chain of command for giving instructions. Also, the size of the area that a given local branch has jurisdiction over and the placement of structures such as offices varies greatly from one local branch to another.</td>
</tr>
</tbody>
</table>

| Strengthening advance countermeasure s such as disaster response bases and facilities | Improving the environment in which staff perform their duties | There were also victims among the prefectural staff members who made the initial response to the disaster. Sufficient thought has not been given to the environments in which duties are performed by the staff of local governments and other organizations that respond to disasters. |
| Strengthening of systems for the storing and providing of items such as equipment | The securing of means of communication by the prefectural office, municipalities, local branches, and local organizations was a problem. Immediately after the occurrence of the disaster, it was not possible to communicate between these organizations to make arrangements for mutual aid. Regarding the supplying of fuel, agreements were made with the involved business persons, but advance coordination and training with these relevant organizations were not sufficient. |

| Collaboration with external organizations | Collaboration with organizations providing aid on agreement | The majority of support in the form of supplying materials and providing personnel started with contacting organizations with which agreements for mutual aid existed. This made clear the importance of forming these agreements for mutual aid in response to disasters. Among such agreements, agreements regarding the supply of materials (food, drink, medicine, daily necessities, and funeral supplies) and regarding the transport of materials were indispensable. |
| Collaboration with local governments providing aid | The importance of support based on agreements between local governments was clear. Because there were multiple routes for requesting and accepting dispatches of personnel, it was difficult to summarize the actual work of the short-term dispatch staff of the local governments. |

Source: “The 3.11 Earthquake, Miyagi Prefecture’s Six-Month Response to the Disaster and Corresponding Investigation into the Said Response (Summary Version) (in Japanese),” 2012, Miyagi prefecture (March 2012)
(2) State of Municipalities during the Period of Emergency Measures

On the basis of the “regional emergency plan” decided on in advance of the disaster, municipalities established Disaster Management Headquarters immediately after the disaster and began responding to the disaster by methods such as collecting information and establishing temporary shelters.

The majority of local governments in coastal areas have experience in suffering damage from tsunamis caused by major earthquakes such as the 1896 Sanriku earthquake, the 1933 Sanriku earthquake, and earthquakes off the coast of Chile. From this experience, they had created in advance tsunami hazard maps that provided estimates of the areas that were expected to be flooded and they had performed evacuation drills in which evacuation locations were determined.

The flooding from this major earthquake and tsunami exceeded the expected hazard maps of Iwate, Miyagi, and Fukushima prefectures. The disaster claimed the lives of a great number of people who were members of the staff (executive or otherwise) of local governments, members of fire brigades, and police officers, for example, the mayor of Otsuchi-cho of Iwate prefecture is among those missing from the tsunami.

Also, the main local government offices (city or town hall) of 13 municipalities were completely destroyed by the earthquake and tsunami, which led to a large number of local governments being unable to thereafter sufficiently carry out their obligations such as the collection of information relating to damages. There were a variety of communities such as isolated communities that were provided with food by organizations such as the Self Defense Force and the US Forces, Japan who saw the SOS indications made by the communities; communities that could receive eager support activities from NPOs and other similar organizations; and communities that helped each other by way of mutual aid.

Actual Example of a Local Government during the Period of Emergency Measures, the Case of Shinchi town in Fukushima Prefecture

Here is the case of Shinchi town in Fukushima prefecture for information on just what activities were performed by a local government during the period of emergency measures (Table 4.12). The local government performed the following activities and brought to an end their period of emergency measures in approximately 3 months: collecting information related to damages; search activities (Self Defense Force, police, and fire brigades); securing water, food, and fuel; establishing temporary shelters; distributing meals; opening and continuation of temporary clinics; securing sites for the construction of temporary housing; understanding the needs of citizens; shifting to the construction of temporary housing; establishing a disaster volunteer center; and closing temporary shelters.

<table>
<thead>
<tr>
<th>Date and Time</th>
<th>Event</th>
<th>Response by Local Government</th>
<th>Number of Evacuees</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 11</td>
<td>14:46</td>
<td>Occurrence of an M9.0 earthquake</td>
<td>Maximum rating of 6-upper in Shinchi town according to the Japan Meteorological Agency seismic intensity scale</td>
</tr>
<tr>
<td></td>
<td>14:49</td>
<td>Official announcement of a major tsunami warning</td>
<td></td>
</tr>
</tbody>
</table>
|               | 14:50 | Establishment of Disaster Management Headquarters                                            | - Issuance of evacuation order for the entire coastal area  
                                                           - Notification of evacuation made by way of the town’s radio communications for disaster prevention  
                                                           - Establishment of temporary shelters and reception of evacuees |                     |
## The Study of Reconstruction Processes from Large-Scale Disasters

<table>
<thead>
<tr>
<th>Date and Time</th>
<th>Event</th>
<th>Response by Local Government</th>
<th>Number of Evacuees</th>
</tr>
</thead>
<tbody>
<tr>
<td>15:40</td>
<td>Arrival of tsunami</td>
<td>- Collection of information related to the state of the tsunami</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Water outages (until April 15) and power outages in 2/3 of the town (until April 19)</td>
<td>- Distribution of meals and requesting of a dispatch of Self Defense Force personnel in response to the disaster</td>
<td></td>
</tr>
<tr>
<td>March 12</td>
<td>- Search and rescue activities</td>
<td>- Temporary shelter and morgue support</td>
<td>1,193</td>
</tr>
<tr>
<td></td>
<td>- Hydrogen explosion at reactor number 1 at the nuclear power plant</td>
<td>- Requests made to the prefecture for the establishment of temporary housing</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Requests made for and reception of support materials</td>
<td></td>
</tr>
<tr>
<td>March 13</td>
<td>Requests made to the prefecture for fuel and other support materials</td>
<td></td>
<td></td>
</tr>
<tr>
<td>March 14</td>
<td>Hydrogen explosion at reactor number 3 at the nuclear power plant</td>
<td>Obtaining of consent from landowners of sites planned for the construction of temporary housing</td>
<td></td>
</tr>
<tr>
<td>March 15</td>
<td></td>
<td>- Organization of 5 temporary shelter locations</td>
<td>1,884</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Start of classroom lectures for workers regarding the radiation problem (held 7 times)</td>
<td></td>
</tr>
<tr>
<td>March 18</td>
<td></td>
<td>Implementation of survey regarding desires of citizens to move into temporary housing</td>
<td>1,529</td>
</tr>
<tr>
<td>1 month after the disaster</td>
<td></td>
<td>- Establishment of a 24-hour temporary clinic within the town office (until May 31)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Implementation of the first effort to move citizens into temporary housing on April 25 (128 individuals among 38 households)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Establishment of a volunteer center (until September 30)</td>
<td>613</td>
</tr>
<tr>
<td>3 months after the disaster</td>
<td>Withdrawal of the Self Defense Force (June 13)</td>
<td>- Completion of 6 locations of temporary housing (1,167 individuals among 370 households)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Closing of temporary shelters (June 19)</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: JICA Study Team based on documents from the report of Mr. Tokita, the head of the Shinchi town planning and promotions department, during the special lecture “Major Disasters and their Management by Administrative Bodies (in Japanese)” held by Meiji University on February 26, 2012.
4.2 The Period of Recovery Activities, from Temporary Shelters to Temporary Homes (April 2011 to December 2011)

The temporary shelters, in which individuals such as those who lost their homes would spend a short period living as evacuees, were established starting on the day of the disaster and signaled the start of the inconvenient life for many people as evacuees. In this stage, together with the recovery of livelihood infrastructure such as electricity and gas, evacuees escape their lives in evacuation shelters and move into temporary housing in which they can become self-sufficient in a variety of ways such as food and bathing. As of December 2011, the majority of temporary shelters had been closed.

4.2.1 Temporary Shelters

(1) Establishing and Closing Temporary Shelters

Schools, gymnasiums, and other public facilities were provided for use as temporary shelters. In 1 week after the disaster, 2,182 locations had been established, but 4 months later, the number of temporary shelters was still 536. There were delays in the construction of and moving of citizens into temporary housing, which was different than the case of the Mid. Niigata Prefecture Earthquake in which all temporary housing had been provided as of 3 months after the disaster.

In Iwate prefecture, the majority of disaster victims had moved into temporary housing and similar facilities by November of the same year, and the temporary shelters were closed. By December, the number of temporary shelters in Miyagi prefecture and Fukushima prefecture had also dropped to almost zero.

In Fukushima prefecture, some evacuees had to move repeatedly to different temporary shelters within the prefecture due to the nuclear accident. At one time, there were 2,000 evacuees amassing in a large-scale event facility in Koriyama city. Also, as of the time of this writing in September 2013, there are still temporary shelters open in Saitama prefecture for evacuees from the nuclear accident. Approximately 100 people are continuing their lives as evacuees.

(2) Operating Temporary Shelters

Temporary shelters are established by local governments on the basis of “regional emergency plans,” but, due to the state of damages, there were cases of temporary shelters holding more than 1,000 people and cases of citizens themselves opening their own temporary shelters. Like the case of the JICA Nihonmatsu office, there were more than a few instances of temporary shelters being opened in unconventional places if deemed necessary by the situation. Also, in Sendai city, there were cases of inappropriate responses to the disaster such as support not being provided to temporary shelters that were not designated as official temporary shelters. There were also few actual instances of temporary shelters providing the social welfare required by people such as disabled people being opened.

When a public facility is used, primarily staff members of the local government are positioned in the temporary shelter to operate it. In this operation, there are a variety of problems such as the assignment of rooms, the supplying of food and the problem of ensuring that people do not receive too much or too little food, rules for using toilets, the securing of privacy, and the providing of individual consultations. Therefore, difficulty arises when training for operation rules is not performed. In this case, especially women, elderly people, and disabled people will feel that a harsh time living in the evacuation shelter is being forced on them.

Through past disasters, we have experienced that this situation was improved by using not only members of the administrative body to operate temporary shelters but also volunteers and other people who independently decided to help with operation. Although in our experience time spent living in evacuation shelters is normally calm, there are also a number of items that should be adjusted.
Box 4.3 Operation of Evacuation Center Considering Various Needs

JICA Nihonmatsu is a training center for Japan Overseas Cooperation Volunteers (JOCV) to prepare for their work in developing countries. Upon a request from Fukushima Prefecture, it served as an evacuation shelter from March 14 and provided support for evacuees.

The shelter received 450 evacuees at the peak time and faced various issues due to accommodating various people all together. JICA held participatory workshops to cope with these difficulties and improve living environment in the shelter. JICA also organized necessary support especially for those who required special care including the elderly and young mothers, through review of all evacuees and needs mapping. Alumni of JOCV, who have excellent experience in coordination and communication in developing countries, succeeded in maintaining the evacuees’ physical and mental health. For example, exercise classes for the elderly to mitigate unhealthy conditions, supplementary classes for students lacking proper study places, and day-care services for kids to allow their parents to participate in recovery activities. Gender-specific assistance was also provided based on the facilitation by women’s leaders.

(See also Section 9.1 about JICA’s efforts in the 3.11 Earthquake)

4.2.2 State of Reconstruction of Livelihood Infrastructure and Industry

(1) Recovery of Livelihood Infrastructure Facilities

Recovery work on the damaged livelihood infrastructure (lifelines) proceeded quickly after the disaster. Electricity and city gas were recovered to more than 90% of capacity in approximately 2 months and LP gas was recovered to more than 90% of capacity in approximately 4 months. The remaining 10% represents areas that are difficult to perform recovery work in such areas those in which homes were washed away and the evacuation zone around the nuclear power plant (Table 4.13).

Transportation infrastructure such as roads, railways, and airports were also recovered comparatively early after the disaster. The emergency recovery work on highways and national roads administered by the national government was completed in approximately 1 month. The full recovery work on national roads administered by the national government had been completed by August. Regarding railways, approximately 90% of all railways were operating as of August. The complete recovery of Sendai airport took approximately 6.5 months, but the airport started partial operations of incoming and outgoing flights approximately 1 month after it suffered damage in the disaster.

80% of the full recovery work of damaged river management facilities has also been completed. On the other hand, coastal areas and harbors are still in the period of emergency measures.

Disposal of Debris and Other Activities

The total amount of debris in coastal municipalities was 23,100,000 tons. Among this amount, as of August 2011, 51% had been removed to temporary dump sites.
The disposal of debris from disaster afflicted areas was not proceeding as planned, so the Ministry of the Environment showed to local governments the “Master Plan for the Final Disposal of Disaster Related Waste from the 3.11 Earthquake” in May 2011. Furthermore, to promote wide-area disposal across all of Japan, the national government implemented in August of the same year the “Act on Special Measures for the Disposal of Debris Caused by the 3.11 Earthquake,” which makes it possible to become an agent of the work of local governments, and in this way proceeded with the disposal of debris. The cost of the final disposal of disaster related waste will all be the responsibility of the national treasury. Municipalities were given the ability to select from various methods of debris disposal such as the direct control of the national government, consignment to the prefecture, and wide-area disposal, so the disposal of debris, which was causing many people to worry, proceeded slowly but surely. The total estimated amount of debris was revised drastically down in February 2013 to 16,280,000 tons, which is an amount that can be disposed of by the target of March 2014.

However, in response to the nuclear accident, from August 2011, decontamination measures have been performed on the basis of the Act on Special Measures Concerning the Handling of Radioactive Pollution, but it has been difficult to build consensus regarding issues such as the establishment of temporary dump sites, so work is falling behind.

<table>
<thead>
<tr>
<th>Item</th>
<th>State of damages at the time of the disaster</th>
<th>State of recovery</th>
<th>Time required for recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roads</td>
<td>15 highways, 69 sections of national roads administered by the national government, 102 sections of national roads administered by prefectural and municipal governments, and 540 sections of other prefectural roads were shut down due to damages.</td>
<td>Highways: Approximately 0.5 month for emergency recovery work</td>
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<td></td>
<td></td>
<td>The emergency recovery work on highways was completed by April 1.</td>
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<tr>
<td></td>
<td></td>
<td>National roads administered by the national government: Approximately 1 month for emergency recovery work and approximately 4.5 months for full recovery work</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The emergency recovery work on national roads administered by the national government was completed by April 10.</td>
<td></td>
</tr>
<tr>
<td>Railways</td>
<td>Immediately after the disaster, operation was stopped for 42 companies and their 177 routes, including 6 Shinkansen routes (the Tohoku, Akita, Yamagata, Joetsu, Nagano, and Tokaido routes).</td>
<td>Shinkansen: Approximately 1.5 months</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>The Tohoku, Akita, and Yamagata Shinkansen routes had been recovered 100%. The Tohoku shinkansen (Sendai to Ichinoseki) restarted operation on April 29. All lines had reopened.</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Railway line extensions: 93% of total 100% of the Tohoku line routes had been recovered. 84% of the Joban line routes had been recovered.</td>
<td></td>
</tr>
<tr>
<td>Airports</td>
<td>The tsunami made Sendai Airport unusable.</td>
<td>Approximately 6.5 months</td>
<td>From April 13, operations of incoming and outgoing flights were restarted for commercial flights, and from June 23, the airport restarted accepting international charter flights within the limits of available facilities. On July 25, domestic flights returned to their regular schedules, and the airport terminal buildings were completely recovered by September 25.</td>
</tr>
<tr>
<td>Harbors</td>
<td>Immediately after the disaster, 14 harbors used as bases for international shipping, Hachinohe harbor, Kuji harbor, and other major harbors suffered damages and became unusable.</td>
<td>53%</td>
<td>Among the public wharves of the 21 harbors from Hachinohe harbor to Kashima harbor, there are 373 berths but 174 of these berths could not be used. In all harbors, some of the wharves could be used. Reconstruction work was required for the majority of the facilities that could be used.</td>
</tr>
</tbody>
</table>
### The Study of Reconstruction Processes from Large-Scale Disasters

<table>
<thead>
<tr>
<th>Item</th>
<th>State of damages at the time of the disaster</th>
<th>State of recovery</th>
<th>Time required for recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rivers</td>
<td>Damage such as dike collapses occurred in 2,115 locations in rivers administered by the national government.</td>
<td>82% Among the 2,115 damaged river management facilities, full recovery work had been completed for 1,726 facilities.</td>
<td></td>
</tr>
<tr>
<td>Coasts</td>
<td>Among the approximately 300 km of coastal dikes in Iwate prefecture, Miyagi prefecture, and Fukushima prefecture, approximately 190 km were completely or partially destroyed.</td>
<td>48% Among the 51.1 km of sections for which countermeasures had been deemed a priority due to the consideration of the importance of hinterland, emergency countermeasures had been implemented for 24.6 km.</td>
<td></td>
</tr>
<tr>
<td>Electricity</td>
<td>The number of homes in the 3 prefectures of Tohoku without power was approximately 2,580,000 (on March 11). Approximately 4,660,000 homes under the jurisdiction of the Tohoku Electric Power Company and approximately 4,050,000 homes under the jurisdiction of the Tokyo Electric Power Company (TEPCO) were without power (on March 11).</td>
<td>By June 18, all the power outages in areas that Tohoku Electric Power Company was capable of starting recovery work in had been recovered. It was difficult to perform recovery work for the remaining 106,000 homes for reasons such as the supply of power for the home was on hold because, for example, the owner of the home was not present; the home was in an area in which homes were washed away; and the home was in the evacuation zone around the nuclear power plant.</td>
<td>Approximately 2 months</td>
</tr>
<tr>
<td>Gas</td>
<td>The number of homes in the 3 prefectures of Tohoku to which the supply of city gas was stopped was approximately 420,000 (on March 11). The number of homes in the 3 prefectures of Tohoku to which the supply of LP gas was stopped was approximately 1,660,000 (on March 11).</td>
<td>City gas: Approximately 1.5 months By May 3, the supply of gas to approximately 360,000 homes had been recovered. The remaining approximately 60,000 homes were in areas such as those in which homes were washed away, so it was difficult to perform work for these homes. LP gas: Approximately 4 months By May 14, it had become possible to supply gas to approximately 1,620,000 homes. The remaining approximately 40,000 homes were in areas such as those in which homes were washed away, so it was difficult to perform work for these homes.</td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>Water outages occurred to water works projects and similar activities in 19 prefectures. The maximum number of homes to which water outages occurred, which was understood after the disaster, was 1,800,000 (at 17:00 on March 16).</td>
<td>98% The approximately 46,000 homes that still had water outages were all in areas such as those in which homes were washed away. The evacuation zone around the nuclear power plant and similar areas were excluded from this discussion.</td>
<td></td>
</tr>
<tr>
<td>Drainage systems</td>
<td>There were 120 drainage treatment plants that were damaged in the disaster. 550 km of drainage pipes were damaged.</td>
<td>79% The 95 inland treatment plants that were not damaged by the tsunami were recovered by June. Operations were suspended at the 16 treatment plants in the coastal areas of the three Tohoku prefectures. However, emergency treatment had been started at 13 of these locations.</td>
<td></td>
</tr>
<tr>
<td>Agricultural zones and similar areas</td>
<td>The area of agricultural zones damaged by the tsunami in Aomori, Iwate, Miyagi, Fukushima, Ibaraki, and Chiba prefectures is approximately 22,000 hectares.</td>
<td>6% The area of agricultural zones in which operations had been performed to remove salt elements and in which farming could be started again was 1,300 hectares. The goal is to reopen approximately 6,400 hectares in the 2014 fiscal year.</td>
<td></td>
</tr>
</tbody>
</table>

Source: JICA Study Team based on documents (in Japanese) from the 18th Extreme Disaster Management Headquarters for the Earthquake off the Pacific Coast of Tohoku (August 26, 2011)
(2) Reconstruction of Industry and Employment

**Recovery of Farming and Fishing**

In August 2011, the Ministry of Agriculture, Forestry and Fisheries made an official announcement of the “Reconstruction Master Plan for Agriculture and Farming Villages” to aim for the restarting of most farming in 3 years. Each prefecture is planning the recovery of its agricultural zones on the basis of this plan and is working to recover agricultural zones while confirming the intentions of agricultural workers in the cities and towns. However, there are a large number of problems such as the reduction in desire of elderly agricultural workers to return to agricultural work and new countermeasures for radioactive substances that affix to fruit trees and other items in agricultural zones.

Also, in June 2011, the Fisheries Agency made an official announcement of the “Master Plan for Reconstruction of Fisheries” in which were indicated plans for the maintenance of heavily damaged items such as fishing harbors, fishing boats, and shared facilities and for cultivation of marine life. Thereafter, means such as the third revised budget have been used to bring in courteous subsidized projects such as support projects for the reconstruction of fishing and projects for the strengthening of disaster prevention in fishing village communities (by a cooperative group of fisheries).

According to a survey of the Fisheries Agency, there are 418 communities with inland fishing harbors in Iwate prefecture, Miyagi prefecture, and Fukushima prefecture, and the disaster caused dead and missing persons in 259 of these communities and damage such that 80% or more of the houses were completely destroyed in 207 of these communities. From this information, a highly detailed response is necessary for the reconstruction of the said communities.

**Restoration of Manufacturing Industries**

Regarding the manufacturing industries in disaster afflicted areas, if we look at the trends in the indices of industrial production, we can see that there was a massive drop of approximately 30% immediately after the disaster and that 1 year later the indices were steadily restored to roughly the same level as that prior to the disaster (Figure 4.10). Examining the situation for each prefecture separately, we see that immediately after the disaster the indices experienced a massive drop for each prefecture. The drop was especially severe for Miyagi prefecture in which the tsunami damage was great. Also, it took time to see a recovery, but in each prefecture the indices did recover to some extent after approximately 3 months and since then have shown a trend mostly toward recovery (Figure 4.10).

![Figure 4.10](image)

Note: The figure in 2005 is defined as 100
Source: “Current Status and Path toward Reconstruction,” 2013, Reconstruction Agency (May 2013)
**Temporary Stores and Temporary Workspaces**

As the first project immediately after the disaster, on April 11, 2011, the Small and Medium Enterprise Agency started the “Maintenance Project of Temporary Plants and Stores” in which local governments secure sites for the construction of temporary stores and temporary plants and then loan these facilities to disaster afflicted business people. At the initial stages, over 200 workplaces were established through this new system (by the end of February 2013, 520 locations had been realized in 49 municipalities in 6 prefectures).

The temporary shopping malls constructed in 49 locations in disaster afflicted areas had a large leadership effect in energizing the citizens as pioneers in the reconstruction of the areas. Also, a variety of temporary workplaces such as temporary warehouses and temporary hotels were created to match local situations. Nonetheless, there have been cases in which this project failed to adequately meet local needs. Examples of such cases include governments not approving of changes to types of businesses and it taking half a year from an application to the program and the actual realization of the requested temporary building.

**Subsidiary Aid for Groups**

The Ministry of Economy, Trade and Industry (1) established new credit lines and credit guarantee frameworks as support for the financing of supply chains and small- to medium-sized businesses that suffered major damage to their businesses as a result of the earthquake and tsunami and (2), in order to support the recovery and maintenance of business facilities, established the “Restoration and Maintenance Subsidy Project for Facilities of Small and Medium Enterprise Groups” as a courteous support system—in which the national government provides 1/2 the support and prefectural governments provide 1/4 the support—from the revised budget for the 2011 fiscal year. This subsidy aid project for groups has, as of May 2013, been applied to a total of 525 groups to provide a total of 408.7 billion yen in aid.

**Employment Countermeasures**

To promote job assistance and job creation for disaster victims from the 3.11 Earthquake, the Ministry of Health, Labour and Welfare arranged phase 1 of the projects of the “Japan as One” Work Council on April 5, 2011, phase 2 on April 27, and phase 3 on October 25.

From a total budget of 4.2966 trillion yen, the result of the job creation of phase 2—which was mainly focused on concrete job creation related to activities such as recovery work, support to assist disaster victims in finding new employment, and the retention of employment and the stability of lifestyles for disaster victims—was the creation of jobs for approximately 200,000 people and an additional 1,500,000 or more people in support roles.

4.2.3 Provision of Temporary Housing and Formation of Temporary Housing Complexes

(1) Rushed Provision of Temporary Housing

**1) Difficult Construction of Temporary Housing**

In order to move citizens from their lives in temporary shelters—in which food and the bare minimum of daily goods were distributed at schools, community centers, and similar facilities—to lives in which citizens could have their own privacy and freely carry out at least the absolute minimum aspects of a normal lifestyle such as eating and bathing, the securing of temporary housing was an important process toward reconstruction. However, this process is regarded as payment-in-kind in the Disaster Relief Act.

The provision of temporary housing was under the jurisdiction of the Ministry of Health, Labour and Welfare (as a result of revisions to laws in 2013, this jurisdiction was given to the Cabinet Office) and the construction of the said housing was performed by the Ministry of Land, Infrastructure, Transport and Tourism, but the actual construction was performed by each prefecture with the understanding of demands and the selection of sites performed by each municipality.
By September 2011, the majority of all disaster victims had moved into temporary housing and similar facilities, but, in Miyagi prefecture, the last temporary housing was constructed on December 26 because of delays due to the securing of sites. As such, it took until December 30 to close the temporary shelters. In Fukushima prefecture, the influence of the evacuation due to the nuclear accident made the closing of temporary shelters take longer, and this was not completed until January 2012. Thereafter, some of the empty houses in the Nakadori area were dismantled and rebuilt in Iwaki city.

Regarding temporary housing, as of August 2012, approximately 53,000 homes had been built and approximately 117,000 people had been moved into approximately 49,000 of these homes. Approximately 180,000 people were living in approximately 67,000 rented private homes. Also, approximately 19,000 homes were being used through means such as public housing and the lodgings of government officials (Table 4.14).

Table 4.14 State of Facilities such as Temporary Housing

<table>
<thead>
<tr>
<th>Type</th>
<th>Number of homes with residents</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public housing and similar facilities</td>
<td>19,359</td>
<td>Total value for all of Japan, from a survey by the Reconstruction Agency (current as of August 6, 2012)</td>
</tr>
<tr>
<td>Private housing</td>
<td>67,428</td>
<td>Total value for all of Japan, from a survey by the Ministry of Health, Labour and Welfare (current as of August 6, 2012)</td>
</tr>
<tr>
<td>Temporary housing</td>
<td>48,791</td>
<td>Iwate prefecture, Miyagi prefecture, Fukushima prefecture, Ibaraki prefecture, Chiba prefecture, Nagano prefecture, and Tochigi prefecture</td>
</tr>
</tbody>
</table>


Regarding issues such as the provision of temporary housing, the arrangement of housing complexes, the securing of meeting halls, and the methods used in moving citizens into the housing, there were points in which improvements were seen from the lessons learned from the Great Hanshin-Awaji Earthquake and the Mid. Niigata Prefecture Earthquake, but there were also points in which regression was seen.

2) Renting of Temporary Housing to Meet Needs exceeding those Filled by Construction (Designated Temporary Housing)

The sites for construction of temporary housing were not sufficient and there were delays in the construction, so, at first, local governments rented private homes and put in place a system for these homes to be leased to disaster victims on a payment-in-kind system. However, after a change to the system, in which the private homes rented by evacuees themselves due to exceptions were seen as designated temporary housing, there was a sudden increase in designated temporary housing in urban areas.

Both the good and bad points of designated temporary housing have been pointed out. For example, while it encouraged self-reliant activities from citizens, it also stole the opportunity for the reconstruction of communities.
(2) Failure to Apply the Lessons Learned from the Great Hanshin-Awaji Earthquake to the Work in Moving Citizens into Housing

Regarding the methods used to move citizens into housing, there was a failure to apply the lessons learned from the Great Hanshin-Awaji Earthquake. This failure was seen in delays in the periods of construction for housing due to difficulty in securing sites and in the fact that the majority of local governments made use of a lottery system regardless of the previous addresses of citizens. As a result, it has been indicated that these methods led to the destruction of communities. Sendai made it possible for groups of 10 or more people to move into housing, but there were few applications for this service in the city. The only local governments that were successful in ascertaining the needs of their citizens, solving problems of housing arrangements, and moving their citizens into housing in community groups were Miyako city, Iwanuma city, and Shinchi town in Fukushima prefecture.

Because the construction was rushed, the housing was not appropriate for cold areas. As such, in houses that have inferior livability, the insulation is being improved, bath heaters are being replaced, and other improvements are also being performed such as the establishment of storage rooms.

Also, neighborhood councils have mostly been formed with one council per housing complex. Information was provided through these councils and in addition, discussions were held in these councils to decide on solutions to lifestyle issues such as the methods to use in operating meeting halls and parking rules.

(3) Work Performed by Municipalities to Form New Temporary Housing Complexes

The majority of temporary housing was constructed in the prefabricated tenement house model, but, starting with the wood temporary housing of Sumita-cho in Iwate prefecture, three prefectures built characteristic temporary housing in which units of a few thousand homes were made of wood through the efforts of local construction contractors.

There were a wide variety of types of wood temporary homes such as log houses and homes made from wooden planks. These homes have excellent livability and cost the same as the other temporary housing. The one negative of the wood homes is that they take slightly longer to build. In the future, it will be desirable to use reusable types as the standard for temporary housing.

For housing complexes that had 50 homes or more, meeting halls were constructed and for locations with less than 50 homes, lounges were constructed. Both the meeting halls and the lounges were planned as places in which to perform communication. Moreover, because there were a great number of households with elderly people, the support centers, group nursing homes, and housing complexes with care centers that were started after the Mid. Niigata Prefecture Earthquake were modified to solve problems.

The temporary housing complex of Kamaishi city (the Heita housing complex) bears special mention for forming a desirable environment as the period of encouragement at this step partway toward reconstruction through activities such as the trial construction of housing complexes with care centers, giving detailed consideration for those citizens who have to deal with elderly people and with the raising of children, and the establishment of temporary shopping malls and bus stops. Also, in Tono city, there were seen temporary homes in which meeting halls were connected to courtyards by way of open corridors.
4.3 The Period of Starting Reconstruction, Starting to Decide on Local Government Rehabilitation Plans (May 2011 to February 2012)

While efforts are being made to perform emergency countermeasures, it becomes necessary to decide on local government rehabilitation plans that related to recovery work and the future images of disaster afflicted areas. At this stage, the national and prefectural governments provide a vision for the rehabilitation as well as secure the systems and budget for its realization while at the same time local governments decide on their rehabilitation plans.

4.3.1 Basic Reconstruction Plan

(1) Basic Act on Reconstruction

The government enacted the Basic Act on Great East Japan Earthquake Reconstruction (Law No. 76, 2011) on May 20, 2011. On June 24, the Reconstruction Headquarters in response to the Great East Japan Earthquake were formed by the Cabinet Office and corresponding local headquarters were formed in Iwate, Miyagi, and Fukushima. Gradually the period shifted from one of recovery to one in which discussions were held regarding how to proceed with reconstruction. On June 25, “Towards Reconstruction ‘Hope beyond the Disaster’” was organized by the Reconstruction Design Council in response to the Great East Japan Earthquake.

In July, the second revised budget (approximately 1.9 trillion yen) was approved containing items such as compensation for nuclear damages and reconstruction support for disaster victims. On July 29, the basic reconstruction plan was decided on by the Reconstruction Headquarters in response to the Great East Japan Earthquake (Table 4.8).

Thereafter, the Reconstruction Agency Establishment Preparation Office was established on August 25. Then, on September 11, the final (19th) Extreme Disaster Management Headquarters was convened 6 months after the disaster itself in order to begin the period of shifting toward reconstruction.

Local government support from the Ministry of Land, Infrastructure, Transport and Tourism

From June 2011, the Ministry of Land, Infrastructure, Transport and Tourism worked to support disaster afflicted local governments in their deciding on local government rehabilitation plans through a survey of the condition of damages suffered by disaster afflicted local governments and a survey of the reconstruction patterns of urban areas (Figure 4.11). As a result of these surveys, disaster afflicted local governments decided on their own local government rehabilitation plans together with the national and prefectural governments. However, there were few plans concerning the construction of new urban areas that deal with population decline and an aging society. It was indicated that the plans simply applied development techniques led by the construction of foundations mainly focused on land readjustment projects.
Figure 4.11 Survey of the Reconstruction Patterns of Urban Areas
(2) Framework of the Reconstruction Agency

Reconstruction Agency

It appeared that the budget, systems, and other items related to reconstruction would be determined by June, 3 months after the disaster. However, final determinations lagged behind due to the difficulty in handling the nuclear accident and due to the political climate.

As preparation for the establishment of the Reconstruction Agency, the Reconstruction Headquarters in response to the Great East Japan Earthquake—on the basis of the plan for reconstruction from the end of August 2011—gave new consideration to the systems for implementing various policies. In November of the same year, the third revised budget (with approximately 9.2 trillion yen budgeted for the disaster) was secured. The third revised budget contained the Grant for Reconstruction, approximately 1.6 trillion yen to be managed entirely by the national government in order to reduce the burden on local governments (Table 4.8).

On February 10, 2012, 11 months after the disaster, the Reconstruction Agency as well as the following branch offices were established: the Regional Bureau of Reconstruction in Iwate prefecture, the Regional Bureau of Reconstruction in Miyagi prefecture, and the Regional Bureau of Reconstruction in Fukushima prefecture (Figure 4.12). An official announcement of the state of reconstruction is being made on the website of the Reconstruction Agency since March 19, 2012, 1 year after the disaster. Let us classify the period up to the establishment of the Reconstruction Agency as the period of starting reconstruction.

Source: “Current Status and Path toward Reconstruction,” 2013, Reconstruction Agency (May 2013)

Figure 4.12  Reconstruction Agency and its Regional Bureaus
The Act on Special Reconstruction Areas

In December 2011, the so-called three reconstruction laws were enacted: the Act on Great East Japan Earthquake Special Reconstruction Areas, the Act on Special Measures for the Securing of Required Finances, and the Act on the Establishment of the Reconstruction Agency. The Act on Special Reconstruction Areas is a framework for the implementation of reconstruction in which local governments decide on plans related to Grant for Reconstruction programs, to reconstruction maintenance, and to reconstruction promotion (Figures 4.13 and 4.14). This system decentralizes power, giving local governments independence related to recovery and reconstruction. As such, a new system was established in which the Reconstruction Agency, which is the national government’s one-stop service body, provides support for the recovery and reconstruction work of the independent local governments.

Source: “Current Status and Path toward Reconstruction,” 2013, Reconstruction Agency (May 2013)

Figure 4.13  Framework of the Law for Special Zone for Reconstruction
4.3.2 Reconstruction Headquarters of Disaster Afflicted Local Governments, Toward Decisions on Local Government Rehabilitation Plans

(1) Work Indicated in the Local Government Rehabilitation Plans of the Three Main Prefectures

In the three prefectures that suffered damages from the disaster, by the end of 2011 decisions had been made on items such as local government rehabilitation plans, and each prefecture is performing a variety of work toward reconstruction. The work and the plans have characteristics that correspond to the situations of the prefectures (Table 4.15).

<table>
<thead>
<tr>
<th>Table 4.15</th>
<th>Reconstruction Work and Characteristics of Local Government Rehabilitation Plans for Each Prefecture</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Iwate Prefecture</td>
</tr>
<tr>
<td>Fishing</td>
<td>All fishing boats have been washed away and the majority of marine product processing facilities have been washed away or damaged, but the restoration of locations such as Miyako and Ofunato and other actions such as the cultivation of marine life are being carried out with great speed.</td>
</tr>
<tr>
<td>Farming</td>
<td>Rice paddy fields have been flooded over a wide range, but the recovery of agricultural zones has been started with great speed.</td>
</tr>
<tr>
<td></td>
<td>Iwate Prefecture</td>
</tr>
<tr>
<td>---------------------------</td>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Recovery of fishing harbors</strong></td>
<td>Recovered to the original state.</td>
</tr>
<tr>
<td><strong>Commerce and industry</strong></td>
<td>High-tech industries were positioned on elevated land prior to the disaster, so they suffered minimal damage.</td>
</tr>
<tr>
<td></td>
<td>It appears that it will take time to reconstruct commercial facilities in cities such as Kamaishi and Rikuzentakata.</td>
</tr>
<tr>
<td><strong>Rebuilding of housing</strong></td>
<td>Houses are being relocated to upland areas and areas around the upstream parts of rivers.</td>
</tr>
<tr>
<td><strong>Building restrictions</strong></td>
<td>Guidance was given to municipalities regarding the introduction of article 39 of the Building Standards Law, but this was done at too late a time.</td>
</tr>
<tr>
<td></td>
<td>There are areas that have entrance restrictions due to the nuclear accident.</td>
</tr>
<tr>
<td><strong>Reconstruction vision</strong></td>
<td>The issues with the highest priority are the searching for missing persons, the support of the livelihood of disaster victims, and the restoration of the livelihood of citizens.</td>
</tr>
<tr>
<td></td>
<td>Basic local government rehabilitation plan (August 2011)</td>
</tr>
<tr>
<td></td>
<td>- Tsunami countermeasures</td>
</tr>
<tr>
<td></td>
<td>- Coastal protection facilities</td>
</tr>
<tr>
<td></td>
<td>- Countermeasures related to the human condition</td>
</tr>
<tr>
<td></td>
<td>- Town development with multiple facilities for disaster prevention</td>
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<tr>
<td></td>
<td>&lt;Goals&gt;</td>
</tr>
<tr>
<td></td>
<td>- Securing safety</td>
</tr>
<tr>
<td></td>
<td>- Rebuilding lifestyles</td>
</tr>
<tr>
<td></td>
<td>- Restoring work</td>
</tr>
<tr>
<td></td>
<td>- Grand design for town development</td>
</tr>
</tbody>
</table>

Source: JICA Study Team based on various documents of the 3 prefectures (in Japanese)
1) Bottom-up Local Government Rehabilitation Plans of Iwate Prefecture

In Iwate prefecture on April 25, the Headquarters for Reconstruction related to the 3.11 Earthquake and the Regional Bureau of Reconstruction, which is a specialized organization that unifies all of the departments, were established. Importance was given to the work of disaster afflicted coastal municipalities and the prefectural government rehabilitation plan had the characteristic of being formed with input from experts within the prefecture.

Each local government rehabilitation plan was composed of a basic local government rehabilitation plan and a local government rehabilitation plan for implementation. The basic local government rehabilitation plan made clear the goals, principles, and basic work related to reconstruction and was officially announced in August (Figure 4.15). The basic way of thinking about tsunami countermeasures in Iwate prefecture is the combination of coastal protection facilities and countermeasures related to the human condition. Attempts are being made to develop towns with multiple facilities for disaster prevention and to spread a culture of disaster prevention. A model draft, the grand design for town development, had been presented, but the guideline for reconstruction down to the level of specific areas, the “Community Planning Guideline by Iwate Prefectural Government,” was not officially announced until September 2012.

![Figure 4.15 Community Planning Ground Design Model (Example)](source)

Regarding the construction of fishing harbors, a guideline for recovering to the original state from the early stages after the disaster was put forward. However, the considerations made by the prefecture regarding how to determine the height to which tidal walls (dikes) should be recovered continued until the end of October 2011, which had an effect on the considerations regarding land-use planning being made by municipalities in coastal areas.

Also, regarding building restrictions, the prefectural government encouraged municipalities to make regulations for building restrictions on the basis of article 39 of the Building Standards Law, but the municipalities did not hurry to do so because they thought it best to match the forming of regulations with the work in coastal areas. The plans in this prefecture have the characteristic of proceeding in a so-called bottom-up fashion in which the situations of municipalities are taken into account.
2) Top-down Local Government Rehabilitation Plans of Miyagi Prefecture

In Miyagi prefecture, an official announcement of the basic reconstruction plan (draft) was made on April 11, 2011. The Reconstruction Headquarters were established on April 22, and at these headquarters a vision that boldly incorporated new systems, such as special reconstruction wards, was hammered out and appeals were made for items such as reconsiderations of fishing rights and the introduction of private businesses.

