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[Current State of Countermeasures to Earthquake Disaster]

1. Promoting Countermeasures to Earthquake Disaster

To prevent disasters and to minimize the damage in an earthquake, the Fire-Defense Agency is upgrading fire-fighting systems, personnel, infrastructure, supplies, etc. Also, based on the objectives of the Disaster Countermeasures Basic Law, the Large Scale Earthquake Countermeasures Law and the Earthquake Disaster Prevention Special Law, they are having the national and local governments, as well as local governments themselves, coordinate countermeasures to earthquake-triggered disasters; providing guidance and advice on preparing local disaster prevention plans (that which regards countermeasures to earthquake-triggered disasters), urgent improvement project plans and emergency disaster prevention plans; imparting and providing guidance on disaster prevention drills; making people more aware of disaster prevention techniques; and promoting research into countermeasures to earthquake-triggered disasters.

In particular, on the lessons learned in the Hanshin - Awaji Earthquake, they are instructing local governments to promptly review disaster prevention plans and to make the necessary updates so that proper and practical action can be taken swiftly in times of disaster.

Also, in order to prevent the outbreak of fire in an earthquake, to put out any developed fires as quickly as possible and to prevent the spread of fire, the Agency is upgrading fire-fighting capacity by providing more pump trucks and fire water tanks, making sure hazardous substances are managed according to regulations, and encouraging local governments to prepare fire-fighting infrastructure for major earthquakes including antiseismic water reservoirs and portable pumps.

They have also just built a seismic intensity information network to help disaster prevention organizations respond quickly to a crisis in the event of a major earthquake (Table 7-4).

In addition to national subsidies, financial assistance is being provided for earthquake evacuation route signs, and vehicles for fire alarms and drills, from public corporations.

(1) Countermeasures to disaster in areas specified for intensified measures against earthquakes

a. Substantial and intensified countermeasures against a Tokai earthquake

According to the Large Scale Earthquake Countermeasures Law enacted in 1978, prefectural and municipal disaster response councils in the 6 prefectures and 167 cities, towns and rural communities (Table 7-5) specified for intensified measures against earthquakes must prepare urgent improvement project plans, while operators of important disaster response facilities such as

hospitals, department stores, theaters and railways must prepare emergency disaster response plans on the assumption that a Tokai earthquake were to occur. This serves to promote systematic and comprehensive disaster response based on the actual situation regarding emergency disaster countermeasures and infrastructure in the specific area.

In February 2000, the Fire and Disaster Management Agency demanded reexamination of these plans, in keeping with the "Reexamination of Intensified Plan for Earthquake Disaster Prevention". In May 2000, the Fire and Disaster Management Agency also reported on the selection of indoor shelters, other safety measures proposed and a method calling the meeting that would enrich and intensify countermeasures to a Tokai earthquake. In addition, the "Special Investigative Committee on a Tokai Earthquake" was established in the Central Disaster response Council on January 26, 2001, to examine possible intensified measures against earthquakes, based on recorded observation data and new scientific knowledge.

In June 2001, using current understanding of likely epicenters, districts that would be likely to suffer considerable damage due to the effects of earthquakes or tidal waves were identified. Based on the results of this reexamination, if areas specified for intensified measures against earthquakes needed to be reexamined, necessary procedures would be taken and the study of concrete measures to take against earthquakes should commence.

Table 7-4 Current disaster response infrastructure for large-scale earthquakes and fires

(millions of yen)

Infrastructure Item	1972 – 2000		2000	
	Qty	Subsidy	Qty	Subsidy
Antiseismic water reservoirs (Total)	8,067	37,397	363	1,849
Antiseismic water reservoirs (40 m^3)	80	205	80	205
Antiseismic water reservoirs (60 m^3)	1,764	5,841	113	425
Antiseismic water reservoirs (100 m^3)	5,618	21,828	150	936
Antiseismic water reservoirs above ground (40 m^3)	1	2	1	2
Antiseismic water reservoirs above ground (60 m^3)	0	0	0	0
Antiseismic water reservoirs above ground (100 m^3)	0	0	0	0
Antiseismic fire/drinking water reservoirs (40 m^3)	0	0	0	0
Antiseismic fire/drinking water reservoirs (60 m^3)	89	1,057	7	87
Antiseismic fire/drinking water reservoirs (100 m^3)	473	5,180	12	194
Antiseismic fire/drinking water reservoirs (1500 m^3)	42	3,284	0	0
Supply storehouses	127	883	5	27
Power generating trucks (Large)	68	669	4	59
Power generating trucks (Small)	41	163	0	0
Initial stage earthquake supplies	89	121	28	32
Water supply trucks	17	77	2	10
Earthquake simulator trucks	97	292	1	3
Mobile information centers	3	29		
Work vehicles (for improvement projects)	5	62	1	13
Disaster response education vehicles	23	164		
Earthquake rescue vehicles	8	39		
Hospital supplies	133	196		
Small portable power pumps	6,477	2,547		
Seismic intensity information networks	46	4,068		
Basic design of damage estimate systems	4	12		
Construction of damage estimate systems	5	167		
Personnel emergency duty-call system	112	430		
Other	8	223		
Total		47,539		1,993

