

Committee for Policy Planning on Disaster Management

Final Report

- Toward the reconstruction for sound and unwavering Japan -

31 July 2012

**Central Disaster Management Council
Committee for Policy Planning
on Disaster Management**

Table of Contents

<u>Introduction.</u>	1
<u>Chapter 1 Basic attitude toward disaster countermeasures</u>	
<u>- To construct a disaster-resilient society -.</u>	2
<u>Chapter 2 Basic principles of disaster management policy</u>	
<u>- Thorough pursuit of "disaster reduction" in all areas of disaster countermeasures.</u>	6
<u>Chapter 3 Future priority issues</u>	
<u>- Based on the basic principles of disaster management policy -.</u>	10
Section 1 Efforts to save lives from disasters and to support and recover the daily lives of affected people.	10
(1) Initial response to save lives from disasters	10
(2) Detailed support for life in evacuation centres, and reconstructing livelihoods of affected people	17
(3) Early recovery from damage on critical infrastructure.	24
Section 2 Strengthening disaster response preparedness	26
(1) Enhancement and strengthening of disaster response systems	26
(2) Response to nationwide "emergency situation" caused by natural disasters.	33
Section 3 Multifaceted efforts to prevent disasters.	35
(1) Clarification of the basic ideas on disaster management, and collaboration by various actors.	35
(2) Inheritance and development of the disaster culture.	36
(3) Construction of a disaster-resilient nation, regions and communities	38
(4) Disaster countermeasures reflecting the latest scientific knowledge.	39
Section 4 Efforts toward prompt and smooth reconstruction.	42
Section 5 Establishment of the system to address the countermeasures with concerted efforts from across the country	44
<u>Chapter 4 Toward the enhancement of future disaster countermeasures.</u>	46

Introduction

Lessons from the Great East Japan Earthquake

More than 16 months have passed since the Great East Japan Earthquake. The road to reconstruction remains rough and steep, and nationwide efforts are still continuing. What are the lessons of this great disaster? We have lost so much by this disaster. Are we taking to heart the painful lessons we have learned? We must imprint these lessons in our flesh and blood so that they may not be forgotten long into the future. Are we doing this now?

We must never forget the experience of the Great East Japan Earthquake. Natural disasters cannot be completely prevented by human intellect, but it is our responsibility to protect precious lives and the livelihoods of the people. Fulfilling this responsibility requires unceasing efforts to face natural threats and get prepared for all of the possibilities. These are what the Great East Japan Earthquake reminded us of and confronted us with.

The position of this final report

This final report is the compilation of ideas and concrete measures for future disaster management with a strong awareness that it is our generation's duty to provide answers to the lessons and challenges generated by the Great East Japan Earthquake for next generations. Since the disaster, the government has been establishing many opportunities for discussion in order to (a) verify the response to the Great East Japan Earthquake, (b) organize the lessons learned, and (c) develop the direction of the countermeasures against future disasters for enhancement and strengthening of them. From the outcome of the deliberation, this final report provides the direction of Japan's disaster management for the future based on the lessons learned from the Great East Japan Earthquake to fulfill the promises in the future.

Chapter 1 focuses on the basic attitude towards disaster countermeasures based on the Great East Japan Earthquake, while Chapter 2 discusses the basic principles of disaster management policy based on Chapter 1. Chapter 3 picks up on future priority issues based on these basic attitude and principles. Finally, Chapter 4 indicates guidelines of disaster countermeasures for enhancement in the future.

It is a long way to the "reconstruction of a sound and unwavering Japan", mentioned in the interim report. However, we must continue our endeavors to realize this. This is our responsibility as citizens of Japan who experienced the Great East Japan Earthquake.

It is our sincere hope that the government, all related parties and the people in Japan will take the responsibility to the best of their abilities and strive to fulfill it long into the future.

Chapter 1 Basic attitude toward disaster countermeasures

- To construct a disaster-resilient society -

We should address the disaster countermeasures with following basic attitude to construct resilient society based on the experience of the Great East Japan Earthquake.

- Protecting the people and the country from disasters is the ultimate responsibility of the government

Due to its geographical, topographical and climatic characteristics, Japan has been and remains prone to numerous and various natural disasters. At times, violent natural disasters had brought extreme damage that beyond our wildest imaginations; but as time passes, our memories of these lessons tend to fade.

Last year, during the Great East Japan Earthquake, we again found ourselves utterly powerless against the force of nature. At the same time, it was a powerful reminder that we cannot escape or completely prevent natural disasters, and that one disaster can trigger other disasters. However, we cannot look away from this threat, instead we must face it.

We must construct a society that can protect the people, their lives and the country itself. This should be one of the biggest concerns for a nation as important as protecting the country and its people from military and man-made threats, and should be recognized as an ultimate responsibility of the government.

- Awareness of large-scale disasters at the "national crises" level

In Japan, occurrence of a large-scale earthquake along the Nankai Trough during the first half of the 21st century is concerned. In addition, occurrence of other major disasters, including Tokyo Inland Earthquakes and volcanic eruptions is also concerned. If these disasters occur at their maximal level, it is almost certain that the death tolls and property damage will surpass those of the Great East Japan Earthquake. Moreover, history shows cases that earthquakes, volcanic eruptions and other disasters occurred one after another; therefore, we must keep in mind that there could be a string of disasters arising simultaneously. Should this happen, there will be the severest impacts on people's daily lives and economic activity in all over Japan, and it would be very difficult to recover from it. Moreover, such a situation could become a national crisis. Disaster countermeasures for such a massive disaster should be deliberated radically and multifacetedly, not only enhancement and strengthening of the existing disaster countermeasures, considering the unpredictable worst-case scenario and the possibility of severe damage that Japan has never experienced. Furthermore, prioritizing the countermeasures will also be essential since resources that can be utilized during the short time up to disaster occurrence are limited.

- Make every possible effort for preparation through "mainstreaming of disaster reduction"

One word that was repeated many times after the Great East Japan Earthquake was "unforeseen." We must never reiterate this word in the future, and we must take every possibility into consideration by utilizing all of the latest scientific knowledge.

Also, we must face this national crisis by (a) mainstreaming disaster risk reduction by full review of administrative fields from the perspective of disaster management and by allocating necessary resources, (b) making land and communities disaster-resilient, (c) building market that is more resilient to disaster risks, and (d) strengthening of the power of the people so that they can protect their own lives and livelihoods. To this end, disaster countermeasures should be improved with both of structural/non-structural measures for disaster management. Additionally, "self-help", "mutual-help" and "public-help" should be enhanced with appropriate public-private role sharing. By these efforts, it is our duty for the next generations to construct disaster-resilient society in all over Japan, as we experienced the Great East Japan Earthquake.

Optimism must be avoided in disaster countermeasures, and all possible preparedness must be made through ceaseless efforts to the disaster management.

- Mass/concentrated provision of resources upon disaster occurrence with the coordination of public and private sectors

In time of disaster, it is necessary to supply resources as much as possible intensively according to appropriate priority for protecting the country and the people from the disaster. The country and its people have to be protected with concerted efforts from across the country, not only by national/local government, but also other various entities such as community people, companies, volunteers and related groups with gathering necessary personnel, goods, resources and concentrating authorities for disaster response.

Also, collecting, communicating and sharing information about the situations with all concerned parties is indispensable for the appropriate procurement and distribution of the resources. Collecting, communicating and sharing information promptly and accurately would be the cornerstone of response to disasters. For making it possible, preparedness during normal time is inevitable .

We must keep in mind that during the Great East Japan Earthquake, serious fuel shortage in wide-area caused difficulties not only in relief activities and heating in affected areas, but also in supplying personnel and goods for the affected areas, though we did not assume it would cause such a great impact during "normal time". When massive earthquake occurs along the Nankai Trough, which will give damage in wider and larger scale, there will more likely be a shortage of daily essentials. For this reason, logistics system for relief supplies should be improved continuously.

- Turning the disaster experience into hopes for reconstructing local communities

If nationwide efforts for reconstruction of the affected areas that are severely damaged by the Great East Japan Earthquake can result in the rebirth of a local communities that is more vibrant and improved compared to its state before the disaster, reconstruction could be a big hope for the affected people and the area. Moreover, realization of such "building back better" is also an integral part of the "disaster resilient society" that we aim for.

Japan experienced the Great Hanshin-Awaji Earthquake 17 years ago, and the affected areas including Kobe, have realized this "building back better". It is necessary to demonstrate inside and outside Japan that we can realize it again.

- Disaster management is the frontier of the revitalization of Japan

Japan has been suffering economic slowdown and stagnation for the past two decades; these were ongoing when we received the massive blow by the Great East Japan Earthquake. The world is watching how we will overcome this crisis, build a disaster-resilient society, and start out on a way to the reconstruction for a sound and unwavering country.

The member of this Council is firmly believe that the beginning of this way to revitalization and re-emergence lies in our disaster management efforts.

For the development of Japan—now that the magnitude of natural disaster risks has been revealed to us by the Great East Japan Earthquake and as we are preparing for another approaching national crisis—what is important is to minimize the damage by large-scale disasters, recover with resilience, establish unwavering systems as a country, and through these efforts, maintain credibility with partner countries around the world.

The disaster management has wide skirts. In Japan, as a natural disaster-prone country, disaster management is related with development in various fields, and disaster management perspective is required in every field. Cutting-edge technology and devices borne through technological innovation are tested and utilized in the disaster management field. For example, the supercomputer “Kei” is currently being used for research and development to upgrade the precision of earthquake/tsunami prediction. Outer space endeavors, such as use of artificial satellites, are also being tested for practical utilization in the disaster management field. Support for reconstruction of livelihoods of affected people utilizing information and communication technology leads the development of an e-Administration society. Furthermore, various needs for disaster management can trigger developments in technology and production activities in wide fields. In Japan, such mutual relationships would surely help further socioeconomic and cultural advance.

- Presenting the "disaster management leader Japan" to the world

Japan has experienced the Great East Japan Earthquake and is trying to recover from the damage. Also, Japan is constructing resilient society that provides underlying strength in Japanese socioeconomic activities by accumulating extensive knowledge and know-hows of disaster management more than ever before, and by addressing disaster countermeasures with various actors. Japan provides disaster management information to overseas, especially Asian countries, as “disaster management leader in the world” that withstand natural environment risks. Also, Japan will disseminate required information about lessons, technologies, know-hows, systems/institutions and grass-roots activities to the countries with respect and ardor. These efforts for constructing resilient society and proceeding mainstreaming disaster management would surely be great contributions to the world in disaster management. Additionally, it is our significant repayment that should be continued by future generations in Japan for all the overwhelming support and heartfelt encouragement that Japan received from all over the world during the Great East Japan Earthquake to become the leader in the field of disaster management and to provide support toward enhancing the disaster management level of various countries.

Chapter 2 Basic principles of disaster management policy

- Thorough pursuit of "disaster reduction" in all areas of disaster countermeasures -

Based on the fundamental understanding that complete prevention of disaster occurrence is impossible, we should thoroughly enforce the idea of "disaster reduction" in order to minimize damage through a series of efforts including prevention measures, response measures and restoration/reconstruction measures in every field of disaster countermeasures, and promote disaster management policy under the following basic principles.

- Be aware that one disaster can trigger other disasters

In the Great East Japan Earthquake, the tsunami that followed the earthquake caused the nuclear disaster. As this event clearly shows, we should be aware that one disaster could trigger another. In addition, we should be aware that severity of damage by a disaster would be increased by each hazard which could be either the cause or the result of the disaster. Disaster countermeasures in all phases, including prevention, response and recovery/reconstruction, should take this into consideration.