The characteristic of the local government rehabilitation plan of Miyagi prefecture is the ideal of a drastic reconstruction that does not stop at just recovery. The plan is in the form of a long-term proposal—for 3 years of recovery, 4 years of restoration, and 3 years of development—and contains positioning within the long term proposal. The “Future Vision for Miyagi, Disaster Reconstruction Plan for Implementation” was officially announced in March 2012.

The local government rehabilitation plans of municipalities are focused on land-use planning, so Miyagi prefecture has given priority to the city planning fields over which it has jurisdicition and has instructed cities and towns to proactively introduce building restrictions in affected urban areas.

To that end, under the assumption of introducing the restoration of affected urban areas to affected areas, building restrictions were applied (as of April 2011) to Kesennuma city, Higashimatsushima city, Natori city, Minamisanriku-cho, and Onagawa-cho on the basis of article 84 of the Building Standards Law, which limits the unregulated building of structures in the planning period. Building restrictions have also been introduced in Ishinomaki city, which has independent rights. The characteristic of Miyagi prefecture is the so-called top-down format of its local government rehabilitation plan. For example, plans to consolidate fishing communities were presented and municipalities were given instructions by the prefectural office.

3) Work Done by Fukushima Prefecture in Difficult Situations

In Fukushima prefecture, the Disaster Reconstruction Headquarters were established on May 20, 2011. In addition to the earthquake and tsunami, the nuclear accident also occurred. Because there were damages over a wide area within the prefecture, among the three prefectures being discussed, this one had the most difficult situation in which to develop a local government rehabilitation plan due to the necessity of dealing with a variety of problems such as dealing with evacuees who had received evacuation orders and dealing with the problem of radiation related to agricultural products and beef.

In August of the same year, the reconstruction vision was determined, different methods to use in escaping from the dependence on nuclear power were collected, and negotiations between the national government and the Fukushima government were performed regarding issues such as acts on special measures. At the end of December, an official announcement of the (first) local government rehabilitation plan of Fukushima prefecture was made. Thereafter, at the end of December 2012, an official announcement was made of the (second) local government rehabilitation plan of Fukushima prefecture, which reflected the ongoing changes in situations.

The prefectoral government also made instructions regarding building restrictions. The first such instance was in Soma city. In August 2011, according to a city regulation based on article 39 of the Building Standards Law, some tsunami afflicted areas were designated as disaster-prone areas and became subject to restrictions on the building of houses. Shinchi town and Minamisoma city have also followed this example.

Regarding areas that have been contaminated by the nuclear accident, a plan for the reviewing of the evacuation area by subdividing it into three smaller areas was decided on by the national government in December 2011, but it took until August 2013 to complete the reorganization of the evacuation area of the 9 municipalities within Fukushima prefecture.
(2) Work on Local Government Rehabilitation Plans of Municipalities

1) State of Decisions on Local Government Rehabilitation Plans of Municipalities

Among the 227 municipalities in disaster afflicted areas, especially in the 37 local governments in the coastal areas of the 3 prefectures, where damage from the tsunami was great, decisions on local government rehabilitation plans have been made quickly.

Decisions on such plans have even been made in inland urban areas such as Kurihara city, Osaki city, and Tome city in Miyagi prefecture and Fukushima city and Koriyama city in Fukushima prefecture.

Including Ibaraki prefecture and Chiba prefecture, in which there was great damage from the earthquake, as of March 2012, more than 60 municipalities had decided on such plans and this number had risen to close to 90 by October of the same year (Figure 4.16).


**Figure 4.16 Local Government Rehabilitation Plans of Coastal Municipalities**
2) Target Images for Local Government Rehabilitation Plans of Municipalities

**Kamaishi City**

In Kamaishi city in Iwate prefecture, the coastal town areas were flooded and fishing village communities also suffered great damages from the tsunami, so the local government is aiming to restore the central town areas and to relocate the houses of fishing village communities to upland areas (Figure 4.17).

However, the earthquake and accompanying tsunami were a rare instance of the most powerful earthquake (which is said to occur once every few hundred years), and to build tidal walls (dikes) to a height to match the tsunami is not reasonable from an economic point of view. Therefore, it has been seen as more reasonable to perform urban development and improvement on the basis of a disaster reduction plan that includes evacuation. There are a large number of citizens who desire not only the safety of the area but who are seeking peace of mind through the relocation of houses to upland areas. On the other hand, because there are large restrictions on the reclamation of land from ria coastline areas and from hard bedrock, it is necessary to carefully collect the opinions of fishing village communities.

**Higashimatsushima City**

In Higashimatsushima city in Miyagi prefecture, the flooding progressed a few kilometers inland just like on the Sendai Plain, so proposals have been made for the use of land through the construction of a system of multiple defenses from tsunami including tidal walls (dikes), disaster prevention forests (secondary protection), and raised roads (tertiary protection) (Figure 4.18).
Soma City

In Soma city in Fukushima prefecture, plans have been hammered out for the use of agricultural zones in disaster-afflicted coastal areas for use in renewable energy facilities and for the purchasing of coastal homes and the subsequent conversion of these locations into industrial sites. Also, the local government rehabilitation plan has been separated into projects related to the human condition and projects related to physical objects. Emphasis has been given to decontamination activities in order to clear away the effect of and harmful rumors related to the nuclear accident and has also been given to plans for the psychological care and the maintenance of health of citizens.

Figure 4.18  Image of Multiple Defenses to be Constructed in Higashimatsushima City
4.4 The Period of Reconstruction Activities, Town Development during Reconstruction for Municipalities Searching for Solutions (February 2012 to August 2013 [Current at the Time of Writing])

With the establishment of the Reconstruction Agency, the stage has now become one in which local governments undertake Grant for Reconstruction programs on the basis of their own local government rehabilitation plans. Budgets for local governments have been secured and the period of full-fledged reconstruction activities is approaching, but the way in which work on town development during reconstruction is carried out differs from one local government to another and as such, the local governments are searching for solutions to the way to accelerate the reconstruction.

4.4.1 Summary of Town Development during Reconstruction for Municipalities

(1) Proceeding with Projects through the Use of Subsidy Programs of the Reconstruction Agency

1) Distribution of the Cost of Grant for Reconstruction Programs

The Reconstruction Agency was established on February 10, 2012 and immediately started the first procedure for Grant for Reconstruction programs for local governments (covering 40 programs from 5 ministries). On March 2, this agency made an announcement that it was capable of distributing subsidies in total of 305.5 billion yen (the base cost of the program). Due to differences between the ideas of the Reconstruction Agency and the amounts requested by local governments on the basis of their initial program plans, there were massive cuts to the amounts requested.

It has become clear that the individual reconstruction of life and public housing for disaster victims were given priority at the Reconstruction Agency, which led to plans requested by local governments, such as key road maintenance and measures to stimulate tourist industries, being pushed back.

The Reconstruction Agency performed assessments at intervals of roughly 3 months on the basis of the level of development of the program plans of local governments. By June 2013, the agency had notified local governments 6 times of the possibility of providing subsidies in order to make lump-sum payments and simplify the procedures for effectiveness promotion programs that could be applied to the programs relating to the human condition that accompanied the restoration of affected urban areas (according to the judgment of municipalities, it was possible to revise the costs of actions such as related renovation programs and building consensus).

The total amount budgeted for the Grant for Reconstruction was approximately 3 trillion yen. Of this amount, notifications for the distribution of approximately 2 trillion yen to local governments had been made by June 2013 (Table 4.16). The amount that has been distributed to local governments is approximately 10% more than the amount that has been requested, which has enabled local governments to secure budgets primarily focused on the individual reconstruction of life for disaster victims.
Table 4.16  Scale of the Budget for the Grant for Reconstruction

<table>
<thead>
<tr>
<th></th>
<th>Cost of programs</th>
<th>Cost to the national government</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale of the budget</td>
<td>3.0288 trillion yen</td>
<td>2.4397 trillion yen</td>
</tr>
<tr>
<td>Accumulated total of requested amounts</td>
<td>1.8459 trillion yen</td>
<td>1.4462 trillion yen</td>
</tr>
<tr>
<td>Accumulated total of the notified distribution amounts</td>
<td>2.0001 trillion yen</td>
<td>1.623 trillion yen</td>
</tr>
</tbody>
</table>

Notes: Regarding the scale of the budget, the cost of programs was approximately 2 trillion yen in the revised budget for the 2011 fiscal year, but this cost increased thereafter. The accumulated total of requested amounts is the accumulated total from municipalities from the 1st time to the 6th time. The reason why the notified distribution amount is larger than the requested amount is because it includes 20% of the cost of the restoration of affected urban areas that was provided as lump-sum subsidies for effectiveness promotion programs. The reason why the cost of programs and the cost to the national government differ in terms of the accumulated total of the notified distribution amounts of the Grant for Reconstruction is because the difference was provided as a subsidy through special tax allocations.


In December 2012, the leadership of the government returned to the Liberal Democratic Party, and the second Abe Cabinet was formed. The amount set aside for the reconstruction framework was revised from a 5-year value of 19 trillion yen to 25 trillion yen in the revised budget for the 2012 fiscal year and the budget compilation of the 2013 fiscal year. Also, a plan was put in place to severely limit the purpose for which the reconstruction budget is spent on disaster afflicted areas.

2) Application of Laws such as the Act on Special Reconstruction Areas

Local governments made requests for Grant for Reconstruction programs together with requests for the recognition of special wards (reconstruction promotion areas) in order to apply systems such as those for the mitigation of taxes on business locations and in order to apply the rationalization of the procedural system of reconstruction maintenance plans.

**Industrial locations and similar locations in reconstruction promotion areas**

The application of special wards (reconstruction promotion areas) has proceeded for the implementation of the mitigation of taxes on capital expenditures by disaster afflicted businesses and on the creation of new business locations. As of the time of this writing in August 2013, 76 such areas have been recognized. However, the majority of business locations have been placed outside of the tsunami flooded areas, which has had a large effect on the securing of workplaces. But this shows that there are few examples of the land of flooded areas being used as had been planned.

**Realization of procedures through the use of councils for reconstruction maintenance**

The construction of new housing complexes, such as for the relocation of houses to upland areas, requires a great amount of approval and authorization such as approval for forestry work, approval for the cancellation and diversion of agricultural land, and applications and approval for development. Each approval and authorization was considered to take several months to complete.

By establishing a single council including members from the national, prefectural, and municipal governments, it was possible to create a system that could perform batch investigations into projects such as urban development projects, projects focused on promoting group relocation for disaster mitigation, and projects related to the creation of urban facilities. As a result, the predictions for the starting of work on projects were sped up for municipalities, and at the time of writing in July 2013, these projects had been launched in 504 areas.
(2) Projects for Town Development during Reconstruction

1) Restoration of Affected Urban Areas and Other Projects Focused on Promoting Group Relocation for Disaster Mitigation

Among the 40 programs that make up the Grant for Reconstruction programs, the restoration of affected urban areas (projects for town development during reconstruction) is made up of foundation construction programs related to the rebuilding of housing. There are a wide variety of selections made by each local government relating to the restoration of affected urban areas, but the securing of residential zones for the relocation of houses to upland areas is one of the projects focused on promoting group relocation for disaster mitigation. The types that accompany the creation of a city center through the building of embankments at or the raising of the current location are land readjustment projects and projects to develop tsunami reconstruction hubs for town area reconstruction. The majority of fishing village communities are making use of projects focused on promoting group relocation for disaster mitigation and projects for the strengthening of disaster prevention in fishing communities. Regarding public housing, the cost of purchasing land has been added to the targets for subsidies, and expanded projects to develop public housing for disaster victims are being applied.

Furthermore, the “project for the recovery construction of tsunami bases,” which has been newly established as a project method, is a project for the creation of urban facilities determined through urban planning in order to urgently create locations such as city centers in which are collected functions such as housing, public utilities, and business facilities with the goal being the forming of bases for the leadership of the reconstruction of areas that have been damaged by the tsunami. This is an urban planning project in which the entire area is purchased. As such, this project is applied to the city centers of the towns whose reconstruction should be started with according to the local government rehabilitation plan.

Projects Focused on Promoting Group Relocation for Disaster Mitigation

Projects focused on promoting group relocation for disaster mitigation are used to construct roads, parks, and the homes for receiving the citizens transferred from the relocation promotion areas, which were flooded by the tsunami and in which building restrictions have been introduced. Work was started on the first such project in August 2012 in the Tamaura-nishi area of Iwanuma city (Figure 4.20). In Iwanuma city, the citizens were moved into temporary housing in units of communities. This city is an example of success in building consensus from the smooth discussions regarding the consent of citizens to being relocated and from the relocating of citizens to a location.
that was in the center of their old village. It is taking time to improve the soil, but construction is expected to be completed within the 2013 fiscal year. The key to projects focused on promoting group relocation for disaster mitigation is building consensus related to the relocation destination. Because there was a clear request to smoothly perform the reclamation work on the purchased site, the work is expected to be completed within a short time period.

**<Tamaura-nishi Area, Projects Focused on Promoting Group Relocation for Disaster Mitigation (Iwanuma City in Miyagi Prefecture)>**
- Mass relocation of the 6 coastal areas that have suffered damages to inland housing complexes will be implemented.
- A decision was made on the plan for projects focused on promoting mass relocation in March 2012.
- Land reclamation and construction work was started in August 2012.

**Summary of the Tamaura-nishi area**
- Relocation promotion area: Approximately 134 hectares
- Housing complex: Approximately 21 hectares
- Number of relocation destination houses: 471 (among which 298 houses are relocation destination houses within housing complexes)
- Construction period: 2011 fiscal year to 2013 fiscal year
- Construction being carried out by: Iwanuma city
- Total cost of program: Approximately 15.2 billion yen

**Key points of the work**
The disaster victims will be moved into temporary housing in units of communities. From the period immediately after the disaster, discussions were carried out periodically with citizens in units of areas. Considerations have been made by each area regarding the mass relocation. From meetings of representatives from each of the 6 areas, the decision was made to relocate to the Tamaura-nishi area.
The town development at the relocation destination is being considered by a committee consisting of representatives from each of the 6 areas and from areas in the vicinity of the relocation destination and of learned and experienced individuals.

Source: “An actual example of work being performed toward reconstruction (in Japanese),” 2013, Reconstruction Agency (February 2013)

**Figure 4.20 Summary of the Project Focused on Promoting Group Relocation for Disaster Mitigation in the Tamaura-nishi Area of Iwanuma City**
**Land Readjustment Projects**

Regarding the land readjustment projects for the creation of homes, roads, and parks, the first approved project was started in the Shinhebita area of Ishinomaki city in July 2012, but this project will require construction over a number of years. Because homes can only be constructed after first performing land reclamation, it is expected that this project will be carried out for a long time (Figure 4.21).

If the agricultural zones on the outskirts of built-up urban areas are changed into residential zones, the urban area will be enlarged. Therefore, as a method for urban planning projects in a society with a decreasing population, it is necessary to perform work after first making clear the urban development strategies such as the positioning of all elements within the urban area and the land use of areas from which citizens will be relocated.

The readjustment project in the Nobiru area of Higashimatsushima city is a type in which land reclamation is performed on hills in order to prepare the land to relocate citizens to. The readjustment project in the Shishiori area of Kesennuma city is a type in which the goal is to rebuild the location by raising the areas that were flooded.

**Projects for the Construction of Public Housing**

The construction of public housing involves the consideration of estimates of demands, the selection of suitable areas, the securing of sites, and the planning for the provision of homes to meet different household types. Housing is provided to those individuals who have lost their homes, but the purchase of public housing as a civic action (the purchase by the local government of housing provided by private businesses) has also been considered. In Soma city, the first set of public housing was completed in August 2012. In April 2013, citizens began moving into public housing for disaster victims in Sendai city and Ishinomaki city. However, it is expected that construction on less than 5,500 homes will be completed in the 2013 fiscal year, 3 years after the disaster. The number of homes that have actually been completed is not even 28% of the 20,000 homes whose completion had been estimated. Also, there are still some local governments that have yet to secure sites for housing.

There are also a large number of local governments that have different departments that are in charge of public housing and the restoration of affected urban areas. Regarding combinations with projects focused on promoting group relocation for disaster mitigation and sites for standalone housing complexes coordination within the local government for town development is indispensable. Moreover, the number of people who want public housing (which indicates the number of homes) is changing as some people find it more favorable, compared to public housing, to meet the necessary

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**Figure 4.21 Reconstruction Progress Schedule of the Shinhebita Area of Ishinomaki City**

Projects for the Construction of Public Housing

<table>
<thead>
<tr>
<th>Project method</th>
<th>Process</th>
<th>Number of planned houses</th>
<th>2012 fiscal year</th>
<th>2013 fiscal year</th>
<th>2014 fiscal year</th>
<th>2015 fiscal year</th>
<th>2016 fiscal year and after</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land readjustment projects</td>
<td>Survey design</td>
<td>1,110</td>
<td>290</td>
<td>290</td>
<td>550</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Projects focused on promoting group relocation for disaster mitigation</td>
<td>Relocation of people and facilities</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td></td>
<td>Construction on public facilities</td>
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<td></td>
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<tr>
<td></td>
<td>Self preparation for residential zones (1)</td>
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</tr>
<tr>
<td></td>
<td>Land acquisition</td>
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<td></td>
<td>Survey design</td>
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<tr>
<td></td>
<td>Creation (1)</td>
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<td></td>
<td>Creation (2)</td>
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<td>Creation (3)</td>
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<td></td>
<td>Creation (4)</td>
<td>270</td>
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<tr>
<td>Projects to develop public housing for disaster victims</td>
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<td></td>
<td>Core group for the project</td>
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<tr>
<td></td>
<td>Number of planned houses</td>
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<td>Construction</td>
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<td>Footing plan</td>
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<tr>
<td></td>
<td>Creation</td>
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<td></td>
<td>Move-in</td>
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<td>Number of houses to provide</td>
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</tr>
<tr>
<td></td>
<td>Residential zones for public housing</td>
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</tr>
<tr>
<td></td>
<td>Total</td>
<td>1,110</td>
<td>290</td>
<td>290</td>
<td>550</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Public housing for disaster victims</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>1,110</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

conditions and receive financing or other means to rebuild their homes themselves. If, because of this, the estimates for public housing requirement are incorrect, there will be empty homes due to the sites where housing is constructed and the provision of homes to meet different household types, which shows how necessary detailed consideration of the issue is.

**Schools, Hospitals, and Similar Facilities**

There are a great number of infants and school-age children who are receiving lessons in temporary schools. There are also a large number of local governments that have not secured a sufficient number of playgrounds for children due to the said playgrounds being changed into locations for the construction of temporary housing. However, while there are many cases in which relocation of citizens will be unified due to the revision of plan conditions such as the reorganization of schools and reviewing of the scale of hospitals to meet the declining population in the future, there are few cases in which construction has started.

2) The Leveling off of Projects for Town Development during Reconstruction

**Starting Projects**

Examining the state of projects that have been started, in March 2012, when the first distribution of subsidies was made, it was estimated that projects focused on promoting group relocation for disaster mitigation would be realized quickly in 54 areas. It was also estimated that construction on public housing would be completed on approximately 5,500 homes in the 2013 fiscal year.

In May 2013, legal procedures on the assumption that projects had started had been completed in 325 areas for projects focused on promoting group relocation for disaster mitigation (consent of a cabinet minister) and in 45 areas for land readjustment projects (city planning decisions). Construction has been started in 106 areas for projects focused on promoting group relocation for disaster mitigation, in 31 areas for land readjustment projects, and on 2,152 homes for projects to develop public housing for disaster victims (Table 4.17 and Figure 4.22).

<table>
<thead>
<tr>
<th>Projects focused on promoting group relocation for disaster mitigation</th>
<th>Land readjustment projects</th>
<th>Projects to develop public housing for disaster victims</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimate</td>
<td>328 areas</td>
<td>59 areas</td>
</tr>
<tr>
<td>Courtroom procedures have been completed</td>
<td>325 areas (with consent of a cabinet minister)</td>
<td>45 areas (city planning decisions)</td>
</tr>
<tr>
<td>Construction has been started</td>
<td>106 areas</td>
<td>31 areas[^3]</td>
</tr>
</tbody>
</table>

**Notes:**
1) This is the number of areas for housing complexes at relocation destinations.
2) The main breakdown has approximately 6,000 houses in Iwate prefecture and approximately 15,000 houses in Miyagi prefecture (the number of houses in Fukushima prefecture is undecided).
3) This is the number of areas that have been authorized for the project plan.
4) This is the number of houses for which sites have been secured.

The Study of Reconstruction Processes from Large-Scale Disasters

4.22 State of Progress of Projects Focused on Promoting Group Relocation for Disaster Mitigation

Leveling Off of Projects

Regarding projects for town development during reconstruction, the current stage is one at which budgets have been acquired and projects are being carried out, but a period of leveling off is necessary to overcome various obstacles—obtaining the consent of landowners in order to secure sites, obtaining land, obtaining approval and authorization, design, construction, and project realization—that are preventing the start of projects. Also, because the process to obtain budgets was rushed and sufficient consensus was not built to a sufficient degree, there are some areas that are adjusting their project plans—including making adjustments to other related plans such as those for tidal walls (dikes)—and some areas that have not yet started construction.

Tidal walls (dikes) are being built to the standard height of frequent tsunami waves, but there are also cases in which the tidal walls (dikes) are being built far taller than in the past, so local governments and communities have been requesting the prefectural government to revise the plans. Against this background, there are areas in which consensus has not been obtained because there are citizens who are questioning the need for tall tidal walls (dikes) because the relocation of houses to upland areas will lead to the case in the future in which no one lives in the areas that were flooded by the tsunami or the raising of the town area makes such tidal walls unnecessary.

4.4.2 State of Progress of Town Development during Reconstruction

(1) Performing Work to Accelerate Reconstruction

The acceleration of rebuilding of housing and of town development during reconstruction is also seen as a problem by the Reconstruction Agency. Official announcements of policy packages were made by the relevant government offices and agencies on March 7, 2013 and subsequent follow-up policy packages were officially announced thereafter. These announcements contained information such as a reconstruction progress schedule for housing, ways to make the land expropriation procedures more efficient in order to speed up land acquisition, and ways to deal with insufficiencies in terms of materials and personnel.

However, in order to accelerate town development during reconstruction, it is necessary to arrange the current situation while paying attention to the strengthening of the abilities of the local government (capacity building)—that is, carefully building consensus with the local citizens—and to the building of favorable relationships between the government office and external supporters.
Obstacles in the Way of the Implementation Process

Regarding town development during reconstruction for areas such as city centers and coastal communities, the basic concept is how much safety and peace of mind to secure due to the state of flooding that occurred. There is a variety of patterns to solve the problem such as relocation of houses to upland areas, rebuilding the local area to raise it up, and using combinations of parts of these other patterns. In any case, reconstruction accompanies the development of residential zones, so together with the construction of public facilities such as roads and tidal walls (dikes) in the location where citizens were relocated from, it is necessary to obtain land in the location where the citizens will be relocated to. There are various obstacles—such as the application of appropriate project methods and the sequential acquiring of consensus for the project and for the realization of the project from right holders, the prefectural government, the Reconstruction Agency, and other similar bodies—that local governments must overcome in order to implement projects (Figure 4.23).

There are vast differences in the scope of local governments and in the state of damages suffered by these governments, for example the local government of Sendai city covers the area where 1,000,000 citizens reside, but there are also local governments for towns that have less than 10,000 citizens. Also, there are over 200 areas of disaster afflicted fishing harbor communities in total in Iwate prefecture, Miyagi prefecture, and Fukushima prefecture, and it was clear that it was not easy for local governments to proceed with obtaining consent for the rebuilding of each area. It is especially important to understand how to make use of external experts when the number of staff at the local government is insufficient such as for local governments in which both the city center and the coastal community have suffered great damages and for local governments that have jurisdiction over many areas due to the consolidation of municipalities over a wide area.
(2) The State of the Process of Building Consensus

1) Forming Local Core Groups

Decisions on local government rehabilitation plans were made in the spring of 2012, one year after the disaster, but there were only guidelines at the local area level. In many cases, no considerations had been given to land use in city centers and in each community nor to the details of the plan for empty spaces. In the first place, disaster victims were scattered into temporary housing through selection by way of a lottery or were scattered to designated temporary housing a long way away from home. This meant that there were few chances for disaster victims to gather and talk with each other.

In the case of Miyako city in Iwate prefecture, in March 2012, the city created a plan for area development during reconstruction on the basis of the participation of area citizens and then quickly indicated a springboard for discussion. This opportunity for the citizens to participate in the planning stage would lead to the later efforts of citizens by themselves to perform town development. There were 10 areas in which 100 or more homes were damaged by the disaster and there were assumptions that multiple reconstruction plans would be required (such as the Taro area in which the tidal wall [dike] said to be the largest in the orient used to be) and 23 areas of fishing village communities in which less than 40 homes were damaged by the disaster.

The land readjustment project is a prototypical example of an urban development project performed by way of urban planning. However, in areas in which the population is decreasing, if the local government misunderstands the demands of the citizens, they will be able to create residential zones but there will remain empty spaces. Especially when the project takes a long time, it can be expected that citizens will give up on the project and will start making demands of other administrative bodies. It is essential to form a detailed hypothesis of the scale and to then build consensus between all local parties such as the local government, landowners, and citizens.

Figure 4.24 shows the general concept to follow when considering how to proceed with town development including a land readjustment project.

It is not possible to realize the level that was present prior to the disaster, which makes it a waste to recover facilities and other structures to match the prior level.

Recovery to 100% is not a condition for reconstruction.

Is it not a better idea to refocus in another direction some of the effort being used in the attempt to return to the prior level?

Source: “Recovery from the Great Disaster and the Path toward New Growth (in Japanese)” presented by Makoto Okumara (March 2013) as part of a presentation at the METI-RIETI Symposium

Figure 4.24 Recovery and Reconstruction under a Reduction Trend
**Encouragement from Administrative Bodies**

The goals for the rebuilding of disaster afflicted areas were supposed to be the relocation of communities to upland areas, the raising of lowland city centers, and the implementation of multiple defenses. However, each area has different conditions, so there is no guaranteed single solution. Therefore, as seen in the examples of Kamaishi city and Higashimatsushima city, starting in the summer of 2012, local governments prepared systems, and then, on the basis of the ideas of the administrative body, began holding conferences to build consensus at the level of the local area.

In the case of projects focused on promoting group relocation for disaster mitigation such as the relocation of houses to upland areas, accurately understanding the relocation needs of disaster victims and the number of times that disaster victims have been relocated and planning for housing complexes in appropriately selected candidate locations are the keys to the process of building consensus. In Iwanuma city in Miyagi prefecture, the requests of local citizens were listened to, a conference for organizing the needs of disaster victims into a single plan was organized under the leadership of the administrative body, and then the project was quickly realized (Table 4.18).

### Table 4.18 State of Town Development during Reconstruction under the Leadership of the Administrative Body

<table>
<thead>
<tr>
<th>Area name</th>
<th>Organization name</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Akahama community, Otsuchi-cho, Iwate prefecture</td>
<td>Akahama Area Reconstruction Council</td>
<td>A council for the reconstruction of the area was formed under the leadership of the town, and discussions at this council are still continuing. Discussions regarding keeping embankments at conventional heights are ongoing.</td>
</tr>
<tr>
<td>Ofunato area, Ofunato city, Iwate prefecture</td>
<td>Working Group</td>
<td>The city called together the concerned parties for participation in this group to consider the project for the construction of tsunami bases. Meetings have been held continuously from October 2012, and as of April 2013, meetings have been held among three teams. From April to August 2013, the functions of the executive office were performed by UR and by consultants. The committee is composed of members such as section managers of the local government, local business people, and experts from post-secondary institutions.</td>
</tr>
<tr>
<td>Isatomae area, Minamisanriku-cho, Miyagi prefecture</td>
<td>Isatomae Area Town Reconstruction Committee</td>
<td>Discussions have been held regarding the relocation of houses to upland areas and the use of land in the original lowland areas. The committee is operated by the town and by consultants.</td>
</tr>
<tr>
<td>Inner bay area, Kesennuma city, Miyagi prefecture</td>
<td>Inner bay Area Town Reconstruction Committee</td>
<td>On the recommendation of the city, the committee was formed locally in June 2012. It was operated from August 2012 to March 2013 under the coordination of four experts. The committee was able to indicate a vision for reconstruction, but the opinions of the prefectural government and of the committee regarding the height of tidal walls (dikes) still differ, and corresponding adjustments are being made. Activities performed include overall meetings among all areas, separate area meetings (for 7 areas), the forming of the city planning division of the executive office, and the production of town planning news. In March 2013, the city made city planning decisions in regard to the land readjustment project.</td>
</tr>
<tr>
<td>Onagawa-cho, Miyagi prefecture</td>
<td>Area Creation Meetings</td>
<td>Meetings have been held in each fishing village community. The executive office is operated by the town, UR, and consultants.</td>
</tr>
<tr>
<td>Chuo area, Ishinomaki city,</td>
<td>Meetings for the Consideration of</td>
<td>Conferences have been held for each town area in which redevelopment work is planned.</td>
</tr>
</tbody>
</table>
### Area name | Organization name | Characteristics
--- | --- | ---
Miyagi prefecture | Chuo Area Town Development | The executive office is operated by the city, consultants, and JV.

Nobiru area, Higashimatsushima city, Miyagi prefecture | Nobiru Town Reconstruction Committee | The Nobiru Town Reconstruction Committee has made proposals to the city regarding town development. Furthermore, the Nobiru Town Reconstruction Committee has been expanded so that its organization includes section meetings and the committee is considering the relocation of houses to upland areas. JICA reconstruction professionals have been performing the duties of the executive office of the town reconstruction committee.

Yuriage area, Natori city, Miyagi prefecture | Committee for the Consideration of Town Development in the Tamaura-nishi Area | A consensus was reached on a reconstruction in original location plan in August 2011, but thereafter a great number of citizens requested relocation, and it is taking a long time to reach agreement on the formation of the land readjustment project.

Tamaura-nishi area, Iwanuma city, Miyagi prefecture | Committee for the Consideration of Town Development in the Tamaura-nishi Area | This was a committee for the consideration of town development in the Tamaura-nishi area (20 hectares), in which was carried out group relocation for disaster mitigation (June to September 2012). Three representative citizens from six areas participated in the committee together with researchers from post-secondary institutions. According to the plan created by the committee, construction began for the first time for the disaster afflicted area.

Gangoya area and other areas, Shinchi town, Fukushima prefecture | Meeting for Newly Planned Housing Complexes | Group relocation for disaster mitigation was proceeding in five areas and construction began at the same time on structures including public housing. Meetings and workshops were carefully implemented for each of the communities where citizens were relocated from and for each of the housing complexes where citizens were relocated to.

Source: JICA Study Team based on documents (in Japanese) from academic conferences related to construction and similar conferences

**In the Case of Shinchi town in Fukushima Prefecture**

Shinchi town in Fukushima prefecture is an example of simultaneously building consensus for the relocation of the 3 communities damaged in the disaster to 7 upland housing complexes. The detailed understanding of opinions of citizens through meetings held in each area led to the building of consensus. Examples of the policies that were put in place as a result of building consensus include the reorganization of temporary shelters into units of communities, moving citizens into temporary housing without using lotteries, enabling citizens to select whether to participate in the relocation of houses to upland areas, and the ability of citizens to be relocated together with other members of their community if so desired.

**In the Case of the Yuriage area in Natori City**

A condition that must be met for land readjustment projects in which reconstruction in the original location and the raising of land are performed is that the area has a population density of 40 people/hectare. So, a problem was that local governments had to plan to reach a consensus between the Reconstruction Agency and landowners regarding the scale of areas and the future possibility of damage from flooding. In the Yuriage area in Natori city, policy decisions were made in August 2011, but the local opinions were not all the same, so, as of the time of this writing in August 2013, the project has not yet been started although 2 years have passed since the policy decisions were made.
In the Case of Onagawa-cho in Miyagi Prefecture

The local government was worried that the fishing village communities would become marginal villages, so they tried to form housing complexes in which to house groups of small fishing village communities. Due to issues such as fishing rights attributable to each section of the seashore and strong feelings of community consciousness, by March 2012, there were already many cases of relocation of houses to upland areas that maintained the previous community units that were present in Onagawa-cho in Miyagi prefecture. In the case of suggestions from the administrative body, it is important to proceed with discussions on the range and scale of areas, but it is impossible to proceed with the rearranging of communities without basing this work on the opinions of citizens.

2) The State of Town Development during Reconstruction through the Use of Local Core Groups

Building Consensus among the Initiative of Residents

In multiple sections of disaster afflicted areas, the administrative body is not participating in support activities and is instead receiving support at volunteer bases from researchers from post-secondary institutions and from experts. We have organized a collection of examples of such town development during reconstruction at the level of the area (Table 4.19).

There are examples of existing local residents associations such as neighborhood councils forming councils for the purpose of reconstruction and groups, which were to be transferred on the basis of neighborhood councils, forming organizations.

<table>
<thead>
<tr>
<th>Area name</th>
<th>Organization name</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kerobe community, Tonio, Kamaishi city, Iwate prefecture</td>
<td>Meeting for all Areas</td>
<td>Through area leaders, the city was presented with and made to acknowledge individual plans. Even before the disaster, no tidal walls (dikes) had been built. Roads will be built at a height above sea level of 16 m and homes will be relocated to locations higher than that.</td>
</tr>
<tr>
<td>Hakozaki community, Unosumai, Kamaishi city, Iwate prefecture</td>
<td>Hakozaki Area Town Reconstruction Executive Committee</td>
<td>The plan made by citizens was debated, but citizens were made to accept the plan to build tidal walls (dikes) 14.5 m in height. Demands to keep embankments at conventional heights are still being made.</td>
</tr>
<tr>
<td>Taro area, Miyako city, Iwate prefecture</td>
<td>Taro Area Town Reconstruction Committee</td>
<td>This is an independent council formed from people of the area. They have established section meetings to hold discussions, but coordination between section meetings has become necessary for topics such as the construction of public facilities.</td>
</tr>
<tr>
<td>Goishi area, Ofunato city, Iwate prefecture</td>
<td>Goishi Area Town Reconstruction Committee</td>
<td>This is a collection of 5 communities led by the head of the community center. They are requesting public housing consisting of separate wooden homes. The Goishi area support organization has been providing continual support by way of experts.</td>
</tr>
<tr>
<td>Ryori area, Ofunato city, Iwate prefecture</td>
<td>Ryori Area Reconstruction Committee</td>
<td>This is an independent organization of prototypical fishing village community areas. Researchers from post-secondary institutions have been providing continual support.</td>
</tr>
<tr>
<td>Okirai-tomari area, Ofunato city, Iwate prefecture</td>
<td>Committee for Town Development during Reconstruction</td>
<td>Meetings for the town development during reconstruction of the Tomari area are ongoing in fishing village communities with participation from the town as an observer. External supporters such as researchers from post-secondary institutions have been providing continual support.</td>
</tr>
<tr>
<td>Sakihama area, Sanriku town</td>
<td>Sakihama Reconstruction</td>
<td>Workshops for the establishment of meeting facilities are ongoing in fishing village communities.</td>
</tr>
<tr>
<td>Area name</td>
<td>Organization name</td>
<td>Characteristics</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Ofunato city, Iwate prefecture</td>
<td>Meeting</td>
<td>External supporters such as researchers from post-secondary institutions have been providing continual support.</td>
</tr>
<tr>
<td>Nagahora area, Hirota town, Rikuzentakata city, Iwate prefecture</td>
<td>Lively Village Nagahora</td>
<td>Communities were formed from the evacuation stage, requests were made for the construction of temporary housing within the communities, and these requests were realized. The organization uses the meeting hall and the women’s group has started community businesses.</td>
</tr>
<tr>
<td>Koizumi area, Kesennuma city, Miyagi prefecture</td>
<td>Meeting for Considering the Future of the Koizumi Area</td>
<td>Immediately after the disaster, this meeting was used to independently discuss the relocation of houses to upland areas and to make a request for this plan to the city. Researchers from post-secondary institutions have provided support and a town development company has been established.</td>
</tr>
<tr>
<td>Toyomazawa area, Kesennuma city, Miyagi prefecture</td>
<td>Meeting for the Promotion of the Toyomazawa Area</td>
<td>Through the cooperation of local leaders, NPOs providing temporary support, and construction experts, projects focused on promoting group relocation for disaster mitigation were implemented at the early stages after the disaster.</td>
</tr>
<tr>
<td>Katahama and Koyodate areas, Kesennuma city, Miyagi prefecture</td>
<td>Council for Group Relocation for Disaster Mitigation in the Katahama and Koyodate Areas</td>
<td>The relocation of houses to upland areas was carried out for three communities. Study sessions in the form of meetings were held with the main participants being researchers from post-secondary institutions.</td>
</tr>
<tr>
<td>Ogatsu area, Ishinomaki city, Miyagi prefecture</td>
<td>Ogatsu Area Town Disaster Reconstruction Committee</td>
<td>There are clearly a great many people who are opposed to the plan suggested by the city for the relocation of houses to upland areas. The most prevalent opinion is the desire to live in previous residential areas.</td>
</tr>
<tr>
<td>Jyusanhama area, Kitakami, Ishinomaki city, Miyagi prefecture</td>
<td></td>
<td>This area is known as Jyusanhama from the Japanese word for 13 (jyusan) due to that being the number of fishing village communities that are present in the old Kitakami town. Architects and researchers from post-secondary institutions are supporting the individual reconstruction of life for the disaster victims. Members of the Miyagi Recovery Support Group have been stationed on site.</td>
</tr>
<tr>
<td>Sanbontsuka area, Sendai city</td>
<td>Meeting to Consider the Future of Sanbontsuka</td>
<td>The damage from the tsunami is great in the farming villages next to the Wakabayashi highway junction, but this area is not defined as an area for group relocation for disaster mitigation. Study sessions held by expert organizations are ongoing.</td>
</tr>
<tr>
<td>Asutonagamachi Temporary Housing Complex, Sendai city</td>
<td>Neighborhood Council for Asutonagamachi Temporary Housing</td>
<td>This council formed a new community of residents in temporary housing. The council applied to the open recruitment for housing complexes in Sendai city for people to gather at and live in but was not selected. Continual support is being given by organizations such as post-secondary institutions and NPOs.</td>
</tr>
<tr>
<td>Isohama area, Yamamoto town, Miyagi prefecture</td>
<td></td>
<td>The area has expressed to the town their desire to make use of the project for group relocation for disaster mitigation, but this work is pending because the town has set as a principle the minimum number of houses for which this project is applicable at 50.</td>
</tr>
<tr>
<td>Toyoma area, Iwaki city, Fukushima prefecture</td>
<td>Home Town Toyoma Reconstruction Council</td>
<td>Starting at the evacuation stage, the people of the area have remained united and are working toward the implementation of mass relocation and land readjustment. External supporters such as researchers from post-secondary institutions have been providing continual support.</td>
</tr>
</tbody>
</table>

Source: JICA Study Team based on documents (in Japanese) from academic conferences related to construction and similar conference.
A representation of the initiative of residents to town development during reconstruction in units of communities is the actual example of the Koizumi area of Kesennuma city that has been worked on since immediately after the disaster in 2011 (Figure 4.25). Although it was just stated that this project was carried out by the initiative of residents, appropriate support from a variety of individuals such as town development experts and the reconstruction assistance personnel who performed the duties of the executive office is indispensable.