Notes 1 Other" includes mobile radio vehicles, fireproof transport vehicles (for evacuation) and TV transmission systems using helicopters. Subsidies were canceled in 1979.

2 Subsidies of some projects was carried over into fiscal 2001; therefore some figures exceed the stated amount of the subsidy.

b. Promoting urgent improvement projects for measures against earthquakes

In order to promote the construction and acquisition of an emergency disaster response infrastructure in areas specified for intensified measures against earthquakes, plans for urgent improvement projects for measures against earthquakes are developed under the Special Fiscal Measures Law for Urgent Improvement Projects as Countermeasures in Areas Requiring Intensified Measures against Earthquakes, that went into effect in May 1980. The national government provides local governments with total or partial funding for the urgent improvement projects necessary for disaster response. The fire-fighting infrastructure that can be funded under this law includes that specified in the Fire-Fighting Infrastructure Improvement Law, small power pump trucks, small portable power pumps and antiseismic water reservoirs. Here, the national government pays for half. Also, other fiscal measures are provided for, such as allowing half of the redemption funds for principle and interests redeemed on local bonds used to generate the financial resources for providing this infrastructure to be included in the basic financial basis on which local taxes are based.

Urgent improvement projects include the maintenance of evacuation areas, evacuation routes, fire-fighting infrastructure, emergency transport routes and communications infrastructure, and improvement of the earthquake-resistant construction of the social welfare infrastructure and public elementary and junior high schools. In the 20 years before March 31, 2000, a total of 1,047.8 billion yen was spent on such projects.

This law is currently effective until March 31, 2005, having already been extended 4 times in the past.

(2) Countermeasures to earthquake disasters in the southern Kanto area

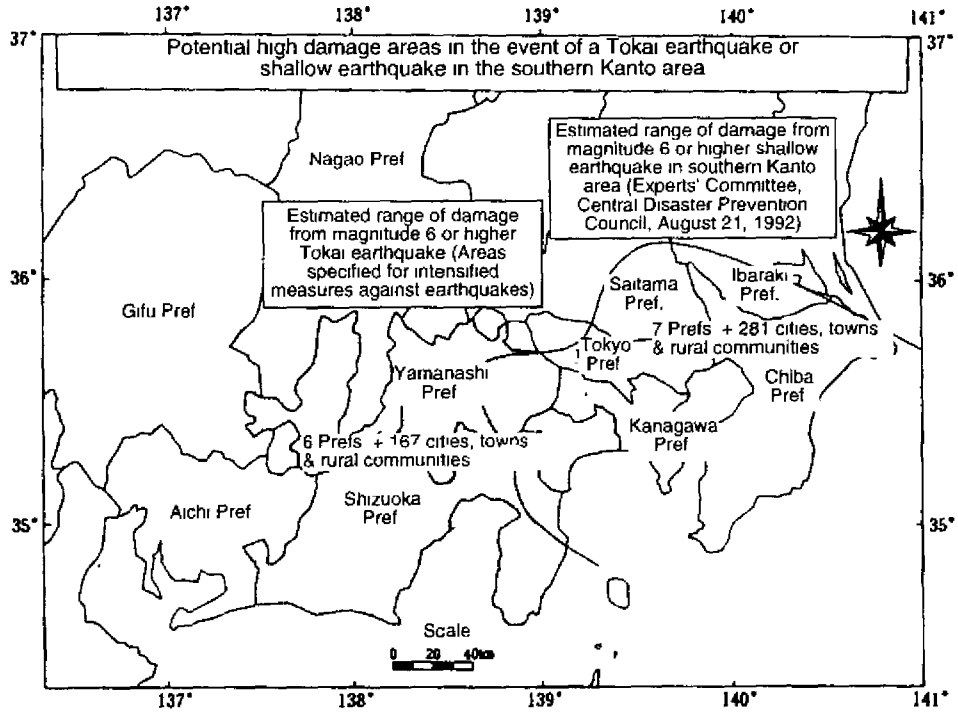
Much of Japan's population and business activities concentrate in the southern Kanto area. Because a large scale earthquake brings fear of widespread damage, Japan's Central Disaster Prevention Council adopted the Emergency Crisis Manual for Earthquakes in the Southern Kanto Area in December 1988 and the Guidelines on Countermeasures to Shallow Earthquakes in Southern Kanto Area in August 1992.