- Utilize every latest scientific knowledge

To minimize disaster damage, it is necessary to utilize all of the latest scientific knowledge, presume possibility of disasters and the damage caused by them accurately, and make all possible preparations for such disasters. Besides natural science knowledge including understanding of the actual disaster status, analyzing the mechanism of occurrence, it is also important that we utilize socio-scientific knowledge, humanities knowledge, and cross-cutting knowledge for recording and inheriting disaster response experience. Moreover, untiring efforts to broaden and deepen scientific knowledge is indispensable. On the other hand, we should always keep in mind the limitations of the scientific knowledge currently available to us.

- Conduct full inspection of all policy fields from the perspective of disaster management

Administrative fields not involved with disaster response do not necessarily have a high level of awareness of the influence of disasters; therefore, reviewing disaster countermeasures are often postponed due to the reasons as lack of time or a shortage of expert personnel. However, suspension of operations in just one administrative field due to a disaster could have a devastating influence on daily lives and economic activities of the people. Based on the possible disaster scenarios and the damage estimation, full review of all administrative fields from the perspective of "disaster management" should be conducted. Also, based

on the results of review, enhancement and revision of disaster countermeasures should be conducted in a steady manner according to appropriate priority.

- Realize a disaster-resilient resistant nation and regions communities with a combination of tangible and intangible structural and non-structural countermeasures

One of the pillars of the Japanese government's disaster management policy is reduction of damage caused by disasters through structural measures including constructing of disaster prevention facilities and national land conservation. However, it was revealed that the forces of nature can overwhelm the disaster management capacity of the possible structural countermeasures, and that the structural countermeasures might be insufficient in preventing damage. Therefore, while promoting structural countermeasures against even unexpectedly severe disasters, we must also make all possible advancements in setting up non-structural countermeasures including urban planning, land use policy, alerts/evacuation measures, disaster prevention education and drills. Also important are structural countermeasures that support non-structural countermeasures; and, we must combine both structural and non-structural countermeasures in establishing resilient land and communities.

- Rely on the power of "people" who can protect their own lives and daily lives, and government "collaboration" with the private sectors and citizens

The government has great responsibility in disaster management; however, what the government can do is limited. We must rely on the powers of the private sectors, including the people, corporations, and volunteers. First, each citizen should raise their awareness towards disaster management so that they can protect his/her own lives and daily lives. In order to make this possible, the government, as well as public and private sector organizations, should support empowerment of the citizens. Also, it is important that, during normal times, government support the building of a society in which citizens help each other and organizations and groups comprising citizens actively and independently protect the local community while cooperating with the government.

- Build a "market" that can withstand disaster risks

Suspension of production activities and distribution due to disasters not only affects economic activity across broad areas, but also has a major negative impact inside and outside Japan on financial services as well as markets for goods with high import/export ratios. Furthermore, mid-term and long-term influences may include a large impact on employment due to overseas relocation of production facilities and loss of the credibility of the Japanese economy. Therefore, it is necessary to build a market that can withstand disaster risks through business continuity plans of corporations and organizations, management of the supply chain, fortification of insurance systems, and development of platforms for mutual support efforts. In addition, we

should also support development of a market where disaster prevention leads to the creation of new products and services.

- Avoid "optimism" in disaster management, and presume the worst

Our aim is to never use the word "unforeseen" with regard to disasters in the future. We must therefore look squarely at all possible damage that could occur, avoid unfounded optimism, and presume the worst situations. And, based on this, we should continue untiring efforts for possible preparedness against disaster prevention.

- Never base any part of disaster management on "normal conditions"

During disasters, every situation may present different conditions from those experienced in normal times. Therefore, in many cases, developing preparedness plans and determining countermeasures based on "normal times" should be avoided. On the other hand, one lesson we have learned is that what is not adequately prepared for during normalcy cannot be utilized during disasters; we must make comprehensive plans during "normal times". Therefore, based on the damage estimation, an assessment of effects on resources, such as personnel necessary for important tasks, goods, funds and information, and a strict estimation of how much of these resources will be necessary for disaster response, must be undertaken. At the same time, we should maintain a broad perspective, consider complex disasters, and understand that there may be unexpected circumstances to be based on the damage status that we confront after disaster occurrence.

- Understand and predict the situations to make timely decisions with limited information

When taking countermeasures immediately after disaster occurrence, it is difficult to obtain adequate and accurate information from the affected areas. Therefore, what is important is to determine how to use limited information to understand and presume the situations as accurately as possible in order to make timely decisions. This is not easy, and requires preparedness and implementation of drills during normal time. Needless to add is the fact that quick and accurate information collection, communication and sharing are the linchpin to disaster response immediately after occurrence of a disaster. Also, preparedness and efforts to obtain accurate information as quickly as possible under severe conditions is essential.

- Be aware that all disaster management, including saving lives, is a competition with time

The entire series of disaster response activities taken after disaster occurrence, including "saving lives", have to be addressed urgently. In other words, any delay in response may bring severe and irreversible consequences. It is important to be aware that this is a "competition with time", for affected people and for society; we must accurately understand the situation that changes minute by minute and take prompt and

appropriate actions in every circumstance. This also applies to the measures taken during the recovery/reconstruction phase, such as "recovering a calm daily lives" and "reestablishing a vibrant communities".

- React with flexibility and agility toward changes in needs; recognizing diversity in disaster affected people

As time passes after disaster occurrence, the needs of the affected people change. Some changes are brought by changes in climate or surrounding environment, and others arise from the efforts to recover normal life. Also necessary is consideration for the diversity of affected people including age, gender, disabilities, nationalities, etc. When conducting relief activities for affected people, it is important to maintain flexibility and agility in handling such changes in needs and take into consideration the diversity of the affected people.

- Aim not only for recovering former state of the disaster area, but also for the realization of "build back better"

In reconstruction of affected area, not only recovering the former state of housing, lifestyle, industries, culture and communities, but building back better by establishing new and necessary elements should be aimed for. Such policy gives hope and courage to the affected people in local communities.

- Consider regional local characteristics and "local capacities" of recovery/reconstruction in the affected area

Regional characteristics including population composition, industrial composition, resources, and connections with other regions are varied, and the influences of a disaster can differ according to region. Also, for each affected area, "local capacities" that can be utilized would vary in many aspects, including manpower, industries, resources and environment. Recovery/reconstruction of the affected areas must match each region's nature, and it is important to devise a recovery plan that maximizes local characteristics and "local capacities" so that each region, including the local government and supporters, may begin to have hopes for the future as early as possible.

Chapter 3 Future priority issues - Based on the basic principles of disaster management policy -

Based on the basic principles of disaster management policy in Chapter 2, provided below are the priority issues to be addressed in the future.

Section 1 Efforts to save lives from disasters and to support and recover the daily lives of affected people

(1) Initial response to save lives from disasters

[1] Basic approach

- The foremost goal of initial response to disasters is to save lives. To this end, it is important to secure safety, for example, in evacuation, based on accurate information that can be collected before a disaster occurs. With an understanding that the within 72 hours from disaster occurrence is an extremely important timeframe in rescue operations, life-saving activities and other activities for it should be prioritized above all other initial response, activities in allocating human and material resources.
- When a large scale disaster occurs, many injured people who are in critical condition would be taken to medical facilities, including disaster base hospitals. The government needs to improve fundamental principles regarding triage before and after transporting the injured to medical facilities, allocation of limited medical resources, etc.
- In time of the occurrence of a large-scale disaster, it is essential to accurately and quickly deliver information to citizens living in various circumstances and to officials of local governments. Therefore, disaster-resilient communication network should be established by setting up disaster communication infrastructure, developing non-structural measures such as training on disaster communication, etc.
- To save lives, time is particularly of the essence for initial response measures during disasters; therefore, relevant organizations should make arrangements, such as entering into agreements to fortify coordination, so that when disaster strikes, each actor may respond in a prompt and effective manner.

[2] Information collection and communication

- Based on the amendment of the Disaster Countermeasures Basic Act, which stipulates that prefectural governments should take necessary measures to collect information when municipalities are no longer able to report their damage status, secured information collection methods should be established, prior to occurrence of disasters detailing the departments/divisions from which

personnel should be dispatched to affected municipalities to collect information. The personnel must know the types of information they must collect, the manner in which to collect the information, and how collected information should be communicated back to the prefecture.

- Information collection by the government organizations has limitations. In order to utilize information collected and communicated by various actors, obtaining information from private media, including social media, as well as sharing information such as car navigation information owned by private corporations, which was utilized during the Great East Japan Earthquake, should be promoted. On the other hand, information accuracy depends on circumstance, and the needed information by each disaster management organization varies. Disaster management headquarters should have the function of triaging obtained information according to the importance of the content (e.g. survivor information), details of time and place included in the information, the information source, etc.
- It is highly effective to utilize geospatial information that can overlap a variety of disaster information onto a map and organize, analyze and visualize the situation in order to unify the understanding of the situation and support decision making. The geospatial information database contains static information on infrastructure and facilities that should be shared by organizations, along with dynamic information on the status of damage and response activities in time of a disaster. Static information should be organized and shared during normal times, while a mechanism to quickly collect dynamic information should be established.
- The measures to provide accurate information effectively to as many people as possible to prevent social confusion caused by unfounded rumors.
- In time of a large-scale disaster, a mechanism to provide appropriate information to foreign countries using overseas media and internet should be deliberated in order to disseminate information on the safety of Japan and to ensure economic credibility.

[3] Safe and secure evacuation

- Emergency evacuation sites to evacuate temporarily from a hazard and shelters to stay mid-term or long-term period should be clearly distinguished and designated by the municipal governments. In addition, evacuation routes to be used during disasters should be determined beforehand, and each route should be clearly indicated in municipal disaster management plans, evacuation plans and hazard maps, to provide information sufficiently for residents.
- The standards for designating emergency evacuation sites to evacuate temporarily from a hazard should be clarified based on the type of hazards and with consideration of safety of each evacuation site. Legal aspects of the designation standards should also be clarified.

- Specification of standards, including legal aspects that allows appropriate operation in each community, is necessary for concrete evacuation measures such as evacuation to safe places or "vertical evacuation" (evacuate to upper floors of a building), as well as for specification of the contents of evacuation order or instruction according to the types and phases of the disaster.
- In aging and declining-birthrate society, social, educational and welfare facilities such as schools and community centers should be organized as communication hubs for local residents. These facilities should be utilized as emergency evacuation sites to facilitate evacuation. At the same time, supply storage, communication equipments and other facilities should be set up at schools and other facilities designated as evacuation sites.
- During normal times, some welfare centers should be designated as welfare evacuation centers, and mechanisms for inter-facility personnel assistance should be established. Many elderly and disabled persons must evacuate to evacuation sites immediately after the disaster; therefore, human resources should be assigned to evacuation sites for prompt and appropriate transportation of elderly and disabled persons to welfare evacuation centers.
- In preparation for evacuation to remote location, local governments should clearly indicate evacuation plans which specify means of transportation including the use of public transportation, chartered buses, automobiles and ships with consideration of the available time for evacuation depending on hazard type.
- Support systems run by various actors, including local voluntary disaster management organizations, social workers for adults and children, nursing-care service providers and volunteers in the communities, should be put in place for smooth evacuation of people requiring special assistance during a disaster. Also, evacuation simulation drills should be promoted in the communities.
- The communication and collaboration system between and among municipal governments and organizations in the communities including kindergartens, day care centers, Nintei Kodomo-en (authorized child care centers) should be improved to enable safe and secure evacuation of preschool children.
- Local governments should thoroughly familiarize evacuation supporters, including police officers, fire fighters, firefighting volunteers and volunteer disaster management organization members, with the behavior rules for them that were created based on the experience of the Great East Japan Earthquake, as well as promote related drills, so as to secure the safety of evacuation supporters.
- Information provision methods should be improved to make accurate safety decisions on evacuation; for example, providing information about disaster risks and necessity of evacuation in an easier-to-understand manner.