Source: Association to consider tomorrow’s Koizumi Area. Ltd. (2013) “To succeed favorite Koizumi area to Children (in Japanese)” (June 2013)

Figure 4.25 Plan for the Relocation of Houses to Upland Areas in the Koizumi Area of Kesennuma City

3) The Reception by the Administrative Body of Plans from Communities

It has been decided that town development during reconstruction is performed with municipalities at its core, but the experience and man power available to municipalities is not sufficient. Therefore, it is important for the administrative body to supply appropriate information, for local citizens being supported by experts and similar organizations to arrange their opinions, and for local governments to—as was seen in the case of Iwanuma city and Shinchi town—properly receive attempts made by citizens at the individual reconstruction of life and at reconstruction in general.

The Ministry of Land, Infrastructure, Transport and Tourism officially announced in June 2012 the “Guideline for Building Consensus in the Restoration of Affected Urban Areas” as a guideline for building consensus. This is a guideline that explains a system based on the formation of local core groups when building consensus for projects focused on promoting group relocation for disaster mitigation and other similar projects for town development during reconstruction, but there are few local governments that have actually put this guideline into practice like Yamamoto-cho in Miyagi prefecture has. Yamamoto-cho has planned to organize the relocation destinations by limiting the relocation candidate locations to three locations such as the areas around train stations that will be relocated to and recruiting people who want to relocate into these locations. However, this is not completely in line with the local opinions.

Currently, there is just a small number of local governments—such as Otsuchi-cho in Iwate prefecture and Kesennuma city in Miyagi prefecture—that are supporting local councils like this one. It is desirable for structures for support systems to spread among local governments.
(3) Staff Shortages and Failures to Create Systems at Municipalities

1) Appointment of Relief Personnel

Regarding Grant for Reconstruction programs for which budgets were secured, there was the problem that there were staff shortages and the budgets could not be enforced even though there were enormous amounts budgeted—a few multiples of the budget from a normal year.

Therefore, fixed-term employees were used to fill the needs of local governments for relief personnel. As of April 2013, approximately 1,700 staff members had been employed in relief work across the 3 disaster afflicted prefectures (Table 4.20).

![Table 4.20: State of the securing of staff by damaged municipalities (Preliminary figures current as of April 1, 2013)]

<table>
<thead>
<tr>
<th>Prefecture</th>
<th>Dispatches from other local governments (including the dispatch of fixed-term employees)</th>
<th>Employment of staff such as fixed-term employees of disaster afflicted municipalities</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iwate</td>
<td>395</td>
<td>81</td>
<td>476</td>
</tr>
<tr>
<td>Miyagi</td>
<td>803</td>
<td>189</td>
<td>992</td>
</tr>
<tr>
<td>Fukushima</td>
<td>165</td>
<td>63</td>
<td>228</td>
</tr>
<tr>
<td>Total</td>
<td>1,363</td>
<td>333</td>
<td>1,696</td>
</tr>
</tbody>
</table>

Note: Summary provided by the Ministry of Internal Affairs and Communications

2) Agreements with the Urban Renaissance Agency (UR) and Applications to Order support

In projects for town development during reconstruction, in addition to building consensus with citizens, a variety of technical, specialized work is necessary on the orderer side such as work related to sites, civil engineering designs, and the ordering of construction. To make use of consultants to fill these roles, instead of hiring each separate role individually, construction managers have been hired to provide orderer support. Moreover, in order to solve problems, there have been modifications to methods such as the application of the construction management system, which unifies the design and construction steps.

From April 2012, UR formed a system of 200 people in disaster afflicted locations, completed protocols and agreements with 20 disaster afflicted municipalities for town development during reconstruction, and shouldered the restoration of affected urban areas in 24 areas and the creation of public housing for disaster victims in 37 areas.

As of the time of writing in August 2013, the UR support system has a total of 316 individuals with 161 individuals at the Iwate Disaster Reconstruction Support Bureau and at the Miyagi and Fukushima Disaster Reconstruction Support Bureau, 151 individuals at on-site offices for the promotion of projects in individual areas, and 4 individuals dispatched to 1 prefecture and 2 cities.
UR construction Management in Onagawa

In Onagawa-cho in Miyagi prefecture, UR has formed a partnership with the town, is providing orderer support, and is employing construction managers and adopting the construction management system. This arrangement is attracting attention as a new contract method for large-scale construction carried out by small town halls. On the other hand, it has been reported in the press that the desire of local residents to return to the town is waning as time passes, which may lead to a large gap between the large-scale construction, which needs a long time to complete, and the individual reconstruction of life of the citizens.

3) Work Demanded to be Performed by Local Governments

Examples of incorporating, as advisors, researchers from post-secondary institutions into the decision-making systems of city halls on the independent decision of the local government can be seen in Kamaishi city, Otsuchi-cho, and Ishinomaki city. It would be effective to systematize this structure of town development advisors and reconstruction town managers.

Now is the time to accelerate town development during reconstruction, which is primarily concerned with the rebuilding of homes. However, what should also be focused on at the same time is the necessity of capacity building, which places the focus on whether opportunities will be made to improve the abilities of the staff of the local government that will remain into the future. To not only construct foundations but to also build a town that the citizens will want to return to, it is necessary to improve the abilities of each and every member of the local government staff.

4.4.3 The State of Town Development during Reconstruction and of Industry Promotion

(1) The Current State of Population and Industry Recovery as Seen from Macro Indices

Some disaster afflicted areas are lagging behind in town development during reconstruction and, excluding Sendai city, the populations of municipalities in coastal areas are exhibiting a continuing decreasing trend. Especially in Iwate prefecture, this trend is severe.

Examining the state of employment, we see that the active job openings-to-applicants ratio is 1.7 as a total for all 3 disaster afflicted prefectures (the active number of job applicants is approximately 130,000). From this and similar information we can see that, compared to the situation in all of Japan, these 3 prefectures have an improving trend of supply and demand of labor. However, the same cannot be said for the coastal areas, which have not yet returned to the levels seen prior to the disaster (Figure 4.26).

One of the reasons for declining populations prior to the disaster was the lack of places to work. There was a high necessity of securing workplaces, but doing so was difficult. As such, people are searching for new methods with which to challenge this trend.
(2) Summary of Industry Recovery and Reconstruction in Disaster Afflicted Areas

1) The State of Industry Recovery

Farming

Excluding Fukushima prefecture, the removal of salt elements from and the recovery of agricultural zones that were flooded by the tsunami are proceeding. In 2013, 63% of agricultural zones has been recovered (such that they are capable of farming or that they are expected to be capable of farming) and farm management has restarted in 50% of the agricultural management entities of the 6 prefectures in the Tohoku and Kanto regions. The great compartmentalization and land consolidation being performed by the national government in Sendai city is also progressing steadily. Around Sendai and to the south of it, there are a great number of strawberry farms that make up a horticultural agriculture belt whose functionality has been enhanced. The plan to recover this area as a large-scale horticultural complex for the growing of strawberries is proceeding. Also, in locations such as Minamisoma city and Rikuzentakata city, new plant factories have started operations as model factories.

Fishing

Regarding fishing, the Sanriku coast, which boasts a world-leading catch of fish, is an area in which the functionality of the marine product processing industry and maritime aquaculture industry have been enhanced. Without a shadow of a doubt, these were the local industries that supported the area. The recovery of these industries has started steadily, but the catch of fish from 2013 from the fish markets of the three prefectures is approximately 73% of the catch from the same period prior to the disaster. Among the 825 damaged marine product processing facilities, 608 of the facilities have restarted work or are otherwise operating, which gives a recovery rate of 74% for these facilities. However, where the marine product processing complexes are in the areas that are targeted for land raising, such as in Ishinomaki and Kesennuma, there is no choice but to take a long time to
reconstruct the marine product processing industries in a full-fledged manner. At the time of writing in September 2013, the self-imposed shutdown of fishing in Fukushima prefecture is still continuing.

Manufacturing

From the indices of industrial production we can see that there is little difference between disaster afflicted areas and non-disaster afflicted areas. In the majority of cases the indices have been restored to the levels from before the disaster, but there is still a large difference between the indices for Fukushima prefecture and those for all of Japan. In basic terms, manufacturing is performed inland in raised areas, so there was little damage from the tsunami that assaulted the coastal areas. However, manufacturing businesses had been actively invited to the area in the vicinity of the nuclear power plant. As such, the evacuation zone houses a large number of closed factories and factories whose operations were forced to be transferred to other areas. Medium- to large-size businesses such as these had the capability to rebuild, but it is not clear whether the local manufacturing industry will be rebuilt.

2) Work on Various Plans for Industry Promotion

The recovery of industries in disaster afflicted areas is proceeding gradually, but there are a number of plans for reconstruction. First, agriculture, forestry, and fishery industries for developing new products will become the standard of industries routed in the area such as farming, fishing, and marine product processing. Second is the direction of innovation overlapping with town development during reconstruction to lead to employment by making use of the restoration of familiar occupations and creating appealing characteristics of the area that cannot be found anywhere else. Third is the direction of obtaining employment opportunities through the introduction of sites for businesses related to the automotive and renewable energy industries, which appear likely to become new international industries, and the improvement of the accumulation of affiliated businesses and research institutions. Details of these various types of work are shown below (Table 4.21).

Work related to Agriculture, Forestry, and Fishery Industries for Developing New Products

This direction, in which all steps up to the sales method are modified such as by processing items such as agricultural products and fish and branding them to add value, is the most sought after by the areas and is also the direction with the most possibilities. In this work, production control by way of IT techniques is introduced and markets are expanded through the use of the Internet. Examples that are starting to be seen include the new development of fishing along the Sanriku ria coast, which temporarily lost its markets, and the development of advanced horticultural facilities such as for Sendai strawberries.

Work related to innovation

Innovation in existing industries leads to opportunities for the training of personnel and the provision of personnel from external sources, the improvement of local resources through the obtaining of new technology, and the enhancement of functionality through combinations with different kinds of resources. Work to create new shopping arcades from devastated business environments began in Rikuzentakata city and has been successful thanks to the dispatched young personnel who have been externally coordinated. Work done by young people, who had no ties to disaster afflicted areas, to start businesses is beginning in forms such as cram schools for the training of personnel through external support and community businesses run by women.

Work related to new concentrations of industries

In Iwate prefecture, work is being done to attract research institutes such as the International Linear Collider to the Kitakami mountainous district. In Miyagi prefecture, work is being done to accumulate industries related to the automotive industry and to stimulate the area surrounding Sendai Airport on the assumption that the airport will be privatized. In Fukushima prefecture, work is being done on a proof-of-concept renewable energy project in the form of Japan’s first maritime
wind power generation facility and work is being done to introduce sites for a variety of advanced research institutions and businesses related to medical care instruments. Also, mega-solar projects for solar panels are spreading in various areas.

### Table 4.21 Various Types of Work on Industry Promotion

<table>
<thead>
<tr>
<th>Area and field</th>
<th>Location and name</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Work related to agriculture, forestry, and fishery industries for developing new products</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced farming</td>
<td>Sendai city, Michisaki Corporation</td>
<td>This agricultural production corporation, established by five farmers who had suffered damages from the disaster, produces agricultural products from a hydroponics facility (a plant factory and a vegetable factory). They hope to integrate processing and selling of their products.</td>
</tr>
<tr>
<td>Advanced horticulture</td>
<td>Yamamoto-cho in Miyagi prefecture, Agricultural Production Corporation GRA Inc.</td>
<td>This corporation was formed by a young IT venture entrepreneur. Through the introduction of information and communication technology, this corporation is attempting to establish a brand for Yamamoto-cho strawberries.</td>
</tr>
<tr>
<td>Plant factory</td>
<td>Rikuzentakata city, GRANPA Farm</td>
<td>This is a vegetable plant that uses sunlight for environmental control. Lettuce is being grown in eight domes, each of which has a plot 1.8 hectares in size.</td>
</tr>
<tr>
<td>Fishing</td>
<td>Ogatsu area in Ishinomaki city, OH! GUTS! Corporation</td>
<td>This corporation was formed by local people working in the aquaculture industry and a young entrepreneur and performs all steps from oyster production to processing and sales by themselves.</td>
</tr>
<tr>
<td>Renewable energy</td>
<td>Minamisoma city, Solar Agripark</td>
<td>This is a plant factory that uses solar panels for power generation and environmental control. Vegetables are grown in two domes. Programs are also available to give participants the chance to experience and learn about farming.</td>
</tr>
<tr>
<td><strong>Work related to innovation in existing industries</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Morning markets</td>
<td>Soma city, Soma Haragama Morning Market Club</td>
<td>The selling of wares from trailers pulled by bicycles is performed at temporary housing complexes. Holding markets in Saturday mornings has brought back the liveliness of the stores that had been lost.</td>
</tr>
<tr>
<td>Creation of shopping arcades</td>
<td>Rikuzentakata city, Mirai Shopping Street</td>
<td>Young people of the right-hand project of the NPO ETIC are coordinating activities to create new shopping arcades in the disaster afflicted areas.</td>
</tr>
<tr>
<td>Personnel training</td>
<td>Kesennuma city, Cram School for Future Management</td>
<td>Business people dispatched to Kesennuma city from the Japan Association of Corporate Executives are coordinating a cram school for the training of managers.</td>
</tr>
</tbody>
</table>
The Study of Reconstruction Processes from Large-Scale Disasters

<table>
<thead>
<tr>
<th>Area and field</th>
<th>Location and name</th>
<th>Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starting of businesses</td>
<td>Ishinomaki city, Ishinomaki 2.0</td>
<td>This project is starting unique businesses through the collection of experts who possess various types of work experience and know-how such as young local shopkeepers, architects, and advertising creators.</td>
</tr>
<tr>
<td>Tourism</td>
<td>Rikuzentakata city, Nadeshiko Meeting in Lively Village Nagahora</td>
<td>This project provided—through storytellers and the production and selling of yubeshi (a Japanese sweet)—hospitality to foreign and Japanese visitors who came on tours to inspect the disaster affected areas.</td>
</tr>
<tr>
<td>Renewable energy</td>
<td>Fukushima prefecture, Proof-of-concept maritime wind power generation facility</td>
<td>Fukushima prefecture has joined with Marubeni Corporation to build a 100 m floating-type wind power generation facility off the coast of Iwaki. Proof-of-concept tests are currently being performed.</td>
</tr>
<tr>
<td>International research institutes</td>
<td>Iwate prefecture, Attraction of the building of the International Linear Collider (ILC)</td>
<td>The ILC is a straight-line type accelerator experiment facility for the colliding of electrons and positrons within a tunnel that has a total length of some tens of kilometers and that is built underground. The Kitakami mountainous district is a candidate for the construction of this facility.</td>
</tr>
<tr>
<td>Biomass</td>
<td>Sendai city, Proof-of-concept of seaweed biomass</td>
<td>Tohoku University and the University of Tsukuba are making use of a sewage treatment facility in Sendai city to cultivate seaweed in order to produce energy.</td>
</tr>
</tbody>
</table>

Source: JICA Study Team based on documents and other sources of information from each organization (in Japanese)

(3) Town Development during Reconstruction and Industry Promotion

For agriculture, forestry, and fishery industries for developing new products and for innovation in existing industries, the base is the industrial policies of local governments such as the training of personnel; interaction between different industries; and collaboration between industry, government, and academia. In addition, collaboration with the local government’s town development during reconstruction may become a catalyst.

Also, the keys to providing effective support are (1) carefully listening to local businesses and (2) figuring out how to make use of the power of external supporters. Especially in relation to industry promotion, a thorough approach to bottom-up-management and the increasing of people’s willingness to receive support—both of which are based on the creativity, openness, and communication ability of the local government—are required just as they are for town development during reconstruction.
Box 4.4  Work Related to Local Government Industry Promotion Plans

Miyako city in Iwate prefecture, which is one of the disaster afflicted areas, had actively implemented numerous industry promotion plans prior to the disaster. After the disaster as well, they have been modifying their plans for the support of small-scale places of business.

In Miyako city, the main local manufacturing industries are farming, forestry, and fishing in which natural conditions are put to use; the food production industry and the harbors that use the products from the above three industries as raw materials; the lumber and wooden product industries that make use of the abundant forest resources; and the mold and connector industries that have specialties in precision molding and micromachining. Miyako city has an industry support center consisting of 7 staff members and 3 coordinators. The center works on activities such as industry promotion, food industry support, manufacturing industry promotion, attracting businesses, and harbor promotion. Another characteristic is that 14 scholars and experts have been entrusted with the role of Miyoko city industry creation advisor. The city has the following unique systems.

- Subsidiary aid for the costs of recovering damaged properties for small- to medium-sized businesses
- Subsidiary aid for projects to loan equipment to owners of disaster afflicted small- to medium-sized business
- Support for new founders of businesses in disaster reconstruction through subsidiary aid for projects to loan equipment
- Subsidiary aid for industry promotion
- Subsidiary aid for projects to change product development to include high added value

As the trick of performing effective industry promotion plans, local governments have to perform close exchanges of information with local industries, but there are few local governments that are actually doing this. Also, to perform innovation in local industries and to attract businesses from outside, it is effective for local governments to perform work such as the securing of specialized personnel within local governments and the development of professional education for young people.

To promote new projects that use renewable energy in Miyako city after the disaster, the “Miyako City Blue Challenge Project Conference” of the Public Private Partnership (PPP) was established on November 26, 2012.
1) Thorough Approach to Bottom-up Management

Environments Close to the Actual Sites

In order to hear from the people in the actual sites, it is necessary for local governments to physically visit people and collect information. It is imperative that local governments fully understand the state of the workplaces within the sites. An example is Iida city in Nagano prefecture, which has proceeded with industry promotion in a unique manner, but it is important to create environments as close as possible to the sites, such as having the agricultural cooperative be in charge of farming, the tourist information office be in charge of tourism, and the fishery cooperative be in charge of fishing.

The goal is not only to recover existing commerce and industries to their levels that were present prior to the disaster. There is no need to recover industries and individual stores that are not putting forth sufficient effort to recover themselves, but there are also cases in which it is important to recover a single store or workplace. The discerning eye and ear of the local government are important in deciding where to provide support. Those local governments that are so concerned with fairness that they hesitate to provide support to disaster afflicted businesses have much room for improvement.

In Ishinomaki city, the rebuilding of marine product processing facilities started prior to the work to raise the marine processing complexes due to insufficient communication between the marine product processing industry and the administrative body. There was the belief that raising of land was not going to be performed at the initial stages, but this decision was overturned due to the fact that the cost would be prohibitive to perform drainage with pumps at a later time because of the hurried rebuilding of the workplaces, which has led to the prediction that reconstruction will take a long time.

Bearers of Responsibility are Present in the Actual Sites

In disaster afflicted areas, 49 temporary shopping malls have been created. Among these shopping malls there are locations like the Rikuzentakata Mirai Shopping Street in which young people from outside the area have coordinated the formation of the shopping malls.

These young people, who are all alone and away from home, have been living on site and have been working as members of the “Right-hand Project for the Reconstruction of Tohoku” of the NPO ETIC. These ground-breaking activities are designed to create new shopping malls within cities to act as temporary bases for the livelihood of disaster victims in order to replace the devastated city centers. As the circle of support for the project expands, JSURP (the Japan Society of Urban and Regional Planners) has begun providing specialized assistance.

In disaster afflicted areas, there are many young people who are using temporary shopping malls and vacant houses to start community businesses. Ishinomaki 2.0 in Ishinomaki city is starting small but interesting projects—within the Ishinomaki city center—that effectively correspond to the current needs of citizens and that will lead to the revitalization of the Ishinomaki city center. There is a need for training support that makes use of the opinions of the people in the new sites.

2) Increasing People’s Willingness to Receive Support

Centers for Open Consultations with Private Businesses

While making use of systems such as the system for special reconstruction areas, the Reconstruction Agency has established an office for the promotion of collaboration between businesses in order to encourage collaboration between private businesses and disaster afflicted local governments and to support the implementation of projects proceeding in various areas.

The office for the promotion of collaboration between businesses is used to exchange information related to projects between private businesses and disaster afflicted municipalities as well as to actively transmit information such as through the holding of explanatory meetings and the publishing of email magazines. Furthermore, the Yuinoba community recovery matching project
has been used to create opportunities for businesses to find matches such as a manufacturer of processed marine products in a disaster afflicted area and a distribution business in a major metropolitan area such as the area around Tokyo.

Generally speaking, there are large connections on a personal level between local governments and local businesses, but there are few examples of local governments organizing the collaboration of local businesses with external businesses. The Private Finance Initiative (PFI) represents a hurdle that is too high for local governments, but there are insufficient entrances to the information exchanges and Public Private Partnerships (PPP) that form the seeds from which can grow the projects prior to PFI.

What methods are local governments using to implement open consultation centers for collaboration with private businesses? Effective methods include determining themes for industry promotion such as the “Future City” initiative, encouraging interested businesses, and holding study sessions. Actual examples, which have attracted attention, of these effective methods are the study sessions that were held by Kesennuma city, Ishinomaki city, and Higashimatsushima city and that were started using the disaster as an opportunity (Table 4.22).

| Table 4.22 Organizations for Collaboration between Disaster Afflicted Local Governments and Private Businesses |
|-------------------------------------------------|-------------------------------------------------|
| Kesennuma city, Miyagi prefecture | This meeting was used to provide information as a point of contact for the introduction of businesses in order to realize the local government rehabilitation plan. The industrial revival strategy division of the industry department of city hall was in charge of the meeting, and the meeting provided a location for private businesses to interact. |
| Ishinomaki city, Miyagi prefecture | This organization aims for a reconstructed city that is a model for the world; decides on themes in collaboration with the city; performs surveys through the collaboration between industry, government, and academia; and makes proposals to the city. The head of the council is the mayor of the city, and the cooperation promotion division is in charge of the council. Businessess perform the functions of the executive office. The 30 organizations and businesses form 4 groups and 10 project work groups such as smart community, renewable energy, and medical care. |
| Higashimatsushima city, Miyagi prefecture | This organization performs activities such as the consideration, management, and promotion of the “Future City” initiative as an umbrella group for the government and the people regarding reconstruction projects. The president is a professor at Tohoku University and the executive office is made up of staff from the city hall. The organization has held 4 section meetings and the private businesses that make up the members of the organization independently perform surveys into areas such as livelihood, industry, and energy. |

Source: JICA Study Team based on each organization’s document (in Japanese)

Town Development during Reconstruction and Industry Promotion

The collaboration between the industry promotion plans of the local government and town development during reconstruction is also indispensable in the land use of flooded lowland areas. It is said that in land readjustment projects, areas in which building restrictions are present, and other similar aspects of reconstruction, the risk of empty lots is high, namely that plots of lands will
remain unfilled, if no industry promotion plan exists. Industry promotion strategies and plans for collaboration with private businesses are necessary at the same time as that foundation construction programs are implemented.

Projects for the recovery construction of tsunami bases, in which it is possible to create bases for industry promotion as projects for town development during reconstruction, are being considered in each area. Examples include the central part of Kamaishi city, the Ofunato area of the central part of Ofunato city, the area around the new train station in Yamamoto-cho in Miyagi prefecture, the area around the train station in Shinchi town in Fukushima prefecture, and the Onahama area in Iwaki city.

Plans have been made in each of these locations for commercial facilities and a variety of facilities for interaction between citizens to create the central areas of these urban areas. These central areas may become the keys to industry promotion in disaster afflicted areas through aspects such as the attraction of new shopping centers, the opening of shared facilities for existing stores, and the development of facilities for the incubation of industries.

It is hoped that the determining of and the implementation process for such plans for the recovery construction of tsunami bases will lead to the opening of the area and the realization of reconstruction that makes use of external assistance while at the same time providing an opportunity to improve the abilities of the local government staff.

**Box 4.5 Foundation of a Drawdown Recovery Fund**

In October 2012, the Ministry of Internal Affairs and Communications made an official announcement of the formation of a “Drawdown Recovery Fund” (a system for drawing down on the pooled funds when necessary) with a total amount of 196 billion yen as a fund that is not tied to the framework of the simple annual budget and that can be used by disaster afflicted organizations to deal with—in a flexible and detailed manner in response to the actual conditions of areas—problems such as the stability of the lifestyles of citizens, the restoration of communities, the promotion of local economies, and the retention of employment. A “Management-type Fund” (a system that makes use of management gains) was used in the Great Hanshin-Awaji Earthquake and in the Mid. Niigata Prefecture Earthquake, but this was seen to be ineffective in the current low-interest situation. As such, the drawdown fund was used instead. Regarding the management of the fund, prefectures were allowed to choose direct management or management by a foundation, but the result was that every prefecture selected direct management.

While there are actual examples of this fund being applied to activities such as maintenance on community centers, the use of the fund is limited and there are many municipalities that have not decided how to use it (according to a summary provided by the Ministry of Internal Affairs and Communications, as of January 2013, approximately 20 billion yen had been used from the total of approximately 98 billion yen available in the subsidies for municipalities).6

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6 Funds were used by individuals after the Great Hanshin-Awaji Earthquake and by communities after the Mid. Niigata Prefecture Earthquake. Against this background, different administrative organizations, incorporated foundations, were established for both funds. Therefore, policies of the administrative body were implemented and the division of roles was performed, and it is said that support could be realized more for issues relating to the human condition than for physical objects. However, because each prefecture selected direct management of the fund after the most recent disaster, the fund was integrated into the policies of the administrative body. Hence, the question of whether support will reach individuals, business persons, and NPOs will become a problem in the future. (Source: Rising Tohoku, volume 11 [published on July 2, 2012 by NPO HUG])
# Appendix 1: Work Performed by the National Government, Local Governments, and Other Similar Institutions

<table>
<thead>
<tr>
<th>Month</th>
<th>Day</th>
<th>National government</th>
<th>Local governments and other similar institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>Mar. 11</td>
<td>Establishment of the Extreme Disaster Management Headquarters (national government)</td>
<td>Establishment of Disaster Management Headquarters by each prefectural and local government</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Declaration of a nuclear emergency situation and establishment of the Nuclear Emergency Response Headquarters (national government)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>Decision to establish the Headquarters for Special Measures related to the Livelihood Support of Disaster Victims (national government)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>Establishment of the Investigative Committee for the Recovery of Disaster Afflicted Areas (Team for the Livelihood Support of Disaster Victims)</td>
<td></td>
</tr>
<tr>
<td>Apr.</td>
<td>5</td>
<td>Plan for urgent work related to items such as the provision of temporary housing and other facilities (Team for the Livelihood Support of Disaster Victims)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7</td>
<td></td>
<td>Announcement of the application of building restrictions to affected areas (Miyagi prefecture)</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td></td>
<td>Official announcement of the draft of the basic reconstruction plan in Miyagi prefecture and official announcement of the basic reconstruction plan in Iwate prefecture</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td></td>
<td>Holding of the Reconstruction Design Council in response to the Great East Japan Earthquake (Cabinet Secretariat)</td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>Specification of the area within 20 km of the Fukushima Daiichi Nuclear Power Plant as an evacuation zone and specification of locations outside of this area as planned evacuation zones and emergency evacuation preparation zones</td>
<td>Establishment of Disaster Reconstruction Headquarters in Miyagi prefecture Holding of the first Disaster Reconstruction Headquarters meeting in Miyagi prefecture (held 16 times)</td>
</tr>
<tr>
<td>May</td>
<td>2</td>
<td>Approval of the first revised budget</td>
<td>Holding of the first disaster reconstruction meeting in Miyagi prefecture</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>Announcement of the Master Plan for the Final Disposal of Disaster Related Waste from the Great East Japan Earthquake (Ministry of the Environment)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>Determination of the plan for urgent work related to striving to return normalcy to the lives of disaster victims at the 17th meeting of the Extreme Disaster Management Headquarters Approval of the Basic Act on Great East Japan Earthquake Reconstruction (Law No. 76, 2011)</td>
<td>Establishment of the Recovery and Reconstruction Headquarters in Fukushima prefecture</td>
</tr>
<tr>
<td>June</td>
<td>1</td>
<td>Survey of the condition of damages suffered by disaster afflicted local governments and survey of the reconstruction patterns of urban areas ordered by the Ministry of Land, Infrastructure, Transport and Tourism</td>
<td></td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>Enforcement of the Basic Act on Great East Japan Earthquake Reconstruction (Law No. 76, 2011) (Cabinet Secretariat)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>&quot;Towards Reconstruction ‘Hope beyond the Disaster’” (Reconstruction Design Council in response to the Great East Japan Earthquake)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>Holding of the (first) meeting of the Reconstruction Management Headquarters (Reconstruction Headquarters in response to the Great East Japan Earthquake)</td>
<td></td>
</tr>
<tr>
<td>July</td>
<td>25</td>
<td>Approval of the second revised budget</td>
<td></td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>Determination of the Basic Guidelines for Reconstruction in response to the Great East Japan Earthquake (Reconstruction Headquarters in response to the Great East Japan Earthquake)</td>
<td></td>
</tr>
<tr>
<td>Aug.</td>
<td>3</td>
<td>Approval of the Nuclear Damage Compensation Facilitation Corporation Act (national government)</td>
<td></td>
</tr>
<tr>
<td>Month</td>
<td>Day</td>
<td>National government</td>
<td>Local governments and other similar institutions</td>
</tr>
<tr>
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<td>---------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Nov.</td>
<td>17</td>
<td>Basic Way of Thinking about Recovery of Coastal Embankments and Similar Objects Damaged by the 2011 Earthquake off the Pacific Coast of Tohoku and Tsunami (Ministry of Land, Infrastructure, Transport and Tourism)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>21</td>
<td>Approval of the third revised budget</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>Approval of the Act on the Securing of Reconstruction Finances</td>
<td></td>
</tr>
<tr>
<td>Dec.</td>
<td>5</td>
<td>Current status of and work toward recovery (Reconstruction Headquarters in response to the Great East Japan Earthquake)</td>
<td>Determination of the reconstruction housing plan in Miyagi prefecture</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Approval of laws related to the creation of areas with tsunami disaster prevention</td>
<td>Completion of construction on temporary housing in Miyagi prefecture</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Special Act for the Reconstruction and Rebirth of Fukushima (Draft)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>Approval of the Act on the Establishment of the Reconstruction Agency</td>
<td>Official announcement of the local government rehabilitation plan in Fukushima prefecture</td>
</tr>
<tr>
<td></td>
<td>21</td>
<td>Determination of 227 municipalities as special reconstruction areas</td>
<td></td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>Establishment of the Organization for Supporting the Rehabilitation of Business People After the Great East Japan Earthquake</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>Jan. 6</td>
<td>Cabinet decision on the basic guidelines for special reconstruction areas</td>
<td></td>
</tr>
<tr>
<td>Feb.</td>
<td>3</td>
<td>First status of the provision of plans for Grant for Reconstruction programs (Reconstruction Headquarters in response to the Great East Japan Earthquake)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Certification of the first reconstruction promotion plan (Iwate and Miyagi)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Launch of the Reconstruction Agency</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>Holding of the (first) reconstruction promotion meeting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>Determination of 227 municipalities as special reconstruction areas</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Establishment of the Organization for Supporting the Rehabilitation of Business People After the Great East Japan Earthquake</td>
<td></td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Month</th>
<th>Day</th>
<th>National government</th>
<th>Local governments and other similar institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mar.</td>
<td>2</td>
<td>Notification of the amounts that can be provided through the Grant for Reconstruction (first notification)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16</td>
<td></td>
<td>Certification of the reconstruction promotion plan of Fukushima prefecture</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>Holding of the (first) reconstruction promotion committee</td>
<td></td>
</tr>
<tr>
<td></td>
<td>26</td>
<td></td>
<td>Official announcement of the “Future Vision for Miyagi, Disaster Reconstruction Plan for Implementation”</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>Approval of the Act on Special Measures for the Reconstruction and Rebirth of Fukushima</td>
<td>Publishing of “The Great East Japan Earthquake, Miyagi Prefecture’s Six-Month Response to the Disaster and Corresponding Investigation into the Said Response” in Miyagi prefecture</td>
</tr>
<tr>
<td></td>
<td>31</td>
<td></td>
<td>Completion of decisions on local government rehabilitation plans for 39 municipalities</td>
</tr>
<tr>
<td>Apr.</td>
<td>2</td>
<td>Establishment of an office in the Reconstruction Agency for the promotion of collaboration between businesses</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Approval of the budget for the 2012 fiscal year (cost of reconstruction: 3,7754 trillion yen)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Official announcement of the distribution (with concrete allocations) by the Reconstruction Agency of the lump-sum amounts in the budget for the 2012 fiscal year (277.9 billion yen)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>Details on the Road Map of Various Bearers of Responsibility regarding Reconstruction Support (Reconstruction Agency)</td>
<td></td>
</tr>
<tr>
<td>May</td>
<td>25</td>
<td>Notification of the amounts that can be provided through the Grant for Reconstruction (second notification)</td>
<td></td>
</tr>
<tr>
<td>June</td>
<td>12</td>
<td></td>
<td>Certification of the reconstruction promotion plan (special IT wards) of Miyagi prefecture</td>
</tr>
<tr>
<td>June</td>
<td>21</td>
<td>Approval of the Act on the Support of Children and Disaster Victims</td>
<td></td>
</tr>
<tr>
<td>July</td>
<td>13</td>
<td>Cabinet decision on the Basic Plan for the Reconstruction and Rebirth of Fukushima</td>
<td>Determination of the “Guidelines on the Construction of Public Housing for Disaster Victims in Miyagi Prefecture”</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aug.</td>
<td>21</td>
<td>Revision of the local government rehabilitation plan and disaster reconstruction plan for implementation in Iwate prefecture (first revision)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>Formation of the “Team for Smoothing Out Reconstruction Projects” to accelerate procedures related to approvals and authorizations in Iwate prefecture</td>
<td>Establishment of Disaster Reconstruction Headquarters, “Town Development and Housing Construction Promotion Headquarters,” in Miyagi prefecture</td>
</tr>
<tr>
<td>Sep.</td>
<td>24</td>
<td>Notification of the amounts that can be provided through the Grant for Reconstruction (third notification)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>27</td>
<td></td>
<td>Official announcement of the “Road Map for Recovery and Reconstruction through Social Capital” in Iwate prefecture</td>
</tr>
<tr>
<td>Month</td>
<td>Day</td>
<td>National government</td>
<td>Local governments and other similar institutions</td>
</tr>
<tr>
<td>-------</td>
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<td>--------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>Mid-year report of the reconstruction promotion committee for the 2012 fiscal year</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Determination of the “Community Planning Guideline by Iwate Prefectural Government”</td>
</tr>
<tr>
<td>Oct.</td>
<td>16</td>
<td>Establishment of the (third) reconstruction promotion meeting and the team for the promotion of reconstruction related to the nuclear accident</td>
<td></td>
</tr>
<tr>
<td></td>
<td>31</td>
<td></td>
<td>Establishment of the Headquarters for the Promotion of Town Development and Rebuilding of Housing in Iwate prefecture</td>
</tr>
<tr>
<td>Nov.</td>
<td>22</td>
<td>Report to the National Diet regarding the state of reconstruction from the Great East Japan Earthquake</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>Notification of the amounts that can be provided through the Grant for Reconstruction (fourth notification)</td>
<td>Official announcement of the “Plan to Develop Public Housing for Disaster Victims” in Miyagi prefecture</td>
</tr>
<tr>
<td>Dec.</td>
<td>6</td>
<td>The first Yuinoba community recovery matching event</td>
<td></td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>Inauguration of the Minister for Reconstruction Takumi Nemoto together with the launch of the Abe Cabinet</td>
<td></td>
</tr>
<tr>
<td></td>
<td>28</td>
<td></td>
<td>Official announcement of the second local government rehabilitation plan for Fukushima</td>
</tr>
<tr>
<td>2013</td>
<td>15</td>
<td>Cabinet decision on the revised budget for the 2012 fiscal year</td>
<td></td>
</tr>
<tr>
<td>Jan.</td>
<td>29</td>
<td>Cabinet decision on the budget for the 2013 fiscal year</td>
<td></td>
</tr>
<tr>
<td>Feb.</td>
<td>6</td>
<td>Deliberation report of the 2012 fiscal year (reconstruction promotion committee)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>Approval of the revised budget for the 2012 fiscal year</td>
<td></td>
</tr>
<tr>
<td>Mar.</td>
<td>7</td>
<td>Official announcement of the reconstruction road map for housing</td>
<td></td>
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<tr>
<td></td>
<td>8</td>
<td>Notification of the amounts that can be provided through the Grant for Reconstruction (fifth notification)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>Official announcement of support packages for disaster victims of the nuclear accident</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30</td>
<td></td>
<td>Completion of the construction of the first set of public housing for disaster victims (Tanaka-higashi housing complex) in Ofunato city in Iwate prefecture</td>
</tr>
<tr>
<td>Apr.</td>
<td>1</td>
<td></td>
<td>First operation to move citizens into public housing for disaster victims in Yamamoto town in Miyagi prefecture</td>
</tr>
<tr>
<td>May</td>
<td>10</td>
<td>Revision of the Act on Special Measures for the Reconstruction and Rebirth of Fukushima</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>Approval of the initial budget for the 2013 fiscal year</td>
<td></td>
</tr>
<tr>
<td>June</td>
<td>5</td>
<td>“Toward the Creation of a New Tohoku (Interim Guidelines)” by the reconstruction promotion committee</td>
<td></td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>Approval of the Mega-disaster Reconstruction Act and the Revised Basic Act on Disaster Control Measures</td>
<td></td>
</tr>
<tr>
<td>Month</td>
<td>Day</td>
<td>National government</td>
<td>Local governments and other similar institutions</td>
</tr>
<tr>
<td>-------</td>
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<td>--------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>Notification of the amounts that can be provided through the Grant for Reconstruction (sixth notification)</td>
<td></td>
</tr>
</tbody>
</table>

Source: JICA Study Team
Chapter 5  Assistance by Private Sector for Reconstruction from the Great East Japan Earthquake

5.1 Volunteer Activities and Its Supporting Organizations

In addition to the countermeasures for disasters taken by the public sector such as the central government and local authorities, a large amount of voluntary assistance was provided to the victims by private organizations, groups and individuals. Volunteers gathering at mega-disaster locations and providing support to the affected people became an established custom and element of Japanese culture following the Great Hanshin-Awaji Earthquake. This section summarizes and shows the type of assistance made by NGO, NPO, and other individual volunteers for victims from the 3.11 Earthquake.

5.1.1 Chronological Record of Number of Volunteers

It was reported by newspapers and other mass media that the number of volunteers involved in the 3.11 Earthquake was too small compared to those for the Great Hanshin-Awaji Earthquake. However, the 3.11 Earthquake cannot be simply compared with the Great Hanshin-Awaji Earthquake due to the harsh environmental conditions for voluntary activities such as severed transportation to the sites, scale of the area, severity of the devastation and harsh weather at the locations etc. In this section, trends and the transition of volunteers are shown by locality with precise data gathered by Japan National Council of Social Welfare.

According to Japan National Council of Social Welfare, the total number of volunteers working in 3 prefectures suddenly increased in May and then gradually decreased with very low volunteer numbers recorded around September (see Figure 5.1).

The above movement traces the overall trend with an increase in May due to volunteer tours during the long holiday, i.e. so-called “Golden Week” in Japan, rapid decrease in the number of victims in evacuation centers in July along with progress in the construction of temporary houses, and the withdrawal of Self-Defense Forces in July and August.

![Figure 5.1 Trends in the Number of Volunteers every month following the Occurrence of the 3.11 Earthquake in 3 Affected Prefectures](image)

Note: The total number of volunteers would increase by counting other contributors such as NGOs who provided support through non-social welfare councils.


5.1.1 Chronological Record of Number of Volunteers

In the Great Hanshin-Awaji Earthquake, 1.34 million volunteers worked in the affected areas within a 10 month period following the occurrence of the disaster (estimated by Hyogo Prefecture) with a peak immediately after the quake with approximately 0.2 million persons a day. On the other hand, this number rapidly decreased to approximately 600 persons after 10 months.
However, the number for each prefecture shows different movements by reflecting the varied local conditions (see Figure 5.2).