- Based on the conditions of the local communities, improvement of the disaster management radio communication systems and Japan instantaneous alert system (J-ALERT), as well as technical development and utilization of satellite positioning systems should be promoted. Also, multiplexing and diversification of communication methods for warnings should be promoted by utilizing popularizing media such as early warning e-mail services for mobile phones, social network services (SNS), one-segment broadcasting, as well as news media.
- As for tsunami evacuation, local governments should promote development of a tsunami evacuation plan with consideration of local characteristics that includes information on predicted inundation areas, areas need to be evacuated, evacuation sites/facilities, evacuation routes, standards for issuing evacuation orders and instructions. Local governments also should ensure that local residents are thoroughly familiarized with the plan. The central government should provide appropriate support for the efforts made by local governments, such as reviewing manuals regarding tsunami evacuation measures.
- Evacuation by foot should be the standard method of tsunami evacuation. Evacuation by automobile may cause traffic jams, which prevent smooth evacuation. Such risks should be considered when developing specific tsunami evacuation plans that match the needs of each community.
- The central and local governments should collaborate in ensuring the delivery of warnings to residents in order to support their decisions to evacuate. To this end, surveillance and observation of phenomena that could lead to tsunami, as well as the information communication system linking the source to the receivers, should be strengthened.
- On the other hand, residents living along the coast must be thoroughly familiarized with correct evacuation behavior, and they should be fully informed that in case of strong shaking or weak but long-lasting tremors, they should expect tsunami occurrence and evacuate without waiting for warnings or other information.
- To secure the safety of firefighting volunteers and flood fighting volunteers engaging in tsunami disaster response activities, such as closing floodgates and land locks, a management system that prioritize the safety of these personnel should be established. This includes evacuation of personnel to a safe location with ample time before a tsunami strikes and the automation or remote operation of closing floodgates.
- Large-scale floods in the Tokyo metropolitan area could result in evacuation of millions; therefore, promotion of measures that will help citizens to identify and become familiar with evacuation locations and routes, as well as early establishment of methods to issue evacuation orders and instructions, provide evacuation guidance, etc., are necessary.

[4] Rescue/firefighting activities

- Rescue/firefighting forces should enhance and strengthen their structures by establishing organizations that provide and receive support for the activities of on-site units. The forces must also secure materials and vehicles, including self-sustaining equipment, and take other measures so that large-scale units can enter into the affected area promptly and securely to conduct operations in a broad area on a long-term basis after disaster occurrence.
- The cases in abroad on emergency response should be referenced to develop rules for communication in order to mutually share information and coordinate disaster response among different forces so that issues such as ineffective or overlapping operations (e.g., different on-site units searching the same location at different times), can be remedied, and collaborative and effective rescue activities can be conducted. To this end, communication methods that enable real-time, on-site information sharing between on-site units should be established.
- Areas with high concentrations of wooden housing are especially prone to large-scale fire caused by earthquakes. Deliberation on prompt evacuation guidance delivered through the collaborative efforts of municipalities and related organizations, sharing of awareness of the potential for the early extinguishing of fire within the region, consideration for improved firefighting activities, etc., are necessary.

[5] Life-saving/healthcare activities

- Since healthcare service level in affected areas could be declined greatly due to damage to buildings/facilities, disruptions of critical infrastructure, unavailability of medical staff, business continuity plans that support healthcare services within affected area should be devised for each healthcare organization so that rapidly increased number of patients can be cared.
- Prompt treatment of a great number of injured people is necessary in affected areas; therefore, collaborative measures such as allocation of patients to be treated among disaster base hospitals and other healthcare facilities inside and outside of the affected area should be established beforehand so as to enable effective medical practices during disasters.
- In preparation for long-term healthcare during a period of disruption of normal distribution routes for medical supplies, disaster base hospitals should enhance their capacity for continued operation by equipping heliports as well as storing food /water, medical supplies, fuel for emergency power supplies, etc.
- To improve the rate of life saving through prompt healthcare activities, continued efforts are necessary for collaboration with fire departments and DMAT (disaster medical assistance teams) for sharing information on rescue activities and injured/sick people, securing method of dispatch to affected areas, etc.

- The viability of schemes established by prefectures to dispatch and coordinate medical teams, etc., should be secured through drills and other measures so that establishment of structures to enable mid-term medical activities by DMAT, smooth handing over of operations from DMAT to various medical teams (JMAT (medical teams organized by Japan Medical Association), Japanese Red Cross) that provide mid-term and long-term healthcare, and other necessary operations can be made.
- In the Great East Japan Earthquake, patients could not receive sufficient healthcare at medical facilities in the affected areas, and wide-area medical transportation to the outside of the affected area of not only patients with external injuries but also those with chronic conditions became a major issue. Therefore, DMAT training sessions should include education in transportation of patients with chronic conditions, and effective performance should be secured through joint training with relevant organizations so as to fulfill the medical needs from the people in affected area.

[6] Provision of emergency goods such as food and water

- In the Great East Japan Earthquake, it was difficult to even understand what goods were lacking in severely damaged municipalities, and it took time before required goods were provided to affected people. Therefore, each district must independently prepare adequate supplies in order to protect the lives of, and provide bare essential needs to, residents in the district and conduct rescue activities in neighboring areas.
- Based on the experience of the Great East Japan Earthquake, municipalities must estimate the time at which external help arrives during large-scale, wide-area disasters. This newly prepared schedule must (a) take into consideration of local characteristics such as geographical conditions that may result in isolation, (b) state the necessary quantities of water and food as well as commodities and fuel that will be required, and (c) include a management plan for the timing and coordination of stockpiling through allocation of burdens among public and private sectors as well as by entering into agreements with business operators. This schedule should be included in the disaster management plan and all relevant parties should be familiarized with it. In addition, collaborative stockpiling and mutual accommodation among municipalities should also be considered.
- So as to enable securing of useful materials and equipment such as fuel, power generators and construction machinery to be used in rescue and recovery activities after a disaster occurrence, the stockpile volume within an area as well as the volume possessed by suppliers should be ascertained, and efforts to compensate for the shortfall and reach agreements between local governments and business operators should be promoted.
- Some affected areas will be lacking relief supplies; therefore, correct information of the supply details and location for delivery, should be collected. The system for sharing information

promptly in the government and supporting affected area according to their requests (a “pull-type” support) should be established.

- Immediately after a disaster occurrence, the local governments of the affected area must make sure to deliver necessary relief supplies, such as food for affected people, even when it is difficult for the local governments to understand the needs from affected people or to request supplies. In this case, the central and local governments should smoothly and steadily conduct a "push-type" support, whereby relief supplies are procured and sent, without requests from the disaster areas, taking into consideration delivery status from the collection base, to each evacuation center, while avoiding excessive oversupply and ensuring delivery to the designated places.
- Regarding the “push-type” support operation, the central government should organize beforehand the judgment standards for deciding what kind of goods should be sent to particular destinations, including information on packaging of goods, and share these standards with local governments when the information coming out of the affected area is insufficient, as well as organize the supply mechanism. The local governments that may request and accept the goods should determine beforehand specific action guidelines on establishing collection bases, division of roles in contacting relevant parties, sending requests and communicating other information to private businesses, etc.
- Whether or not to operate push-type support should be decided without delay for affected areas in which authorities have no ability to communicate information regarding relief supply deficiencies. Such decisions should be based on the aforementioned judgment standards and on all obtained information such as the number of affected people, location of collection bases, etc.
- On the other hand, as continuance of the “push-type” support can result in excessive accumulation of goods in the disaster areas, provision should be switch to the “pull-type” support, based on requests, as early as possible while taking into consideration on-site delivery status.
- Measures to conduct priority provision of fuel to vehicles engaging in disaster response in affected areas, including private trucks delivering relief supplies, should be arranged beforehand.
- Both publicly and privately owned vehicles are utilized in great numbers for disaster countermeasures; therefore, it has recently been clarified that they may be excluded from traffic bans. Moreover, such vehicles, particularly those involved with medical practice, transportation of heavy machinery, etc., are now targets of the prior notification system, which has just been implemented so as to enable smooth issuance of emergency traffic permits after a disaster occurs. All relevant parties should be sufficiently familiarized with this system, and revisions to the system be made in the future, as needed.

(2) Detailed support for life in evacuation centres, and reconstructing livelihoods of affected people

[1] Basic approach

- To provide necessary support for affected people appropriately in all stages, from evacuation to reconstructing livelihoods, principles and basic matters regarding the support should be clearly stipulated in the Disaster Countermeasures Basic Act. The Disaster Relief Act, the Act on Support for Livelihood Recovery for Disaster Victims, and other laws should be implemented based on such stipulations.
- From the comprehensive perspective of supporting affected people, transfer of jurisdiction over the Disaster Relief Act from the Ministry of Health, Labour and Welfare to the Cabinet Office which also has jurisdiction over the Disaster Countermeasures Basic Act and the Act on Support for Livelihood Recovery for Disaster Victims, should be considered.
- The Disaster Relief Act stipulates that prefectures providing support to disaster-affected prefectures are to request reimbursement of incurred costs from disaster-affected prefectures. However, during severe disasters, such mechanism not only enlarges administrative burdens for disaster-affected prefectures, but also, such requests for reimbursement to disaster-affected prefectures can burden supporting prefectures psychologically. Therefore, the possibility of temporary reimbursements from the national government instead of disaster-affected prefectures should be deliberated, and necessary actions should be taken.
- Necessary actions must be taken so as to ensure that the fundamental "request basis" rule, wherein the national government pays costs for support provided by other prefectures based on requests from disaster-affected prefectures, does not hinder prompt support of affected people.
- Since disasters vary in scale, region, season, etc., the implementation standards of disaster relief should be improved to be convenient and useful for local governments to respond each disaster more appropriately.
- The basic rule of only allowing in-kind provisions by the Disaster Relief Act (the basic rule of only allowing direct provisions of goods and services to affected people, therefore affected people cannot purchase nor pay in cash for obtaining goods and services) should continue to be deliberated while the rule's operation status is carefully examined.
- Under the current law, the use of disaster relief funds is limited to the costs shouldered by each prefecture according to the Disaster Relief Act, but this should be reviewed so that the scope can be expanded to include general support measures for affected people conducted independently by each prefecture.

[2] Life in evacuation centres, shelters, etc.

- Shelters, where affected people reside for a certain period, which could be for the long-term in some cases, should be a safe place with access to critical infrastructure. Concerns arising during life in shelters such as food, temperature control, and mental and physical healthcare measures should be legally stipulated.
- Schools and other facilities designated as shelters should promote enhancement of disaster management functions such as securing electric power, and they should also promote enhancement of earthquake-proof of building structures as well as non-structural materials; for example, preventing ceiling material from falling.
- If shelters are in dangerous locations, transfer to a safer area should be deliberated taking into account the inclination of affected people, so that private businesses, volunteers and other actors can provide support in a safe environment.
- Women should participate in the operation of evacuation centres as responsible roles, in order to gain better perspectives in caring for the elderly persons, disabled persons, expectant/nursing mothers, families with infants/children, etc., as well as to promote gender equality. At the same time, it is necessary to conduct surveys to understand the inclinations of affected people so as to cope with changes in needs, and to set up consultation spaces to collect opinions from affected people who, in some cases, tend to refrain from expressing their opinions. Also, guidelines on fundamentals of operation of evacuation centres should be devised so that necessary standards can be achieved with respect to the basic operation measures of evacuation centres.
- Since it is helpful to recover the normal daily lives of affected people who are helping each other within the community, local governments should clarify division of roles on operation of evacuation centres. Also, local governments should support affected people develop autonomous organizations sustained by mutual support among the affected people, to be shifted from operation by officials of municipal governments or school teachers/staff as early as possible.
- Guidelines should be developed to sufficiently provide information, relief supplies, and welfare service and other services to people who have to remain at home during and subsequent to disaster occurrences through appropriate support by cooperation among the national/local governments, private corporations, private organizations and other related organizations.
- Information, relief supplies, welfare service and other services should also be sufficiently provided to those who have moved into rented accommodation provided as emergency temporary housing (deemed temporary housing) through appropriate support by cooperation among the national/local governments, private corporations, private organizations and other related organizations.

[3] Smooth provision of goods to the affected areas

- Information collection base (digital infrastructure) that allows simultaneous comprehension and sharing of supply-demand balance, stock status, etc., within a particular city by the government and other organization should be implemented in order to realize stable supply of goods not only for affected areas but for all over Japan.
- Stockpiling utilizing distribution routes has many merits: the cost can be saved on renewing the stockpiled goods, no storage warehouse is necessary, administrative work for management of goods can be reduced, etc. However, when a large-scale disaster strikes, there are concerns such as disruption of provision due to damage to production hubs and other facilities, difficulties with carrying out due to warehouse damage at consigned businesses, and hindrance of distribution due to loss of delivery methods to areas requiring emergency supplies or suspension of communication with consigned businesses. Therefore, local governments and other bodies should deliberate on the ideal state of stockpiling utilizing distribution routes with sufficient consideration of the negative aspects of this method, and its possible combination with stockpiling of goods.
- Provision of relief supplies should be prompt and efficient. It also should be coordinated with private businesses possessing expertise, and should utilize logistics facilities of private businesses, for every step including transportation from outside of the affected area, management and sorting at collection bases, and delivery to individual shelters. What should also be considered at the same time is the effect of reallocating workforce of local governments to other tasks.
- Stockpiling, securing and transporting goods should be conducted while taking into consideration differences in needs of the elderly persons, disabled persons, expectant/nursing mothers, families with infants/children, and those with dietary restrictions, and any other needs, as well as the differences in needs between men and women. Stockpiling and transporting food, serving meals, and any other food-related matters should be overseen by dietitians.
- A coordination system that allows smooth procurement and provision of goods, as well as sharing information on such as units of goods and mode of packing which is necessary for provision and transportation of goods, should be established by cooperation of each government entity and private business groups.
- Small or mixed-goods packages sent by individuals to affected areas require confirmation and sorting of contents, burdening the local governments in the affected area; therefore, the sending of such packages by citizens should be discouraged unless the packages are addressed to specific individuals and deliverable. On the other hand, local governments in non-affected areas should establish a system to sort out mixed-goods packages with the help of volunteers. This should be widely announced to the general public.
- Since facilities not equipped with required functions could currently be designated as collection bases in the disaster management plan, these locations should be reviewed to check for necessary

functions, such as accessibility for trucks for smooth transportation and provision of goods, so that appropriate collection bases can be secured in proper areas.

- Establishment of a system for petroleum and petroleum gas provision during disasters, augmentation of the national stockpile of petroleum products and strengthening of shipping functions should be conducted in order to realize steady provision of petroleum and petroleum products during disasters.
- Establishment of stockpile bases for alternative supply during disasters should be deliberated in order to realize steady provision of natural gas.

[4] Broad area evacuation

- In response to the stipulations in the Disaster Countermeasures Basic Act pertaining to acceptance procedures, as well as coordination procedures, by the national and prefectural governments for the purpose of smooth acceptance of evacuees transcending borders of cities and prefectures, government entities should postulate places to evacuate to, deliberate on method of acceptance, create procedure manuals, etc., so as to allow smooth, wide-area evacuation during disasters for everyone including people requiring assistance during a disaster.
- To secure methods of transportation for disaster victims promptly during wide-area evacuation, each government entity should stipulate specific methods of relocation in its evacuation plans, etc. Also, legal justifications should be deliberated regarding the power of government entities in requesting transportation businesses to transport affected people, as well as regarding the authority of national and prefectural governments in handling matters in "push-type" methods.
- The mechanism for prefectural governments to provide information offered by evacuees, such as their address of current location, to the evacuees' original evacuated prefectures and municipalities should be smoothly operated and enhanced so that evacuees can keep receiving support from their local governments in the evacuated areas without delay.
- There is a need to ensure steady provision of information, relief supplies and services for wide-area evacuees of whom respective local government knows where they are.

[5] Securing housing

- In addition to the move from shelters to emergency temporary housing, fair, effective and efficient methods to secure housing should be deliberated with consideration to the financial capabilities and needs of affected people; specifically, reconstructing homes, constructing public housing for affected people, utilizing private rental accommodations and other methods should be combined. Also, ways for effective utilization, well into the future, of residential buildings constructed for temporary use during disasters should be deliberated.

- In massive disasters, relying only on construction of emergency temporary housing results in housing shortages; therefore, prefectural governments should investigate available private rental accommodations during normal times for preparedness, and indicate handling procedures and other necessary information when renting private rental accommodation for disaster relief purposes.
- To effectively utilize homes after disasters, the ideal state of emergency repair systems should be reviewed.
- Measures to move for evacuees from emergency temporary housing to permanent housing during the recovery phase should be devised according to the realities of each region.

[6] Maintenance/regeneration of ties in communities

- Since maintaining community relationships that existed before the disaster plays a major role in preventing a sense of isolation in affected people and ensuring mental and physical health, measures to maintain such relationships in emergency temporary housing and provision of support to establish communities at evacuation locations should be considered.
- Support for activities of local organizations, NPOs and other groups as well as cultivating leaders for such support during normal times is necessary so that the ability to maintain existing relationships within the community and create new relationships at evacuation locations can be fostered.

[7] Ensuring health, including mental care for the affected people

- Health issues tend to be prolonged due to changes in the living environment for the elderly people and others. Such issues include an increase in incidence and aggravation of disease syndrome and lifestyle diseases as well as mental issues. A system of individual visit by clinical and public health nurse teams, along with arrangements for consultation rounds at nearby locations where evacuees can receive health consultations, should be put in place.
- Comprehensive support is necessary to establish connections among local residents, including securing housing and jobs, providing individual consultations by visit and other means, and hosting casual tea parties, social gatherings and seasonal events.

[8] Recovering livelihoods by securing jobs, promoting industrial development, etc.

- To secure jobs for affected people, a hiring policy should be deliberated and put into effect. The policy should combine job creation measures that are temporary and immediately effective as well as those that, together with industrial revival and development, result in a mid-term to long-term steady increase in jobs. In carrying out such an initiative, it is

necessary for the government to match the newly arising needs from the affected areas with the labour power and competence of the disaster victims.

- To provide jobs to affected people so as to allow them to find purpose in life and comrades in their new situation, implementation of temporary job creation measures as well as provision of vocational training that endows knowledge and skills necessary for employment should begin immediately after the disaster through utilization of job creation funds, etc.
- Currently, there are many on-going projects utilizing job creation funds in the affected areas of the Great East Japan Earthquake. The effectiveness of these projects should be verified so that deliberations on which measures should be implemented in future disasters can be conducted. Of these projects, some measures which are intended for long-term implementation and should be continued even after budgetary measures expire should be deliberated.
- In addition to employed workers, support measures for maintenance and revival of independent enterprises, agriculture, forestry/fisheries businesses, smaller businesses, as well as founding of new companies and community businesses should be enhanced.
- Also necessary is an industrial development perspective that takes into consideration regional characteristics of the affected areas.
- For disaster affected children, provision of mental healthcare, utilization of the kinship foster care system and family homes, support for school attendance and other measures should be taken; furthermore, continuous and steady support should be ensured through collaboration with private support programs including funds.
- This disaster brought attention to support funds consisting of donations made by individuals who, and private enterprises that, agree with specific activities. Such systems should be further utilized.

[9] Measures for people requiring special assistance those with special needs during a disaster

- Matters regarding people requiring assistance during a disaster, such as of making lists, should be stipulated by laws and regulations pertaining to disaster countermeasures.
- Laws and regulations pertaining to personal information protection are often seen as obstacles to making lists of people requiring assistance during a disaster. This relevance to laws and regulations should be reviewed and organized.
- During the Great East Japan Earthquake, there were insufficiencies in support provided to disabled persons, the elderly persons, foreign nationals, expectant/nursing mothers, and others with special needs in various fields including information provision, evacuation, and living status during evacuation. Based on this, evacuation support guidelines for people requiring assistance during a disaster should be reviewed for each step of the evacuation process, and should include information

provision, stockpiling/securing/transporting of relief supplies, evaluation of living situations at shelters, and relocation to temporary housing.

- According to the situations, shelters with support systems staffed from welfare facility employees and other qualified personnel should be developed for people requiring assistance during a disaster.
- Deliberation of a system wherein social welfare personnel providing daily care for people with special needs can be involved in evacuation support, securing of fixing household furniture on walls or ceiling, and undertaking of other emergency measures is necessary.

[10] The perspective of gender equality

- Issues pertaining to each phase of supporting affected people, emergency response measures, recovery/reconstruction, disaster preparedness on the Great East Japan Earthquake, should be understood from the gender equality perspective, and based on this understanding, necessary measures/response in regard to gender equality during disasters should be summarized and disseminated.
- In supporting affected people, it is important to focus on the perspective of women who tend to care for the elderly and children on a daily basis to meet the special needs of the elderly persons, disabled persons, infants, etc. Gender equality in decision making pertaining to disaster management should be promoted through measures such as making the women-men ratio of disaster management division employees of national and local governments similar to or greater than the ratio for that of all employees of each government. At the same time, gender equality should also be promoted in decision making pertaining to shelters, emergency temporary housing, etc.

[11] Creating infrastructure for supporting the affected people

- Matters regarding disaster affected certificates, which are necessary for supporting individual victims, should be stipulated in laws and regulations pertaining to disaster countermeasures. Also, this matter is related to the social security/tax number that would be introduced in the My Number bill currently being submitted to the Diet should be further clarified so that utilization of this number can reduce the burden on residents.
- The ledger of affected people should also be stipulated in laws and regulations pertaining to disaster countermeasures, and the relevance of the ledger to the aforementioned social security/tax number should be clarified.
- There are many cases where it is unclear which division or department of local governments handles affected people support systems during normal times; this should be clarified so that systems can be properly improved and maintained. During this process, the organizing operating bodies in shelters comprised of residents, and specifically including women and young people, should also be

deliberated. Also, utilization of systems for integrated management of information on affected people and other tools should be deliberated during normal times.

- The relevance of laws and regulations to personal information protection should be clarified in regard to the handling of personal information held by local governments during disasters.
- Efforts should be made to avoid inconsistencies in damage assessments of housing, and measures should be taken to speed up the process, such as increasing training opportunities for personnel assessing damage. At the same time, prior approval and registration of personnel those who are qualified to assess housing damage should be deliberated.
- In order to realize prompt distribution of monetary donations to affected people during massive and wide-spread disasters, organizations accepting donations, such as the Japanese Red Cross, should predetermine efficient methods of accepting donations and determine the most efficient distribution routes to each prefecture, and the national government should actively support this process. Also, a decision on units of donations should be deliberated so that the municipalities that understand the status of affected area have room for discretion.