Miyagi Prefecture
- Volunteers started visiting around March, suddenly increased in May and then rapidly decreased after May.
  ➢ Due to the relatively early recovery of the transportation network with the recommencement of operations of the Shinkansen bullet trains between Tokyo and Sendai on 28th April
  ➢ With a rather abundant number of organizations for accepting volunteers, i.e. 39 volunteer centers in total in the prefecture with 10 in Sendai that was not affected by the Tsunami

Iwate Prefecture
- The number of volunteers was less in the affected 3 prefectures shortly after the disaster with less than half of those visiting Miyagi in May. However, after May Iwate saw a gradual increase in the number of volunteers with a peak in August followed by a gradual decrease.
  ➢ Due to the extremely difficult access to coastal areas at the beginning. By system establishment for accepting volunteers such as the establishment of a logistics support base in Toono in the beginning of April, commencement of operation of volunteer buses in July etc volunteers were provided access to the affected areas in Iwate.

Fukushima Prefecture
- The number of volunteers has been significantly limited in comparison with the other 2 affected prefectures since the disaster occurred. A further decrease was found due to the geographical dispersal of the evacuees.
  ➢ Suitable methods for supporting Fukushima is still being considered due to its unique situation surrounding the nuclear power plant accident.

Notes:
1) Number of volunteers registered with the Disaster Relief Volunteer Centers for each municipality, as of 31st July, 2013. Numbers are temporary calculations and may change in the near future.
2) All figures are calculated on a monthly basis, e.g. data in March 2011 indicates the number for the period from 11th March to 31st March.

Source: JICA Study Team based on the homepage of and data by the Japan National Council of Social Welfare (in Japanese); http://www.saigaivc.com/%E3%83%9C%E3%83%A9%E3%83%B3%E3%83%86%E3%82%A3%E3%82%A2%E6%B4%BB%E5%8B%95%E8%80%85%E6%95%B0%E3%81%AE%E6%8E%A8%E7%A7%BB/ (as of Oct. 2013)

Figure 5.2  Trends in Numbers of Volunteers in Iwate, Miyagi, and Fukushima Prefectures (2011.3 - 2012.2)
Even more than 2 years following the disaster, many volunteers continue to work for and support the victims in the affected areas. Many visit the devastated areas repeatedly to provide assistance.

- In the case of the 3.11 Earthquake, the number of volunteers increased relatively slowly due to cuts in transportation/road access as well as repeated calls for people not to rush into the devastated regions immediately following the disaster. On the other hand, the trend of decreasing numbers is also rather slow when compared to the Great Hanshin-Awaji Earthquake. This is considered due to the vast number of areas affected and an increase in the number of volunteers with a long-term commitment to the cause. (see Figure 5.3).

![Graph of volunteer numbers](image)

*Figure 5.3  Trends in Numbers of Volunteers in Each Prefecture, Iwate, Miyagi, and Fukushima (2012.3 - 2013.7)*

5.1.2 Changes in the Content of Volunteer Activities

Needs for volunteer activities are derived mainly from locations where victims were evacuated to and locations affected by the disaster which changes as time passes.

(1) From March to May 2011

During this period, most of the assistance involved the serving of hot meals, distribution of foods and other emergency supplies, especially water supplies, sanitation, transportation, logistics support, communication and operation of evacuation shelters. This indicates the acute needs for emergency relief like life critical services, commodity supply for maintenance of good health, establishment of supporting mechanisms and opening and operation of evacuation centers during the initial few weeks following the disaster as the largest number of evacuees are affected during this period.

(2) From June to August 2011

This period saw a shift in the living locations of the evacuees, moving gradually from evacuation shelters to temporary houses. Needs for hot meals, distribution of foods and emergency supplies still existed but decreased. Other requirements were identified with support for the easing of stress attributed to the prolonged evacuation such as medical and mental care and support in education, health and hygiene. Besides, assistance was further required in the recovery of the devastated areas such as the cleaning and removal of debris and mud as well as the reconstruction of livelihoods such as the economic revitalization and job assistance.

(3) Since September 2011 to Date

Seeing the progress in the construction of temporary houses, all the evacuation centers were closed on 31st August in Iwate Prefecture. Along with changes like this the focus of volunteer activities also shifted to the inhabitants of temporary houses in the forms of medical and mental care, support in education, health and hygiene etc.
This period saw an increase in the number of support staff assigned by the municipalities and Social Welfare Councils as well as that of reconstruction assistance personnel with a major shift to support the livelihoods in temporary houses including those rented from the private sector.

Requests for cleaning and the removal of debris and mud on the other hand decreased in this period. As the Self-Defense Forces withdrew, the task of removing debris was passed on to specialists in civil engineering works. Thus, Volunteers came to be used for manual works, rather than the removal of debris such as the removal of dangerous substances.

This period corresponds to the shifting from emergency relief to recovery and reconstruction from the disaster. Volunteer activities were also stepped up to deal with new issues such as communication/coordination among volunteer bodies and collaboration with experts/professionals by facing the changes in needs to support resident activities in temporary towns, reconstruction of shopping malls and fishery harbors etc.

5.1.3 Supporting Mechanism for Affected Areas Including Volunteers

As the importance of volunteer activities was clearly recognized from experiences of other mega-disasters such as Great Hanshin-Awaji Earthquake and Mid. Niigata Prefecture Earthquake, the Government of Japan and local authorities have been establishing a mechanism to receive and collaborate with volunteers through Social Welfare Councils. On the other hand, NPO/NGO have been developing their capacities and expanding their networks through accumulating working experiences in provision of assistance to disaster victims in Japan as well as overseas. This section shows the mechanisms under which stakeholders such as public sector, private organizations, and individuals collaborated with each other and also looks at if the mechanisms effectively and efficiently enabled those stakeholders to communicate and collaborate with each other.

(1) Public Organizations for Disaster Countermeasures

The core organization in the public sector is the Disaster Countermeasures Office. Regarding the reception of volunteers, it is determined by Social Welfare Councils at the prefectural and municipality level to establish Disaster Relief Volunteer Center². This was enacted based on lessons learned from experiences in the Great Hanshin-Awaji Earthquake and further developed during the Mid. Niigata Prefecture Earthquake through establishment of “Project Meeting for Supporting Volunteer Activities for Disaster Victims” in January 2005 with participation of social welfare offices, Central Community Chest of Japan, NPOs, enterprises, and other related organizations. The Project Meeting supports Volunteer Centers by providing leadership training for volunteers, supplying materials for volunteer activities and promotion of those activities by private enterprises etc.

(2) Non-Governmental Organizations for Disaster Countermeasures

The above mechanism with Volunteer Centers as a core organization is known as “Social Welfare Council Model.” Under this model, activities are coordinated and managed in a so called “administrative” way by maintaining equity in the searching of needs, implementing safety control of volunteers who were invited from the general public and coordinating their progress.

On the contrary, there is another scheme called “NGO Model.” International as well as domestic NGOs with accumulated working experiences in supporting disaster victims fully utilized their own networks in collecting emergency supplies from organizations they knew, seeking accessible routes like those going along Japan Sea coast, exchanging information with other volunteer organizations, finding out independently those areas that required needs for assistance, and implementing activities depending on their capacities or expanding bases of activities.

² Social Welfare Council is not a public administrative organization but established by Social Welfare Act to provide public services under support of public authorities.
It was the Japan NGO Center for International Cooperation, JANIC, and Group Networking the NGOs for Disaster Suffers, Shin-tsuna, which facilitated the collaboration of NGOs and NPOs which had been working independently before (as for Shin-tsuna, please refer to 5.1.5 found below).

JANIC set up liaison offices in Sendai, Toono, and Fukushima cities and assigned full-time staff in each office to collect information and coordinate volunteer activities following the occurrence of the 3.11 Earthquake. Information on the actual situation in the devastated areas as well as those on rescue/emergency relief was shared through informational exchange meetings, mailing lists and homepages etc which enabled the member organizations of JANIC to source new collaborators and supporters. It especially helped organizations from overseas and also relatively new NGOs and enterprises that did not have the sufficient resources nor working experiences in the provision of assistance for the disaster victims. Still, there were still some areas of activity that require work as noted in “JANIC Annual Report 2011”:

- Coordination between public organizations and civic organizations: Although JANIC held various meetings for information exchange and coordination among governments, public organizations and local civic organizations, effective coordination was not achieved and mostly resulted in the exchange of information only. If the civic society including NGOs had been publicly recognized and accepted and a mechanism for involving them in the provision of assistance had been agreed to and well prepared, coordination might have been more smoothly carried out and enabled international NGOs to function more effectively.

- Localization and mainstreaming of international standards (application by modifying them to fit the Japanese context, raising awareness and proposals): Many NGOs pointed out that it was not easy to apply international standards for emergency humanitarian relief to Japan.

(3) Mechanism for Public-Private Partnership (PPP)

Since many NGOs and NPOs visited and worked in remote geographical areas, it was considered necessary to establish a horizontal association mechanism for sharing and exchanging information and facilitating cooperation and collaboration among major NGOs and NPOs. With governments, either central or local, and private companies which were willing to participate in the mechanism, the Japan Civil Network, JCN, was established on 30th March 2011. JCN held on-site meetings for discussing with volunteer bodies working in the affected areas as well as liaison conferences for coordinatination among ministries, through which JCN became a nationwide networking organization to support the activities of various volunteer bodies in a large number of areas (as for the activities of JCN, please refer to Chapter 6 and Chapter 7 as well).

On 15th March 2011, Prime Minister Kan at the time recognized the importance of volunteer activities in a time of disaster and established “Liaison Office for Collaboration with Volunteers for Disaster Victims” in Cabinet Office.

This mechanism is specific in its aim and function: the Government of Japan does not provide direct support, i.e. guidance and conditionalities to volunteers but promotes the smooth implementation of volunteer activities as a coordinating and information sharing facility. Through this mechanism the Government provided indirect support such as the provision of free passes for emergency vehicles run by NPOs and NGOs, free admission to express highways as well as a reduction in airfares for those who took on volunteer activities, and recommending business groups to let their employees take holidays to carry out volunteer activities.

We require more time to verify how effectively this mechanism functioned. Still, it was a new step for Government to seek the possibility of collaboration with the private sector in a series of countermeasures taken for reconstruction from the 3.11 Earthquake.

Figure 5.4 gives a broad picture of the supporting mechanisms for disaster victims including those mentioned above.
The Study of Reconstruction Processes from Large-Scale Disasters

● Mechanism of Assistance for Affected Areas including Volunteer Activities

**Administrative Bodies**

- Disaster Relief Volunteer Center in each municipality accepts volunteers
- Backup from Support Project for Volunteer Activities for Disaster Victims (Support P)

**NGOs**

- Utilize existing connections, possess commodities for assistance independently, and seek out local bases for operation
- Information network among NGOs/NPO
  - JANIC (Int'l NGO)
  - "Shin-tsuna", etc.

Source: JICA Study Team

**Figure 5.4 Supporting Mechanism for Disaster Victims of the 3.11 Earthquake**

**Figure 5.5 Relationship among Volunteer Bodies for Disaster Victims**

Source: “Volunteer Activities for Connecting People By Utilizing Information Technologies: Present Activities of IT Volunteers for Reconstruction from the 3.11 Earthquake and Its Future (in Japanese)” in the presentation materials for the symposium on “Community Reconstruction” held at the knowledge square in Kasumigaseki in Fiscal Year 2011, on 3rd July 2011, IKEMOTO Shugo, Senior Director of Specified Nonprofit Cooperation “Support Center for NPO Activities”
5.1.4 Organizations for Supporting Volunteers

There are several donor organizations that provide funds as well as information to support volunteers and volunteer bodies in their activities for disaster victim relief and overcoming other challenges and difficulties. Major donor organizations can be found below:

(1) Central Community Chest of Japan

Central Community Chest of Japan was established as the organization to provide financial support for the promotion and upgrading of social welfare after World War II, with the “Akaihane” (Red Feathers) Community Chest commencing in 1947. The donation is mainly utilized for promoting social welfare at the community level. The organization carries out “Project to Support Activities of Volunteers for Disaster Victims” and takes on the initiative as the head office for concerned assistance. Moreover, it created “the Disaster Relief Volunteers and NPO Support Fund” immediately after the 3.11 Earthquake to provide funds to volunteer bodies (see Figure 5.6). 2,387 volunteer bodies and NPOs have been provided total funds of JPY 2,667,210,000 since May 2011 from the 1st to 10th provisions and another JPY 130,450,000 was provided for mutual support activities by inhabitants. Therefore a total of JPY 2,797,660,000 in total was subsidized through the organization (as at the end of April 2013).

![Figure 5.6  Support and Funds for Disaster Relief from the Central Community Chest of Japan](image)

Source: “Assistance for Victims from the 3.11 Earthquake through Akaihane, Red Feathers, Donation (in Japanese),” February 2012, Central Community Chest of Japan

(2) Japan Plathome

Japan Platform, JPF, is an international NGO established in 2,000 for providing international humanitarian support using lessons learned from the assistance refugees in the Kosovo conflict. It is financed mainly by 1% Club of Keidanren, Federation of Economic Organizations of Japan, and provided assistance in terms of technologies, human resources and information from private companies, with further provisions of emergency support under the collaboration of NGOs, economic society, and the Government.
In the case of the 3.11 Earthquake, Japan Platform made a survey by helicopter of the devastated areas just after the occurrence and then received initial reactions by member organizations. Since June, it implemented emergency relief activities, while also creating “Fund for Living Together” as a financing program for volunteer activities selected by the public. The total amount of financial support for the activities of 3.11 Earthquake victims was approximately JPY 6.9 billion including JPY 5.3 billion for assistance by JPF member organizations through more than 60 projects and JPY 1 billion for those supported with “Fund for Living Together” through approximately 144 projects (see Figure 5.7).

![TOTAL DONATION ¥6,943,113,902 (74,298,262USD)](image)

Figure 5.7 Donations Gathered by Japan Platform: Total Amount and Purpose of Use

(3) The Nippon Foundation

The Nippon Foundation is the supporting organization for nonprofit activities that was established in 1962 and financed by subsidies from the sales and proceeds of boat races. It set up “Fund for Victims of the 3.11 Earthquake” immediately after the quake and started collecting donations, while creating the “ROAD Project” to provide assistance to the victims by utilizing collected donations.

The results of the ROAD Project can be found in Table 5.1 below, which implies the following specific features of the Project in its support of volunteer bodies.

(i) Setup and operation of the Nippon Foundation’s operational base: The Nippon Foundation took the initiative to set up a base in Ishinomaki City, Miyagi Prefecture, and operate activities from there.

(ii) Project to Support Volunteers Activities: Provided funding to support the activities of “Group Networking the NGOs for the Disaster Victims”

(iii) Joint Project of Support by Connecting Victims and NPOs, “Tsuna-Pro”: Joint Project with “Sendai, Miyagi NPO Center” and other organizations

(iv) Support Fund for Volunteer Activities for Disaster Victims: Provided support fund up to JPY 1 million per organization. Applications were widely invited from the general public.
Table 5.1 Contents of ROAD Project of the Nippon Foundation and Expenses for Each Activity

<table>
<thead>
<tr>
<th>Activity</th>
<th>Expense (JPY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Setup and operation of The Nippon Foundation’s operational base in Miyagi prefecture</td>
<td>86,770,000</td>
</tr>
<tr>
<td>(2) Setup and operation of volunteer support centers in 9 locations</td>
<td>129,250,000</td>
</tr>
<tr>
<td>(3) Assessing the needs of people in affected areas and matching problems with the different specialized NGOs (widely called as “Tsuna-pro”)</td>
<td>74,500,000</td>
</tr>
<tr>
<td>(4) Distribution of meals in emergency shelters and residential areas (completed)</td>
<td>15,000,000</td>
</tr>
<tr>
<td>(5) Distribution of monetary condolences for the bereaved and missing</td>
<td>866,200,000</td>
</tr>
<tr>
<td>(6) Supporting NGOs and volunteer groups by providing up to JPY 1 million per organization, in support funds</td>
<td>661,900,000</td>
</tr>
<tr>
<td>(7) Dispatching university students to volunteer in the affected areas</td>
<td>49,975,000</td>
</tr>
<tr>
<td>(8) Setup and operation of community based radio stations</td>
<td>151,210,550</td>
</tr>
<tr>
<td>(9) Setup and operation of support centers for the deaf in each of the 3 affected prefectures (completed)</td>
<td>7,500,000</td>
</tr>
<tr>
<td>(10) Project for improving sanitation of temporary toilets in evacuation centers</td>
<td>10,753,480</td>
</tr>
<tr>
<td>Others (for 26 projects)</td>
<td>2,564,809,551</td>
</tr>
<tr>
<td><strong>Total (as of 31st of January 2012)</strong></td>
<td><strong>4,627,868,581</strong></td>
</tr>
</tbody>
</table>


5.1.5 Distinguishing Activities of NGO/NPO: Group Networking the NGOs for Disaster Suffers, “Shin-tsuna”

This section uses “Group Networking the NGOs for Disaster Victims, Shin-tsuna” as a model. Shin-tsuna is has been establishing a nationwide network by communicating with its collaborating volunteer bodies since the Great Hanshin-Awaji Earthquake and is involved in the long-term support for the victims of the 3.11 Earthquake by conducting some unique activities such as “provision of footbaths and recording victims’ murmuring.”

(1) Establishment of Shin-tsuna and History of Activities

Shin-tsuna was established in 1997 as a loosely networked unit for volunteer bodies working in the field of disaster relief following the Great Hanshin-Awaji Earthquake with its secretariat in the NGO Rescue Stock Yard. There are 35 affiliated organizations including individual members, as of January 2012. It has been providing assistance in areas that have suffered from earthquakes, eruptions and floods etc (see Table 5.2).

“Networking Committee for Volunteers for Disaster Victims in Preparation for Earthquake in Tokai Area, etc.” has its head office in Volunteers Association in Shizuoka Prefecture which is one of the member organizations of Shin-tsuna and carried out map exercises with the participation of volunteer bodies in and outside of Shizuoka Prefecture, Social Welfare Councils, and the concerned organizations. This became one of the cues for Shin-tsuna to further expand its network and strengthen the connection with the Nippon Foundation, which went on to became a firm base and background for supporting volunteer activities in the devastated areas of the 3.11 Earthquake.
<table>
<thead>
<tr>
<th>Year</th>
<th>Assistance for Areas Affected by Earthquake/Eruption</th>
<th>Flooded Areas Provided Assistance by Shin-tsuna</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>Jan.: Great Hanshin-Awaji Earthquake</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1996</td>
<td>Nov.: Started preparatory meetings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td>Nov.: Established &quot;Group Networking the NGOs for Disaster Victims&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td></td>
<td>Aug.: Heavy rainfall in Fukushima and Tochigi</td>
<td>- Operation of volunteer buses</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sep.: Heavy rainfall in Kochi and around the Shin-Minato River in Kobe</td>
<td>- Support for volunteer centers</td>
</tr>
<tr>
<td>1999</td>
<td>Jun.: Kure in Hiroshima and Shin-minato River in Kobe</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Oct.: Karumai Town in Iwate</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>Mar.: Eruption of Mt. Usu in Hokkaido</td>
<td>Sep.: Tokai Heavy Rainfall in Aichi</td>
<td>Storage and utilization of materials/equipments for volunteer activities</td>
</tr>
<tr>
<td></td>
<td>Jun.: Eruption of Mr. Oyama on Miyake Island in Tokyo</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Oct.: Western Tottori Earthquake</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>Mar.: Hiroshima Geiyo Earthquake</td>
<td>Sep.: Heavy rainfall in Southwestern Part of Kochi</td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td></td>
<td>Jul.: Typhoon No. 6 (in Gifu, Tochigi, and Fukushima)</td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>Oct.: Mid. Niigata Prefecture Earthquake</td>
<td>Jul.: Fukushima, Niigata, and Fukui</td>
<td>Confusion brought by the provision of emergency supplies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Aug.: Tidal wave in Takamatsu, Kagawa</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Oct.: Typhoon No. 23 in Hyogo</td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>Mar.: West-off Fukuoka Earthquake</td>
<td>Sep.: Typhoon No. 14 in Miyazaki</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td></td>
<td></td>
<td>Team “Osekkai” (providing “too much care”)</td>
</tr>
<tr>
<td>2007</td>
<td>Mar.: Earthquake on Noto Peninsula in Ishikawa</td>
<td></td>
<td>- Support for reconstruction of the local economy and houses / Team “Ashiyu” (providing footbath services)</td>
</tr>
<tr>
<td></td>
<td>Jul.: Mid. Niigata Prefecture Earthquake</td>
<td></td>
<td>- Project for activities with victims</td>
</tr>
<tr>
<td>2008</td>
<td>Jun.: Inland Earthquake in Iwate and Miyagi</td>
<td>Aug.: Heavy Rainfall at the End of August in Aichi</td>
<td>- Support for reconstruction of devastated business</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Support for victims from heavy rainfall in urban areas</td>
</tr>
<tr>
<td>2009</td>
<td></td>
<td></td>
<td>- “Charcoal” Project</td>
</tr>
<tr>
<td>2010</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>Jan.: Eruption of Mt. Shinmoe Mar.: the 3.11 Earthquake</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: “Records of Supporting Activities for Victims of the 3.11 Earthquake by Group Networking the NGOs for Disaster Suffers (in Japanese),” May 2012, Group Networking the NGOs for Disaster Suffers
(2) Supporting Mechanism of the 3.11 Earthquake: Nippon Foundation Joint Project of Shin-tsuna and ROAD Project

Immediately after the occurrence of the 3.11 Earthquake, the affiliate organizations of Shin-tsuna started communicating with each other and preparing to visit the devastated areas exemplified by the NGO Collaboration Center for Hanshin Quake Rehabilitation that went into Tono City, Iwate Prefecture, from the Yamagata side.

The Nippon Foundation, on the other hand, was trying to start its activities in Ishinomaki, Miyagi Prefecture at the same time. Since the disaster was extremely significant in its scale of devastation, Shin-tsuna and the Nippon Foundation got together in Tokyo on 14th March and established a mechanism for collaboration by jointly setting up a head office in Tokyo. At this time the Joint Project of Shin-tsuna and ROAD Project of the Nippon Foundation began.

As noted in Figure 5.8, the project member organizations have been carrying out their activities using local bases, that vary in size and form, in each of the affected localities. Besides this, the Project set up well-equipped facilities for supporting volunteer activities in Tono City of Iwate Prefecture, Shichigahama Town of Miyagi Prefecture, and Ichinoseki City of Iwate Prefecture. Those 3 bases accommodated volunteers in dormitories and contributed to provide ongoing support with a long-term perspective for the surrounding areas.

Source: “Records of Supporting Activities for Victims of the 3.11 Earthquake by Group Networking the NGOs for Disaster Suffers (in Japanese),” May 2012, Group Networking the NGOs for Disaster Suffers

Figure 5.8 Bases for Supporting Activities by Affiliate Organizations of Shin-tsuna
(3) Footbaths and Social Moments

“Ashiyu (footbath)” volunteer activities was the most distinguishing activity of Shin-tsuna. Taking a footbath itself is a kind of preventive activity, by placing ones feet in hot water while typically using wash bowls, improves blood circulation and also prevents influenza and other diseases.

This activity started after an idea of one of the young volunteers who provided assistance to victims of the Great Hanshin-Awaji Earthquake in 1995. Footbaths at that time allowed volunteers to engage victims by taking their feet and rubbing with their hands while listening to the victims stories. Some original footbath protocols were modified to fit the the local situation following the disaster.

On the occasion of the 3.11 Earthquake, Shin-tsuna and ROAD Project collected volunteers mainly in Tokyo, provided them with 2 hour training, and then took them to the devastated areas as “Team for Footbaths.” Compared to past cases where mainly young students took up the initiative, volunteers of a variety of age and sex, especially female volunteers who could not contribute to heavy physical labour, were found to be active in the provision of this service. This can be pointed out as one of the specific features of volunteer activities in the case of the 3.11 Earthquake (see Figure 5.9).

![Diagram of Footbath Service]

Source: “Records of Supporting Activities for Victims of the 3.11 Earthquake by Group Networking the NGOs for Disaster Suffers (in Japanese),” May 2012, Group Networking the NGOs for Disaster Suffers

**Figure 5.9 Mechanism for Dispatching “Team of Footbaths” by Shin-tsuna and ROAD Project**

The footbath service itself was provided by the NGO Collaboration Center for Great Hanshin-Awaji Earthquake Rehabilitation on the occasion of Mid. Niigata Prefecture Earthquake and victims’ stories which were listened to during these services were recorded by volunteers and planed to be passed onto future generations. The records were afterwards found to be very valuable records of the truth of victims livelihoods during the evacuation period. Also, in the case of the 3.11 Earthquake, notes were taken by volunteers on the key points of victims’ stories as “Notes of Victims’ Stories: Tsubuyaki,” which turned out to be an important and rare source of factual information to help outsiders recognize the actual situation of victims’ livelihoods as well as their needs for further support.

“Note of Victims’ Stories: Tsubuyaki” numbered 16,000 during the 2 year period after the earthquake and were analyzed by the Volunteer Network for Supporting Affected People, Tokyo University, since June 2011 (for the outline of analysis results please refer to the related section starting from page 5-18). The Notes are records of the communication that occurred between the affected people and the
volunteers through the “footbath” intermediary and the information on them cannot be objective in the precise sense. Therefore it cannot be expected to obtain any statistical results/outputs from the analysis. It is still a valuable source of information when we are considering suitable methods of support as well as reconstruction from the victims’ own perspectives.

Apart from that above, listening to their stories enabled supporters to provide mental care for the suffers appropriately if implemented in conjunction with local facilities for medical as well as mental health support. Therefore it is planned to prepare “Guidebook for Mental Health of Disaster Victims (tentative title)” by reflecting the analysis results of these stories to utilize in future volunteer activities.

(4) Liaison Meetings for Volunteers Working for Temporary Houses Inhabitants and Others

An extremely large number of temporary houses were constructed for the victims of the 3.11 Earthquake after the disaster hit and devastated vast geographical areas in Tohoku area. Anticipating this necessity for support, including that for inhabitants of the temporary houses in the near future, Shin-tsuna decided to work for the inhabitants in the temporary houses by utilizing its experience accumulated after the Great Hanshin-Awaji Earthquake. Shin-tsuna started holding “Liaison Meetings for Volunteers Working for Temporary House Inhabitants” as its sectional committee in June 2011 by networking volunteer bodies which knew each other well. The meeting was aimed at conducting volunteer activities in temporary houses.

In the meetings, representatives of member organizations of Shin-tsuna gathered to obtain and share information on the actual situation in the affected areas and discuss the content of support to be provided there. The meeting was open for any person/organization to discuss not only how to utilize the information obtained from disaster victims’ stories at footbaths and the constraints but also what kind of policy recommendations were discovered and made from their activities.

Information exchange meetings are held on a regular basis mainly by member organizations of Shin-tsuna and open to those who work at sites and take initiatives in activities. While Liaison Meetings are held at the premises of the Nippon Foundation in Tokyo, information exchange meetings are held in the affected 3 prefectures. The exchange of information on the respective affected areas enables the volunteers to formulate and carry out suitable assistance which fulfills the imminent needs of the victims. Also, it allows all the meeting participants to, despite which organization they belong to, share information as well as the constraints faced and create new networks among the group. All these activities are conducted with a key goal of providing assistance to the victims. The meetings are not for reporting to each other just once or twice but for clarifying the actual constraints faced at the sites and discussing the countermeasures with all the participants, which meets the needs of all the participants (see “Records of Supporting Activities for Victims of the 3.11 Earthquake by Group Networking the NGOs for Disaster Suffers,” May 2012, Group Networking the NGOs for Disaster Suffers).

(5) Provision of Medium- and Long-term Support for Victims

2 years has passed since the 3.11 Earthquake and volunteer organizations are at a turning point in their provision of assistance to modify, reduce in size and the changing of course etc by facing the changing needs for and/or conditions for assistance after the relatively long evacuation into temporary houses.

Changes in Needs

Support for temporary communities up to the stage of reconstruction, i.e. capacity development of communities for self-reliance and community development for reconstruction etc. is necessary. A major task ahead is to break through the temporary houses livelihoods which are stuck in a rut at the moment.
Changes in Conditions on the Volunteer Side

Termination of funds for activities and closure of large-scale accommodation for volunteers as applicants for volunteer activities are examples of negative influences while on the flip side local volunteer bodies are increasing along with capacity development.

Member organizations of Shin-tsuna modify or reorganize their institutions for providing assistance to the victims by: 1) reducing activity sites and continuing provision of support, 2) not setting up their own activity bases but utilizing public facilities, and 3) withdrawing their own bases at sites and changing the target/content of support. Among those taking the alternative 3), there are some that will restart their support for long-term evacuees mainly from Fukushima after retreating back to head office and reorganizing proper mechanisms for those activities (as for support for long-term evacuees, please refer to Chapter 6 as well).
Box 5.1  Analysis Results of Victims’ Stories Collected by Provision of Footbath Services

Source: “Records of Supporting Activities for Victims of the 3.11 Earthquake by Group Networking the NGOs for Disaster Suffers (in Japanese),” May 2012, Group Networking the NGOs for Disaster Suffers

Targets: 15,145 Notes of Stories: Tsubuyaki, collected from 29th March 2011 to 11th November 2012

Analyzed by: Working Team for Analyzing Stories, Support Network for Affected Areas, Tokyo University

Method of Analysis: Review all the stories and categorize them by applying 25 items for analysis (found in Table A) that were set by the Working Team and Head Office of ROAD Project. All the categorized stories were made both quantitative and qualitative analyses by processing statistically and confirming the meaning of each story respectively.

### Table A  25 Items for Categorizing Contents of Victims’ Stories

| 1 Experience of Earthquake, Nuclear Accident Victim | 10 Land, Assets, and Residences | 19 Education, Child Rearing, and Schools |
| 2 Live or Dead | 11 Shopping | 20 Local Features (Strengths of the Areas) |
| 3 Radioactivity | 12 Transportation | 21 Individual Histories and Live Purpose |
| 4 Medical support, Health, Nursing Care, and Social Welfare | 13 Food, Cloths, and Other Daily Commodities | 22 Small Talk |
| 5 Family and Relatives | 14 Living Environment in Temporary Houses | 23 Footbath |
| 6 Neighbors and Friends | 15 Community Development and Reconstruction Plan | 24 Volunteers and Assistance |
| 7 Animals and Pets | 16 Future Plans | 25 Living Environment in Evacuation Centers |
| 8 Jobs and Regular Vocation | 17 Leisure and Hobbies |
| 9 Money and Cost of Living | 18 Nothing to Do |

#### Results of Quantitative Analysis:

It is possible for all the data to be calculated and analyzed on the victims’ personal profiles, chronological changes of participants and changes in the tendency of those 25 items etc. although the data is rather difficult to objectify. The following is known following the results of analysis:

- Many women in their 70’s were found to be recipients of footbath services.
- Differences in the content of stories was found between those who suffered from the tsunami and those who suffered from nuclear accidents, i.e. evacuees from Fukushima (see Figure B).
- No significant changes were found in the content of stories even 2 years after the disaster, although there was some fluctuation in the content, that meant the situation the suffers were forced into has not been improved significantly (see Figure C).

![Figure B](image-url)  Items that Found Relatively Large Difference by Prefecture
Results of Qualitative Analysis:
Despite those that were categorized into 25 items, the data are “words and sentences” containing information that was collected at random. The Working Team read all those “words and sentences” to make qualitative analyses and try to extract important messages from the victims.

- **Power of Footbath**: positive effects were found in both physical and mental care.
- **Experiences of Earthquake and Bereavement**: No significant changes noted both in quantity and in quality while they throughout the period following the disaster.
- **Suffering from Nothing To Do**: Increased at the timing of movement from evacuation centers to temporary houses and found to exist in conjunction with reference to stories on “lack of jobs.” Also, it was mentioned together with references to gaining/losing weights, which tells us the potential correlation with their health conditions.
- **Living Environment, Mental Conditions, and Human Relationship in Evacuation Centers**: found many stories on “No idea for actions to recover their own livelihoods” until 1 month after the disaster and those on “How long evacuation would last” after that. Voices expressing a higher anxiety level increased 2 months following the quake especially in regards to separating from friends and acquaintances by moving to temporary houses.
- **Human Relationships in Temporary Houses and Referencing the Past**: it was found that public meeting spaces contributed significantly to the establishment of human relationships among the evacuees. After a period of time of settlement in temporary houses, stories were uncovered where comparisons between “present livelihoods” and “those before the disaster” were made.

Feedback of Analysis Results to Volunteers
Messages noted in stories are extremely precious for volunteers when they address the victims as basic information that allows recognition of the actual situation in which the victims were/are and also the ability to obtain a suitable approach to communicate with the affected people. Also, these messages sometimes indicate the urgent requirements of the victims.

Considering the above, feedback of the analysis results is made as soon as possible to volunteers working at sites in order to improve the effectiveness of the footbath service provision. For example, reports are made in several meetings such as steering committees of volunteers, including participants from a number of stakeholders including public officers in charge of community care in the affected prefectures etc.

Tasks ahead for future activities are found below:

- **Establishment of Mechanism for Collaboration with Experts and Academics in Community Care**
- **Preparation of “Guidebook for Mental Health” to Contribute to Qualitative Improvement of Volunteer Activities**
5.2 Engagement of Universities and Research Organizations

 Universities and research organizations have provided a wide range of support for the affected areas/people since the 3.11 Earthquake, although some of them closed their campuses around April 2011, depending on the degree of damage. Their activities are exemplified as bases for the disaster relief activities and for volunteer activities by students in the emergency relief period, while also being utilized as sites for research activities in the concerned fields, a source of information and expertise for local authorities in their formulation of reconstruction plans as well as in the community reconstruction field and for establishing NPOs and aggregate corporations in the recovery and reconstruction period.

5.2.1 Involvement of Universities

(1) Emergency Relief Period

Universities that were affected but not seriously damaged were not only opened to the public as temporary evacuation centers but also utilized as bases for volunteer activities (Ishinomaki Senshu University) and used by the students as a site for receiving volunteers from outside of the prefecture (Tohoku Fukushi University). In another example Iwate Prefectural University collaborated with NPO’s and functioned as the intermediary for receiving and sending student volunteers from around the country to the affected areas (see Table 5.3).

Those in metropolitan areas as well had some involvement, such as Rikkyo University which opened its facilities for those who had difficulty returning to their home just after the earthquake.

![Table 5.3](image)
(2) Recovery and Reconstruction Period

Universities in the affected areas tried to expand research institutes in the field, collaborate with local authorities, and function as centers for student volunteers.

One example is Iwate University in Iwate Prefecture which set up several satellite offices along the coastal areas to better understand the needs of the victims as well as work in collaboration with industries and local authorities (see Table 5.4). Another is Tohoku University with its newly established International Research Institute of Disaster Science, IRIDeS, to upgrade the standard of research in the concerned fields and also carry out many research projects within the university. Fukushima University newly organized Research Institute for Reconstruction and “Fukushima Future Center for Regional Revitalization” collected young academics to engage in specific problems/constraints in the affected areas. JICA also dispatched an outside researcher to be trained in the Center as a coordinator for international exchange (as for the involvement of Fukushima University, please refer to Chapter 6 as well).

Table 5.4 Cases of Involvement of Universities in Recovery and Reconstruction Period

<table>
<thead>
<tr>
<th>University</th>
<th>Main Actor</th>
<th>Contents</th>
</tr>
</thead>
</table>
| Iwate University    | Satellite Offices at Sites                      | - Support and promote reconstruction with an active commitment of all the faculties of the university in the coastal areas of Sanriku, with 3 main concepts for assistance, i.e. “Support for Reconstruction of Livelihoods,” “Support for Reconstruction of Industries,” and “Formulation of Bases for Community-based Disaster Management” in collaboration with industries and public administration.  
- Set up a satellite office in Kamaishi and extension centers in Kuji and Miyako  
- Collect needs for support from the affected areas, provide information on resources that Iwate University possessed and could utilize for disaster victims and match the needs and resources to encourage proper support for suffers.  
- Coordination with municipalities in the affected coastal areas, business entities, organizations/groups and other related bodies  
- Formulate support programs and promote reconstruction projects implemented by Iwate University |
| Tohoku University   | Research Institute for Reconstruction and Regeneration from Disaster | - Established in April 2011  
- Implemented 8 projects to promote/support Actions for Reconstruction 100+.  
- “Actions for Reconstruction 100+” indicates more than 100 voluntary actions for reconstruction implemented by academics of Tohoku University covering damage assessment, assistance for disaster victims and support activities for rehabilitation and reconstruction etc. |
| International Research Institute of Disaster Science, (IRIDeS) | - Established as a new organization for interdisciplinary research on countermeasures for low-probability, high-impact disaster under one of the 8 Projects mentioned above, “Project for Promoting International Research on Disaster Science.”  
- Carry out the world’s most advanced interdisciplinary research on disaster science by formulating a network with capable research institutes in and outside Japan. |
| Fukushima University| Research Institute for Reconstruction             | - Established in April 2011.  
- Joint research with active participation from all faculties of the university on the following 8 themes: 1) Nuclear Power Plant Accident, 2) Reconstruction of Industries, 3) Reconstruction of Livelihoods of Disaster Victims, 4) Reconstruction of Affected Municipalities, 5) Support for Disaster Education and Disaster Management Education, 6) Medical/Health Care and Welfare at the time of Disaster, 7) Information on Disaster, and 8) Renewable Energy. |
The Study of Reconstruction Processes from Large-Scale Disasters

<table>
<thead>
<tr>
<th>University</th>
<th>Main Actor</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iwate</td>
<td>Iwate University</td>
<td>- Carried out “Assessment on Progress of Reconstruction from the 3.11 Earthquake” in August 2011 with approximately 28,000 households in Futaba District.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Established in July 2011.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Set up satellite offices in Minami-soma City and Kawauchi Village in addition to 4 divisions for supporting children and young people, supporting in the formulation of reconstruction plans, energy and environment and planning and coordinating respectively.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Not only assessing and information collection in the affected areas but provided advice to municipalities and other public agencies in charge of rehabilitation and reconstruction from the 3.11 Earthquake and technical support for the formulation of plans and measures.</td>
</tr>
</tbody>
</table>

Source: JICA Study Team based on the information provided by the concerned universities (in Japanese)

Many of local universities took part in the project for installing functions as a center for community development by universities, etc. which is taken an initiative by Ministry of Education, Culture, Sports, Science and Technology (MEXT) with various individual themes for researches. Table 5.5 indicates content of the activities adopted for fiscal year 2011 and applications are invited thereafter.

**Table 5.5 Projects for Installation of Functions as a Center for Community Development by Universities, etc. (for FY 2011)**

<table>
<thead>
<tr>
<th>Prefecture</th>
<th>University</th>
<th>Main Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iwate</td>
<td>Iwate University</td>
<td>＜Support for regeneration of industry, agriculture and forestry and support for reconstruction of livelihoods＞&lt;br&gt;Apply the methods for upgrading manufacturing technologies developed by the university in the watershed area of Kitakami River to the coastal area of Sanriku, and contribute to the reconstruction of the target area by job creation through revitalization of local industries, training for engineers to upgrade their technologies, and such.</td>
</tr>
<tr>
<td></td>
<td>Iwate Prefectural University</td>
<td>＜Formulation of communities at schools and temporary residential areas, and capacity development of core personnel for community development＞&lt;br&gt;Education Support for elementary, junior high, and high schools students, community development and reconstruction support in temporary residential areas, and others</td>
</tr>
<tr>
<td>Iwate</td>
<td>Medical University</td>
<td>＜Capacity development of medical staff and establishment of remote medical support system＞&lt;br&gt;Established Education Center for Local Medical Support on Disaster to foster medical staff who are capable of providing medical relief and care in a time of disaster and to set up remote medical system.</td>
</tr>
<tr>
<td>Miyagi</td>
<td>Tohoku University</td>
<td>＜Establishment of a cycloid type of cross-fertilizing system including reeducation of health personnel and establishment of a discipline of disaster medicene.＞&lt;br&gt;Established Comprehensive Training Center for Local Medical Services and implemented cycloid type of personnel exchange program by receiving health personnel from the suffered hospitals, reeducate them in advanced medical technologies and disaster medicene, and dispatch them back to core hospitals in the affected areas for relatively long period, and then facilitating those core hospitals to send their young staff to the university for reeducation, and such.</td>
</tr>
<tr>
<td>Prefecture</td>
<td>University</td>
<td>Main Contents</td>
</tr>
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</tr>
<tr>
<td>Miyagi</td>
<td>University of Education</td>
<td>&lt;Education Support&gt; Implementation of education support for elementary, junior high, and high school students in the affected areas, provision of mental care, and provision of assistance for teachers in conducting classes</td>
</tr>
<tr>
<td>Miyagi</td>
<td>University</td>
<td>Projects by/in satellite campus and support for reconstruction of community in Minami-sanriku Town</td>
</tr>
<tr>
<td>Prefecture</td>
<td>University</td>
<td>With the base of “Minami-sanriku Station for Reconstruction,” conduct travelling lectures and meetings for reconstruction for residents.</td>
</tr>
<tr>
<td>Ishinomaki</td>
<td>Senshu University</td>
<td>Support for industrial revitalization and strengthening of capacity in disaster management</td>
</tr>
<tr>
<td>Prefecture</td>
<td>Institute of Technology</td>
<td>Human resource development for reconstruction, support for volunteer activities, and support for industrial revitalization</td>
</tr>
<tr>
<td>Tohoku</td>
<td>Institute of Technology</td>
<td>Fostering personnel who can take active initiatives in reconstruction at community level, and such.</td>
</tr>
<tr>
<td>Sendai</td>
<td>National Collage of Technology</td>
<td>Capacity development of engineers for reconstruction</td>
</tr>
<tr>
<td>Prefecture</td>
<td>University</td>
<td>By concentrating resources of the six (6) technical collages in Tohoku, develop human resources who are capable of solving problems in the fields of industrial revitalization and such in the area.</td>
</tr>
<tr>
<td>Fukushima</td>
<td>University</td>
<td>Education support, participation in community development, and countermeasures against radioactivity and energy supply</td>
</tr>
<tr>
<td>Prefecture</td>
<td>University</td>
<td>Education support for children, provision of mental care, and others</td>
</tr>
<tr>
<td>Fukushima</td>
<td>Medical University</td>
<td>Capacity development of medical staff in a time of disaster, and dispatch of medical doctors and other medical staff</td>
</tr>
<tr>
<td>Prefecture</td>
<td>University</td>
<td>Establishment of training program in provision of medical relief and services in a time of disaster and nuclear accident, and implementation of training of medical staff</td>
</tr>
<tr>
<td>Iwaki</td>
<td>Meisei University</td>
<td>Assessment for solving local problems</td>
</tr>
<tr>
<td>Prefecture</td>
<td>University</td>
<td>Implement activities for solving local problems, e.g. archiving documents on the disaster in digital data, and researches on measuring as well as mitigating radioactivity.</td>
</tr>
<tr>
<td>Fukushima</td>
<td>National Collage of Technology</td>
<td>Human resource development for reconstruction</td>
</tr>
<tr>
<td>Prefecture</td>
<td>University</td>
<td>Established a special course for developing capacity for reconstruction as an advanced course program and provide education in 3 fields such as renewable energy, safety in nuclear power generation, and engineering in disaster mitigation.</td>
</tr>
<tr>
<td>Neighboring Area</td>
<td>Hachinohe Institute of Technology</td>
<td>Assessment for solving local problems</td>
</tr>
<tr>
<td>Prefecture</td>
<td>University</td>
<td>Assessment for solving local problems, e.g. stable energy supply, and disaster resilient community development</td>
</tr>
</tbody>
</table>

Source: Ministry of Education, Culture, Sports, Science and Technology.
At Fukushima University, students voluntarily established the Disaster Relief Volunteer Center and provided services such as footbaths in Big-Palette Fukushima in Koriyama City where a large-scale evacuation center had been set up and hot meal services in temporary houses. In Sendai, on the other hand, universities took the initiative of holding a series of seminars for citizens entitled “University for Reconstruction” and are expected to upgrade the level of knowledge in the localities and foster human resources to contribute to the reconstruction.

Those in metropolitan areas and in the Kansai area as well saw active involvement in the expansion of research areas outside their own level of expertise and also in supporting the volunteer activities of students.

Here are some examples:

- Tokyo University: Project for Supporting Relief and Reconstruction from the 3.11 Earthquake
- Tsukuba University: Program for Supporting Reconstruction from the 3.11 Earthquake
- Meiji University: Establishment of Center for Supporting Reconstruction from Earthquake
- Nara University of Education: Collaboration with Miyagi University of Education
- Institute for Research on Mechanisms for Reconstruction, Kansei Gakuin University: Making policy recommendations and holding the society for scientific study
- Kobe University: Establishing Unit for promoting Support for Reconstruction from Disaster and Research on Disaster Sciences in collaboration with Tohoku University
- Network of 22 Private Universities for Supporting Affected Areas: Established “Shidai Net 36” (Network of Private Universities for Supporting Sanriku Area) by collaborating with the Training Center in Minami Sanriku area in order to work collectively gathering knowledge from the member universities to formulate tourism reconstruction projects as well as the revitalization of agricultural and forestry industries.

Table 5.6 shows cases of support for disaster victims provided by universities as of March 2013. The contents of the activities range widely from direct support at the affected sites, such as removal of debris to more indirect support such as collecting donations, provision of commodities, distribution of information on the situation of victims areas/people and holding events for mental relief of victims etc. Most of these activities are unique in that they fully utilize expertise and technologies that the universities possess and it is expected to see the continuous involvement of those universities.

<table>
<thead>
<tr>
<th>Name</th>
<th>Main Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sapporo University (Sapporo City, Hokkaido)</td>
<td>Set up and implemented a sustainable donation project for disaster victims, “Rimu Day. 11” since June 2011.</td>
</tr>
<tr>
<td>Higashi Nippon International University (Iwaki City, Fukushima)</td>
<td>Opened a website for distributing information on community development in Iwaki City to those in and outside of Japan, aiming at promoting the recovery of tourism and also collaborating with various information sources that can contribute to community development in the area by distributing information in various languages. The activity is being conducted with support of a multinational team mainly consisting of students and academic staff of the university.</td>
</tr>
<tr>
<td>Seigakuin University (Ageo City, Saitama)</td>
<td>Published a booklet, “Being There with Children – Care for Suffered Children,” in February 2013. This is the 2nd version of the booklet with the same title published in February 2012 and developed through discussion and opinion exchange with readers of the 1st version as well as experts. It recommends some picture books for reading with children and is distributed to those who wish to read for free.</td>
</tr>
<tr>
<td>Ootsuma Women’s University (Chiyoda Ward, Tokyo)</td>
<td>Students are engaged in various support projects by utilizing their own expertise and technologies: Department of Clothing and Textiles contributed products such as schoolbags, graduates from Dep. of Child Studies provided panel theatre performance to children and parents in Sendai, School of Social Information Studies provided assistance in restoration of damaged pictures from tsunami etc.</td>
</tr>
</tbody>
</table>
### 5.2.2 Engagement of Academic Societies

Science Council of Japan\(^3\) established Committee for Countermeasures for the 3.11 Earthquake after the 3.11 Earthquake and held forums as well as symposiums to formulate policy recommendations and reports up until September 2011. The Council set up Supporting Committee for Affected Areas/People by the 3.11 Earthquake and also Exploratory Committee for Academic Researches on the 3.11 Earthquake to discuss, survey and formulate recommendations etc after September 2011. In concrete, “Recommendations from Academic Society – For Dynamic Reconstruction” and “Recommendations on Tasks Ahead Necessary to Be Tackled for Recovery from Nuclear Accident and Reconstruction from Disaster” were publicly announced in April 2012 and in June 2013 respectively.

Civil Engineering and Architecture Committee of Science Council of Japan established in May 2011 “Liaison Conference among Academic Societies on Comprehensive Countermeasures to the 3.11 Earthquake” for the purpose of taking more appropriate countermeasures to the 3.11 Earthquake as well as mega-disasters which Japan may face in the future by exchanging information and discussing actively on an interdisciplinary basis by collaborating with approximately 30 concerned academic societies.

Apart from the above, some societies in the fields of engineering, cultural sciences, and social sciences conducted support activities and research on reconstruction from the 3.11 Earthquake as below (see Table 5.7), despite those activities being outside their professional areas.

<table>
<thead>
<tr>
<th>Name</th>
<th>Main Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architectural Institute of Japan</td>
<td>Establishment of “Head Office for Preliminary Reconnaissance of the 2011 Tohoku-Chiho Taiheiyo-Oki Earthquake,” and “Supporting Unit for Collecting Information on Damage in Tohoku Area.”</td>
</tr>
<tr>
<td>2011.3.11</td>
<td>Development of Guidelines for Reconnaissance of the earthquake off the Pacific coast of Tohoku Area, which was withdrawn in January 2012.</td>
</tr>
<tr>
<td>2011.4.14</td>
<td>Establishment of Liaison Meetings of Architecture-Related Organizations for Discussing Countermeasures against Disasters.</td>
</tr>
<tr>
<td>2012.11.15</td>
<td>Recommendations of regional development for rehabilitation and reconstruction of the areas afflicted from the 3.11 Earthquake</td>
</tr>
</tbody>
</table>

\(^3\) Science Council of Japan is the organization established under supervision of Prime Minister in 1949 as “Special Institute” totally independent from the government, aimed at reflecting as well as penetrating scientific facts/results into public administration, industries and national livelihoods under the concept that science is the basis of cultural states. The Council is the organization representing approximately 840,000 scientists in Japan in the fields of cultural sciences, social sciences, life sciences, sciences and engineering.
<table>
<thead>
<tr>
<th>Name</th>
<th>Main Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013.5.15 Head Office for Preliminary Reconnaissance of the 2011 Tohoku-Chiho Taiheiyo-Oki Earthquake was dissolved while a newly established task force for reconstruction from the quake is planned in the near future.</td>
<td></td>
</tr>
<tr>
<td>The City Planning Institute of Japan</td>
<td>Establishment of “Special Committee for Research on Disaster Prevention and Reconstruction” consisting of 5 subcommittees on city planning for reconstruction, disaster prevention in urban areas, restructure of social system, archives and reconstruction from nuclear accident.</td>
</tr>
<tr>
<td>2011.3.14</td>
<td>Joint emergency statement by presidents of the City Planning Institute of Japan, of Japan Society of Civil Engineers, and of the Japanese Geotechnical Society</td>
</tr>
<tr>
<td>2011.3.23</td>
<td>Joint dispatch of a study team for the 1st comprehensive assessment on the 3.11 Earthquake by Japan Society of Civil Engineers and the City Planning Institute of Japan</td>
</tr>
<tr>
<td>2011.4</td>
<td>Joint recommendations from presidents of 7 institutes and societies in the field of national land and reconstruction on the 3.11 Earthquake, i.e. the Society of Heating, Air-Conditioning and Sanitary Engineers of Japan, the Japanese Geotechnical Society, Japan Society of Civil Engineers, Architectural Institute of Japan, Japan Concrete Institute, and Japanese Institute of Landscape Architecture</td>
</tr>
<tr>
<td>2011.5</td>
<td>Joint dispatch of a study team for the 2nd comprehensive assessment of the 3.11 Earthquake by Japan Society of Civil Engineers and the City Planning Institute of Japan</td>
</tr>
<tr>
<td>2012.7.3</td>
<td>Mid-term recommendations by the Committee for Collaboration for Community Reconstruction jointly established by the City Planning Institute of Japan and Japan Society of civil Engineers</td>
</tr>
<tr>
<td>2011.9-201</td>
<td>Recommendations for community-based reconstruction by the Study Group on City Planning for Reconstruction jointly established by Japanese Research Association for Community Development and the City Planning Institute of Japan</td>
</tr>
<tr>
<td>2012.10</td>
<td>The 2nd recommendation of community-based reconstruction</td>
</tr>
<tr>
<td>FY 2011-2012</td>
<td>Implementation of support project of MLIT for community development: Coordinating support for victims livelihoods in Kitakami City and Otsuchi Town, with an operation base in Kitakami and functioning to identify the needs of community-based organizations such as residents’ organizations, matching those needs with proper assistance and making recommendations on those projects of necessity for the residents of Otsuchi Town,</td>
</tr>
<tr>
<td>Japan NPO Research Association</td>
<td>Inauguration of “Special Project for the 3.11 Earthquake”</td>
</tr>
<tr>
<td>Since 2011.9 to Date</td>
<td>Implementation of Special Forum on the 3.11 Earthquake that has been held 5 times so far</td>
</tr>
<tr>
<td>Since 2012.1 to Date</td>
<td>Assessment on progress and trends in assistance by the private sector for victims of the 3.11 Earthquake, jointly carried out with the Japan NPO Center as one project in “Program for Regeneration of Life and Livelihood, sponsored by Takeda Pharmaceutical Company Ltd.”</td>
</tr>
</tbody>
</table>

Source: JICA Study Team based on the homepages of each academic society (in Japanese)
International and Governmental Research Institutes

(1) World Bank

The World Bank strongly recognized the need of learning lessons from the experiences of the 3.11 Earthquake and utilizing them to enhance disaster management measures in other countries, by considering the devastating damage brought by the 3.11 Earthquake and the immense impact to the world economy through supply chains. “Learning from Megadisasters, a knowledge-sharing project” sponsored by the Japanese Government and the World Bank was formulated and commenced in October 2011.

The project aims to facilitate mutual learning as well as international cooperation for the purpose of establishing a disaster resilient society by collecting, analyzing, distributing and sharing data and information on the damage and loss caused by the 3.11 Earthquake. The first phase of the project delivered a set of 32 “Knowledge Notes” grouped into six thematic clusters and provided as discussion points in seminars presented through the offices of the Global Development Learning Network, video-conferencing facilities as well as in face-to-face activities such as “Conference on Disaster Management and Development in Sendai,” “Seminar on Lessons Learnd from the 3.11 Earthquake” and other related activities in order to share information and encourage developing countries to mainstream disaster risk management (DRM) in developing their policies and planning. The results from those activities and discussions are compiled into the report, “The Great East Japan Earthquake, Learning From Megadisasters.”

The report pointed out 3 characteristics specific to the 3.11 Earthquake and the following as features of Japanese disaster management mechanisms; 1) investing in both structural and nonstructural preventive measures, 2) nurturing a strong culture of knowledge and learning from past disasters, 3) engaging in wise DRM regulation, legislation, and enforcement, 4) promoting cooperation among multiple stakeholders, 5) installing facilities utilizing a high level of technology. It concluded that Japan had established a sophisticated and cutting-edge system for disaster management (see Figure 5.10). Based on the above analysis the report recommends the following 3 points for further improvement of the system.

1) Spreading understanding of the nature and limitations of risk assessment such as hazard mapping among local authorities and the population at large
2) Coordination mechanisms on the ground should be agreed to before the disaster.
3) Vulnerable groups must be not only protected but also engaged.

Source: “The Great East Japan Earthquake: Learning From Megadisasters - Knowledge Notes -,” 2012, the Government of Japan, the Global Facility for Disaster Reduction and Recovery (GFDRR) and the World Bank

Figure 5.10 Summary of Findings and Lessons Learned from the Project
Under the 6 thematic clusters, a set of 32 “Knowledge Notes” are indicated and key lessons as well as suggestions for developing countries derived from the 32 knowledge notes are offered in the report below.

### Table 5.8 Knowledge Notes

<table>
<thead>
<tr>
<th>Cluster</th>
<th>Knowledge Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Structural Measures</td>
<td>1-1 Structural Measures against Tsunamis</td>
</tr>
<tr>
<td></td>
<td>1-2 Building Performance</td>
</tr>
<tr>
<td></td>
<td>1-3 Hydro-meteorological Disasters Associated with Tsunamis and Earthquakes</td>
</tr>
<tr>
<td></td>
<td>1-4 Multifunctional Structures</td>
</tr>
<tr>
<td></td>
<td>1-5 Protecting Significant and Sensitive Facilities</td>
</tr>
<tr>
<td>2. Nonstructural Measures</td>
<td>2-1 Community-based Disaster Risk Management</td>
</tr>
<tr>
<td></td>
<td>2-2 Disaster Management Plans</td>
</tr>
<tr>
<td></td>
<td>2-3 The Education Sector</td>
</tr>
<tr>
<td></td>
<td>2-4 Business Continuity Plans</td>
</tr>
<tr>
<td></td>
<td>2-5 Tsunami and Earthquake Warning Systems</td>
</tr>
<tr>
<td></td>
<td>2-6 Evacuation</td>
</tr>
<tr>
<td></td>
<td>2-7 Urban Planning, Land Use Regulation, and Relocation</td>
</tr>
<tr>
<td></td>
<td>2-8 Green Belts and Coastal Risk Management</td>
</tr>
<tr>
<td>3. Emergency Response</td>
<td>3-1 Mobilizing and Coordinating Expert Teams, Nongovernmental Organizations</td>
</tr>
<tr>
<td></td>
<td>3-2 Emergency Communication</td>
</tr>
<tr>
<td></td>
<td>3-3 Logistics Chain Management for Emergency Supplies</td>
</tr>
<tr>
<td></td>
<td>3-4 Supporting and Empowering Municipal Functions and Staff</td>
</tr>
<tr>
<td></td>
<td>3-5 Evacuation Center Management</td>
</tr>
<tr>
<td></td>
<td>3-6 Ensuring Protection in Response and Equity in Recovery</td>
</tr>
<tr>
<td>4. Recovery Planning</td>
<td>4-1 Infrastructure Rehabilitation</td>
</tr>
<tr>
<td></td>
<td>4-2 Reconstruction Policy and Planning</td>
</tr>
<tr>
<td></td>
<td>4-3 Transitional Shelter</td>
</tr>
<tr>
<td></td>
<td>4-4 Debris Management</td>
</tr>
<tr>
<td></td>
<td>4-5 Livelihood and Job Creation</td>
</tr>
<tr>
<td>5. Hazard and Risk Information</td>
<td>5-1 Risk Assessment and Hazard Mapping</td>
</tr>
<tr>
<td>and Decision Making</td>
<td>5-2 Risk and Damage Information Management</td>
</tr>
<tr>
<td></td>
<td>5-3 Risk Communication</td>
</tr>
<tr>
<td>6. The Economics of Disaster</td>
<td>6-1 Measuring the Cost-Effectiveness of Various DRM Measures</td>
</tr>
<tr>
<td>Risk, Risk Management and Risk</td>
<td>6-2 Earthquake Risk Insurance</td>
</tr>
<tr>
<td>Financing</td>
<td>6-3 Economic Impact</td>
</tr>
<tr>
<td></td>
<td>6-4 The Financial and Fiscal Impacts</td>
</tr>
<tr>
<td></td>
<td>6-5 Strategies for Managing Low-probability, High-impact Events</td>
</tr>
</tbody>
</table>

Source: “The Great East Japan Earthquake: Learning From Megadisasters - Knowledge Notes -,” 2012, the Government of Japan, the Global Facility for Disaster Reduction and Recovery (GFDRR) and the World Bank

(2) NIRA (National Institute for Research Advancement)

NIRA developed “Indices for Recovery and Reconstruction from the 3.11 Earthquake” and continued to upgrade until July 2013 with recognition on the importance of policy formulation as well as implementation based on a scientific basis such as statistics and data for obtaining a complete picture of the damage and facilitating steady and intensive progress in the recovery and reconstruction from the 3.11 Earthquake. The institute follows the chronological movement in recovery and reconstruction of the affected 3 prefectures and extracts tasks ahead through the activities.

The Indices consists of 2 categories of indices; one is that for indicating the degree of comprehensive
recovery of infrastructure which is the basis for reconstruction of livelihoods in the affected areas, i.e.
“indices on degree of rehabilitation of infrastructure,” and the other is that for grasping conditions of
production, consumption and distribution etc by the affected people in the affected areas
comprehensively and chronologically, “indices on people’s activities.” Both indices set the condition
just before the 3.11 Earthquake as 100, the standard, consisting of multiple sub indices respectively.

According to the data in July 2013, the rehabilitation of infrastructure had been proceeding slowly
since the Autumn of 2011 (see Figure 5.11). Considerable improvement was found in debris removal
in all 3 prefectures and an index on population movement also showed improvement. Progress in
education and medical services, on the other hand, is still slow in the affected areas.

Notes: “Indices on degree of rehabilitation of infrastructure” consisting of the following seventeen (17) sub-indices:
1)Proportion of Evacuees at Evacuation Centers in Total Populations, 2)Proportion of Evacuees Both In and Out of
Prefectures in Total Populations, 3)Share of the Inhabited Temporary Houses in Total Numbers of Those Houses,
4)Number of Students Who Transferred Schools, 5)Degree of Rehabilitation of Electricity, 6)Degree of Rehabilitation
of Gas, 7)Degree of Rehabilitation of Railroad Transportation, 8)Degree of Rehabilitation of Road Access,
9)Proportion of the Affected Medical Facilities (Hospitals) in Total Hospitals Before the 3.11 Earthquake,
10)Proportion of the Affected Medical Facilities (Clinics) in Total Clinics Before the 3.11 Earthquake, 11)Proportion
of Removed Debris in Total Amount, 12)Proportion of Disposed Debris in Total Amount, 13)Support from Other Local
Authorities, 14)Proportion of Paid Donations in Total Amount, 15)Proportion of Insurance and Mutual Aid Money
(Paid) in Total Amount, 16)Proportion of Loaned Money in Total Amount of Damage, 17)Proportion of Convenience
Stores in Comparison with those just before the 3.11 Earthquake
*Index 1), 2), 4) and 13): the figure came close to the standard 100 as the situation deteriorated.

Source: “NIRA Research Report 2012.8 Present Situation and Tasks Ahead II in the Affected 3 Prefectures Indicated from
2013, NIRA

Figure 5.11  Chronological Trend of “Indices on Degree of Rehabilitation of Infrastructure”
(with conditions just before the 3.11 Earthquake with a standard of 100)

After seeing a steady recovery in production after the 3.11 Earthquake, indices on people’s activities
have shown no significant changes since spring 2012 (see Figure 5.12). Iwate Prefecture indicated a
rapid increase in 2013 to exceed the standard before the quake. Miyagi has seen a slow but steady
increase, while Fukushima is stuck at a relatively low level.
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Note: Indices on People's Activities” consisting of the following 12 sub-indices:
1) Quantity of Wholesale Transactions of Fruit and Vegetable, 2) Effective Labor Supply, 3) Amount of Payment for Medical Treatment Fee, 4) Quantity of Fishery Catches, 5) Index of Mining and Industrial Outputs, 6) Electricity Usage by Industries, 7) Contract Amount of Public Works, 8) Sales by Large Retailers, 9) Number of New Houses which Started Construction Already, 10) Number of Office Bankruptcy, 11) Number of Local Airport Users, 12) Quantity of Freight at Local Airports

Source: Same as that of Figure 5.11

Figure 5.12 Chronological Trend of “Indices on People’s Activities”
(with conditions just before the 3.11 Earthquake as 100, the standard)

(3) Development Bank of Japan
Development Bank of Japan made public its report, “Estimated Loss of Accumulated Capital by the 3.11 Earthquake” on 28th April 2011, approximately 1 month after the 3.11 Earthquake to provide data on the degree of devastation in each area. 1 year after the quake the bank again presented the report, “Record of a year after the 3.11 Earthquake – Verifying Data by Area on Degree of Rehabilitation and Reconstruction and Tasks Ahead” to show the changes by area within the period and to make recommendations on tasks ahead.

The report clearly indicates the chronological trend of rehabilitation and reconstruction by issue and area and is supplemented with tables and figures. The contents cover the following issues: 1) actual situation of the affected areas, by referencing the degree of damage and rehabilitation/reconstruction of lifelines, infrastructure for transportation etc., 2) progress in formulation of reconstruction plans in major municipalities, 3) progress in formulation of major related regulations/legislations and budget allocation, 4) trends in the economy, private enterprise operation and public finances. Regarding item 4), the report presents data on economic performance, investment in machinery/equipment, and employment etc. by industry and by size of enterprise for each prefecture, with some figures for comparison. Furthermore, the report summarizes the degree of damage as well as the rehabilitation of heavily affected enterprises in the affected areas.
5.3 Involvement of Private Enterprises and Others

5.3.1 Engagement of Various Private Enterprises in Volunteer Activities

In the case of the 3.11 Earthquake, private enterprises provided various assistance to the affected areas/people and contributed to the rehabilitation and reconstruction from the devastation of the 3.11 Earthquake. According to the Committee on Corporate Philanthropy as well as the 1% Club of Keidanren, Association of Economic Groups in Japan, the business community in Japan mainly consisting of private enterprises provided assistance to the affected areas/people to the amount of approximately JPY 100 billion with around 180,000 volunteers dispatched by private companies in various forms of support, some of which utilized their expertise in business and others that collaborated with NPO/NGO’s (see Table 5.9).

Table 5.9 Assistance Provided by Business Community in Japan and Individual Private Enterprises

<table>
<thead>
<tr>
<th>Activities</th>
<th>Amount of Donation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>JPY billion</td>
</tr>
<tr>
<td>1. Donations by Private Enterprises</td>
<td>90.4</td>
</tr>
<tr>
<td>(a) Donations of Money</td>
<td>71.5</td>
</tr>
<tr>
<td>(b) Provision of Commodities, including Services</td>
<td>14.8</td>
</tr>
<tr>
<td>(c) Matching Donation Gifts by Employees and Collected at Shops</td>
<td>2.7</td>
</tr>
<tr>
<td>(d) Others</td>
<td>1.4</td>
</tr>
<tr>
<td>2. Donations Collected by Business Groups</td>
<td>9.0</td>
</tr>
<tr>
<td>(2) Donations by Business Groups</td>
<td>1.6</td>
</tr>
<tr>
<td>Subtotal &lt;Donations by Enterprises and Business Groups&gt;</td>
<td>101.1</td>
</tr>
<tr>
<td>3. Donation by Employees, Consumers, Customers, etc.</td>
<td>21.3</td>
</tr>
<tr>
<td>Total &lt;Donations from Business World&gt;</td>
<td>122.4</td>
</tr>
</tbody>
</table>
### (2) Assistance from Individual Private Enterprises

<table>
<thead>
<tr>
<th>Activities</th>
<th>No. of Companies</th>
<th>Amount of Donation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>%</td>
</tr>
<tr>
<td>1. Donations in Money</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Monetary Assistance (Consolation Payment Directly Provided to Victims)</td>
<td>417</td>
<td>91</td>
</tr>
<tr>
<td>(b) Support Money Utilized for NPO Activities of Assistance etc.</td>
<td>154</td>
<td>33</td>
</tr>
<tr>
<td>(c) Scholarship, Grant and others Operated by Private Enterprises</td>
<td>34</td>
<td>7</td>
</tr>
<tr>
<td>(d) Others</td>
<td>54</td>
<td>12</td>
</tr>
<tr>
<td>(e) Reserve for Future Projects</td>
<td>36</td>
<td>8</td>
</tr>
<tr>
<td>2. Provision of Commodities, including Services</td>
<td>331</td>
<td>72</td>
</tr>
<tr>
<td>3. Allowing People to Use Facilities</td>
<td>92</td>
<td>20</td>
</tr>
<tr>
<td>4. Promotion of Employees' Volunteer Activities for Affected Areas/People</td>
<td>259</td>
<td>56</td>
</tr>
<tr>
<td>(a) Promotion of Employees' Volunteer Activities Developed by Enterprises</td>
<td>170</td>
<td>37</td>
</tr>
<tr>
<td>(b) Promotion of Employees' Volunteer Activities Developed by Other Organizations</td>
<td>184</td>
<td>40</td>
</tr>
<tr>
<td>5. Other Activities</td>
<td>419</td>
<td>91</td>
</tr>
<tr>
<td>(a) Request of Donations from Employees</td>
<td>398</td>
<td>86</td>
</tr>
<tr>
<td>(b) Setting up Mechanisms to Request Donations from Consumers and Customers</td>
<td>154</td>
<td>33</td>
</tr>
<tr>
<td>(c) Promotion of Purchase of Commodities Produced in Affected Areas</td>
<td>124</td>
<td>27</td>
</tr>
<tr>
<td>(d) Others</td>
<td>65</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>461</td>
<td></td>
</tr>
</tbody>
</table>

Source: JICA Study Team based on “Report on Assistance for the Areas/People Affected by the 3.11 Earthquake Provided by Business Community in Japan – Activities for Mutual Aid by Business Community (in Japanese),” 2012, Committee on Corporate Philanthropy and 1% Club of Keidanren

Activities covered a wide range of issues and were adapted in order to fit the actual situation in the affected areas. Those were then categorized into mainly “business activities” and “assistance” (see Figure 5.13). “Business activities” indicates the business of each individual enterprise itself and its inauguration in the early stages contributed greatly to promoting rehabilitation of the suffered areas. “Assistance” is literally the assistance for the victims with several sub-categories such as “provision of finance, commodities and facilities,” “promotion of purchasing products made in the affected areas,” “provision of human resources and knowhow” etc. The latter includes activities that are not directly linked to their own business.
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The Study of Reconstruction Processes from Large-Scale Disasters

Figure 5.13  Contents of Volunteer Activities for Reconstruction by Private Enterprises

(1) “Business Activities”

Those activities exemplified are the rehabilitation of electricity, gas, water supply, communication, road access etc. at an early stage that further promoted rehabilitation in the affected areas. Also, restarting various services was indispensable to the recovery of livelihoods in the affected communities.

Also, reopening the offices of companies guaranteed employment at each locality, while newly established and transferred offices in/to the affected areas created jobs for the victims. There were some cases of existing enterprises creating job opportunities for victims to provide support in vocational training for the victims.

(2) “Assistance”

1) Financial Assistance

Some companies made donations, either simple financial contributions or a portion of the sales amount was donated and collected as a contribution from their staff and/or at their shops. Categorized by the recipient of donation, there were those provided to local authorities/municipalities in the affected areas, NPOs for their volunteer activities, and programs operated by NPOs etc. Others established funds or financial groups for provision of scholarships and finance for volunteer activities for reconstruction from disaster etc.
2) Support in Kind
Not only providing their own products and commodities, or supplies in stock at their offices, but also commodities gathered from their staff and acquaintances were provided to the victims through various intermediaries such as local authorities/municipalities and NPO/NGO’s or sent directly to the victims/devastated companies.

3) Allowing People to Use Facilities
In some cases the provision of not only company condominiums, facilities for employees’ welfare, and company-owned lands but also hotels to be utilized as evacuation shelters, residential sites for temporary houses, and accommodation for volunteers were made. Another example was the provision of buildings to be utilized as temporary offices for the local authorities.

4) Support in the Form of “Purchasing,” “Eating,” and “Visiting”
“Purchasing” and “Eating” local products, i.e. those produced in the affected areas, was another way of assisting sufferers and was implemented mainly outside the affected areas. In a number of cases it was found that such sales in department stores and various events, usage of the products at hotels and restaurants, sales of agricultural products and processed foods by private enterprises to their own staff and residents, and utilization of those products for meals served at company cafeterias and facilities for employees’ welfare.

As time passed following the disaster, we found cases of visits to the affected areas on company outings and/or training for employees. This is another form of support by “visiting” to bring about positive economic impact to the affected areas, some of which are further integrated with volunteer activities by staff.

5) Provision of Human Resources, Services, and Knowhow

Activities Not Directly Linked to Business
Many enterprises involved themselves in volunteer activities in the affected areas which were not directly linked to their own business. In one case they dispatched their staff to the support programs operated by NPOs that were working in the affected areas. In another case they implemented employee training including that for freshmen in conjunction with volunteer activities at sites.

Also, lots of companies participated in and dispatched their staff to the “Enterprise Assistance Program for the People Affected by the 3.11 Earthquake.” This Program invited participants from member companies of 1% Club, assigned a coordinator from the Project Meeting for Assistance to the tours and implemented orientations as well as wrap-up meetings before and after the tours.

Individual enterprises in many cases facilitated and supported their staff to engage in volunteer activities either as individuals or in groups by establishing or expanding the existing system of “days off for volunteer activities,” and paying expenses for transportation and accommodations to assist with volunteer activities.

Activities Closely Linked to Business
Many cases were discovered of distribution and/or utilization of their own products, dispatching staff to provide services and/or professional skills, promoting staff who qualified to pharmaceutical chemists to be engaged in volunteer activities, dispatching experts such as nurses and medical staff working for their own business group.

Activities Linked to Business
There were other cases of enterprises engaging in assistance by utilizing strengths in their own business field and setting up a kind of consortium with participation from several enterprises for reconstruction of the devastated areas. Moreover, various kinds of events were held to liven up the victims including children by providing mental care services and such with the full utilization of expertise and knowhow accumulated in the host companies.

1% Club analyzed those activities done by private enterprises to date and extracted tasks ahead for future activities such as suitable and on-time matching of finance to the intermediaries like NPOs,
appropriate modification of activities to fit the changing needs at sites, and more suitable collaboration with local authorities and NPO/NGO’s.

### 5.3.2 Public Utility Foundations and Others

In Japan, “culture of donation” was quite uniformed at an individual level that can be exemplified by the “Akai-hane (red feather) contribution.” However, recently donations have been more forthcoming from private enterprises not only for advertisement of their companies and commodities but also as good corporate philanthropy. And when they make a donation, they clarify or decide in which ways they want the donation used themselves. Preferential treatment on levying for approved NPOs and other related organizations and revision/reorganization of charitable corporations facilitated the establishment of new financial groups as well.

Apart from the Nippon Foundation and public utility foundation of the JKA, Toyota, Mitsubishi Corporation, and Mitsui and Co., Ltd. invited applications from the public and provided financial assistance for NPO activities and other related organizations (see Table 5.10).

#### Table 5.10  Involvement of Major Financial Groups in Assistance

<table>
<thead>
<tr>
<th>Financial Group</th>
<th>Description</th>
</tr>
</thead>
</table>
| **The Toyota Foundation** | - In fiscal year 2011, program officers visited and collected information to better understand the actual situation in the affected areas. The Foundation then set specific issues for supporting reconstruction from the 3.11 Earthquake and provided monetary support for 28 programs including capacity development activities.  
- In fiscal year 2012, the Foundation changed its method of inviting applications from once a year to twice a year and also started new grant activities for "connecting communities and activating localities" as well as for "making policy recommendations" to study desirable visions for regeneration of the affected areas. |
| **Yamato Fukushi Foundation** | - Established “Donation for Reconstruction and Regeneration of Livelihoods and Industries from the 3.11 Earthquake” especially fishery and agriculture as local industries and terminated the program in June 2012.  
- With the basic concepts of “Tangible,” “Quick,” and “Effective” support, provided financial support for 31 projects mostly on specific issues that were not covered by national subsidies and that seek new models for reconstruction, with JPY 14.2 billion in total.  
- Provided support to temporary fish market in Minami-sanriku area, nursery schools in Noda Village and temporary fish processing estate etc. |
| **Mitsubishi Foundation for Supporting Reconstruction** | - Established “Fund for Supporting Reconstruction from the 3.11 Earthquake” with capital of JPY 10 billion for 4 years and provided scholarships for the affected students, subsidies for NPO’s and volunteer activities etc.  
- Contributed some capital from the Fund in March 2012 and established “Mitsubishi Foundation for Supporting Reconstruction” in May to continue activities supported by the former Fund to make contributions in industrial revitalization and job creation.  
- As the first line of assistance in the field of industrial revitalization, provided assistance for reconstruction of a hotel in Rikuzentakata City |

Source: JICA Study Team based on the documents/homepages of those foundations (in Japanese)

#### Engagement of Japan Red Cross Society

Japan Red Cross Society is actively engaged in provision of assistance for the victims from the 3.11 Earthquake with 160,000 volunteers in total who answered the calls from Societies all over Japan in order to support the victims’ livelihoods and meet the various needs at evacuation centers from the onset of the disaster through to today (as of March 2012). The assistance is found in provision and preparation of hot meals, helping the water supply, collecting and distributing information by radio transmission, management and operation of stores of emergency supplies and cleaning of damaged houses etc.
Direct support to the affected areas aside, the Society invited donations from the public and utilized the money for reconstruction works in the affected areas. All donations are transferred to the Committee for Distribution of Donation for Suffers set up in each of the affected prefectures and then to the victims according to the standards for distribution set up by the Committee. 2,968,209 donations were accepted by the Society totaling JPY 328 billion up until 3rd September 2013, while JPY 367.7 billion was remitted to 15 prefectures up until 12th June 2013.

Apart from the above donation, some other financial assistance from overseas was provided to the Society, such as “Relief Money from Overseas” with a total amount of approximately JPY 57.8 billion sent through Red Cross Societies as well as Red Crescent Societies in other countries and “Support Money for Reconstruction” totaled approximately JPY 40 billion which is equivalent to the total amount of sales of crude oil provided for free by the Government of Kuwait. The Society will utilize “Relief Money from Overseas” for reconstruction projects according to the 3 year plan (see Table 5.11). Regarding “Support Money for Reconstruction,” it will be reserved as “Reconstruction Fund” in the affected 3 prefectures of Iwate, Miyagi, and Fukushima and utilized for reconstruction projects by the prefectures.

### Table 5.11 Plans for Reconstruction Projects

<table>
<thead>
<tr>
<th>No.</th>
<th>Issues</th>
<th>Contents of Projects</th>
<th>Budget (JPY billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Emergency Relief</td>
<td>Dispatch of medical staff, distribution and replenishment of relief supplies</td>
<td>0.47</td>
</tr>
<tr>
<td>2</td>
<td>Reconstruction of Livelihoods</td>
<td>Contribution packages of 6 home electric appliances, installment of those appliances to evacuation shelters, measures against hot and cold extremes, provision of mental care services and operation of community vehicles etc.</td>
<td>29.52</td>
</tr>
<tr>
<td>3</td>
<td>Nursery Services</td>
<td>Contribution of beds, vehicles and other appliances designed specifically for the elderly and the disabled, and the dispatch of care givers</td>
<td>1.98</td>
</tr>
<tr>
<td>4</td>
<td>Educational Assistance</td>
<td>Rehabilitation and reconstruction of children’s houses and gymnasiums, provision of school equipment and provision of school buses etc.</td>
<td>2.97</td>
</tr>
<tr>
<td>5</td>
<td>Medical Assistance</td>
<td>Establishment of temporary medical clinics, support for reconstruction of medical facilities and provision of pneumococal vaccine etc.</td>
<td>15.10</td>
</tr>
<tr>
<td>6</td>
<td>Protection from Radioactivity</td>
<td>Provision of whole body counters and radiation measuring instruments on food contamination etc.</td>
<td>2.33</td>
</tr>
<tr>
<td>7</td>
<td>Expansion of the Capacity of the Society in Disaster Management</td>
<td>Reserve of emergency supplies and vehicles for future disasters, set-up and storage of disaster-related goods etc.</td>
<td>3.50</td>
</tr>
<tr>
<td>8</td>
<td>Administrative Expenses</td>
<td>Costs for office management, advertisement and auditing etc.</td>
<td>1.80</td>
</tr>
<tr>
<td>9</td>
<td>Reserves for Projects to Be/Being Formulated for future needs</td>
<td></td>
<td>2.17</td>
</tr>
<tr>
<td>10</td>
<td>Projects by Utilizing the donation in the form of a free crude oil provision by the Government of Kuwait</td>
<td>Those in the 8 fields such as “Reconstruction of Local Basic Facilities” and “Medical Support” implemented by Iwate, Miyagi, and Fukushima Prefectural Governments</td>
<td>40.06</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Subtotal JPY 59.86 billion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total JPY 99.93 billion</td>
</tr>
</tbody>
</table>

Source: Homepage of Japanese Red Cross Society (as of June 2013); http://www.jrc.or.jp/shinsai2011/plan/

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4 “Monetary Donation” is sent to victims in the form of “money” and not used as expenses for implementation of reconstruction projects by Japanese Red Cross Society.
Relief Money from Taiwanese Red Cross Society totaled approximately JPY 6.7 billion, with about JPY 5 billion set for specific purposes such as construction of public housing complexes in Soma City. Plans have already determined usage of the Relief Money such as construction of hospitals in Minami-sanriku Town of Miyagi Prefecture and construction of houses and public meeting spaces in Otsuchi Town of Iwate Prefectures.