(3) Early recovery from damage on critical infrastructure

[1] Recovery of critical infrastructure, public facilities, etc.

- The managers of each critical infrastructure, such as electricity, gas, water and sewerage, should review design standards for improving damage prevention capacity and prepare manuals for rapid recovery as soon as possible based on the status analysis of damage and recovery from the Great East Japan Earthquake so as to enable quick recovery.
- Plans that enable early recovery after a disaster strikes should be prepared during normal times; for transportation infrastructure such as roads, airports and harbors, the plans should take into account early recovery of transportation for personnel and goods to affected areas, and for disaster prevention facilities such as riverside and coastal levees, the plans should take into account prevention of complex disasters involving floods and tidal waves.
- Also, to address these recovery operations smoothly, coordination system among the central and local governments as well as conclusion of agreements on disaster management with corporations should be promoted.
- Inspection and recovery of public facilities in affected areas are slowed due to reduced number of engineers employed by local governments; therefore, cooperation of the central and local governments as well as cooperation among local governments, for example, by concluding agreements on support, should be promoted.

[2] Disaster waste disposal measures

- To enable smooth disposition of disaster waste generated by a large-scale disaster, the volume of disaster waste that could be generated should be estimated, and a temporary collection site for disaster waste should be designated within the area during normal times.
- Mechanisms of cooperation and coordination among local governments as well as between local governments and private businesses, and mechanisms for central government involvement, should be improved regarding wide-area disposal systems of disaster waste, securing final disposal sites, etc.
- To enable smooth demolition and removal of damaged private buildings, etc., as well as disposal of subsequently accumulated disaster waste, deliberation on necessity of permission from the owners in urgent cases, and the propriety of using public expense for demolition and disposal, should be conducted.

Section 2 Strengthening disaster response preparedness

(1) Enhancement and strengthening of disaster response systems

[1] Basic approach

- When a disaster strikes, the bigger the disaster is, the harder it is to obtain information from disaster areas. Therefore it is necessary to obtain all information available from all sources, including live footage filmed from helicopters and stationary cameras, mass media and social media. Information should be shared by all parties engaging in disaster management by aggregating all pieces of gathered information at the disaster management headquarters, categorizing by type, accuracy and other characteristics, indicating locations on a common map, etc.
- Necessary countermeasures should be devised, with order of priority based on the circumstances of the affected areas and their surrounding regions, which can be understood from the mapped information (whether or not there is any regions for which information is missing, loss of functions of local governments, etc.).
- In disaster emergency response, needs change as time passes or as countermeasures progress; therefore, disaster emergency response for each phase should be envisioned beforehand and sorted out according to a timeline for effective utilization. What is important in this situation is to accurately understand the constantly changing disaster status and take flexible countermeasures. Drills and exercises for various foreseeable disaster situations and other preparations should be conducted in order to review the validity of countermeasures as well as to improve the handling capacity of actors.
- Disasters exceeding the scale of the Great East Japan Earthquake would result in long-term searches for a great number of missing persons; therefore, ample deliberation on institutional preparations should be conducted.

[2] Strengthening of systems by collaboration with various actors

- The Disaster Countermeasures Basic Act was revised so as to enable wide-area support in all aspects of disaster emergency response when an expansive and massive disaster strikes. Each local government should establish specific measures to enable smooth support that matches the scale of the disaster as well as the needs of affected areas, such as determining where to provide/receive support to/from, and concluding disaster cooperation agreements regarding mutual support. In addition, since it is appropriate for the central government to take necessary coordinating measures upon occurrence of a major-scale disaster, the central and local governments should develop in advance methods of coordination.
- The cooperative structure between and among disaster management actors including the central government, local governments, private enterprises, NGOs, NPOs, associations, foundations and

volunteers is essential, and division of roles for each actor should be determined based on characteristics, possible scope of activities, capacity shortfalls that require supplementation, etc.

- Capacities, facilities, know-how and the energy of private enterprises should be utilized, by concluding agreements between local governments and private enterprises regarding disaster response tasks that can be commissioned to them (organizing information on disaster situation; transportation and storage of relief supplies; distributing food to shelters and at-home evacuees, etc.).
- Enlarging the scope of designation of designated public corporations stipulated in the Disaster Countermeasures Basic Act as well as a mechanism for the enhancement of alliances with enterprises should be deliberated so that further coordination with private enterprises can be realized for smooth execution of disaster response measures.

[3] Strengthening of systems by the central government

- An organization comprising department/agency representatives of each ministry should be established under the Extreme Disaster Management Headquarters, for sharing information as well as enhancement and strengthening of practical functions regarding inter-ministry coordination, so as to enable prompt decision making on matters that span multiple ministries.
- Deliberation should also be conducted on the ideal institutional arrangement at time when there is a possibility of disaster occurrence.
- For smooth execution of disaster response the Extreme Disaster Management Headquarters, each division of "information processing," "supervision/coordination" and "resource management" must function together without glitches. The current organizational structure should be reviewed from this perspective and reorganized as necessary; for example, by regrouping teams and reallocating human resources within the Extreme Disaster Management Headquarters' secretariat.
- During the Great East Japan Earthquake, the Extreme Disaster Management Headquarters was established very quickly, but it was some time until full-fledged support that could cope with needs that change with time, such as wide-area evacuation and supplying goods, was provided to the affected people. New grouping and review of manuals should be conducted in order to allow speedy and smooth execution of affected people support.
- The on-site disaster management headquarters of the government during the Great East Japan Earthquake could not engage in activities indicated in the current manual, such as coordination of human resource and goods allocation. Instead, the on-site headquarters engaged in information collection, coordination with the central ministries that had little involvement with local government administration during normalcy, coordination with each ministry on cross-cutting tasks (collaboration with volunteers, etc.), etc. Based on this, the ideal state of all operations conducted by on-site disaster management headquarters should be

reviewed in the future, including information collection in disaster areas and coordination tasks.

- When an on-site disaster management headquarters is established, joint meetings with prefectural disaster management headquarters should be arranged in order to share information. Such meetings with municipalities should also be arranged on an as-needed basis.
- Disaster management tasks of Extreme Disaster Management Headquarters for which utilization of private enterprises is possible should be identified and participation by necessary private enterprises can be requested.
- Supplying goods should be delegated to private enterprises whenever possible, and the central government should take over only when the operation is too much for them to handle. When the central government becomes the main actor in goods transportation and coordination, prioritizing to handle should be done ahead of time by Extreme Disaster Management Headquarters.
- Mechanisms to ask external experts and those who with experience in disaster management for their opinions should be established during normalcy.
- Upon selecting emergency priority tasks that should be continued by each ministry if Tokyo Inland Earthquakes strikes, a business continuity system for the entire government should be established by devising fundamental policies on business continuity, which should be complied with by the government, along with other measures. Backing up important information, securing alternative sites at the Tokyo area, securing alternative sites outside the Tokyo area (Osaka, etc.) in case business continuity within the Tokyo area is hampered, and other measures to enhance and fortify the business continuity system should be conducted in each ministry. Also, consistency with business continuity plans of private enterprises should be ensured.
- For the time being, a certain number of government workers' housing within walking distance should be maintained so that those who must promptly engage in emergency priority tasks can be gathered even if a disaster strikes during weekend and/or night time, when transportation and communication methods are limited or suspended.
- On that basis, securing necessary workers' housing in order to maintain the stability of the emergency convening system should be deliberated in the future.
- The government office complex No. 8, which is currently under construction, should have ample space for relevant workers to work in if a major disaster occurs; moreover, it should serve adequately as an ideal disaster management facility of the government by stockpiling sufficient amount of drinking water, goods, and supplies, as well as securing a power source. In this regard, in view of the importance of the roles played by the private sector in disaster management, securing necessary space

where the government, designated public corporations, and others can work as one in promoting disaster countermeasures should be deliberated.

- To maintain the business continuity of the state, the understanding and cooperation from the legislative and the judicial branches should be gained so that the three powers can unite in establishing the business continuity system for the state.
- The functions of the general disaster management division of the government should be fortified through system enhancements made possible by coordinating with local governments in dispatching and training employees and by clarification of roles of the general disaster management division of the government. At the same time, national and local disaster management systems should be enhanced through stronger coordination of various government divisions dealing with disaster management and enhanced and fortified disaster drills that contribute to human resource cultivation and stronger coalition between the central and local governments.
- Also, the need for the establishment of local branches in charge of drills and exercises during normalcy and initial responses at time of disaster under the general disaster management division should be deliberated, including the possible use of existing organizations (such as the Regional Development Bureaux of the Ministry of Land, Infrastructure, Transport and Tourism). The ideal state of disaster management organization of the government against natural hazards should be deliberated as well, with consideration of past results, to enhance organizational function, etc.
- In the future, providing workers at both central and local governments with experience in crisis management, as well as mutual complementary engagement during crisis management, should be aimed for through increases in personnel exchange opportunities between central and local governments.
- Smooth acceptance of international support in various fields is indispensable during large-scale disasters; therefore, matching of personnel and goods, clarification of criteria for acceptance and procedures for acceptance must be discussed with foreign governments and organizations so as to prepare a smooth system of accepting international support.
- Further attention should be paid to enhancing the Japan Disaster Relief Team, which could be dispatched upon major disaster occurrence abroad. In addition, protection of Japanese expatriates during overseas disaster occurrence should be further considered.
- Countermeasures against critical incident stresses during large-scale disasters should be enhanced so as to provide mental healthcare to personnel of fire departments, police departments, Japan Coast Guard, Japan Self-Defense Forces, local governments, etc., engaging in relief activities.

[4] Strengthening of systems by local governments

- Upon disaster occurrence, local governments must conduct disaster countermeasures on their own until support from outside reaches the disaster area; however, local governments inexperienced in dealing with major disasters may be unfamiliar with disaster management. Therefore, each should establish management procedures such as the development of checklists for basic measures necessary for disaster response by, for instance, referring to the report of the Committee for Technical Investigation on Earthquake Disaster Management in Smaller Cities.
- During the Great East Japan Earthquake, government facilities, mayors and staff were affected and government functions were greatly compromised in some local governments. Based on this, securing alternative sites, appointing deputies for mayors and key staff, backing up important data, etc., should be promoted in order to ensure business continuity of local governments. Also, since disaster response tasks tend to concentrate in specific departments and sections of a local government, consideration of personnel allocation and requests for backup are necessary.
- Local governments and institutions related to disaster management should include a support acceptance plan, in their disaster management plans and local disaster management plans which contains specific methods for communication and requesting of backup and support, so as to establish a mutual support system that runs smoothly.
- For comprehensive and smoother execution of wide-area support between central and local governments, as well as among local governments, disaster response tasks should be programmed and standardized as much as possible. It is especially effective to share operating rules, information systems, etc., with the counterparts of disaster cooperation agreements; therefore, at least, proficiency of the rules and systems of the counterparts should be enhanced.
- Regarding support among local governments, the knowledge gained from the support during the Great East Japan Earthquake (e.g., (a) the need for self-sufficiency of support teams such those bringing their own food supplies, (b) the efficacy of the counterpart method, (c) the efficacy of teaming up a prefecture and municipalities within the prefecture, (d) consideration for a situation when the supported local government cannot give instructions to supporters, (e) the need for a local support headquarters for supporters, (f) shortages of staff at affected local governments for construction works, land acquisition, investigation of buried cultural properties, clerical tasks for applications, etc.) should be amply utilized.
- Since each local government has many employees inexperienced in disaster management, every local government should be aware that the activities to support affected local governments are also useful in gaining experience on disaster management.
- To promote a system whereby surrounding areas can provide logistic support for disaster areas, logistic support bases outside of disaster areas should be included in disaster management plans, etc.,

- with reference to case examples such as that of Tono City, Iwate Prefecture. Also, when providing support from distant locations, securing goods supply bases in the nearby-area should be considered.
- The necessity of financial support that has some degree of freedom for the local governments that accepted wide-area evacuees to secure certain level of discretions in providing support to affected people should be deliberated.
 - Manuals, etc., should state that requests for attendance to disaster management headquarters can be made to personnel from designated local public corporations and other organizations for the purposes of hearings, liaison, coordination, etc., so as to realize accurate and speedy execution of disaster countermeasures by local governments.
 - Mechanisms to ask external experts and those with experience in disaster management for their opinions should be established during normalcy.
 - Local governments should have in place measures for securing manpower including fixed-term hiring of retirees (including retirees of national organizations such as the Self-Defense Forces) and private sector personnel so as to enable smooth emergency response, recovery and reconstruction after disaster occurrence.