5.3.3 Funds

Several public facilities were established for facilitating reconstruction and restarting operation of the suffered enterprises by promoting debt relief from those companies but with only limited utilization.

A focus of the “Reconstruction Fund” which is a mechanism where individuals make small amounts of investment to affected private companies through the internet to support them financially in the reconstruction of their business. The fund is an investment partnership that turns over the capital collected from multiple investors and distributes the returns to recipient enterprises as a capital injection.

The strength of the fund is in its scale merit by increasing the amount of capital to be turned over with the collection of a number of small-sized investments and expanding the positive effects to the recipients’ business operation. Another relatively new advantage of the mechanism can be found in the case of “Securite Support Fund for Affected Areas” operated by Music Securities Inc., that is establishing close connections between investors and recipients by utilizing half of the collected capital for monetary contribution to the affected people and the other half for reinvestment and obtaining a return in invest in the operation of recipient companies. This kind of micro-fund is quite a new system created for the disaster affected areas and is highly regarded for future development.

As for personal loans for housing, Financial Service Agency set “guideline for adjusting personal loans” as the mechanism for a reduction and exemption of loan repayment to avoid double loans for the affected people in the case of reconstruction of houses devastated by the disaster, which is not based on the law. It enables the suffers to write off their debts after leaving a monetary donation, subsidy for reconstructing livelihoods of disaster victims, and JPY 5 million of cash money in their hands by coordinating with banking establishments, an assistance program also widely known and utilized amongst the suffers.

5.3.4 Assistance by Various Experts and Professional Groups

Universities and private enterprises aside, there is still a variety of assistance provided by the private sector.

A good example is Hyogo Construction Technology Center for Regional Development. The Center sent “regional development advisors for Hyogo Prefecture” to the disaster affected areas as an activity in a series of “Provision of Expertise in Regional Development to Areas Affected by the 3.11 Earthquake” to provide advice on the reconstruction of houses to those who hope to relocate inland in a group, move into public houses for disaster victims and reconstruct houses with their own resources as well as the regional development of entire affected areas.

Support Organization for Reconstruction from Disaster, participated in by 17 associations of experts such as layers/attorneys, tax accountants and architects etc, established “Consultation Desk for Supporting Reconstruction from the 3.11 Earthquake” in collaboration with National Research Institute for Earth Sciences and Disaster Prevention (NIED) to provide advice to victims and their

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5 “Securite Support Fund for Affected Areas” was established on 25th April 2011 and has collected approximately JPY 1 billion from 27,000 investors in total to date (according to the homepage of the company in September 2013). The mechanism is as follows: firstly each investor chooses one of the small- and medium-sized enterprises in the affected areas which are registered to the fund and invests JPY 10,500 per donation. The amount of JPY 10,500 includes JPY 5,000 of donation, JPY 5,000 for investment, and the remaining JPY 500 for commission. Preferred amounts of donation are set by enterprises and clearly written on the webpage. Although it is not “capital-safe,” investors can receive a cash dividend according to profits after the companies restart their businesses.
relatives/friends via e-mail.

Japan Society of Urban and Regional Planners, a specified nonprofit organization, assigned its member planners to the 3 cities, i.e. Shinchi Town of Fukushima Prefecture, Watari Town of Miyagi Prefecture, and Kuji City of Iwate Prefecture for half a year in collaboration with Urban Disaster Research Institute. Those assigned to the sites provided technical assistance in formulation of reconstruction plans as advisors to mayors and/or the heads of officials in charge of reconstruction of the municipalities.

ArchiAid, mainly consisting of academics and young professional architects, is a networking organization among architects. It was established after the 3.11 Earthquake and is engaged in various support activities such as collecting, reviewing, and distributing information on reconstruction projects, promotion of communication among architects, affected areas/people, and students, reviewing and submitting feedback to reconstruction projects and reconstruction plans.
Box 5.2 From Emergency and Short-term Relief to Support for Inauguration of Business -- Assistance Made by ETIC, a Specified Nonprofit Organization --

ETIC, a specified nonprofit organization, not only provided support for victims’ livelihoods at the outset of the disaster but also has been providing unique assistance in the medium to long term for reconstruction of the affected areas.

Since the day following the 3.11 Earthquake, ETIC started discussion on the assistance for reconstruction and established “Project for Supporting Leaders for Reconstruction” on 14th March for supporting the affected areas/people. The project aims to “create Tohoku as a Place of Strong Entrepreneurship to Be Fulfilled by Youth in the Decade Following.”

<table>
<thead>
<tr>
<th>Period</th>
<th>Phase 1 Emergency and Short-term Relief</th>
<th>Phase 2 Program for Dispatch of Young Professionals</th>
<th>Phase 3 Program for Supporting Inauguration of Business</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contents</td>
<td>2011.3.14 - 5.1</td>
<td>2011.5 -</td>
<td>2012.5 -</td>
</tr>
<tr>
<td>● Dispatch volunteers through “Tsuna-pro” and created activities in needs identification at evacuation centers, connecting them to NPOs, and providing specific commodities</td>
<td>● Dispatch excellent young professionals as guy Friday to support those who actively work for reconstruction of industries, community and rehabilitation of medical, welfare, and educational services.</td>
<td>● Provide JPY 2.5 million of monetary support as well as opportunities for obtaining training and networking with other concerned organizations for entrepreneurs who are willing to inaugurate business for reconstruction of Tohoku area</td>
<td></td>
</tr>
<tr>
<td>● Dispatch leaders of “Tsuna-pro” and “guy Friday”</td>
<td>● Provision of incubation for the projects to which guy Friday are to be assigned from ETIC</td>
<td>* Implemented as one of the projects approved by Cabinet Office, i.e. project for creating local employment by supporting reconstruction.</td>
<td></td>
</tr>
<tr>
<td>● Monetary support for emergency relief</td>
<td>● No. of volunteers: 378</td>
<td>● No. of volunteers as guy Friday: 119, including those sent at emergency relief phase</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Evacuation shelters visited: 443</td>
<td>● No. of projects assigned with volunteers: 55</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● No. of visits by volunteers: 965</td>
<td>● No. of applicants for guy Friday: 283 in total</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● No. of dispatching leaders to “Tsuna-pro”: 15 (Data is as of 1st May 2011)</td>
<td>(Data as of 11th Setember 2012)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● No. of needs found: 505, including 232 minor needs (Data as of 10th May 2011)</td>
<td>* planned to send 200 volunteers up until March 2014</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● No. of needs properly matched to support: 115</td>
<td>● No. of selected entrepreneurs: 50 in total for the 1st and 2nd fund.</td>
<td></td>
</tr>
</tbody>
</table>

Source: ETIC, Annual Report 2011-2012
Chapter 6  Support and Status of Long-term Evacuation

In this chapter, we use data to create an overall picture of long-term evacuation centered in Fukushima Prefecture. Then we compile support methods by government and prefectures during prolonged evacuation. In response to or apart from this, we study the approaches by disaster-affected local governments, municipalities that accepted evacuees, and private support groups.

We summarize the intentions of evacuees based on the existing survey results and conclude with considerations for long-term evacuation support.

6.1 Circumstances

6.1.1 Nuclear Accident and Evacuation Instruction Status

The damage caused by the tsunami following the 3.11 Earthquake produced the emergency power generating equipment failure at the Fukushima No.1 Nuclear Power Plant run by the Tokyo Electric Power Company (TEPCO); the station blackout (SBO) occurred about one hour after the earthquake. Therefore, cooling of the nuclear reactor and the spent nuclear fuel pool became disabled, and then a massive amount of radioactive material was released due to the hydrogen explosions in the reactor building. The disaster is rated Level 7 as a major accident on the International Nuclear Event Scale (INES), equivalent to the Chernobyl disaster, and many residents around the nuclear power plant were forced to evacuate. (See Chapter 4 for conditions of radioactive contamination.)

Evacuation areas were gradually expanded as follows, and local governments and residents had to evacuate repeatedly at the mercy of the evacuation orders.

<table>
<thead>
<tr>
<th>March 11</th>
<th>7:03 P.M.</th>
<th>Fukushima No.1</th>
<th>Declaration of a nuclear emergency situation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8:50 P.M.</td>
<td>Fukushima No.1</td>
<td>Fukushima prefecture ordered the evacuation within a radius of 2 km from the plant</td>
</tr>
<tr>
<td></td>
<td>9:23 P.M.</td>
<td>Fukushima No.1</td>
<td>Central government ordered the evacuation within a radius of 3 km from the plant</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Central government ordered the indoor evacuation within a radius of 10 km from the plant</td>
</tr>
<tr>
<td>March 12</td>
<td>5:44 A.M.</td>
<td>Fukushima No.1</td>
<td>Central government ordered the evacuation within a radius of 10 km from the plant</td>
</tr>
<tr>
<td></td>
<td>7:43 A.M.</td>
<td>Fukushima No.2</td>
<td>Declaration of a nuclear emergency situation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Central government ordered the evacuation within a radius of 3 km from the plant</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Central government ordered the indoor evacuation within a radius of 10 km from the plant</td>
</tr>
<tr>
<td></td>
<td>5:39 P.M.</td>
<td>Fukushima No.2</td>
<td>Central government ordered the evacuation within a radius of 10 km from the plant</td>
</tr>
<tr>
<td></td>
<td>6:25 P.M.</td>
<td>Fukushima No.1</td>
<td>Central government ordered the evacuation within a radius of 20 km from the plant</td>
</tr>
<tr>
<td>March 15</td>
<td>11:00 A.M.</td>
<td>Fukushima No.1</td>
<td>Central government ordered the indoor evacuation within a radius of 20 to 30 km from the plant</td>
</tr>
</tbody>
</table>

Set and Review of the Deliberate Evacuation Areas

The central government issued “evacuation zone”, “deliberate evacuation areas”, and “evacuation-prepared areas in case of emergency” in consideration of evacuation from the nuclear plant and the radiation exposure on April 22, 2011. On August 9, 2011, Nuclear Emergency Response
Headquarters made a statement about the rearrangement of evacuation areas. Thereafter, it rearranged the evacuation areas several times. See Table 6.1 and Figure 6.1 for the evacuation areas as of September, 2013.

**Table 6.1 Evacuation Areas after the Rearrangement**

<table>
<thead>
<tr>
<th>(1) Areas for which evacuation orders are ready to be lifted</th>
<th>Areas where the annual cumulative dose is expected to definitely be 20 mSv or less: Evacuation orders in this area will be continued for the time being. However, support measures for recovery and reconstruction are being implemented promptly and development of the residential environment to return home is the goal for this area.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2) Areas in which the residents are not permitted to live</td>
<td>Areas where the annual cumulative dose is expected to be more than 20 mSv, and where residents are ordered to remain evacuated to reduce the risk of radiation exposure: This area is systematically implementing decontamination to achieve the future return home of residents and reconstruction of the local community, and the goal is to restore infrastructure facilities which require early restoration.</td>
</tr>
<tr>
<td>(3) Areas where it is expected that residents will face difficulties in returning for a long time</td>
<td>Areas where the annual cumulative dose is estimated to exceed 20 mSv even six years after the accident: Areas where the current radiation exceeds 50 mSv/y as of March 2012.</td>
</tr>
</tbody>
</table>

Source: JICA Study Team based on “Current Status and Path toward Reconstruction (in Japanese),” 2013, Reconstruction Agency (July 2013)

Source: “Progress on Off-site Clean-up Efforts in Japan,” 2013, Ministry of the Environment (July 17th, 2013)

**Figure 6.1 Schematic Chart of Evacuation Ordered Areas**
6.1.2 Trend of Refugees from the Nuclear Power Disaster

After the nuclear power disaster, evacuation areas were set in order to avoid exposure to radiation around the Fukushima No.1 and No.2 nuclear power plants (NPS). Residents living in these areas had to evacuate inside and outside Fukushima Prefecture. In addition, even outside of the evacuated areas, many people evacuated voluntarily because they were concerned about health damage caused by radioactive contamination.

**Multiple Movement of the Evacuation Area**

In general, immediately after the earthquake and tsunami, people first gathered in the designated places of refuge such as gymnasiums of the local elementary schools and junior high schools, and then, they moved from one evacuation area to another according to the instructions of the local government. Some people were able to move into temporary housing in their desired areas or by a lottery, however, in the case of Fukushima, evacuation methods varied (Figure 6.2).

**Figure 6.2 Evacuation Flow to Move into Temporary Housing**


**Changes in the Number of Evacuees in Iwate, Miyagi and Fukushima Prefectures**

The number of evacuees affected by the 3.11 Earthquake in the Iwate, Miyagi, and Fukushima Prefectures has tended to decrease since peaking at 344,590 evacuees in June, 2012. As of August 2013, the total number of evacuees is 289,611 and the breakdown is as follows: 144,275 evacuees in Fukushima, 105,253 evacuees in Miyagi, and 39,392 evacuees in Iwate. About half of the total evacuees are from Fukushima Prefecture (Figure 6.3).
Evacuation Status outside the Prefecture

The number of evacuees outside the prefecture in Fukushima is more than one-third of the total evacuees, and it is also a unique characteristic that the Miyagi and Iwate Prefectures do not have (Figure 6.4).

Major evacuation areas outside the Fukushima Prefecture are Yamagata Prefecture, Tokyo and Niigata Prefecture although there is a slight time series variation. (Table 6.2) The number of evacuees toward regional areas such as the Yamagata Prefecture and Niigata Prefecture has tended to decrease, and the number of evacuees toward Tokyo Metropolitan has tended to increase by ratio.
Table 6.2  Evacuation Status from Fukushima Prefecture to Other Prefectures

(Number of people)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>Niigata Prefecture</td>
<td>Yamagata Prefecture</td>
<td>Yamagata Prefecture</td>
<td>Yamagata Prefecture</td>
<td>Yamagata Prefecture</td>
</tr>
<tr>
<td></td>
<td>7,386 (18.9%)</td>
<td>12,945 (21.0%)</td>
<td>12,391 (20.0%)</td>
<td>10,105 (17.4%)</td>
<td>8,549 (15.8%)</td>
</tr>
<tr>
<td>2nd</td>
<td>Yamagata Prefecture</td>
<td>Tokyo</td>
<td>Tokyo</td>
<td>Tokyo</td>
<td>Tokyo</td>
</tr>
<tr>
<td></td>
<td>5,345 (13.7%)</td>
<td>7,421 (12.0%)</td>
<td>7,803 (12.6%)</td>
<td>7,537 (13.0%)</td>
<td>7,274 (13.5%)</td>
</tr>
<tr>
<td>3rd</td>
<td>Tokyo</td>
<td>Niigata Prefecture</td>
<td>Niigata Prefecture</td>
<td>Niigata Prefecture</td>
<td>Niigata Prefecture</td>
</tr>
<tr>
<td></td>
<td>3,294 (8.5%)</td>
<td>6,692 (10.9%)</td>
<td>6,440 (10.4%)</td>
<td>5,950 (10.3%)</td>
<td>5,045 (9.3%)</td>
</tr>
<tr>
<td>4th</td>
<td>Chiba Prefecture</td>
<td>Saitama Prefecture</td>
<td>Saitama Prefecture</td>
<td>Saitama Prefecture</td>
<td>Ibaraki Prefecture</td>
</tr>
<tr>
<td></td>
<td>2,716 (7.0%)</td>
<td>4,701 (7.6%)</td>
<td>4,251 (6.8%)</td>
<td>3,939 (6.8%)</td>
<td>3,889 (7.2%)</td>
</tr>
<tr>
<td>5th</td>
<td>Gunma Prefecture</td>
<td>Ibaraki Prefecture</td>
<td>Ibaraki Prefecture</td>
<td>Ibaraki Prefecture</td>
<td>Chiba Prefecture</td>
</tr>
<tr>
<td></td>
<td>2,666 (6.9%)</td>
<td>3,150 (5.1%)</td>
<td>3,814 (6.1%)</td>
<td>3,926 (6.8%)</td>
<td>3,390 (6.3%)</td>
</tr>
<tr>
<td>Total including others</td>
<td>38,896</td>
<td>61,659</td>
<td>62,084</td>
<td>(57,954)</td>
<td>(53,960)</td>
</tr>
</tbody>
</table>

Note: These figures in parentheses indicates the percentage against “total including others”.
Sources: JICA Study Team based on “Evacuation status from Fukushima Prefecture to outside the prefecture (in Japanese),” Fukushima Prefecture

Evacuation Status to outside the Prefecture by Age Group

For the population by age group in Fukushima Prefecture, social decrease is obvious in infants and twenty to thirty year olds. The amount of population decrease in the age group 0-14 is approximately 9,000, and it indicates that many mothers and children have evacuated outside the prefecture (Figure 6.5).

Figure 6.5  Rate of Annual Social Increase and Decrease by Age Group

Note: Comparison of 2010 and 2011
Evacuation Status inside the Prefecture

The largest number of municipal evacuees accepted in Fukushima Prefecture as of July 2013 is in Iwaki City (over 20,000) followed by Fukushima City and Koriyama City (Figure 6.6).

Source: JICA Study Team based on Yomiuri Shimbun (in Japanese) (September 11, 2013)

Figure 6.6  Major Evacuation Areas in the Prefecture
Evacuation by Order and Voluntary Evacuation

Another characteristic of evacuation in Fukushima Prefecture is that there are two types of disaster victims: (1) those who evacuated from government-ordered evacuation areas and (2) those who evacuated voluntarily from outside of the evacuation ordered area. As of June 2013, the number of total evacuees in Fukushima Prefecture is approximately 150,000; the former is approximately 106,000 and the latter is estimated at approximately 44,000. (Table 6.3)

Table 6.3  Evacuation Status of Residents of Fukushima Prefecture

<table>
<thead>
<tr>
<th>Number of evacuees from evacuation ordered areas</th>
<th>Approx. 106,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Areas for which evacuation orders are ready to be lifted</td>
<td>Approx. 33,000</td>
</tr>
<tr>
<td>Areas in which the residents are not permitted to live</td>
<td>Approx. 25,000</td>
</tr>
<tr>
<td>Areas where it is expected that the residents will have difficulties in returning for a long time</td>
<td>Approx. 25,000</td>
</tr>
<tr>
<td>Deliberate evacuation areas</td>
<td>Approx. 1,000</td>
</tr>
<tr>
<td>Former evacuation-prepared areas in case of emergency</td>
<td>Approx. 22,000</td>
</tr>
</tbody>
</table>

Source: Livelihood support team for residents affected by the nuclear accident summed up based on the 2010 national census and hearing investigation from each municipality (As of June 11, 2013)

<table>
<thead>
<tr>
<th>Number of evacuees throughout Fukushima Prefecture ¹)</th>
<th>Approx. 150,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Number of evacuees to the inside of Fukushima Prefecture</td>
<td>Approx. 96,000</td>
</tr>
<tr>
<td>Temporary housing (including private rental)</td>
<td>Approx. 92,000</td>
</tr>
<tr>
<td>Job development housing etc.</td>
<td>Approx. 4,000</td>
</tr>
<tr>
<td>(2) Number of evacuees to the outside of Fukushima Prefecture</td>
<td>Approx. 54,000</td>
</tr>
<tr>
<td>Yamagata Prefecture</td>
<td>Approx. 8,500</td>
</tr>
<tr>
<td>Tokyo</td>
<td>Approx. 7,300</td>
</tr>
<tr>
<td>Niigata Prefecture</td>
<td>Approx. 5,000</td>
</tr>
<tr>
<td>Saitama Prefecture</td>
<td>Approx. 3,300</td>
</tr>
<tr>
<td>Ibaraki Prefecture</td>
<td>Approx. 3,900</td>
</tr>
</tbody>
</table>

Note 1): Including evacuation areas
Source: Fukushima Prefecture announced “Flash report on damage situation caused by the Great East Japan Earthquake in 2011 (973rd publication)” (June 25, 2013)

It is difficult to confirm the number of self-evacuees, and in addition, published data is limited. According to the source of the Dispute Reconciliation Committee for Nuclear Damage Compensation of the Ministry of Education, Culture and Sports, the number of self-evacuees from Fukushima is 23,551 inside the prefecture and 26,776 to outside the prefecture as of September 22, 2011.¹ On the other hand, the total number of evacuees from evacuation ordered areas is 100,510; 70,817 inside the prefecture and 29,963 to outside the prefecture. It must be noted that the evacuation ratio of self-evacuees to outside the prefecture is high.

Published data about hometowns of self-evacuees is limited; therefore, Fukushima Prefecture uses the basic resident register as a reference to release the number of people moving in to and out of the prefecture. According to the released data, the number of people who moved out in 2011 is much

¹ Number of evacuated people in data only includes the number who registered at the administrative office; therefore, the actual number of people may be larger than the data due to the existence of unregistered people such as people evacuating to their family home.
larger than the people who moved in\(^2\) in 2010 even outside of the evacuation areas such as Koriyama City, Iwaki City, and Fukushima City (Figure 6.7). In addition, the number of self-evacuees from Iwaki City was high, but the number of evacuees who moved in from evacuation ordered areas was the highest in the prefecture (Figure 6.6).

Note: Increase-decrease rates as of March 1, 2011.

Figure 6.7 Number of Major Excess Move-in/out by Municipality in Fukushima Prefecture (Top 10 Municipalities)

Evacuation of Hospitalized Patients

Hospitalized patients, a total of 1,310 patients at 14 hospitals within 30 kilometers, were evacuated (confirmed by Fukushima Prefecture); about 700 to inside and about 600 to outside the prefecture. However, many patients being taken to the hospital were in serious condition, and many of them died during or after the transportation. In particular, 51 patients at the Futaba Hospital and Long-Term Care Health Facilities affiliated with the Futaba Hospital died by April 2011 including the deaths in the hospital because of the following reasons: long rescue time, long distance and time of travelling, and insufficient facilities at evacuation sites such as high school gymnasiums. Many of the welfare facility residents were old and most of them required nursing care; therefore, the Welfare Division for the disabled requested that hospitals in Fukushima accept residents to transfer into the hospital on March 15, 2011. Medical personnel were sent to temporary shelters at the same time.

Disaster-related Deaths

The number of dead and missing people in Fukushima Prefecture is the smallest compared to the Iwate and Miyagi Prefectures, but the number of evacuees is the largest as above and there are many disaster-related deaths\(^3\).

The number of disaster-related deaths in Japan was 2,688 as of March 31, 2013; about 40% died

\(^2\) Number of people in the figure is based on the registered residence certificate, and it may not always correspond to the number of evacuees since normal moving-in or moving-out is also included. In addition, it is necessary to note that evacuees from the coast district due to the earthquake and tsunami are also included.

\(^3\) “Disaster-related deaths” means those who died from exacerbating causes due to the fatigue caused by prolonged evacuation time and the psychological trauma from the disaster, and not from direct causes such as being crushed in a collapsed building or drowning in the tsunami. There is not a clear standard for disaster-related deaths; first, bereaved families apply for a disaster-related death approval, and then the review board established by municipalities examines and approves the causal relationship between death and disaster. With the review board’s certification, condolence money, a maximum of 5 million JPY in total, will be paid in case of natural disaster from municipalities, prefectures and central government. However, there are issues that make it difficult to approve those causal relationships between disaster and nuclear plant disaster and death, including the prolonged evacuation time and the unclear criteria.
within a month after the disaster and 90% of them were people over 66 years old. A breakdown of the number of disaster-related deaths by prefecture shows that the majority (1,383 people) were in the Fukushima Prefecture, followed by the Miyagi and Iwate Prefectures. (Table 6.4) Certified deaths in the evacuation ordered areas were 1,223 in 8 cities and villages in Futaba district and in 11 cities, towns, and villages in Minami Soma City and Tamura City, and this accounts for 88.4% of the total 1,383 deaths in the Fukushima Prefecture. The number of certified deaths in Minami Soma City was the largest (406 people), followed by Namie Town and Tomioka Town. 129 people died over one year after the disaster, and this accounts for 87.7% of the total 147 deaths in Japan. It seems to be the effect of prolonged living in shelters after the disaster; therefore, it is urgent to improve construction of public disaster housing and certification methods for disaster-related deaths.

According to the Reconstruction Agency “Investigation report on preventing disaster-related death in Fukushima Prefecture (March 29, 2013)”, the major cause of death for people who died over one year after the disaster in Fukushima Prefecture is “mental and physical exhaustion in refuge life at the time of disaster” followed by “mental and physical exhaustion during transportation to temporary shelters”.

Some experts point out that disaster-related deaths may increase in the future because many evacuees become stressed by having no hope for the future due to prolonged living in shelters.

According to the data published by Fukushima Prefecture, the number of disaster-related deaths after over two and a half years is 1,462 (as of September 11, 2013); this means 79 people died in half a year. Incidentally, the number of disaster-related deaths in Miyagi Prefecture is 869 (increased by 7) and in Iwate Prefecture is 413 (increased by 24) as of the end of August, 2013.

<table>
<thead>
<tr>
<th>Table 6.4 Certified Number of Disaster-related Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>End of March 2013</td>
</tr>
<tr>
<td>Fukushima City</td>
</tr>
<tr>
<td>Aizuwakamatsu City</td>
</tr>
<tr>
<td>Iwaki City</td>
</tr>
<tr>
<td>Sukagawa City</td>
</tr>
<tr>
<td>Soma City</td>
</tr>
<tr>
<td>Tamura City</td>
</tr>
<tr>
<td>Minamisoma City</td>
</tr>
<tr>
<td>Date City</td>
</tr>
<tr>
<td>Otama Village</td>
</tr>
<tr>
<td>Kagamishio Town</td>
</tr>
<tr>
<td>Ichikawa Town</td>
</tr>
<tr>
<td>Miharu Town</td>
</tr>
<tr>
<td>Hirono Town</td>
</tr>
<tr>
<td>Naraha Town</td>
</tr>
<tr>
<td>Tomioka Town</td>
</tr>
<tr>
<td>Kawauchi Village</td>
</tr>
<tr>
<td>Okuma Town</td>
</tr>
<tr>
<td>Futaba Town</td>
</tr>
<tr>
<td>Namie Town</td>
</tr>
<tr>
<td>Katsurao Village</td>
</tr>
<tr>
<td>Shinchi Village</td>
</tr>
<tr>
<td>Iitate Village</td>
</tr>
<tr>
<td><strong>Fukushima Prefecture(Total)</strong></td>
</tr>
<tr>
<td>Iwate Prefecture</td>
</tr>
<tr>
<td>Miyagi Prefecture</td>
</tr>
<tr>
<td><strong>Nationwide (Total)</strong></td>
</tr>
</tbody>
</table>

6.2 Response of Government and Prefectures

6.2.1 Overall Direction

(1) Implemented Measures to Recover from the Nuclear Accident

Nuclear Emergency Response Headquarters considers the victims of the nuclear power plant disaster to be victims of state policy. They committed to the “Policy of immediate measure regarding supported residents affected by the nuclear accident” in May 2011, which indicates government would be responsible for them through completion, and they announced the policy's roadmap. With the goal of recovering from the nuclear accident of TEPCO, the policy with immediate measures and roadmap indicated the following three steps as medium-term issues: (Step 1) until mid-July in 2011, (Step 2) 3 to 6 months after Step 1, (Step 3) after Step 2 (Figure 6.8).

Nuclear Emergency Response Headquarters confirmed a condition equivalent to “cold shutdown” and de-escalating the nuclear power plant accident in December 2011. Thereafter, Prime Minister Noda issued a declaration of “Step 2 completion”, the release of radioactive substances was under control and radiation was greatly inhibited.

(2) Measures for Early Return Home

The central government responded directly to aid the disaster victims immediately after the disaster, and has provided shelters and temporary housing, applying the Disaster Relief Act. According to the “Act on Compensation for Nuclear Damage”, TEPCO had a duty to provide living conditions equivalent to those before the disaster; however, the disaster was unprecedented, and the central government and local governments promptly tried to aid the disaster victims.
The government announced the “Policy of measures against residents and local governments in evacuation areas affected by the nuclear power plant accident (ground design)” in September 2012. The government revised its basic stance and summarized the following three points.

(i) Government will accelerate special measures responsibly and empathically for victims based on the social responsibility, considering policies to date which have promoted nuclear power.

(ii) In order for disaster victims to achieve future plans at the earliest possible time, government will implement the followings: 1) improvement of living environment, 2) ensuring residential environment and employment, and 3) revival of local economy and community.

(iii) Government will lead the implementation of special measures through completion for disaster victims to recover their homes with pride and confidence and reconstruct their lives securely and safely.

In this policy, target reconstruction progress is divided into three terms: short term (after 2 years), middle term (after 5 years), and long term (10 years later), and it summarizes the approach to the target reconstruction.

The “Quick return and settlement plan” was put together in March 2013, aiming at environment improvement for the realization of returning home. The plan aims to realize and accelerate the quick return and settlement of evacuated residents by prompt implementation of necessary measures without waiting for the lifting of the evacuation orders in areas where it is possible for victims to return home in the next one to two years.

Japan's position is mainly to implement measures centering on the quick return of evacuees by supporting disaster afflicted areas (Figure 6.9).

Source: Reconstruction Agency (2013) “Approach to the Reconstruction and Restoration of Livelihood from the Nuclear Power Plant Accident” (August 1, 2013)

Figure 6.9  System of Reconstruction Measures from the Nuclear Power Plant Accident
(3) Develop Reconstruction Vision and Reconstruction Plan for Prefecture

Fukushima Prefecture developed “Reconstruction vision in Fukushima” in August 2011 and then developed the “First reconstruction plan” based on this in December 2011. (The second reconstruction plan was developed in December 2012.)

- Reconstruction vision: This provides the basic principles and major policies for reconstruction, and its target area is throughout Fukushima. Target period of time is 10 years.
- Reconstruction plan: This shows specific measures and major businesses. Its target area is throughout Fukushima and it is also stated regionally. Planning period is 10 years, but it may change depending on the resolution of the nuclear power plant accident.

In order to inform reconstruction status by use of data, Fukushima Prefecture has been publishing a regular newsletter “Process for revitalization in Fukushima Prefecture (Fukushima Fukko no Ayumi)” since October 2012. The newsletter releases information about evacuation status, livelihood reconstruction for disaster victims, environmental recoveries such as change in dose of radiation, status of medical examination, status of agriculture, forestry and fisheries, and approach to its security and safety, and tourism business revitalization etc.

6.2.2 Correspondence by Category

(1) Compensation

Compensation Standards

The Act on the Nuclear Damage Liability Facilitation Fund was established in August 2011 based on Nuclear Damage Compensation (Article 16 of the Act); if the amount of compensation of the accident is too much for a nuclear operator to pay, government would subsidize the compensation. In accordance with the law, an organization was jointly established by government and nuclear operators.4

The Dispute Reconciliation Committee for Nuclear Damage Compensation, established based on Nuclear Damage Compensation, serially develops policies showing damage items and its scope which can be categorized as damage to pay compensation (Table 6.5). TEPCO offered detailed compensation standards for residents living in the evacuation ordered area by drawing a line around the government specified evacuation area. On the other hand, TEPCO offered only a lump sum payment for residents outside the evacuation area who live in thirty-two (32) municipalities in Fukushima Prefecture and Marumori Town in Miyagi Prefecture in the voluntary evacuation target area, and other areas are not listed under coverage. In addition, compensation standards during the evacuation ordered period were uniform, although, when an evacuation order is released in an area, then compensation is withdrawn after a transitional period of about 3 months. Only the damage associated with the evacuation is covered, and health and mental damage caused by radiation exposure is excluded.

4 Various damages have occurred in the nuclear power plant accident: evacuation by neighborhood residents, food contamination by radioactive substances, and harmful rumors. It is believed that the amount of compensation is more than 10 trillion JPY. The Act on the Nuclear Damage Liability Facility Fund was established to support damage compensation held by Tokyo Electric Power. However, there is much criticism of the increasing burden on citizens by use of taxpayer money for TEPCO’s damage compensation and the shift of the amount of burden charge to be paid by TEPCO to increases in electricity rates. As well, managers and shareholders of TEPCO and financial institutions as a major creditor are not being accused.
Table 6.5  Scope of Compensation

<table>
<thead>
<tr>
<th>Scope of compensation</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Mental damage caused by evacuation, etc.</td>
<td>A flat sum of 100,000 JPY per month per person. Compensation includes living expense increases associated with evacuation.</td>
</tr>
<tr>
<td>(2) Property damage such as housing, buildings and household goods</td>
<td>Housing and building is calculated by the valuation at the time of accident, household goods are calculated by the number of members of household, and repair cost of the building is calculated by a uniform standard, depending on the floor area.</td>
</tr>
<tr>
<td>(3) Damage concerning business and employment</td>
<td>As a rule, compensation covers the decrease in revenue.</td>
</tr>
<tr>
<td>(4) Transportation and lodging expenses regarding evacuation, temporary access, and returning home, etc.</td>
<td>Compensation is calculated in a standard uniform per person in each area.</td>
</tr>
</tbody>
</table>

Source: Ministry of Education, Culture, Sports, Science and Technology (2011) Guideline regarding determination of scope of nuclear damage affected by the nuclear disaster accident at Tokyo Electric Power’s Fukushima No.1 and No.2 Nuclear Power Stations

Compensation Model

Based on the aforementioned scope, a model of disaster victim is set, and compensation amount for each evacuation ordered area is compared in Figure 6.10. The amount of compensation differs substantially in some areas, and the amount of compensation for residents living outside the evacuation ordered area is not guaranteed to meet the living costs of long-term evacuation.

Source: “Accident at Fukushima nuclear power plants: For livelihood recovery of disaster victims and reconstruction at the disaster afflicted areas (in Japanese),” 2012, Tetsuo Ozaki (The Center for International Public Policy Studies (CIPPS) (October 26, 2012)

Figure 6.10  By Area: Compensation Amount Model by TEPCO
**Compensation Procedure**

The range of damages that can be applied is restricted, and the complicated application procedure for compensation has a problem that should be solved. In September 2011, TEPCO started to send the billing form by mail, in which the accommodation and transportation costs as well as compensation standards such as mental damage are written with a manual, to approximately 140,000 people who were forced to evacuate due to the nuclear accident. They also started to accept claims. The disaster victims received approximately 60 pages of the bill form, and 160 pages of the manual. These documents had been created to reduce workload for Tokyo Electric Power Company rather than to ease the burden on disaster victims for filling in forms. In addition, they were extremely complicated so that a great amount of time, work, and attention were required for filling in the form. TEPCO stated that they were going to have a briefing for the victims to explain how to fill in the forms. However, needless to say, it was very difficult in a situation in which the disaster victims had evacuated to everywhere in the country.

Under this situation, the Japan Federation of Bar Associations announced that the compensation procedure would be revised based on the victims’ point of view. The associations have created a brochure for the victims to tell them to come to the nearest Japan Federation of Bar Associations consultation service desk if they have any questions. In addition, they also drew victims’ attention by telling them not to sign the agreement if they are not satisfied with the claimable amount, and to consider other steps such as petition to the nuclear compensation conflict resolution center and bring an action to the court.

As of September 2013, a total amount of JPY 28,504 million has been paid from TEPCO to the residents and business operators who had evacuated.

**(2) Decontamination**

The radiation decontamination process has been promoted mainly by the Ministry of the Environment in accordance with the basic policies of “Act on Special Measures Concerning the Handling of Radioactive Pollution” enacted on January 1, 2012 and its law. Under the act, it is stated that decontamination should be performed preferentially from the areas that need it based on the human health point of view. The waste that is generated from decontamination will be collected, transported, temporarily dumped, and disposed of safely. In the act, “Intensive Contamination Survey Area” and “Special Decontamination Area” are provided (Table 6.6 and Figure 6.11).

<table>
<thead>
<tr>
<th>Area</th>
<th>Action</th>
<th>Target area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intensive Contamination Survey Area (outside the controlled areas)</td>
<td>- Areas to be decontaminated mainly by municipalities - Decontamination process is promoted based on the decontamination plan that has been made according to the results of investigation and measurement performed by each municipality. - The national government establishes financial and technical actions.</td>
<td>100 municipalities in 8 prefectures are specified including the areas of 0.23 Sv/h or more (as of August, 2013)</td>
</tr>
<tr>
<td>Special Decontamination Area (controlled areas)</td>
<td>- Areas to be decontaminated by the national government directly - Based on the opinion of each municipality, a decontamination plan for each special decontamination area is made, and then actions are taken in accordance with that (a plan has been made for 10 municipalities as of August, 2013)</td>
<td>11 municipalities in Fukushima that have been an evacuation zone or deliberate evacuation zone are specified.</td>
</tr>
</tbody>
</table>

Source: JICA Study Team base on the table by referencing the “Current Status and Path toward Reconstruction (in Japanese)”; 2013, Reconstruction Agency (July 2013)
As of the end of April, decontaminated houses in Fukushima prefecture only make up 12.2% of houses specified as the Intensive Contamination Survey Area in 40 municipalities and scheduled to be decontaminated by the end of FY2013. Decontamination of 23,127 houses in 32 municipalities has been completed compared to the planned 189,379 houses. The other decontamination execution rates are: 59.6% for public facilities, 17.3% for roads, 75.4% for rice fields, and 53.1% for farmlands (the values are based on the announcement of prefecture in June, 2013).

For the Special Decontamination Area, Tamura city has been decontaminated completely. However, there are no prospects for the completion of other municipalities. As a result of the full progress check performed by the national government for the controlled areas in September 2013, the goal, in which decontamination is completed in 2 years and contaminated waste is transferred to Interim Storage Facilities, that was set before the decontamination started is reviewed, and decontamination will be promoted along with recovery progress depending on the condition of each municipality. The ending time frame for decontamination has not been stated clearly.

(3) Living Expenses for Evacuees: Housing, Child-raising, Medical Care, Social Welfare, etc.

1) Provision of Houses

On March 12, 2011, Fukushima prefecture determined to apply the Disaster Relief Act to the 47 municipalities that recorded an earthquake intensity of upper-5 or greater. A lot of people evacuated from the given municipalities after that day so the act was additionally applied to another 12 municipalities on March 17. In total, the Disaster Relief Act was applied to 59 municipalities after the date of the earthquake. In addition, on March 12, 46 prefectures were requested for reinforcements based on the Disaster Relief Act and for acceptance of evacuees from Fukushima prefecture.

For the temporary housing stated in the Disaster Relief Act, there is housing that is constructed and then provided as well as borrowed housing that is from privately borrowed housing to be provided to the disaster victims (see Chapter 4). The former is constructed by the prefecture corresponding to a request from municipalities, and approximately 16,000 houses (for approximately 30,000 people) have been completed as of September 2013. The latter can be divided into general borrowed housing and borrowed housing for special measures. As of September 2013, approximately 1,100 borrowed houses have been provided for approximately 2,700 people, and approximately 22,300 houses for

5 Source: Survey of Decontamination Progress, Environment Management Bureau, Ministry of Environment
6 The special measures on rented temporary housing is applied to private housing rented by the evacuees before the prefecture started to provide temporary borrowed housing. The contractor of the leasing is changed to the prefecture so that it is changed to borrowed housing.
special measures have been provided for approximately 52,200 people.