[5] Strengthening of systems/infrastructure for information collection and communication

- To ensure accurate information collection and communication during disasters, each actor involved with disaster management should promote the securing and preparedness of communication methods by duplexing communication routes, diversification and upgrading of communication methods (such as using satellite cell phones, a disaster management radio system, the national early warning system (J-ALERT), etc.), securing emergency power source for communications equipment, etc.
- In addition to the above, telecommunications carriers should further promote efforts to improve the safety and reliability of telecommunications facilities by geographical dispersion of infrastructure facilities with consideration to the damage forecast of local governments, installation of emergency recovery equipment, promotion of communication congestion countermeasures, etc.
- Fundamental improvements should be made as soon as possible so that truly necessary information can be collected for and provided to the Comprehensive Disaster Management Information System, which currently shares information with only some of the ministries and agencies. Specifically, with operation during actual disasters in mind, a system where necessary information can be collected and shared among all organizations involved with disaster management including relevant ministries and agencies, prefectures, municipalities, and power companies, and where necessary information can be provided to the public utilizing, among other methods, the telecommunications carriers, should be established and put into operation before the relocation to the new government office building No. 8.

- To strengthen communication systems for executive officials of the central and local governments, requests should be made to each ministry, agency and local government to prepare satellite cell phones for usage during emergencies; moreover, a mechanism should be provided whereby certain stockpiling can be done so that prompt utilization of the devices can be made possible upon disaster occurrence.
- An information processing team comprising specialists and academic experts was set up during the Great East Japan Earthquake; local governments should deliberate on accepting support activities through agreements concluded with such external teams in order to secure manpower for information processing and other tasks.
- As countermeasures for foreseen isolation of some settlements during large-scale disasters, communication methods, such as satellite cell phones and disaster management radio systems, should be enhanced.

[6] Response to triggered phenomena

- In situations where two or more disasters occur simultaneously or consecutively and their combined effects escalate the disaster situation, disaster countermeasures become difficult (complex disasters), disaster management could be greatly compromised due to several factors: confusion and delay in information collection and decision making; shortage of personnel, equipment, materials, etc.; unbalanced injection of resources; delays in relocation and transportation; difficulty in evacuation unlike in the case of the evacuation plan intended for independent disaster; etc. The central and local governments and other organizations must become aware of the possibility of complex disasters, review disaster management plans, etc., and enhance preparedness.
- When separate management headquarters for each disaster are established, schedule coordination for members with overlapping duties, mutual dispatching of personnel for information collection, liaison and coordination, and of course, the possibility for unification of management headquarters should be deliberated. Departments/bureaux in charge of the management headquarters secretariat are different in many cases, so specific measure for coordination, including unification, should be prepared. Similar considerations may be necessary for on-site disaster management headquarters as well.
- Regarding personnel, equipment and materials for disaster management, there is a possibility of inappropriate allocation, such as dispatching/allocating in excess supplies to the first disaster, causing a shortage for any subsequent disasters. The management plan should stipulate that if there is a threat of subsequent disasters, resource injection should be adjusted to prepare for them, and at the same time, requests are to be made for generous external support at an early stage.
- In preparation for complex disasters, table top drills and exercise envisioning various complex disasters should be conducted so that the results can dictate management plans for each situation.

Further, complex disasters with high occurrence probability should be identified so that actions, such as convening drills by personnel and exercise by a unified disaster management headquarters, can be conducted.

- There should be ample awareness toward and preparedness for a possible situation during a future major disaster where security enforcement becomes a top priority.
- To enforce security in affected areas and surroundings, a system should be put in place for issuing alert, patrolling at shelters and temporary houses and for conducting initial investigation if an incident occurs.

(2) Response to nationwide “emergency situation” caused by natural disasters

[1] Basic approach

- In the future, countermeasures should be established for a massive disaster exceeding the scale of the Great East Japan Earthquake, since fundamental frameworks under the current laws may not be sufficient for adequate management of such a massive disaster.
- For disaster countermeasures in emergency situations caused by major natural hazards, lifesaving activities as well as measures to sustain the country, such as enforcing security and maintaining financial functions, are indispensable, and to this end, sufficient legal preparedness should be made.
- No declaration of a disaster emergency situation was made during the Great East Japan Earthquake, but should an even larger disaster occur, a strong message for the citizen and the government to be united and make all possible efforts for disaster management should be announced by the government to the citizen, so that all necessary measures can be taken to recover stability of the economy and society.
- In deliberating the above, other systems for preparedness for emergency situations, such as laws and regulations for civil protection, should be carefully referenced.

[2] The scope of emergency measures taken by the government during national-scale "emergency situations" caused by natural hazards

- Current laws limit the scope of emergency measures during disaster situations to economic measures, but the need for possible expansion of the scope from the perspectives of supporting affected people and enforcing security, should be deliberated, with sufficient verification of cases where emergency legal actions were taken during the Great East Japan Earthquake.
- Also, emergency measures under current laws are limited to periods when the Diet is closed or the House of Representatives has been dissolved, and there is no time to convene an extraordinary session of the Diet or to request an emergency session of the House of Councillors and wait for decisions to be made. However, there should be deliberations on management of critical situations,

such as when Tokyo Inland Earthquake occurs and the immediate convening of a Diet session is impossible, nonetheless swift legislative actions, such as price controls, become necessary.

- Efforts should be made during normalcy to provide and familiarize information to foreign governments regarding mechanisms and content of legal actions taken to stabilize the Japanese economy during emergency situations caused by natural hazards.

[3] The roles of the central and local governments during national-scale "emergency situations" caused by natural disasters

- Under the current system, government work, authority, and financial burden pertaining to disaster management are handled by municipalities as a general rule and these are supplemented by prefectures depending on the scale of the disaster. Whenever necessary, these prefectures are supplemented by the central government. However, the ideal handling of government work, authority and financial burden by the central government, prefectures and municipalities during possible emergency situations caused by a disaster exceeding the scope of the Great East Japan Earthquake, where prefectures would be unable to sustain their functions, should be deliberated based on the experience and measures taken during the Great East Japan Earthquake.
- The ideal state of information communication and sharing among the central government, prefectures and municipalities during an emergency situation caused by natural hazards should include, as a communication route option, direct communication from municipalities to the central government, bypassing prefectures, depending on the circumstances.
- The authority of the head of an Extreme Disaster Management Headquarters is generally stipulated as "coordination" and "necessary instructions," but its authority and role should be specified beforehand.
- Under the current laws, during a large-scale disaster, temporary organizations are established separately by the central and local governments, but deliberations should be made to allow a unified countermeasure council comprising the central government, prefectures and municipalities.
- When municipalities lose their government functions, prefectures shall take over to issue evacuation orders, set up alert areas, etc., under the current system. The scope of such proxy authority should be expanded for other disaster countermeasures including rescue and life-saving activities, early recovery, cleaning and epidemic prevention, and the securing of emergency transportation.
- Deliberations should be conducted so that when prefectures lose its government functions during an emergency caused by natural hazard, the central government can take over its disaster countermeasures. Upon such deliberation, the inclination of prefectures should be carefully respected.
- It should be made possible for prefectures to support municipalities, and for the central government to support prefectures and municipalities, during the recovery/reconstruction phase.

Section 3 Multifaceted efforts to prevent disasters

(1) Clarification of the basic ideas on disaster management and collaboration by various actors

[1] Clarification of the basic ideas on disaster management

- Based on the basic attitude towards disaster countermeasures and the basic principles of disaster management policy, the basic ideas of disaster management should be organized and legally stipulated.
- The basic ideas should take into consideration not only preventative measures but all measures including emergency response measures and recovery and reconstruction measures, and based on the possibility of major disasters where damages cannot be completely avoided, the perspective of mitigation of damages (disaster reduction) and the ideal state of collaboration by diverse actors should be legally stipulated.
- The basic ideas should legally stipulate the philosophy and roles of "self- help," where people and enterprises protect their own lives, safety and assets; "mutual- help," where people of the community, enterprises, volunteers, relative organizations and others collaborate to protect the safety of the region, and "public- help" by the central and local governments, with consideration given to the importance and limitations of "public- help."

[2] "Self -help and mutual- help" and collaboration by various actors

- To promote "self- help" and "mutual- help," familiarization of their importance as well as a mechanism to support and encourage them is necessary; to that end, specific efforts such as preparing system infrastructure and support measures should be made.
- There is a need to encourage "self -help" through confirmation of evacuation methods for oneself and family members, confirmation of disaster management information source and method of utilization, fixing furniture onto walls and floors, stockpiling at home and workplace, making buildings fireproof and earthquake-resistant, enhancing earthquake and fire insurance policies and encouraging policy purchases, etc. "Mutual- help" should also be encouraged by offering support, etc., to voluntary disaster management organizations, NGOs, NPOs, associations, foundations and volunteers.
- Bottom-up disaster management plans should be organized in order to promote awareness-sharing regarding disaster management activities and collaboration by diverse actors in communities, and utilized wherever possible.
- Measures for preparing systems for accepting volunteers, etc., in disaster areas, securing safety during activities, providing information on affected people's needs, and other matters should be established, while sufficiently respecting the initiatives and diversity of activities by volunteers, NPOs, NGOs, associations, foundations, and other actors.

- There is a need to foster private organizations, such as local voluntary disaster management organizations as well as disaster management activity leaders, in order to strengthen the disaster management capabilities of each region.
- Fire -fighting teams and flood control teams, which have characteristics of "mutual- help" and "public- help," should be reevaluated as the linchpin in the comprehensive disaster management system of each region, and there is a need to upgrade equipage and treatment, improve education and drills, enhance the understanding of businesses towards fire -fighting teams and flood control teams, prepare activity environments with emphasis on women, young men, etc.
- Utilization of capabilities and retained resources of enterprises as well as sustenance of social functions of enterprises are necessary during disasters; therefore, roles and responsibilities of enterprises during disasters should be legally stipulated.
- To promote formulation and revision of business continuity plans (BCP) used for businesses to continue their important operations during disasters, a system to enhance support measures, create a mechanism for accurate evaluations, etc., should be established. Also, taking into consideration international standards on business continuity management, mutual credibility of BCP of both Japanese and overseas enterprises should be enhanced, and consistency of BCP of the government and enterprises should be improved.
- Since the government collaborates with private enterprise and groups in disaster management during disasters, there is a need to promote conclusion of agreements, etc., that go into effect when disasters strike, with these private sector actors.
- Recovery and reconstruction efforts by private enterprise to rebuild operations and support the livelihood of their employees should be promoted, and at the same time, a mechanism to further promote social contribution activities such as volunteer activities by employees should be deliberated.

(2) Inheritance and development of the disaster culture

[1] Disaster education / learning, and succession of lessons learned

- Disaster education/learning should be conducted at home, in schools, within communities, in the workplace, etc., with emphasis on the preciousness of life and the importance of living, and should provide each person with an ability to obtain information, make judgments and decisions, and take actions so as to be able to survive major disasters. Also, deeper understanding must be gained regarding the possibility of major disasters of unexpectedly large scale.
- To build the disaster culture for the next generation, disaster education in school should be further promoted by reorganizing the content of the systematic disaster education in schools, clarifying its positioning in the teaching guidelines, deliberating on measures to secure time for organized instruction on safety including disaster, etc.

- To develop disaster education/learning efforts into forms matching the needs of each region and carry out such efforts continuously, the development of human resources that are competent to carry out disaster education is important. There is a need to prepare training systems to foster disaster management leaders at local governments, universities, etc., as well as utilize retirees of organizations involved with disaster management, former teachers, former school principals and presidents, etc.
- Disaster education/learning is necessary for children as well as local residents and working people. This will help to improve the disaster management capability of regions. Enhancement of disaster education/learning should be achieved through utilization of public seminars, workshops, and activities of organizations involved with disaster management such as women's fire-safety clubs and youth fire-fighting clubs. In carrying out such activities, knowledge and experience of fire -fighting teams and flood control teams, which play the central role in local disaster management activities, as well as local experts that have accurate knowledge on disasters should be utilized.
- Disaster measures to be conducted by local governments are wide-ranging; therefore, education to allow staff to smoothly execute such measures should be promoted.
- To pass on the lessons learned from past disasters to the next generation and utilize the experience gained to implement future disaster countermeasures, disaster case studies and lessons learned from disasters should be recorded and accumulated/organized/shared as archives so that they may be widely utilized in disaster education, etc.
- Efforts to sift through technological and structural findings from past disasters to identify materials that can be turned into intellectual property, as well as having the perspective to utilize such intellectual properties, are also important.
- The knowledge and lessons acquired from the Great East Japan Earthquake are beneficial not only to Japan but also to various foreign countries in improving disaster management capabilities, and in an effort to reciprocate the overwhelming support to Japan during the disaster, the knowledge and lessons should be widely transmitted and shared by the world.

[2] Enhancement/strengthening of disaster drills

- Efforts should be made to reflect drills and exercise results into disaster management systems and countermeasures for their continuous improvement by incorporating external evaluations. This will help clarify the achievement status of drills and exercise' objectives and expose issues. At the same time, the formulation of the "Comprehensive Disaster Drills and Exercise Outline" and legal stipulation of its fundamental ideas should be deliberated in order to ensure proper execution of practical training by each actor in collaboration with the public and private sectors.

- To prepare for damage from disasters such as Tokyo Inland Earthquakes and the Major Nankai Trough Earthquake, etc., a framework participated by various organizations, such as councils comprising relevant organizations, should be established so that the framework may be utilized to conduct training by local blocks.
- Drills on a regional level conducted by municipalities and neighbourhood associations should be carried out with collaboration of schools, voluntary disaster management organizations, local organizations, medical institutions, private enterprises that have concluded support agreements, NPOs, NGOs, and any other actors within the region (not only actors in disaster management but also actors of urban planning, etc.), and their content should match regional characteristics, such as past disaster history.
- To confirm the viability of business (operation) continuity plans (BCP) of the country, each local government, and each private enterprise, drills and exercise that verifies the feasibility of (a) securing necessary manpower, goods, equipment and communication methods, (b) executing emergency priority operations, should be conducted.
- In addition to drills and exercise to enhance proficiency levels in disaster management, drills aimed at discovering problems should also be conducted; moreover, solutions for issues identified through such drills should be deliberated, and reflected as improvements and revisions to disaster management plans and manuals.
- The leadership of leaders and senior executives is important in disaster management for both public and private organizations; therefore, drills and exercise for situation recognition and decision making upon disaster occurrence, as well as opportunities to hear the actual experiences of local chief executives and presidents who have experienced disasters, should be provided.

(3) Construction of a disaster-resilient nation, regions and communities

- To make it possible to protect the lives and assets of the people even during major disasters, efforts should be made for upkeep of erosion control, flood control, shore protection and other facilities for national land conservation as well as for appropriate maintenance of aging social capital. Anti-seismic analysis and anti-seismic renovation should be promoted for these facilities.
- Regarding the upkeep of facilities for national land conservation, those facilities should be designed so that it will not be destroyed or collapsed when they faced with unforeseen massive disasters or disasters in scale exceeding the design projection, or even when facilities are destroyed or caused to collapse, their protective capabilities will remain tenaciously in place.
- To make available diverse choices in transportation methods even during large-scale disasters, efforts should be made to enhance the road network through elimination of missing links of highways and other measures, and efforts should be made to secure alternative or supplementary functions by

preparing various public infrastructure facilities in preparation for prefectural trans boundary disasters. In addition, anti-seismic renovation of railway facilities, establishment of highly seismic resistant quay walls, anti-seismic renovation of airport facilities, etc., should be promoted in order to secure transportation by railway, ships, airplanes and other means.

- Warning and evacuation systems should be prepared in areas with high disaster risks, and from the perspective of inducing appropriate selection of place of residence, urban plans and land use plans that take into consideration local disaster risks should be formulated.
- Promotion of anti-seismic renovation of buildings, such as houses, schools and hospitals, as well as structural objects, such as lifelines and infrastructure facilities, should be continued. At the same time, measures to prevent falling of non-structural materials, such as ceiling material, and prevent toppling of furniture should also be promoted.
- Countermeasures against long-period ground motion, which is a concern for skyscrapers during massive earthquakes, should be taken from both structural and facility aspects. At the same time, re-examination of design standards should be conducted and the ideal state of information provision regarding long-period ground motion during earthquakes should be established.
- Areas threatened by liquefaction in coastal areas and former river channels should familiarize such risks to the public, and should enrich the database on ground stability and enhance technical standards, based on which liquefaction countermeasures can be devised.
- For tsunami countermeasures, local preparedness with multiple defense systems should be promoted by combining, with flexibility, structural and non-structural measures including maintenance of disaster-reduction forests along the shoreline, elevation of land, designation of evacuation locations for emergencies, preparedness of designated tsunami evacuation buildings and evacuation routes as well as evacuation stairs, and restrictions on land use and buildings with consideration of flood risks, in addition to the up keeping of shore conservation and other facilities and infrastructure.
- Regarding tsunami countermeasures, anti-seismic renovation of buildings along evacuation routes should be conducted, and measures for preventing damage caused by drifting wreckage from buildings, automobiles, ships, etc., should be devised.
- Disaster management measures that effectively combine government countermeasures with effort of private businesses should be promoted, such as collaborating with the private sector in constructing designated tsunami evacuation buildings by utilizing the PFI method.

(4) Disaster countermeasures reflecting the latest scientific knowledge

- [1] Promotion of investigation/research/observation related to disaster management

- The Great East Japan Earthquake brought shaking and tsunami on scales far exceeding the 2005 forecasts of the Central Disaster Management Council, resulting in extensive damage. Taking this reality seriously, there is a need to use the latest scientific knowledge in reviewing past forecasts of earthquakes and tsunami in order to accurately foresee possible disasters.
- The Major Nankai Trough Earthquake is estimated to be of an unprecedented scale, taking into consideration every possibility based on the latest scientific knowledge, such as tsunami caused by shallow earthquakes and the mechanism of wide-area destruction. In the future, investigation and research for elucidation of generation mechanism of the Major Nankai Trough Earthquake, as well as for prediction of earthquake occurrence, should be conducted in order to enhance countermeasures.
- In the future, there is a need to deliberate on the possibility of earthquakes and tsunamis at an unprecedented scale in Hokkaido and along the shores of the Sea of Japan; investigation and research should be conducted to clarify foreseeable locations, scale and other information of future earthquakes so that scientific knowledge and findings can be accumulated.
- Deliberations regarding possible Tokyo Inland Earthquakes should also include possible major earthquakes along the Sagami Trough, which are currently not targeted.
- The accuracy of emergency earthquake alerts should be improved, and at the same time, tsunami prediction technology should be improved for further enhancing the accuracy of tsunami alerts in order to reduce tsunami damage.
- A seabed earthquake/tsunami observation network should be established in order to develop tsunami prediction technology that uses the network to promptly and accurately predict scale and arrival time of tsunamis.
- There is a need for continued investigation of ancient documents, tsunami deposits, etc., and long-term evaluation, including for earthquakes of unprecedented scale predicted with consideration of every possible factor, in order to indicate earthquake occurrence risk over a certain period. Also, such evaluation should include not only ground motion, but also other aspects such as tsunami height.
- Japan is one of the most volcano-riddled countries in the world, with 110 active volcanoes, but its system of volcanic observation, surveillance, investigation and research is insufficient; therefore, an increase in the number of observation facilities and points indispensable for improved accuracy of eruption prediction, investigation of past eruption history and other records, research on eruption mechanisms, and other activities should be promoted.
- In addition to natural science research into earthquake and tsunami disaster hazards, research should be promoted regarding comprehensive disaster management, including measures for prevention, emergency response, recovery and reconstruction, and organizational operation, with involvement of diverse fields such as humanities and social sciences.

Deliberation should be conducted on systems that allow organized and continuous execution of comprehensive investigation and research on disaster management and reduction measures necessary for establishment of a tough and resilient society against all natural disasters, including earthquakes.

[2] How to devise countermeasures

- Projections for human/material damage should be made based on the forecasts of the Major Nankai Trough Earthquake and Tokyo Inland Earthquakes, and with consideration to the big picture of countermeasures summarized by the Working Group for Reviewing Measures to Cope with a Major Nankai Trough Earthquake and the Working Group for Reviewing Measures to Cope with Tokyo Inland Earthquakes, an Earthquake Countermeasure Outline should be devised as the countermeasure master plan, from prevention and emergency response to recovery and reconstruction. Based on this Outline, emergency response activity guidelines and other manuals that stipulate activities, rules regarding support, and other measures to be taken by each organization upon disaster occurrence should be created. At the same time, a nationwide system to cope with disasters, while keeping in close coordination with local governments, private enterprises and other relevant organizations, should be established.
- Regarding the legal framework concerning the Major Nankai Trough Earthquake countermeasures, it is necessary to conduct specific deliberations in order to enact a special law from the perspectives of strengthening comprehensive tsunami countermeasures. There is also the need for deliberation on the ideal structural framework, including enacting of a special law, regarding earthquakes with Tokyo Inland Earthquakes.
- Based on damage projections and recommendations for specific countermeasures by the Committee for Technical Investigation on Countermeasures for Large-Scale Floods, an Outline of Countermeasures Against Large-Scale Floods in the Tokyo Metropolitan Area and other manuals should be devised, stipulating wide-area evacuation, wide-area disaster reduction structure, flood control measures, etc., to cope with large-scale floods in the metropolitan area.
- Local governments, government-related organizations, volcano experts, etc., should promote the establishment of a volcanic disaster management council that will deliberate cooperatively on disaster management measures including volcano hazard mapping, posting of eruption alert levels, and provision of evacuation plans for each volcano, and local governments should promote formulation of evacuation plans.
- In preparation for major volcanic eruptions, deliberation on the operational structure of local management headquarters, wide-area evacuation plans, countermeasures against volcanic ash that falls in wide areas should be promoted.