Approximately 6,000 houses out of approximately 16,000 construction type temporary housing were provided by local builders with wooden housing meeting superior housing standards. It is noteworthy that wooden temporary housing that includes surplus and reusable types is being used for mid-term housing that exceeds the temporary housing period of 2 years.

Those people who evacuated themselves were not support targets of the Disaster Relief Act. However, because they have been evacuated for a long time, only those families that have evacuated within the prefecture with children under 18 years old or expectant mothers were accepted as residents of borrowed housing. Rent paid before the application is not covered by recompense, and the acceptance period for new applications was limited to between November and December 2012. In addition, when the people who evacuated themselves from the prefecture live in private borrowed housing with “rent less than 60,000 yen (less than 90,000 yen for households of 5 or more people)”, a system in which the rent is owed by Fukushima prefecture (up to 90% is covered by the national government) was applied by the Disaster Relief Act. The acceptance of new applications finished on December 28, 2012. In short, after the end of December 2012, when people choose to evacuate themselves, they have to pay the full expenses regardless of whether they are coming in or out of the prefecture (there is a subsidy system for people who come back to Fukushima from other prefectures).

2) Citizen Services at Evacuation Destinations

The government established the Law for Special Cases of Refugee-related Paperwork and Measures relating to People Moving Home in Dealing with Disaster caused by Nuclear Power Plant Accident in the Great East Japan Earthquake (hereinafter, “Law for Special Cases relating to Nuclear Power Plant Evacuees”) in July 2011. Many residents had to evacuate from municipalities or relocate their addresses due to the influence of the nuclear accident disaster. Actions such as provision of appropriate administrative services for the residents who have evacuated to outside the area and relational maintenance between the relocated residents and original local government were discussed. For the evacuees from 13 specified municipalities, administrative services mainly regarding medical and welfare work (such as certification of needed long-term care and vaccination) and education work (such as schooling for children) has been provided by the local government of the evacuation destinations since January 1, 2012 based on this law.

Even though there is a question who owes the expenses related to the administrative services other than special paperwork, on May 31, 2013, the Ministry of Internal Affairs and Communications announced that they would significantly increase financial support for municipalities that had accepted the evacuees from the nuclear accident. The target municipalities for the increase are those who have accepted approximately 95,000 evacuees from 13 municipalities in Fukushima specified by Law for Special Cases relating to Nuclear Power Plant Evacuees. Associated work used to be investigated and integrated individually to calculate the budget. Now the system has been changed so that around 42,000 yen per evacuee is settled and distributed depending on the number of evacuees. The Ministry of Internal Affairs and Communications believes this will decrease paperwork.

3) Support for Anxieties about Health and Burdens throughout Life

There are anxieties about health due to radiation and subsequent burdens throughout life in the areas that were not a target of the evacuation order from the government. In addition, children in the Fukushima prefecture do not have enough chance to exercise. It has been pointed out that there is an increase in the obesity trend, decrease in physical fitness, and a lot of stress. As shown above, voluntary evacuation of families mainly with small children continues from areas other than the evacuation ordered area due to the anxieties about radioactive substances.

With this background, the act concerning the promotion of measures to provide living support to the victims, including the children who were affected by the TEPCO Nuclear Accident in order to protect and support their lives (Assistance for Children and Nuclear Disaster Victims Act) was issued by the lawmaker-initiated legislation in June 2012. The expected target items are shown in Figure 6.12.
Assistance for Children and Nuclear Disaster Victims Act is based on the principles that specify the basic items of the initiatives such as support for livelihood of disaster victims, and the details of the initiatives are specified by the government. However, as of September 2013, the outline has not been designated. Accordingly, the initiatives such as support for livelihood of disaster victims based on this law have not been implemented. It is said that the outline has not been designated because it is difficult to specify the support target areas.

It has been indicated that it is necessary to take the initiative to support disaster victims based on the general meaning of the act on support for disaster victims and children prior to implementation of the outline in order to relieve anxieties of the disaster victims and achieve stability. After these opinions were shared, actions were considered and organized by associated government agencies, and “disaster victim support package by the nuclear hazard for expansion of support for children and individual evacuees” was established in March 2013. This package includes the following: securing exercise opportunities for children in affected areas (1), investigation for health control and test for mental care and school meal (2), and improvement of living environment such as free highway for mother and child evacuees.

In this package, actions that have been taken or are on a budget are summarized. The package does not include the supports requested for health conditions acquired a long time after the nuclear accident and for extended evacuation.

4) Living points for Long-term Evacuees

A consultation consisting of the national government, Fukushima prefecture, and local government that accepts victims was established in September 2012 in order to promote the consideration for securing and construction of the living points for people who have been evacuated for a long time. To secure the living points for long-term evacuees, relocation period, relocation scale, construction method, systematic tasks, etc. are considered and adjusted. Depending on the needs of the local government in the evacuation area, construction of public housing for disaster victims is considered and adjusted with the local governments that accept the evacuees.

Initially, many people hoped that “concentrated housing” in a large residential site was possible. However, it takes time to develop large residential zones to provide for a lot of people on a large scale. In addition, the development affects the urban planning of the local governments that accept the evacuees. Therefore, people now hope for distributed housing in which people live separately. In addition, the following situation also affects the construction needs. A lot of local governments that...
accept the nuclear victims are also afflicted local governments damaged by the earthquake and tsunami. However, TEPCO has not guaranteed sufficient compensation. As a result, problems such as friction between residents have occurred.

The policy for living in the public housing for disaster victims discussed in “New Fukushima Reconstruction Promotion Committee Headquarters Meeting” held in June 2013 is based on the occupancy on a municipality basis. In order to protect the communities from the neighborhood association before the evacuation and from the temporary housing as well as the relative bonding, occupancies are arranged for certain resident groups. On the other hand, some people are concerned about the grouping rules and acquisition of sufficient lands.

(4) Actions related to Job Assistance and Employment

1) Efforts for Industrial Recovery in Disaster Afflicted Areas

In order to restore local industry in the Fukushima prefecture, the government established the subsidy for business location for the industrial recovery of Fukushima in addition to Restoration and Maintenance Subsidy for Facilities of Small and Medium Enterprise Groups that were established in entire areas afflicted by the 3.11 Earthquake for the third revised budget of the FY2011. A subsidy of 170 billion is available for the companies that will open new offices in which five or more people are employed in Fukushima prefecture in five years. The subsidy rate was high and required conditions for applications were not very tight, so there was a deluge of applicants. However, the evacuation ordered area was not prepared to consider new and additional workplaces. Most of the applicants were companies that had owned workplaces outside the restricted evacuation area in Fukushima prefecture.

The government created the “Basic Guidelines for Fukushima Reconstruction and Revitalization” based on the “Act on Special Measures for the Rebirth of Fukushima” in July 2012. They also created an industrial development plan for the purpose of recovery and restoration for the whole prefecture and focused promotion plan for the purpose of creation of new industries, and announced a recovery and restoration plan for areas for which an evacuation order had been released (Figure 6.9). In April 2013, as a part of reconstruction and expansion for accelerating reconstruction and revitalization in Fukushima, the target areas for the tax breaks were expanded from the areas for which an evacuation order had been released to the areas for which an evacuation order is to be released and restricted residential areas for further promotion of establishment of new business facilities. However, in the Hamadori target area, the transportation network including the Joban line has been disconnected. Some people say it is not easy to attract new enterprises to this area.

2) Efforts for Creation of Employment in Disaster Areas

Approximately 10,000 out of 35,000 employees in 8 municipalities in Futaba were engaged in TEPCO or related industries before the disaster. That occupied over 60% of the gross production in the area. Other employment in the disaster afflicted area was of mega businesses, small- to medium-sized businesses, independent businesses, and services. The government is employing thousands for work related to nuclear security assurance and nuclear decommissioning, as well as decontamination and restoration of infrastructure in disaster afflicted areas. However, there are only a few types of jobs for which evacuees can apply, and the number of the applicants who receive employment offers is very few.

For the people who left the disaster afflicted areas, outplacement support through consulting is established in Tokyo as job placement support for people who have backed to Fukushima to support job employment in Fukushima prefecture for students who want to return to Fukushima and job applicants such as disaster victims.
3) Damage to Reputation from Harmful Rumors

The harmful rumors related to the nuclear disaster affect not only Fukushima prefecture but a wide range of area. Agricultural and marine food products, industrial products and tourism are also heavily affected. For example, due to the harmful rumors over agricultural products, safe products for which shipment was not restricted could not be sold and their prices collapsed simply because the production area was near Fukushima prefecture. Restrictions have expanded; for example, the amount of radiation in Japanese industrial products was tested in more than 30 countries.

Due to this fact, the Reconstruction Agency summarized a countermeasure package for each government agency in April 2013. Based on this package, in addition to identifying and disseminating the radiation conditions in the disaster afflicted areas accurately, support for creation of new demand for agriculture, forestry and fisheries industry as well as tourism that were damaged are provided in cooperation with government agencies. For example, for identifying the radiation conditions accurately, the radiation test and measurement system for foods, such as all rice bags in Fukushima, are arranged, and accurate and consumer-friendly information, such as disclosure of test results on the internet, has been provided. As a support for agriculture, forestry and fisheries industry, in order to increase in consumption of agricultural products produced in disaster afflicted areas, these crops are used in cafeterias of government agencies aggressively, and public relations activities are implemented using mass media. In order to support tourism and create tourism demands in the Tohoku region, public relations activities are implemented using mass media and recovery events are held.

Regarding damage to agricultural products, etc., TEPCO targeted business damages due to “Damages Arising from the Government Instructions for Evacuation, etc.” and “Damage caused by shipping restriction order for agricultural, forestry and fishery products etc. by the Government, etc.” and the damages due to so-called harmful rumors were tasks to be considered. However, their mid-term guideline in August 2011 announced that the decreased profit due to harmful rumors would be included in compensation.

Related to this nuclear disaster, harmful rumors not only for items but humans have been exposed. Some local authorities requested that residents who were transferred from Fukushima prefecture take a radiation test. An elementary school child evacuated from Fukushima prefecture was avoided by other elementary school students.

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8 Total amount of loss (estimate) due to reputational damage from harmful rumors calculated by TEPCO is approximately 1,300 billion JPY. Its breakdown is 833.8 billion JPY for agriculture, forestry, fisheries and food industries (domestic), 65.1 billion JPY for agriculture, forestry, fisheries and food industries (export), 336.7 billion JPY for tourism, 68.4 billion JPY for manufacturing and service industries (TEPCO Management and Finance Investigation Committee Report, October 3, 2011).
6.3 Response to Municipalities Evacuating and Accepting Residents and Non-Municipal Support Groups

6.3.1 Emergency and First-Aid Period

Relocation of Municipal Offices

The evacuation instructions issued immediately after the occurrence of the nuclear accident communicated almost no information to local municipal offices or citizens, causing residents to panic and escape in any direction available. In Namie Town, while 10 buses were on standby and residents were urged to evacuate as a group, the government’s instructions changed repeatedly and control was virtually lost. As a result, the residents are now dispersed between temporary housing in 28 different locations in Nihonmatsu City and five other municipalities.

The Namie Town office, responsible for administrative functions, was also forced to move. Nine municipalities have moved to multiple new locations to serve the needs of their citizens. Namie Town office, for example, shifted for the fourth time in September 2012 (figure 6.13).

With little information being made available, there were also municipalities that independently decided to evacuate. On March 12, Kawauchi Village office independently evacuated itself to Tomioka Town office. The two then established a joint disaster response headquarters and readied themselves to take immediate action. On March 15, disregarding the government’s zoning instruction requiring residents within a 20 to 30 kilometer radius of the plant to remain indoors, municipal staff closed the office and urged residents to evacuate themselves. On March 16, they also made the decision to evacuate and completed a move to Koriyama City (Big Palette). A temporary municipal building eventually began administrative operations at the evacuation point on April 12. With no direct instructions from the government, the municipality made its own decision based on media reports and urged residents to evacuate.

Distribution of Stabilized Iodine Preparations

Although stabilized iodine preparations are available as a preventive measure against the occurrence of thyroid cancer caused by radioactivity, their distribution and dosing are based on governmental and prefectural instructions. The prefecture had stored approximately 204,000 iodine tablets in the six municipalities located within a 10 kilometer radius of the nuclear power plant. According to the manual, upon receiving notification from the government, the prefecture would communicate to the municipalities to distribute the tablets. However, the instruction from the government came on March 16 and by this time, evacuation of residents within a 20 kilometer radius of the plant was almost completed.

Despite the lack of notification from the government or prefecture, a number of municipalities independently decided to distribute the iodine tablets and issue dosing instructions to their residents. According to an interim government report, Miharu Town both distributed the tablets and issued dosing instructions on March 15.
According to Miharu officials, the town was collecting information to decide whether it was necessary to distribute the iodine tablets right up until the final decision was made. After the accident, officials arranged for a windsock to be set up at an elevated point inside the town and wind coming from the direction of the plant was constantly monitored. Although there were concerns about side effects to the dosing such as allergic reactions, local doctors confirmed there would be no life-threatening consequences. In the end, town officials decided that when the possibility of a large-scale release of radioactive substances was considered, they had to act even without knowing the dispersal patterns and obtained the iodine tablets from the prefecture and distributed them to residents.

However, after this, the town was contacted by the prefecture and asked to explain why the tablets had been distributed without authorization. Fortunately, none of the Miharu residents who took the medicine exhibited any side effects. In media interviews, the mayor has also emphasized that in times of confusion, a hands-on approach is best. It is the town that must protect the safety of residents and this may not be possible if it waits for instructions from the central or prefectural governments.

6.3.2 Recovery and Reconstruction Period

(1) Municipalities Evacuating Residents

1) Development of Local Government Rehabilitation Plan

Disaster afflicted local governments with evacuated citizens dispersed both in and outside the prefecture can also find it difficult to establish a consensus on creating an outline for the future reconstruction of the municipality. However, they are employing a range of different approaches to understand and reflect the various opinions of residents in their plans.

In the case of Namie Town, whose citizens were all evacuated outside the town, people first discussed about a general principle of joint ownership among citizens in the development process for the local government rehabilitation plan and then focused on a reconstruction vision including necessary measures and policies. (Table 6.7).

| Table 6.7 Main Features in Development of Namie Town Reconstruction Plan |
|-----------------------------|--------------------------------------------------------------------------------|
| **Feature**                  | **Details**                                                                 |
| Meeting of exploratory        | - Main exploratory body operating as the core unit                           |
| committee for Namie Town      | - Comprised of 34 members including townspeople, experts, and national,       |
| reconstruction               |  prefectural and municipal officials                                         |
|                             | - Held a total of eight times, with detailed discussion of items by three    |
|                             | subsections                                                                  |
|                             | - Rather than discussing opinions on revisions to executive proposals, the   |
|                             | committee emphasized an in-depth approach in which issues raised by the      |
|                             | members themselves either in advance or on that day were identified, expanded|
|                             | and examined, and then countermeasures were investigated (adoption of a      |
|                             | workshop style approach)                                                     |
| Circulation of               | - Due to the various issues involved according to age and gender, a questionnaire was circulated among all townspeople (individuals) of high school age and older |
| municipal questionnaire      | - In addition to achieving a response rate of 59.6%, the survey elicited     |
|                             | candid opinions from a large number of respondents                           |
|                             | - From the questionnaire, officials understood: 1. a significant number of   |
|                             | residents believed it would be difficult to return to Namie, 2. about half  |
|                             | wished to remain together as a community if it was not possible to return to |
|                             | Namie, and 3. a large majority wished to reconstruct the town even if was    |
|                             | potentially difficult to return                                              |
| Circulation of children’s    | - A questionnaire was also circulated among first year elementary to third   |
| questionnaire               | year junior high school students, achieving a response rate of 71.7%         |
The Study of Reconstruction Processes from Large-Scale Disasters

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>- In their open answers in the questionnaire, the children emphasized the importance of Namie as their hometown and also that the situation was an opportunity to reexamine established values</td>
<td></td>
</tr>
</tbody>
</table>
| Solicitation of public comments | - In most cases, public comments are usually sourced as a final step, however, for Namie, an interim report on the state of the investigation was created and comments were solicited at an intermediate stage  
- An interim report was sent by mail to all households  
- Opinions were combined with the results of the children’s questionnaire and reflected in the reconstruction plan |
| Contribution by experts | - An expert committee for Namie Town reconstruction was set up and in-depth discussions were conducted on the radiation issue and other areas requiring specialized knowledge |
| Major cooperative efforts by Namie Town council | - The Namie reconstruction vision and reconstruction plan were deliberated by a special disaster contingency planning committee for Namie Town comprised of all local council members  
- Committee members made presentations on Namie residents’ perceived level of awareness of the problems being faced  
- Rather than presenting individual opinions on items that should be included in the reconstruction vision, the committee worked together to clarify, collate and resolve points |


In addition, the reconstruction vision publicly announced for Namie Town in April 2012 included as one of its fundamental policies a commitment to rebuilding the livelihood of all residents and ensuring everyone remained part of the town regardless of where they were actually living. The policy also stated a commitment to providing residents with wide ranging options as to where they could live both at that time and in the future, and generally helping everyone to be happy. At the same time, the vision also adopted as a fundamental policy the idea of residents’ inherited and continuing responsibility to rebuild their hometown and a pledge to fully restore Namie to its original state no matter how many years this might take.

After developing the local government rehabilitation plan., Namie also established the town development and investigation subcommittee and resident-supported progress management subcommittee under the reconstruction plan development committee. The town development and investigation subcommittee handled the actual design of the urban development policy established under the primary local government rehabilitation plan, while the resident-supported progress management subcommittee worked to build a structure allowing planning progress to be managed in conjunction with the townspeople.

Concurrently with the above activities, town volunteers came together after the earthquake to establish Machizukuri NPO Shinmachi Namie, a non-profit that is working to rebuild livelihoods and the local community. This effort is being supported by Waseda University’s Sato Laboratory. With the NPO’s backing, volunteers have staged Namie reconstruction “classes” that include workshops allowing residents to exchange opinions and proposals. These discussions are later summarized and made available in a report. To assist the effort, the council has also provided the town hall as a venue for the workshops and this has apparently helped to create a complementary relationship between the two groups.

In August 2012, Namie Town: the path to reconstruction and the 24 project were officially announced. This was followed in March 2013 by the Namie declaration 13.03: specific targets for cooperative reconstruction and urban development, along with the proposal for a cooperative structure for implementation.

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9 In August 2012, Namie Town: the path to reconstruction and the 24 project were officially announced. This was followed in March 2013 by the Namie declaration 13.03: specific targets for cooperative reconstruction and urban development, along with the proposal for a cooperative structure for implementation.
2) Care Services for Evacuees

Functioning as an administration to provide services and supply information to widely dispersed evacuees was a significant issue for municipalities affected by the disaster.

**Information Delivery / Sharing**

Tablet computers were used by the four towns for which the whole area was designated as an evacuation zone following the nuclear accident. The tablets facilitated multi-directional communication, enabling the town to provide administrative information while also allowing residents to both send opinions and questions to officials and engage in exchanges with fellow residents.

(i) Provision of Welfare and Health Services by Municipalities

Tomioka, the first town to begin the tablet program, sought the approval of its residents to collect information including their name and address and then began combined management of the Tomioka livelihood recovery support center, named the Odagaisama Center. Consultation staff handling livelihood support used tablets to input and successively update information from evacuees including their medical history, family structure, and livelihood-related circumstances. The tablets proved valuable to the staff and also public health nurses when confirming information and conducting discussions, allowing them to check basic details such as who was suffering what problem and the relevant location. The tablets also apparently allowed them to better assess the frequency at which they should visit evacuees based on their circumstances, enabling a more efficient approach to providing care.

(ii) Provision of Administrative Services to Residents

As of April 2013, the municipalities were lending tablets free of charge to the following approximate numbers of target households: Naraha Town, 2,300; Tomioka Town, 3,500; Okuma Town, 4,000; and Iitate Village, 2,300.

The tablets allocated to residents by Tomioka Town allowed them to listen to Odagaisama FM (Tomioka’s temporary FM station for the disaster) from anywhere in Japan. As a general rule, this type of FM station is usually set up in the disaster afflicted areas. However, due to the nuclear accident, Odagaisama FM had to be established at the evacuation destination, making the process more difficult than usual. Fortunately, thanks to the enthusiasm of related parties, it finally started operation from the Odagaisama Center on March 11, 2012, one year after the earthquake. As 2013 began, with the tablet computers allowing interactive communication, there were times when listeners were introduced directly on air.

However, resistance to using the high-tech tablets was much higher than anticipated among the elderly. Of the 3,500 households to which Tomioka distributed devices, actual usage on any one day averaged only around 400 households, amounting to approximately 10 percent of all those that received the devices (as of April 2013). A number of explanatory meetings have been set up to encourage use of the items.

**Promotion of Reconstruction Support Personnel System: Providing Care for Evacuees Living outside the Prefecture**

While evacuees within the prefecture can be reached with administrative support comparatively easily, the majority of those dispersed through the country are separated from their local community and living insecure lives in unfamiliar areas. If these people continue to live as evacuees for an extended period, isolation will also gradually become a problem. After considering these circumstances, Namie Town created a system whereby Namie reconstruction support personnel are dispatched to relevant

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10 Odagaisama Center was established as a volunteer livelihood support facility at the joint social welfare conference staged by Tomioka Town and Kawauchi Village on May 1, 2011. It is located inside the Big Palette Fukushima evacuation center. Rather than just promoting exchange among victims of the disaster, a key point for the center is its promotion of the management of temporary housing by the inhabitants themselves. One of the center’s practical activities was also to create a telephone book of residents. A book listing the numbers of consenting residents was published and distributed to all townspeople.
evacuation areas. These specialist employees provide support for everyday life and community activities targeting residents who were evacuated outside the prefecture.

The system has been developed using the reconstruction support personnel system created by the Ministry of Internal Affairs and Communications (subsidized measure providing remuneration and activity-related expenses to support personnel whose purpose is to provide protection and care services in disaster afflicted areas and support revitalization activities in other affected areas).

As of September 2013, resident offices (umbrella groups such as NPOs) have been set up in the five prefectures of Yamagata, Chiba, Niigata, Saitama, and Kyoto and three support personnel have been stationed at each one. The period is to be a maximum of five years and the workers will engage in activities including visiting the homes of evacuees, providing information via magazines, holding exchange meetings, and liaising and coordinating with support groups (figure 6.14). However, due to the breadth of each prefecture, the difficulty of reaching evacuees living some distance from the central area has been raised as an issue.

Source: “Namie Town livelihood support efforts (in Japanese)”, 2013, Reconstruction Agency (July 24, 2013)

Figure 6.14 Namie Reconstruction Assistance Personnel System

3) Reopening of Elementary and Junior High Schools

Due to the significant harm suffered by Fukushima Prefecture as a result of the nuclear accident, as of May 1, 2012, close to 9,000 elementary and junior high students had changed to schools outside the prefecture. Compared to 2009, the numbers of these students in Fukushima have decreased by more than 20,000. However, in response to rapid progress in the reorganization of schools in particularly coastal municipalities in Iwate and Miyagi Prefectures, a decision was made to forego similar measures in Fukushima and to temporarily close schools during fiscal 2013.11

Among all the elementary and junior high schools in the 12 municipalities within Fukushima Prefecture specified as evacuation areas due to the nuclear accident, 32 out of the 42 schools have restarted classes, but the number of students has been reduced to 1,592, which is less than a fifth of the 8,388 students prior to the accident.12

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11 According to an explanation provided by the Fukushima Prefectural Board of Education, the schools hoped to return to their home districts and it was not the time to consider reorganization, and also many of the schools were continuing operation in their evacuation areas. (Source: Tomonori Suzuki (2013), “Decline in the Numbers of Juvenile Students and Reorganization of Schools in the Three Prefectures Affected by the Disaster” (Legislation and Review, June 2013, No. 341, edited and published by the Office for Planning and Coordination, Secretariat of the House of Councilors))

12 Source: Kahoku newspaper, article dated July 31, 2013
Of the 27 elementary schools involved 20 have restarted classes, while 12 out of 15 junior high schools have also reopened. There are areas in which the evacuation order has been rescinded and schools have returned to their original facilities, however, some have moved to municipalities outside the evacuation zone and set up temporary buildings there. In addition, small-scale schools and similar schools have been forced to hold combined classes (table 6.8).

In Namie, which experienced the greatest reduction, elementary school students have decreased by 98.5% and junior high school students by 93.0%. Of the nine elementary and junior high schools in the town, only the two that transferred to Nihonmatsu City have reopened.

Table 6.8  Elementary and Junior High Schools before and after Nuclear Accident (Extracted Values)

<table>
<thead>
<tr>
<th>Minamisoma City</th>
<th>Number before nuclear accident</th>
<th>Number after nuclear accident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kodaka Ward</td>
<td>Kodaka Elementary 392</td>
<td>Reopened (Kashima Ward) 97</td>
</tr>
<tr>
<td></td>
<td>Fukuura Elementary 105</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kaniefuwa Elementary 143</td>
<td>Combined classes (Kashima Ward) 82</td>
</tr>
<tr>
<td></td>
<td>Hatobara Elementary 65</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kodaka Junior High 382</td>
<td>Reopened (Kashima Ward) 91</td>
</tr>
<tr>
<td>Namie Town</td>
<td>Namie Elementary 558</td>
<td>Reopened (Nihonmatsu City) 17</td>
</tr>
<tr>
<td></td>
<td>Kiyohashi Elementary 122</td>
<td>School closed</td>
</tr>
<tr>
<td></td>
<td>Ukedo Elementary 93</td>
<td>School closed</td>
</tr>
<tr>
<td></td>
<td>Obori Elementary 157</td>
<td>School closed</td>
</tr>
<tr>
<td></td>
<td>Kario Elementary 174</td>
<td>School closed</td>
</tr>
<tr>
<td></td>
<td>Tsushima Elementary 58</td>
<td>School closed</td>
</tr>
<tr>
<td></td>
<td>Namie Junior High 398</td>
<td>Reopened (Nihonmatsu City) 43</td>
</tr>
<tr>
<td></td>
<td>Namie-higashi Junior High 179</td>
<td>School closed</td>
</tr>
<tr>
<td></td>
<td>Tsushima Junior High 34</td>
<td>School closed</td>
</tr>
<tr>
<td>Futaba Town</td>
<td>Futaba-kita Elementary 151</td>
<td>School closed</td>
</tr>
<tr>
<td></td>
<td>Futaba-minami Elementary 192</td>
<td>School closed</td>
</tr>
<tr>
<td></td>
<td>Futaba Junior High 208</td>
<td>School closed</td>
</tr>
<tr>
<td>Okuma Town</td>
<td>Kumamachi Elementary 333</td>
<td>Reopened (Aizuwakamatsu City) 65</td>
</tr>
<tr>
<td></td>
<td>Ono Elementary 423</td>
<td>Reopened (Aizuwakamatsu City) 113</td>
</tr>
<tr>
<td></td>
<td>Okuma Junior High 371</td>
<td>Reopened (Aizuwakamatsu City) 119</td>
</tr>
<tr>
<td>Tomioka Town</td>
<td>Tomioka 1st Elementary 416</td>
<td>Reopened (Miharu Town) 14</td>
</tr>
<tr>
<td></td>
<td>Tomioka 2nd Elementary 521</td>
<td>Reopened (Miharu Town) 17</td>
</tr>
<tr>
<td></td>
<td>Tomioka 1st Junior High 259</td>
<td>Reopened (Miharu Town) 20</td>
</tr>
<tr>
<td></td>
<td>Tomioka 2nd Junior High 291</td>
<td>Reopened (Miharu Town) 11</td>
</tr>
<tr>
<td>Naraha Town</td>
<td>Naraha-kita Elementary 274</td>
<td>Combined classes (Iwaki City) 88</td>
</tr>
<tr>
<td></td>
<td>Naraha-minami Elementary 158</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Naraha Junior High 254</td>
<td>Reopened (Iwaki City) 63</td>
</tr>
</tbody>
</table>

Note: Pre-accident figures are as of May 2010, while post-accident figures are as of May 2013.
Source: Kahoku newspaper (in Japanese), dated July 31, 2013
Box 6.1  Independent Efforts by Evacuees  
- NPO Tomioka Children Future Network -

Tomioka Children Future Network was established in February 2012 (incorporated as an NPO in February 2013) by residents of Tomioka Town who were living as evacuees following the 3.11 Earthquake and subsequent nuclear accident. The network mainly includes parents aged 30 to 40 years old with experience of PTA activities, etc.

While hoping to promote central government understanding of actual conditions following the evacuation, the members realized that simply expressing their individual opinions would usually amount to little more than a chorus of “loud voices.” Based on previous experience, they decided it would be more effective to collect everyone’s views and present them to the government. To achieve this, they have staged town hall type meetings in areas throughout the country and are continuing to gather together the opinions of Tomioka residents.

The approach adopted for the town hall meetings was first to hold closed door discussions for only Tomioka residents. This has since progressed to open meetings at which non-residents can also participate in the conversation, with the goal of sharing and more deeply examining the views expressed. In February 2013, the Tomioka future meeting was held. At this public forum, the statuses of issues raised during the course of the first to fifth town hall meetings were shared with residents and government representatives as a step toward resolving these problems.

The major content of those activities is outlined as follows:

1. Communication activities: Including the staging of town hall meetings to collect requests and opinions from residents as well as information on the current state of evacuees’ lives, and the subsequent delivery of residents’ true opinions to the government and related bodies via open forums.

2. Lobbying activities: Including the clarification of parties responsible for the nuclear accident and pursuit of compensation that truly covers residents’ losses, along with the establishment of a legal framework that addresses the actual circumstances of evacuees and provides continuing support.

3. Construction activities: Including respect for the provision of a wide range of future options for residents and support for their independent achievement, as well as the development of a future vision for Tomioka and the creation of a new hometown by the residents themselves.

(2)  Local Governments that Accepted Evacuees

1) Overall Picture

Local governments throughout Japan that accept evacuees offer support in accordance with the Special Act concerning Evacuees from Nuclear Accident, as previously discussed; however, it has also been pointed out that matters such as the occupancy period for borrowed housing is entrusted to the judgment of the local government and that the extent of support at the place of evacuation will vary.

When services from an administrative body are received at the place of evacuation, the issue of residence certificates will also arise. In order to receive compensation for the earthquake and tsunami and for the nuclear accident, the evacuees must leave their residence certificates at their place of origin. Because of this, they cannot receive services at the place of evacuation or it may take a long time. For example, if they do not transfer their residence certificate, they cannot register their seal at the place of evacuation and the only thing they can do is to go to their local government office at the place of origin and apply for such a transfer or mail an application. Also, when they purchase a mobile phone or a car, the vendor may request a transfer of their residence certificate, or in some cases they are not able to sign a contract because their credit card is sent only to the site of their residence certificate. The Special Act concerning Evacuees from Nuclear Accidents provides measures for evacuees who do not transfer their residence certificates; however, it is limited to certain affairs (“special affairs”) such as Certification of Needed Long-term Care and school transfers.
Amidst this backdrop, the government of Japan, at a meeting held for the exchange of opinions concerning long-term evacuation held by the government and Fukushima prefecture in October 2012, stated that “the constitution does not recognize multiple residence certificates” and announced plans to take action for providing proof of residence at the place of evacuation without having to transfer the residence certificate. The government indicated its thoughts on a forward-looking initiative for those prefectures that require issuance of a proof of residence certificate.

In December 2012, the Ministry of Internal Affairs released a notice to municipalities of places of origin about “administration processing requirements for proof of application for evacuation location” with respect to the issuance of a certificate concerning evacuation location. As a result, actions could be taken on cases in which evacuees are requested to provide proof of evacuation location for private contracts and similar matters related to their long-term living status as evacuees.

In another development, the Science Council of Japan, in a statement issued in June 2013, described support measures for recognizing duplicate registration of residence after clarifying support measures by issuance of a “victim’s handbook.” In the additional case in which the evacuee transfers their residence certificate to the place of evacuation, a mechanism should be set up for a local government at the place of evacuation to grant residential status and to enable their involvement in the formulation of local government rehabilitation plans and similar matters of the local government at the place of origin.

2) Case Study – Initiatives in Yamagata Prefecture –

This section summarizes the support in Yamagata prefecture, the prefecture which accepts the largest number of evacuees from Fukushima prefecture.

**Evacuee Acceptance Status**

Yamagata prefecture has accepted about 15% of the people from Fukushima prefecture who have evacuated outside of the prefecture, although inspection of the time series shows that the number is down slightly from its peak in January 2012 (Table 6.9).

| Table 6.9 Status of Evacuee Acceptance in Yamagata Prefecture |
|---------------------------------|-----------------|----------------|
| **Category** | **People Accepted** | **Remarks** |
| Apartments, etc. | 6,955 | Private rental, public-run housing, etc |
| Other | 640 | Living with friends, in hospital, etc |
| **Total** | 7,595 | - Fukushima evacuees account for over 90% |
| | | - Breakdown by municipality: Yamagata (city) - 2,701; Yonezawa - 2,008; Tendo - 489 |

Source: JICA Study Team based on data from the Yamagata prefecture’s website as of 5 p.m. on August 15, 2013

**Assistance from an Administrative Body**

Similar to other prefectures, the Yamagata prefecture system of borrowed housing for evacuees as a result of a request to close its acceptance of applications from Fukushima prefecture is accepting no new applications after December 28, 2012. The evacuees pay no rent, security deposits, common expenses or management fees, but do pay for utilities and other living expenses. As special support from Yamagata prefecture, the prefecture is also hosting seminars on “winter living,” which cover how to drive a car as a countermeasure for heavy snow.

**Assistance from Public-Private Partnerships**

In order to take action on assistance for disaster afflicted areas and the acceptance of evacuees, the prefecture, prefecture-business partnerships, and NPOs have cooperated from the start of the earthquake disaster to establish a “Volunteer Disaster Management Headquarters” within the prefectural government offices and held daily information-sharing sessions. These sessions, which are open for all, have had many support organizations participate, and have led to activity reports and
information-sharing, among other results.

In August 2011, “Reconstruction Volunteer Support Center Yamagata” was established as a center for information and activities for those providing assistance to the recovery and reconstruction effort. “Let’s Bind Together and Support with Reconstruction Support Project Yamagata,” a project run by the center, is an umbrella group comprising two NPOs and the prefecture and providing assistance for disaster recovery and the disaster victims. As support activities for evacuees within the prefecture, the project provides “a place” for the benefit of evacuees, where through use of the Internet, information is transmitted and information bulletins are published, and where organizations, individuals, and related parties who provide assistance to disaster afflicted areas and evacuees within and outside the prefecture can introduce their services and exchange information.

In August 2013, the prefecture also established the “Yamagata Evacuee Support and Collaboration Network” as a medium-term form of assistance to those within the prefecture who had to evacuate. The aim of the network is to have evacuee support group including administrative agencies, related organizations, NPOs, and volunteer groups offer fine-grained support catering to the needs of evacuees, while sharing information and collaborating. Noteworthy activities include information-sharing on evacuee support, promotion of cooperative activities for evacuee support, and implementation of collaborative support projects. As of the time of writing, September 2013, 94 groups were participating in this network.

(3) Universities and Private Support Organizations

This section summarizes trends at organizations that focus their efforts on long-term evacuees and reconstruction of Fukushima prefecture due to the nuclear accident. This section should also be read together with Chapter 5 to gain an understanding of the private reconstruction support activities from directly after the disaster until the present.

1) Fukushima Cooperative Reconstruction Center

Founded in July 2011, the Fukushima Cooperative Reconstruction Center\footnote{Became a general incorporated association in December 2012} aims to “provide support without overlook or omission while overseeing the entire network” and targets a bootstrap recovery of disaster afflicted areas and disaster victims from the 3.11 Earthquake, while undertaking activities to build a coordination network covering a broad spectrum of support and to support promotion of information provision, communications, project partnerships, and collaborative activities (Figure 6.15).

![Figure 6.15  Functions of the Fukushima Cooperative Reconstruction Center](image)

Source: JICA Study Team based on materials obtained from the Fukushima Cooperative Reconstruction Center

\footnotetext{13}{Became a general incorporated association in December 2012}
NPOs supported logistically by the center have been giving direct assistance since directly after the earthquake in such areas as distribution of supplies, oversight, and educational support; however, keeping in mind the end of the residency period for temporary housing and borrowed housing, they are now considering the need for gradually shifting their efforts to self-reliant activities and reconstruction support. As a result, the center’s direction of support must shift in response to the stage of recovery. It will therefore now be important to express specific guidelines on what type of support is needed and how it must be changed.

Specific contents for fiscal year 2013 projects are as follows:
- Promoting network formation and collaboration
- Information provision, communication, and coordination
- Nationwide evacuee support projects (forming a network among support groups and making recommendations to various sectors for the construction of a support system for nationwide support personnel in areas where it is difficult for prefectural support groups to respond—a challenge faced by Fukushima prefecture).
- Support for model formation and advisory projects (logistical support for running programs that can serve as a reconstruction model in Fukushima prefecture (including support for evacuees who evacuated outside the prefecture), project startup for certain model cases, and offering recommendations to individual support groups and centers,)  

2) Fukushima University – Fukushima Future Center for Regional Revitalization –

To take long-term action towards recovery and reconstruction support on an organizational basis, Fukushima University launched the Fukushima Future Center for Regional Revitalization (FURE) in April 2011. FURE’s objective is “to conduct scientific investigations of the facts arising from the Great East Japan Earthquake and the accident at Tokyo Electric Power’s Fukushima No.1 Nuclear Power Plant and their resulting damage, and based on these facts, to forecast the trends of disaster afflicted areas as well as providing support for recovery and reconstruction.” The center has set up nine project teams established under four divisions, not for the primary responsibility of a research center focusing on research and scholarship, but rather for the development of practical activities as a support center that stands close to local recovery and reconstruction efforts.

The broad spectrum of activities carried out thus far by the center includes the following: 1) autonomous support for children’s study and for young people, 2) support for creating ties at temporary housing and borrowed housing facilities and community revitalization in the afflicted areas, 3) preparation of a detailed radiation map of agricultural zones as a countermeasure for damage to agricultural produce in the prefecture and harmful rumors together with recommendations towards the construction of an inspection system for safety and security, 4) research investigations for elucidation of transfer mechanisms for soil and agriculture produce with radioactive substances, and 5) support for the introduction and spread of renewable energy that make the maximum use of the community’s characteristics.

As an example, based on cooperative agreements for recovery and reconstruction between Fukushima University and the eight townships in the Futaba district, the center in January 2012 led support for the preparation of a local government rehabilitation plan and provided reconstruction support in the Futaba district for a variety of fields including industry, the residential environment, and education. Then in October 2012, FURE started a new lecture series, “Study of Disaster Recovery Support” developed lectures led by center researchers and founded on their cumulative experience and which feature walks through the actual afflicted areas.
The Study of Reconstruction Processes from Large-Scale Disasters

Now in the third year since its founding, the center strives for the development of talented people who can make an active contribution to post-disaster reconstruction and endeavors to enhance communication within and outside the prefecture, including foreign countries, while collaborating in partnership with a wide variety of institutions.14

3) Private Support Groups and What Ties them together

The Japan Civil Network for Disaster Relief in East Japan (JCN)15 has raised “creating binds with groups in support of nationwide evacuees” as its No. 1 activity. Also, the Japan NGO Center for International Cooperation (JANIC), which fulfills the networking function of connecting NGOs and NPOs, is providing long-term evacuation support at facilities in Fukushima.

Activities of Individual Private Support Groups

According to the results of “A factual survey on livelihoods for building a network of nationwide support groups,” which was conducted by JCN between March and May 2012, the state of nationwide support groups is as follows:

- Location of respondents (support groups): Tokyo had the most, followed by Hokkaido (at roughly half the number of Tokyo)
- Contents of support in effect (multiple responses allowed): “Exchange and community” had the most replies, followed by “communicating information,” “support for relief supplies,” “various consultations,” and “education and training.”
- Expected completion period for activities: “Not decided” had the most responses, followed by “watching conditions, but still waiting,” “until there are no move evacuees.”
- Necessity of partnerships and cooperation with other groups: “Necessary” accounted for over 80% of the answers.


15 Nationwide networking organization created from private support groups spanning many sectors, with participation from NPOs, NGO, corporations, and volunteer groups concerned with support activities for disaster victims and evacuees of the 3.11 Earthquake. See also Chapter 7.
- Fund procurement method: “Donations and recovery support payments” had the most responses followed by aid from “volunteer support (disaster volunteers, solicited contributions for support of NPO activities)”

**JCN Programs**

As part of its efforts starting in fiscal year 2012 to build ties with groups that support nationwide evacuees and evacuee groups, JCN has been holding regular “nationwide evacuee support meetings” since June 2012 in which support groups come to the local areas of nationwide evacuees. These meetings were held in 8 areas in 2012 and a total of 490 groups participated. Participating groups, including private NGOs, NPOs, ad hoc groups, and Councils for Social Welfare, aimed to collect information and create horizontal ties.

Attendees at the July 2013 meeting in Tokyo had the following comments:

- We are getting a lot of detailed advice, but on the issue of housing, problems with economic disparities and information gap continue.
- The zone settings and revisions and the compensation system are putting ties between parties (disaster victims) in jeopardy.
- A diversity of support needs must be handled, so support for self-reliance is needed.
- Support groups are grappling with the common problems of lack of personnel, know-how, and funds. Supportive measures are hitting their limits as organizations are getting worn down by the unforeseen and hopeless conditions. To respond to these diverse needs, the executive functions of the support organizations need to be strengthened.
- There is remarkably good cooperation between the public sector with its stabilizing and public information ability, and the private sector with its communication and take-action ability.

These points raised items that deserve to be examined and borne in mind as long-term support continues.

**JANIC Programs**

In July 2011, JANIC established staff residency stations in Fukushima and started continuous service using its staff (moved to the Fukushima Station area in June 2012 as a convenient place for people to gather) In a joint effort with Fukushima University, JANIC’s Fukushima office has formed a network of internal and external cooperative relationships, and achieved further cooperation and recording of information through its constant supply of information within Japan and abroad. Main activities include:

- Setting up and administering space for Fukushima NGO cooperation: Meeting space, office space for groups without facilities, event space
- Setting up and running a Fukushima portal site: Distributing information in English on Fukushima’s current conditions with the cooperation of Fukushima University and FURE (Fukushima on the Globe).
Box 6.2 Interchange with Residents of the Place of Evacuation

Evacuees living at the Shinonome Jutaku National Public Officers’ Housing in Koto Ward (Tokyo) established an interchange organization (Shinonome no Kai) in September 2011. The housing complex started accepting evacuees in April 2011, but since the start “many people from the same town have entered but almost exclusively people who do not know each other, which is different from the welcoming message we received.” Government workers from existing local government organizations are living there, but evacuated residents have not been joining.

Concerned about these conditions, the Bureau of Urban Development of the Tokyo Metropolitan Government is pushing for acceptance of evacuees and has set up gatherings at separate floors, and then formed an interchange organizations after listening to people’s opinions. The primary activities of the Shinonome no Kai are an “interchange salon” (every Tuesday and Thursday), interchange events (including introduction events from businesses), a Shinonome oversight group, publishing a public information magazine called Kizuna (“the ties that bind”), and local community interchanges. In particular, local community interchanges known as “clean missions” bring evacuees and volunteers together with the aim of meeting once per month to pick up the area around Shinonome Jutaku. In addition, opportunities are being created for interchanges with disaster victim residents through such actions as participation in local festivals.

This is not just for blending into the local community and receiving support; in the future, they would like to focus their efforts on having the evacuees themselves take initiative.

Source: Newspaper reports, materials from JCN meetings for nationwide evacuee
6.4 Evacuees’ Intentions

In this section, we summarize evacuees’ intentions and their trends based on questionnaire surveys conducted after the earthquake and nuclear accident by the government, universities, and other institutions. Because the respondents and questions were different depending on who administered the survey, it is necessary to keep in mind that discussions should be on the same dimension and extract the key points from the main survey results.

6.4.1 Factual Survey of Evacuees from the Nuclear Accident and Disaster (conducted June and September 2011)

Table 6.10 shows the survey summary and results.

<table>
<thead>
<tr>
<th>Table 6.10 Survey Summary for Factual Survey of Evacuees from the Nuclear Accident and Disaster</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey organization</td>
</tr>
<tr>
<td>Objective</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Interviewees</td>
</tr>
<tr>
<td>Main results (key points)</td>
</tr>
</tbody>
</table>

Sources: (Both in Japanese)
Looking at changes in the data over three months shows that the proportion wishing to return to their community fell from 59.3% in the first survey to 43.2% in the second. In particular, evacuees outside the prefecture had fewer responses of “want to return” and more of “don’t want to return.” Young adults also had fewer “want to return” replies. Taken together with the fact that many evacuees outside the prefecture are in their 30s, it may be the case that young adults are less likely to return to their community after time has passed.

Looking at changes in ambition shows that about half of responded “I will put in my best” in both surveys. However, it must also be kept in mind that after three months, there was a near doubling in the number of people responding, “I am losing my spirit.”

6.4.2 Fiscal Year 2011 Factual Survey on Disaster Reconstruction at Eight Townships in Futaba (conducted September 2011)

Table 6.11 shows the survey summary and results.

Because this survey was conducted across eight townships, its results show that there were large differences by community in the extent of damage and the related intent to return home. Also, similar to the survey in section 6.4.1, young adults expressed a lower desire to return home amidst radiation concerns.

<table>
<thead>
<tr>
<th>Table 6.11 Survey Summary for Factual Survey of Eight Townships in Futaba</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey organization</td>
</tr>
<tr>
<td>Objective</td>
</tr>
<tr>
<td>Survey period and method</td>
</tr>
<tr>
<td></td>
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<tr>
<td>Interviewees, response rate</td>
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<tr>
<td></td>
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<tr>
<td>Main results (key points)</td>
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</tbody>
</table>
Among current living difficulties, the large number selecting “radiation concerns” stood out. In contrast, for future living difficulties, the most common response was “not knowing the length of our evacuation period.”


### Table 6.12 Summary of Survey on Residents’ Intent for Local Governments in Areas Afflicted by the Nuclear Power Disaster

<table>
<thead>
<tr>
<th>Survey organizations</th>
<th>Conducted jointly by the Reconstruction Agency, Fukushima prefecture, individual municipalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective</td>
<td>To collect basic information for concrete ways of proceeding on improvement of the living environment during the evacuation period, implementation of various measures for returning home, and support for long-term evacuees.</td>
</tr>
<tr>
<td>Survey period and method</td>
<td>Period: August 2012 to January 2013 (Conducted over a two-week period in each municipality)</td>
</tr>
<tr>
<td>Interviewees, response rate</td>
<td>Method: Questionnaire</td>
</tr>
<tr>
<td></td>
<td>Interviewees: Differs by municipality - Okuma, Iitate: all heads of household - Futaba: All residents, middle-school age or older - Namie, Naraha, Katsurao: All residents over 15 - Tomioka: All residents over 18 - Tamura: All heads of household in the reserve area released from evacuation order and the evacuation reserve area of the former emergency</td>
</tr>
<tr>
<td></td>
<td>Response rate: 60.2% of 60,705 questionnaires distributed (response rate by municipality omitted)</td>
</tr>
<tr>
<td>Main results (key points)</td>
<td>1. Current evacuation status - The dispersion of households (families) has its highest proportion in Iitate at about 50%, and lowest in Katsurao at about 30%. - In many municipalities, the area that raises the most concern about evacuees’ lifestyle is community formation, followed by employment and work. By type of residence, residents of borrowed housing raise the issue of community formation higher than do residents of temporary housing.</td>
</tr>
</tbody>
</table>
2. Intent to return
- Responses on intent to return vary completely by municipality, as shown by these proportions of respondents who do not wish to return: Tamura - 10.2%, Naraha - 22.3%, Tomioka - 40.0%, Okuma - 45.6%, Futaba - 30.4%, Namie - 27.6%, Katsurao - 27.1%, and Iitate - 27.8%.
- Comparison by age for all municipalities shows that seniors have the highest intent to return and young adults the lowest. By family composition, families with children have a lower intent to return. Also, residents who cannot decide account for a constant proportion across all responses.
- Among the necessary information and conditions cited for the decision to return, “the outlook for the social foundation” and the “outlook for lower radiation levels” rank highest.
- Among reasons cited for the lack of intent to return, “unease about radiation levels” and “unease about nuclear safety” ranked the highest in many municipalities.
- For the type of assistance most requested of administrative bodies by those not intending to return, “support for getting a place to live” and “providing information from the municipality where they used to live” ranked the highest in many municipalities.

3. Living location and form of residence during evacuation period
- For the desired location to be sent for living as an evacuee, Iwaki ranked the highest, followed by Fukushima and Minami-Soma.
- For the form of residence most sought after for living during the evacuation period, “a home of one’s own” received a high number of responses.

4. Outside community (for the towns of Tomioka, Okuma, Futaba, and Namie)
- For the intent to reside in an outside community, over 40% responded, “cannot decide at this time.” However, a look at the data by age shows that for all four towns, the intent to reside was highest among seniors and lowest among young adults.
- As the waiting period until they transfer residence to an outside community, over half of all respondents in all four towns cited periods between “within 1 year” and “within 3 years.”


As discussed at the beginning, because the survey organizations, survey methods, and survey subjects are different, results cannot be summarized into a uniform result, but the following trends are evident.
- Intent to return falls with the passage of time.
- Intent to return is strongest among seniors and lowest among young adults.
- A main reason people have for not returning or wishing to transfer residence is unease about the effects of radiation.
- Many people are uneasy about their current living situation with respect to radiation, income, and employment.
Box 6.3 Changes over Time in Evacuees’ Intent

The latest results (September 11, 2013) of a Yomiuri Shinbun survey are described below. The survey population is limited to 200 people, but the survey has been conducted regularly since one month after the disaster. The survey population consists of disaster victims who entered into evacuation living in Fukushima prefecture after the nuclear accident.

The number of evacuees who wish to return to their previous community of residence before evacuation continues to fall, dropping 4 points to 42% from the previous survey, which was conducted two years after the earthquake.

The proportion of respondents who believe they would like to live within Fukushima prefecture when they return differs between evacuees who would like to remain in the prefecture and those who live outside of it. Among those who responded that they would like to transfer their residency from their previous place of residence before evacuation, 95% of evacuees within the prefecture responded, “I would like to remain within the prefecture and rebuild my life,” while 5% responded, “I would like to move outside the prefecture and rebuild my life.” On the other hand, among evacuees living outside the prefecture, 82% responded that “I would like to remain outside the prefecture and rebuild my life,” while only 18% responded that “I would like to return to the prefecture and rebuild my life.”

In response to a question about whether they think their community before evacuation can be rebuilt, only 20% responded, “I think so.” On expectations towards reconstruction, the result has trended around 20% since the survey taken one year after the disaster, from which we can infer that the reconstruction effort seems to be hitting a stretch of plateau. ((b)).

![Figure (a) Intent to Return](image)

![Figure (b) Expectations towards Reconstruction](image)

Source: Yomiuri Shinbun, from a questionnaire for 200 nuclear accident evacuees (administered periodically since April 2011)
6.5 Considerations on Support for Long-term Evacuees

This section summarizes the considerations concerning support for long-term evacuees in light of actions taken by the country and prefecture (6.2); the resulting initiatives by local governments in disaster afflicted areas, the local governments that accept evacuees, private support groups, etc. (6.3); and the intent of the evacuees themselves (6.4).

Both groups may be evacuees, but there are “those from locations where it is possible to return” and “those from locations where returning is not possible (at least for a long time).” Even if it is possible to return from the viewpoint of radiation levels, if the environment is not ready in terms of infrastructure, places to shop, and places to work, then conditions will nevertheless be not be in place for the residents’ return, such as what was stated in the return declaration by the village of Kawauchi. Also, depending on such attributes as field of work and household composition by age, sex, and whether there are children, intent will vary and undergo changes by the day and by the minute. The result is that if sudden action is not taken, the number of people not returning will grow more and more, and we will reach a point where the problem cannot be solved by a “one size fits all” type of support.

If we look at the actions by the national government concerning the nuclear accident with respect to areas specified as evacuation zones, they put in place such measures as drawing up plans for prompt return home or permanent residence, setting up councils on long-term evacuation, and furnishing subsidies for community restoration. They are also overseeing Tokyo Electric Power’s compensation system even though various problems are being pointed out. However, the goal of completing decontamination, including the placement of temporary dump sites is not being met, so the evacuations are expected last for a long time. However, outside of the evacuation zones, there is limited support from administrative bodies for people who evacuated on their own will as a result of their unease over radioactive contamination. Although the Act concerning Support for Children and Disaster Victims has been enacted, it has not led to the implementation of concrete measures. A disaster victims’ support implementation package has been put together; however, the current status is that support for those who evacuated the prefecture on their own will and choose not to return, including compensation, is quite limited.

The main premise behind government action is that evacuees will return, even though it is not clear at the evacuation zone about when this will happen. However, in consideration of the fact that evacuees have diverse situations and keeping in mind that reconstruction is long term, then many more options must be prepared. In this case, attributes such as age, sex, and family composition must necessarily be kept in mind. Furthermore, support cannot just come from administrative bodies but also from private institutions such as universities, NPOs and NGOs, and businesses, making Public Private Partnerships (PPP) indispensable.

Figure 6.17 shows the path to reconstruction for each local government and by form of evacuation, serving as an image that will easily spring to mind for evacuees. The image shown is merely a single scenario, but necessary information for giving the evacuees themselves their own future choices and at the same time putting in place support personnel plans.

16 On September 10, 2013, the Council for Compensation, Dispute and Examination of Damage from Nuclear Power resolved to increase the amount of compensation to evacuees from nuclear accidents for damage to structures and land. The national and local governments are moving forward on measures for return of evacuees, and have increased the payments consistent with the situation that some evacuees have had to purchase housing at their place of evacuation. As a result, As a result, measures to encourage more relocation to places of evacuations are moving ahead. However, these measures are limited to those evacuees who lived in areas where return home is difficult and for which the evacuation order will not be lifted until at least six years after the accident, and are not recognized as measures for other evacuees.
Lastly, we summarize individual points of consideration concerning support for long-term evacuees.

**Although Based on Individual Conditions, We Make a Closely Examination of Support for Self-reliance**

The conditions in which evacuees are placed vary by person, yet there is a strong trend towards making the evacuation long term. Because there are limits to separate actions that can be taken by the government, what is needed are private support groups and the construction of a system that enables thorough care.

In addition, after the disaster until the time the evacuees settled down in temporary housing, outside support came to the disaster victims in the form of relief supplies and human support. Then after time passed, the feeling that support is the natural thing to do fell away in some cases. Private support groups that have been active in the disaster afflicted areas from the time of the disaster are exploring solutions in which evacuees are encouraged to become self-sufficient through such means as finding work and interaction with residents at the place of evacuation, rather than situations in which support creates conditions that keep the disaster victims as evacuees. Moreover, because self-reliance makes information a critical matter, administrative bodies must work hard at providing the latest information including the nature of the available support and also make use of a variety of information-sharing tools from the Internet to wall posters.
Housing Support that Fits the Current Situation

The natural disasters envisioned by the Disaster Relief Act of Japan, are not ones in which people live as evacuees for a comparatively long time. Even in the Great Hanshin-Awaji Earthquake, despite the fact that the occupancy period at temporary housing was extended, living as evacuees more than five years after the disaster was not envisioned. In the current case of living as evacuees as a result of the nuclear power accident, this type of living has exceeded that of a normal natural disaster and is expected to be a long-term situation. However, the system under the current Basic Act on Disaster Control Measures fails to deal with the necessary period for rebuilding disaster victims’ living conditions and housing. As we go forward, the fact that prefabricated temporary housing has a favorable construction lifetime, except for wood construction, means more flexible solutions are needed such as securing public housing for disaster victims through private partnerships.

Support for Outside Communities and Preparation of Living Facilities

Residents who would like to return home, but who may have trouble doing so for five years or more after the disaster, require the preparation of living facilities in outside communities that furnish public housing for disaster victims. By 2015, 3,700 units are expected. Negotiations are in progress with the accepting local governments, but securing a diverse of housing options for the general body of evacuees is not being indicated. The preferred form of the outside communities has not been clarified yet, and a method is needed to form consensus on the detailed needs at the level of housing occupants and the accepting community, who may for example secure conditions that enable self-sufficient farming.

Support for Community Formation and Preservation

Regardless of whether evacuees return or do not return to their communities of residence before the disaster, it is essential to enter into the full living conditions of forming new communities or preserving existing communities at the place of evacuation. In this earthquake disaster, there have been instances in which the evacuees form their own group and not only sponsor events where information exchange and evacuees are included, but also take on initiatives to summarize the views of individual evacuees and petitioning the government or other institutions. Moreover, in indicating a major role in community preservation for the passing on of traditional local community events, such as festivals, we can also learn from past examples. Because the conditions placed on each individual change daily, people say that doing something together has become a difficult task; yet it is crucial that we carry forward our admittedly loose ties underpinned by such organizations as private support groups.

Assistance to Private Support Groups

As the evacuation gets drawn out, we are hearing people say that private support groups are being depleted. As the type of support changes from provision of relief supplies to reconstruction and town development, people with more special expertise and experience are needed. And as memories of the earthquake fade away, donations from individuals and corporations will fall off so that some groups will find fundraising harsh. Private support groups can be an effective position from which to smooth the path from evacuee to resident of the place of evacuation (community). The country should organize matters for the sake of reconstruction and must build mechanisms (including funding) that leave to private organizations those things that the country cannot do on its own.

Support for Children

In the case of evacuation, regardless of whether it is short term or long, children will suffer a heavy impact, both physically and psychologically. In particular, for children, the ones who will bear the future, to receive a steady education, initiatives must be undertaken by administrative bodies in conjunction with activities by student volunteers. In so far as the nuclear accident and disaster are concerned, there are indeed children who are the targets of harmful rumors in schools at their place of evacuation, and together with care for the spirit of these children the country must seek to enlighten even those people who were not afflicted by the disaster.
Box 6.4 The Volcanic Eruption on Miyake Island

Evacuees from the volcanic eruption on Miyake Island fared in conditions in which they could return once the gas released by the eruption abated, and therefore the administration bodies were able to take measures premised on returning. However, for evacuees from the recent nuclear accident there is large variation in the degree of unease from conditions at their community of residence before the disaster the state of radiation decontamination work, and conditions are such that discussions premised on everyone returning cannot proceed. The administrative bodies have few options in response. Consequently, from the viewpoint of the gap between evacuees’ intent and trends and the actions by administrative bodies, the case of the nuclear accident looms much larger.

However, in the case of the Miyake Island volcano, evacuation lasted from September 2000 to February 2005, and public and private support provide during that time serves as a useful reference (for details, see Chapter 3).

Evacuees from the Miyake Island volcano were distributed to the 23 wards of central Tokyo and the 27 municipalities of the Tama district (western Tokyo). Rather than being placed in temporary housing, they directly entered Tokyo public housing and similar facilities and were able to quickly restore the level of their living conditions. Also, programs for evacuee support and reconstruction were mainly borne by the metropolis of Tokyo. For example, the metropolitan government established its own system and provided its own support for the households not covered at the time by the Act on Support for Livelihood Recovery of Disaster Victims.

In addition, plans were created for community preservation and preparations were made for the return home. For example, the city of Hachioji and Koto ward erected a farm where the island residents could interact and which employed 300 people, or about 8% of the evacuees. Other measures included the formation of a Miyake residents’ network and erecting a “clean house” as extended stay temporary homecoming facilities.

Private support groups played a large role in this evacuee support. For example, the Tokyo Volunteer Network for Disaster Relief led the start-up of the Miyakejima-Tokyo Volunteer Support Center, which prepared and distributed a “Miyake citizens’ telephone directory” that could be used to learn about the mutual conditions of fellow residents by using a postal transfer of residence service while overcoming obstacles related to personal information. In other support activities, they formed a Miyake residents contact network by installing fax machines, held meetings for the Miyake Island residents’ network, and opened a place for recovery discussions by Miyake residents. After the evacuees returned to Miyake, the center provided cleanup volunteers to the island, and have continued their support up to today.
Appendix 2: Chronological Table for Fukushima after the 3.11 Earthquake

<table>
<thead>
<tr>
<th>Month</th>
<th>Day</th>
<th>Central Government</th>
<th>Local Authorities</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Evacuation order for people living within a 3 km radius of Fukushima No.1 Nuclear Power Plant and order for those within a 3 -10 km radius of the plant to remain inside their houses.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>Evacuation order for people living within a 10 km radius of Fukushima No.1 Nuclear Power Plant. -Evacuation order for those within a 20 km radius of the plant. -Evacuation order for those within 10 km of Fukushima No.2 Nuclear Power Plant.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>Evacuation order for those living within a 20-30 km radius of the Fukushima No.1 Nuclear Power Plant to remain inside their houses.</td>
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<td></td>
</tr>
<tr>
<td>18</td>
<td></td>
<td>Nuclear and Industrial Safety Agency (NISA) assessed and announced the accident as level 5 on the International Nuclear Event Scale (INES).</td>
<td></td>
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</tr>
<tr>
<td>21</td>
<td></td>
<td></td>
<td>Stopped shipment of spinach cultivated in Fukushima due to its radioactivity exceeding the tentative standard.</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td></td>
<td>Requested those who live within a 20-30 km radius of Fukushima No.1 Nuclear Power Plant to evacuate on their own.</td>
<td></td>
<td>Detected high density of iodine in the seawater near Fukushima No.1 Nuclear Power Plant.</td>
</tr>
<tr>
<td>26</td>
<td></td>
<td></td>
<td></td>
<td>Found that the heavily polluted water was getting out of Fukushima No.1 Nuclear Power Plant to the neighboring sea.</td>
</tr>
<tr>
<td>Apr.</td>
<td>1</td>
<td>Prohibited rice planting at the paddy fields in which cesium over 5,000 Bq/Kg was detected (Ministry of Agriculture, Fishery, and Forestry, MAFF).</td>
<td></td>
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<tr>
<td>8</td>
<td></td>
<td>Designated the areas within a 20 km radius of Fukushima No.1 Nuclear Power Plant as “planned evacuation area” and ordered those who living in the corresponding areas to evacuate.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## The Study of Reconstruction Processes from Large-Scale Disasters

### 12 NISA reassessed the accident and raised the level from 5 to 7 on INES.

### 22 Designated the areas within a 20 km radius of Fukushima No.1 Nuclear Power Plant as “restricted area,” and the areas outside the restricted areas as “planned evacuation zone” and “emergency evacuation preparation zone.”

**May**

<table>
<thead>
<tr>
<th>Day</th>
<th>Central Government</th>
<th>Local Authorities</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Enacted “the Act on Special Arrangement on Securement of Financial Resources Necessary for Recovery and Reconstruction from the 3.11 Earthquake,” the 42nd act in 2011, and approved the 1st supplementary budget.</td>
<td></td>
<td>Temporary return to Kawauchi Village with protective clothing and radiation dosimeters.</td>
</tr>
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<td>10</td>
<td></td>
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</tr>
<tr>
<td>16</td>
<td>Announced the guidelines for disaster-related waste disposal as a result of the 3.11 Earthquake (Agency of the Environment).</td>
<td></td>
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</tr>
<tr>
<td>17</td>
<td>Developed the roadmap for tentative policies on relief for nuclear disaster victims (Nuclear Emergency Response Headquarters).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td></td>
<td></td>
<td>Tokyo Electric Power Company (TEPCO) started temporary payment to farmers and foresters in Fukushima.</td>
</tr>
</tbody>
</table>

**Jun.**

<table>
<thead>
<tr>
<th>Day</th>
<th>Central Government</th>
<th>Local Authorities</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>Enforcement of the Basic Act for Reconstruction from the 3.11 Earthquake (Cabinet Secretariat).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>The 1st Meeting of Reconstruction Headquarters in response to the 3.11 Earthquake (Reconstruction Headquarters in response to the 3.11 Earthquake).</td>
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</tbody>
</table>

**Jul.**

<table>
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<tr>
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<tbody>
<tr>
<td>5</td>
<td>Reviewed the framework for countermeasures to the nuclear accidents according to restoration from accident and assignment of Minister in charge of recurrence prevention of nuclear accidents (Nuclear Emergency Response Headquarters).</td>
<td></td>
<td>Detected cesium exceeding the tentative standard for beef in the market in Tokyo from</td>
</tr>
<tr>
<td>Month</td>
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<td>Central Government</td>
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<td></td>
<td></td>
<td>beef cattle raised in Minami-soma City.</td>
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<tr>
<td>19</td>
<td></td>
<td>Approved the 2nd supplementary budget.</td>
<td>Stopped shipment of beef cattle raised in Fukushima.</td>
</tr>
<tr>
<td>25</td>
<td></td>
<td>Approved the Basic Guidelines for Reconstruction in response to the 3.11 Earthquake (Reconstruction Headquarters in response to the 3.11 Earthquake).</td>
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</tr>
<tr>
<td>Aug.</td>
<td>3</td>
<td>Established Nuclear Damage Compensation Facilitation Corporation (Government of Japan, GOJ).</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>Enacted Special Act for Evacuees from Nuclear Disaster.</td>
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<tr>
<td></td>
<td></td>
<td>Formulated “Mid-term Strategies for Judgment of Nuclear Damage due to the accidents at Fukushima No.1 and No.2 Nuclear Power Plants of TEPCO”.</td>
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<tr>
<td>11</td>
<td></td>
<td>Announced the vision for reconstruction of Fukushima.</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td></td>
<td>Enacted Act on Special Measures Concerning Disaster-related Waste Disposal as a result of the 3.11 Earthquake.</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td></td>
<td>Developed the basic policies for urgent implementation of decontamination (GOJ).</td>
<td>Carried out temporary return to Futaba Town and Oookuma Town both of which are within a 5 km radius of the nuclear power plant.</td>
</tr>
<tr>
<td>27</td>
<td></td>
<td>The 1st Meeting of Committee for Reconstruction and Regeneration of Fukushima from Nuclear Disaster.</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td></td>
<td>Officially announced Act on Special Measures Concerning Countermeasures for Radioactive Contamination (Agency of the Environment).</td>
<td>TEPCO announced the standards for estimation of compensation for damage as well as schedule for payment.</td>
</tr>
<tr>
<td>Sep.</td>
<td>1</td>
<td>Established the Center for Settlement of Disputes on Compensation for Nuclear Damage (Ministry of Education, Culture, Sports, Science and Technology, MEXT).</td>
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</tr>
<tr>
<td>11</td>
<td></td>
<td>Announced the progress of rehabilitation work and major challenges (Nuclear Emergency Response Headquarters).</td>
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<tr>
<td>13</td>
<td></td>
<td>The 1st Meeting of Organizers of Committee for Reconstruction and Regeneration of Fukushima.</td>
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<tr>
<td>22</td>
<td></td>
<td>Set up the committee for discussion on living bases for long-term evacuees and others.</td>
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<td>Month</td>
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<td></td>
<td>21</td>
<td>Cabinet approval of the 3rd supplementary budget.</td>
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<tr>
<td>Nov.</td>
<td>11</td>
<td>Basic policies based on Act on Special Measures Concerning Treatment of Radioactive Contaminated Materials (Agency of the Environment).</td>
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<tr>
<td></td>
<td>21</td>
<td>Approval of the 3rd supplementary budget: with a part of this budget creating “subsidy for facilitating firm location for industrial reconstruction in Fukushima” with approximately 160.1 billion JPY and “interest-rate subsidy for development of industrial park” with approximately 9.9 billion JPY.</td>
<td></td>
</tr>
<tr>
<td>Dec.</td>
<td>6</td>
<td>Formulated “Supplement for Mid-term Strategies for Judgment of Nuclear Damage due to the accidents at Fukushima No.1 and No.2 Nuclear Power Plants of TEPCO, about the loss derived from voluntary evacuation and the like.”</td>
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<td></td>
<td>10</td>
<td>Bill on a special law for reconstruction and regeneration of Fukushima.</td>
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<td></td>
<td>19</td>
<td>Enacted Act on Establishment of Reconstruction Agency.</td>
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<tr>
<td></td>
<td>21</td>
<td>Developed the mid- and long-term roadmap for decommissioning of reactors No.1-No.4 of Fukushima No.1 Nuclear Power Plant (Nuclear Emergency Response Headquarters).</td>
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<td></td>
<td>26</td>
<td>Decided to review designation of evacuation zone (Nuclear Emergency Response Headquarters).</td>
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<td></td>
<td>28</td>
<td>Requested 8 towns and villages in Futaba district as well as Fukushima Prefecture to consider establishing interim storage facilities of radioactive contaminated materials in the districts.</td>
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<td></td>
<td>4</td>
<td>Set up and opening of the office for environmental regeneration in Fukushima.</td>
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<tr>
<td>6</td>
<td></td>
<td>Cabinet approval on the basic policies for designating special reserves for reconstruction.</td>
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<tr>
<td>31</td>
<td></td>
<td>Declaration of Return to Kawauchi Town.</td>
<td></td>
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<tr>
<td>Feb. 3</td>
<td></td>
<td>Announced the number and the content of reconstruction projects that applied for the 1st subsidy for reconstruction from 3.11 Earthquake (Reconstruction Headquarters in response to the 3.11 Earthquake).</td>
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<tr>
<td>Mar. 10</td>
<td></td>
<td>Establishment of Reconstruction Agency.</td>
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<tr>
<td>Mar. 16</td>
<td></td>
<td>Formulated “the 2nd Supplement for Mid-term Strategies for Judgment of Nuclear Damage due to the accidents at Fukushima No.1 and No.2 Nuclear Power Plants of TEPCO, about the loss derived from reviews of evacuation zones and such by the GOJ.”</td>
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<tr>
<td>Mar. 30</td>
<td></td>
<td>Enacted Act on Special Measures Concerning Reconstruction and Regeneration of Fukushima.</td>
<td></td>
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<tr>
<td>Apr. 5</td>
<td></td>
<td>Approved budget for FY2012 with 3,775.4 billion JPY for reconstruction from the 3.11 Earthquake.</td>
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<tr>
<td>Apr. 6</td>
<td></td>
<td>Officially announced the package allocation of budget for reconstruction for FY2012 to Reconstruction Agency (277.9 billion JPY).</td>
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<tr>
<td>Apr. 27</td>
<td></td>
<td>Announced the number of deaths attributed to the 3.11 Earthquake.</td>
<td></td>
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<tr>
<td>May 31</td>
<td></td>
<td>Formulated “Action Plan for Proper Care for Anxiety of Nuclear Disaster Victims toward Health.”</td>
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<tr>
<td>Jun. 21</td>
<td></td>
<td>Enacted Act on Support for Children and Disaster Victims.</td>
<td></td>
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<tr>
<td>Jun. 13</td>
<td></td>
<td>Prefectural government submitted “urgent request for reconstruction” to the GOJ.</td>
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<tr>
<td>Jul. 13</td>
<td></td>
<td>Cabinet approval of the basic policies for reconstruction and regeneration of Fukushima.</td>
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<tr>
<td>Jul. 17</td>
<td></td>
<td>Restructured evacuation zones into 3 areas in Iidate Village.</td>
<td></td>
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<tr>
<td>Jul. 20</td>
<td></td>
<td>Announced “Ways of Thinking of Standards for Compensation of Damage derived from reviews of evacuation zones and such by the GOJ”, considering “the 2nd Supplement for Mid-term Strategies for Judgment”</td>
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</table>
### The Study of Reconstruction Processes from Large-Scale Disasters

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<tr>
<td></td>
<td></td>
<td>of Nuclear Damage due to the accidents at Fukushima No.1 and No.2 Nuclear Power Plants of TEPCO” as the basis (Ministry of Economy, Trade and Industry, METI).</td>
<td></td>
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</tr>
<tr>
<td>Aug.</td>
<td>7</td>
<td>Officially announced a schedule for rehabilitation of public infrastructure in Tamura City, Minami-soma City, Hirono Town, and Kawauchi Village.</td>
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<td></td>
<td>19</td>
<td>Proposed candidate sites for assessment on interim storage facilities.</td>
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<td></td>
<td>30</td>
<td>Measured radioactivity of rice harvested in Fukushima and announced the results to the public.</td>
<td></td>
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<tr>
<td>Sep.</td>
<td>4</td>
<td>Officially announced “Policies of the GOJ for Supporting Nuclear Disaster Victims and the Affected Local Authorities in Evacuation Zones (Ground Design).”</td>
<td></td>
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<tr>
<td></td>
<td>19</td>
<td>Formulated “Plan for Facilitating Industrial Revitalization and Job Creation for Supporting Return to Hometowns as well as Community Regeneration in Evacuation Zones from Nuclear Accident.”</td>
<td></td>
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<td></td>
<td>21</td>
<td>Ookuma Town adopted the 1st reconstruction plan of the town that clearly described its policy of not returning to the town for at least the next 5 years.</td>
<td></td>
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<tr>
<td></td>
<td>22</td>
<td>The 1st Meeting of Committee for Discussion on Living Bases for Long-term Evacuees and Others.</td>
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<td></td>
<td>26</td>
<td>Approved the policies for constructing reconstruction houses at the old factory sites in Iidate Village and Iino Town in Fukushima City.</td>
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<td></td>
<td>27</td>
<td>Tomioka Town declared that it would not lift the evacuation order for at least the next 5 years.</td>
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<td></td>
<td>28</td>
<td>Namie Town compiled the 1st draft of the reconstruction plan and clearly described that it will take at least 5 years to lift the evacuation order.</td>
<td></td>
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<tr>
<td>Oct.</td>
<td>1</td>
<td>Prefectural Government started free provision of medical services for those under age 18.</td>
<td></td>
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<tr>
<td></td>
<td>9</td>
<td>Prefectural Government announced the results of verification on the initial responses to the 3.11 Earthquake and the nuclear accident.</td>
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<tr>
<td>16</td>
<td></td>
<td>The 3rd Committee for Promoting Reconstruction set up a team for facilitating reconstruction from nuclear disaster.</td>
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<td></td>
<td></td>
<td>Compiled “Package for Promoting Decontamination.”</td>
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<td>19</td>
<td></td>
<td>Iidate Village approved the policies for lifting the evacuation order for 16 political jurisdictions in March, 2014.</td>
<td></td>
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<tr>
<td>Nov.</td>
<td>2</td>
<td>Announced a schedule of construction of public infrastructure in evacuation preparatory zones for lifting evacuation orders, i.e. Iidate Village and Naraha Town.</td>
<td>Kawauchi Village started revisions of the disaster prevention plan.</td>
<td></td>
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<tr>
<td>5</td>
<td></td>
<td>Prefectural Government officially announced its establishment of support system for the citizens who evacuated voluntary within the prefecture and rented private houses.</td>
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<tr>
<td>21</td>
<td></td>
<td>Tomioka Town developed and distributed its own telephone books.</td>
<td></td>
<td></td>
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<tr>
<td>Dec.</td>
<td>7</td>
<td>Prefectural Government set up “Committee for Supervising Security and Safety on Decommissioning of Reactors.”</td>
<td></td>
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<td>10</td>
<td></td>
<td>Ookuma Town restructured its political jurisdictions into 3 groups depending on the amount of radioactivity per annum.</td>
<td></td>
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<td>11</td>
<td></td>
<td>Naraha Town submitted a bill for municipal bylaw to designate a part of 5 jurisdictions on the coastal line as calamity danger districts.</td>
<td></td>
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<tr>
<td>14</td>
<td></td>
<td>Lifting of “Specified Recommended Area for Evacuation” from all the 129 households.</td>
<td></td>
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<tr>
<td>17</td>
<td></td>
<td>Tomioka Town made a request to TEPCO for compensation of damage from nuclear accident.</td>
<td></td>
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<tr>
<td>23</td>
<td></td>
<td>Namie Town approved the implementation of chromosomal study for the applied citizens who were under age 18 at the timing of the nuclear accident.</td>
<td></td>
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<tr>
<td>24</td>
<td></td>
<td>Katsurao Village approved the policy for restructuring of evacuation zone.</td>
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<tr>
<td>In 2013</td>
<td>1</td>
<td></td>
<td>TEPCO set up the head office for reconstruction of Fukushima in J Village.</td>
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<tr>
<td>Jan.</td>
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<tr>
<td>Feb.</td>
<td>1</td>
<td>Established the Head Office for Reconstruction and Regeneration of Fukushima.</td>
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<thead>
<tr>
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<tr>
<td></td>
<td>5</td>
<td>Announced a study to measure local feelings for citizens of Tamura City, Iitate Village and Futaba Town.</td>
<td></td>
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<td></td>
<td>8</td>
<td>Announced a study to measure local feelings for citizens of Naraha Town and Tomioka Town.</td>
<td></td>
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<tr>
<td>Mar.</td>
<td>11</td>
<td>Prefectural Government set up the head office for promoting reconstruction and regeneration of Fukushima.</td>
<td></td>
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<td></td>
<td>15</td>
<td>Announced the package of measures to support the nuclear disaster victims.</td>
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<tr>
<td></td>
<td>25</td>
<td>Prefectural Government approved the plan for industrial revitalization and regeneration based on Act on Special Measures Concerning Reconstruction of Fukushima as well as the prioritized projects for promoting the plan.</td>
<td></td>
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<tr>
<td>Apr.</td>
<td>2</td>
<td>Announced the package of countermeasures including those for negative rumors about products from Fukushima.</td>
<td></td>
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<td></td>
<td>26</td>
<td>Approved the priority measures based on Act on Special Measures Concerning Reconstruction of Fukushima</td>
<td></td>
<td></td>
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<tr>
<td>Jun.</td>
<td>10</td>
<td>The 2nd Meeting of Committee for Discussion on Living Bases for Long-term Evacuees and Others.</td>
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<tr>
<td></td>
<td>14</td>
<td>Announced the number of public houses for disaster victims.</td>
<td></td>
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<td></td>
<td>17</td>
<td>Futaba Town Office moved back in the prefecture after 2 years and 3 months.</td>
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<td></td>
<td>25</td>
<td>Announced improvement of environment for visiting graves in the common graves within the designated areas as “difficult to return.”</td>
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<tr>
<td>Jul.</td>
<td>2</td>
<td>Announced the possible amount of subsidy for urgent assistance for settlement by citizens of Fukushima prefecture.</td>
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<td></td>
<td>11</td>
<td>Revised the measures related to the basic policies for reconstruction and regeneration of Fukushima.</td>
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<td></td>
<td>16</td>
<td>Prefectural Government revised the plan for construction of public houses for disaster victims.</td>
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<tr>
<td>Aug.</td>
<td>8</td>
<td>Completed all the revision work by finishing that for Kawamata Town.</td>
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<td></td>
<td>30</td>
<td>Announced the draft for the basic policies for supporting livelihoods of children and disaster victims in conjunction with inviting public comments on it.</td>
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</tr>
</tbody>
</table>

Source: JICA Study Team