Section 4 Efforts towards prompt and smooth reconstruction

- Instead of passing special legislation every time, in order to enable prompt recovery from major disasters, a legal framework for reconstruction should be established that enables formulation of fundamental policies of restoration, establishment of restoration headquarters that handles general coordination of measures by relative administrative bodies.
- A committee comprising intellectuals and heads of local governments of disaster areas, who can provide opinions based on specialized knowledge would be necessary in devising fundamental policies regarding recovery; such a committee, as well as reconstruction headquarters and other organizations, should be legally justified.
- Also deliberation of legal justifications for fundamental principles common in all recovery and reconstruction from future large-scale disasters should be done.
- Reconstruction from disasters so wide in scale that local governments of affected areas lose their administrative functions requires initiative by the central government. Therefore, based on the experience and handling of the Great East Japan Earthquake, the ideal state of allocation of administrative responsibilities, authority and financial burdens among the central government, prefectures and municipalities, depending on the scale and state of disasters, should be deliberated.
- Regarding recovery and reconstruction operations conducted by affected local governments, legal measures should be taken so as to enable prompt invocation of special measures taken during the Great East Japan Earthquake, including proxy authority by central and prefectural governments, fortification of local financial functions to support small- and medium-sized enterprises, and provision of administrative services by local governments accepting wide-area evacuees, simply by setting the scope of application via ordinances, notices, etc., in order to prepare for future large-scale disasters.
- Aside from special measures that should already be enshrined into law, there may be other special measures that require prompt application in special cases during individual disasters. Therefore, the scale and state of a disaster, the period necessary for recovery, the target scope, etc., should be predicted and organized for each special measure so as to enable prompt invocation.
- Affected local governments should aim to establish organizations that participate in countermeasure deliberation meetings involving disaster victims, supporting organizations, government officials, etc., and act as a bridge between affected people and the government by understanding the needs of the victims and making proposals to the government.

- Based on damage projections, local governments should deliberate necessary urban planning measures, from normalcy to the restoration phases, and organize procedures of various operations, including the process to be followed to reach a consensus among citizens, in preparation for step-by-step reconstruction.
- Reconstruction of disaster areas should not merely be a return to the state before the disaster; realization of "improved rebirth" should be aimed for by making necessary additions and developments in various fields, including daily living, industry, culture and community to create something better.

Section 5 Establishment of the system to address the countermeasures with concerted efforts from across the country

- To reduce disaster damage, individuals, families, communities, enterprises, relative organizations, and all other social actors should collaborate to their maximum capabilities to create a nation-wide movement for disaster management.
- The Disaster Management Association comprising private organizations that agree with the nation-wide movement should be expanded, and with participation of diverse organizations from all circles and levels, a nationwide framework for the nation-wide movement should be created and continuously promoted.
- The central and local governments should gain cooperation from local disaster management organizations in order to develop the nation-wide movement, and also promote incorporation of participatory and hands-on learning of disaster management and reduction into lifelong learning programs by utilizing a large number of social education facilities such as community centers all over Japan where learning activities that match local needs are conducted on a daily basis. Also through such promotion, efforts should be made to foster disaster management leaders and improve social valuation of their activities.
- There is a need to provide day-to-day opportunities during normalcy for people to maintain disaster awareness and recognize the importance of participating in disaster management activities by utilizing, to the maximum, opportunities such as anniversaries, special weeks, etc., related to disaster management, including the Disaster Preparedness Week and Disaster Preparedness and Volunteer Week. Also, deliberation should take place on whether to appoint March 11 as “a day to remember the Great East Japan Earthquake” pass on lessons learned from it to the future generations, and conduct drills and educational events.
- To improve social valuation of voluntary disaster management efforts by individuals and enterprises, recognition and introduction of outstanding efforts, provision of opportunities for exchanges of those making such efforts are necessary.
- The essential governmental functions that must be sustained even during “emergency situations” due to natural disasters in order to subsist as a nation should be deliberated, and perhaps legally stipulated, with reference to the eight National Essential Functions stipulated by the executive order of the U.S president (protecting against threats to citizen, maintaining of security, providing rapid and effective recovery from incidents, protecting and stabilizing the economy, providing critical health, safety and welfare services, ensuring the continued functioning of the three separate branches, providing leadership, defending the constitution, and maintaining effective relations with foreign nations).

- Based on the Disaster Countermeasures Basic Act amendment that, in addition to allowing staff of disaster management organizations to be automatically appointed, allows members of voluntary disaster management organizations and academic experts as members of the Local Disaster Management Council to be designated, female members should be actively added to the Council in order to reflect diverse opinions onto local disaster management plans.
- A mechanism where the Local Disaster Management Council can tender its opinions to the Central Disaster Management Council should be introduced in order to reflect local opinions onto national disaster countermeasures.
- It should be taken into consideration that regarding support from the central to local governments during disasters, local governments prefer support requiring minimal bureaucratic procedures and greater discretion.
- Various regulations intended for normal times may hinder smooth execution of various operations and activities related to disaster management; therefore, a mechanism that allows relaxation of these regulations upon request from local governments, trade associations, etc., during these disasters should be deliberated.
- There is a need to secure stable financial sources in order to increase the efficacy of the disaster management policy. The nationwide disaster countermeasure funds and the disaster management/reduction operation mechanism are particularly effective, and future discussions on whether continuance is necessary, how to secure necessary financial sources, and other matters are required.
- Public land and national assets should be effectively utilized in promoting various disaster management measures and activities, including selection of evacuation locations, construction of evacuation centers and emergency temporary housing, storage of relief supplies, stockpiling, and selection of temporary sites for disaster waste storage.

Chapter 4 Toward the enhancement of future disaster countermeasures

In the future, based on this final report, the government of Japan should aim for further enhancement of and strengthening disaster countermeasures through continued discussion of countermeasures in each field; clarification of roles, responsibilities, collaboration measures, etc., of the central government, local governments, private enterprises and organizations, volunteers, individuals and other actors; improvement and enhancement of immediately necessary systems; and promotion of specific countermeasures.

Also, the status of improvements and enhancements of implemented systems as well as promotion of specific countermeasures should be, along with conventional countermeasures, regularly and continuously monitored and inspected by the government and each actor. In doing so, systems and countermeasures should be evaluated from a wide perspective, including their overall efficacy against massive disasters and compound disasters that may occur in the future. Results from these inspections and evaluations should be utilized for further improvements in disaster management systems and countermeasures.

In conclusion, the following points should be re-emphasized.

Japan foresees major disasters, including a large-scale earthquake along the Nankai Trough and Tokyo Inland Earthquakes that are expected to occur in the near future. This final report should be viewed as the grand design of disaster countermeasures in Japan for the time being, and the society must work together as one to promote disaster countermeasures so that damage from these disasters, should they occur, can be minimized, recovery and reconstruction can be speedy, and above all, the people of Japan, especially the next generations, can have bright hopes for their future without fearing the shadows of these disaster forecasts.

Reference materials

- Member roster of the Committee for Policy Planning on Disaster Management, Central Disaster Management Council

- Course of discussions

Member roster of the **Committee for Policy Planning on Disaster Management**, Central Disaster Management Council

(Honorifics omitted)

Cabinet officials (Central Disaster Management Council members)

Chairperson : Osamu Fujimura Chief Cabinet Secretary
Deputy Chairperson : Masaharu Nakagawa Minister of State for Disaster Management (the 5th session and thereafter)
Deputy Chairperson : Tatsuo Hirano Minister for Comprehensive Review of Measures in Response to the Great East Japan Earthquake (the 5th session and thereafter), Minister of State for Disaster Management (the 1st to the 4th sessions)

Members : Tatsuo Kawabata Minister of Internal Affairs and Communications
Yoko Komiyama Minister of Health, Labour and Welfare
Takeshi Maeda Minister of Land, Infrastructure, Transport and Tourism (the 1st to the 9th sessions)
Yuichiro Hata Minister of Land, Infrastructure, Transport and Tourism (the 10th session and thereafter)
Yasuo Ichikawa Minister of Defense (the 1st to the 3rd sessions)
Naoki Tanaka Minister of Defense (the 4th to the 9th sessions)
Satoshi Morimoto Minister of Defense (the 10th session and thereafter)
Kenji Yamaoka National Public Safety Commission Chairperson (the 1st to the 3rd sessions)
Jin Matsubara National Public Safety Commission Chairperson (4th session and thereafter)

*Other Cabinet officials are asked to join on as-needed basis.

Academic experts

Members: Katsuyuki Abe Professor emeritus of the University of Tokyo (Central Disaster Management Council member)
Hirohiko Izumida Governor of Niigata Prefecture (Central Disaster Management Council member, Chairperson of the Special Committee on Disaster Management of the National Governors' Association)
Yoshiaki Kawata Professor of Kansai University (Chairperson of the Committee for Technical Investigation on Countermeasures for Earthquakes and Tsunamis, etc.)
Keiko Kiyohara Vice President of Hyogo Earthquake Memorial 21st Century Research Institute, Special Advisor to the Governor, Hyogo

Prefecture

Toshiyuki Shikata	Crisis management and security analyst, Professor of Teikyo University (Former member of the Committee for Technical Investigation on the Large-Scale Flood Countermeasures)
Atsushi Tanaka	Professor of the University of Tokyo (member of the Committee for Technical Investigation on Countermeasures for Earthquakes and Tsunamis.)
Keiko Tamura	Professor of Niigata University (Central Disaster Management Council member)
Haruo Hayashi	Professor of Kyoto University (Chairperson of the Expert Panel on Emergency Countermeasures and the Expert Panel on Disaster Legislation Study)
Katsuyuki Haranaka	Former Chairperson of the Japan Medical Association, President of Ohata Hospital (Kyoninkai)
Keiko Hirano	Storyteller, Newscaster (former member of the Committee for Technical Investigation on Passing Down Lessons Learned from Past Disasters)
Hiroya Masuda	Advisor at Nomura Research Institute, Ltd., former Minister of Internal Affairs and Communications, former Governor of Iwate Prefecture
Emiko Munakata	Representative Director of Equal Network Sendai, a specified non-profit organization (Member of the Committee for Technical Investigation on Earthquake Disaster Management in Smaller Cities)

Course of discussions

First session 28 October 2011

- Purpose of the council; how to proceed in the future

Second session 28 November 2011

- General overview of emergency countermeasures, etc., for the Great East Japan Earthquake
- Review of the Basic Disaster Management Plan

Third session 7 December 2011

- View on the nationwide disaster countermeasure funds
- Framework for disaster countermeasures laws

Fourth session 1 February 2012

- Countermeasures against large-scale disasters
- Management systems against natural disasters hazards

Fifth session 16 February 2012

- Discussions on the interim report

Sixth session 7 March 2012

- Draft of the interim report draft
- Process of discussions toward final report

Seventh session 18 April 2012

- Measures under consideration by relevant ministries and agencies (Ministry of Health, Labour and Welfare; Ministry of Land, Infrastructure, Transport and Tourism)

Eighth session 26 April 2012

- Measures under consideration by relevant ministries and agencies (Ministry of Internal Affairs and Communications; Ministry of Defense; National Police Agency)

Ninth session 17 May 2012

- Measures under consideration by relevant ministries and agencies (Ministry of Education, Culture, Sports, Science and Technology; Ministry of Agriculture, Forestry and Fisheries; Ministry of Economy, Trade and Industry; Ministry of the Environment)

Tenth session 7 June 2012

- Response to “emergency situations” caused by natural hazards

Eleventh session 28 June 2012

- Disaster management philosophy and disaster management activities by various actors
- Issues regarding support to disaster affected people

Twelfth session 19 July 2012

- Discussions for the final report

Thirteenth session 31 July 2012

- Draft of the final report