Based on the purport of this manual and these guidelines, instructions have been given to upgrade countermeasures to earthquake-triggered disasters by - for example - building and acquiring disaster prevention infrastructure, taking measures to prevent or at least minimize damage in urban earthquakes, building and upgrading wide area systems of assistance, securing emergency transportation, establishing a system of rescue and relief, setting up an information and public relations system, strengthening emergency disaster prevention measures, making people aware of disaster prevention, and staging disaster prevention drills together with surrounding areas.

(3) Staging general disaster response drills

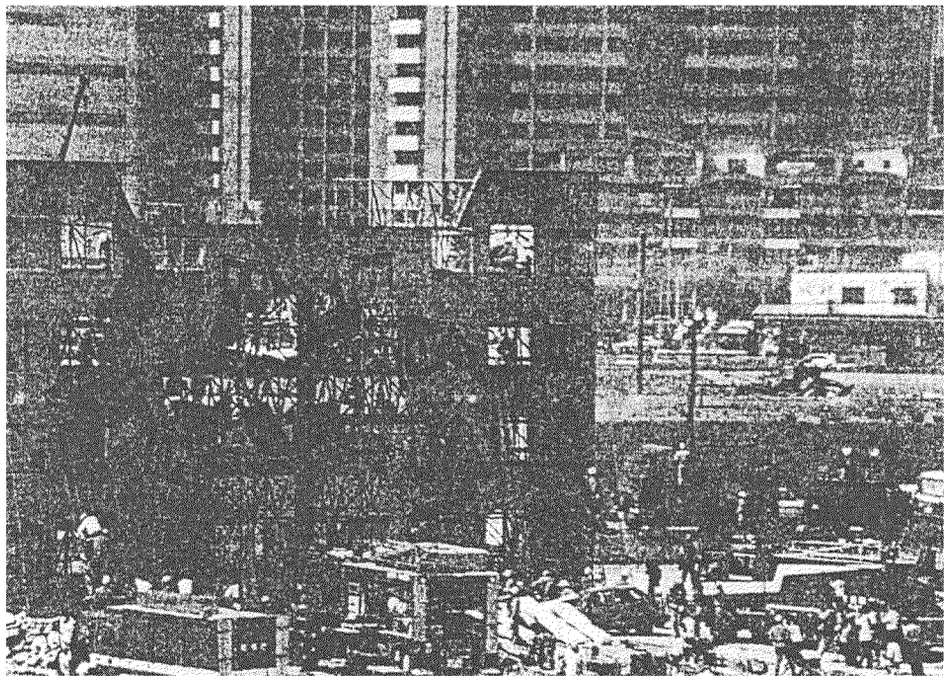
Based on the Basic Disaster Countermeasures Law and the Large Scale Earthquake Countermeasures Law, the government staged general disaster drills, assuming that a major earthquake occurred in the Tokai region and a major shallow earthquake in the southern Kanto region. The drills took place under the FY2001 Fundamental Principles of General Disaster Drills Guidelines that were determined by the Central Disaster Response Council for September 1, 2001. This day is known in as "Disaster Response Day".

Table 7-5 Potential high damage areas in the event of a Tokai earthquake or shallow earthquake in the southern Kanto area



Remarks

This map does not mean that a magnitude 6 or higher earthquake will occur simultaneously across the area enclosed in the line, in the event of a single shallow earthquake in the southern Kanto area. In the event of such an earthquake, it is estimated that a rough 30 km radius would be affected, but the degree of effect would vary according to locality.



Scene from general disaster prevention drills in Yokohama

The designated governmental organizations and relevant designated public corporations and prefectures and municipalities, including both areas specified for intensified measures against earthquakes and the areas surrounding, took part in these drills. The drill assuming that a major earthquake had occurred in the Tokai area was run to practice preventative measures prior to a disaster, while the drill assuming that a major shallow earthquake had occurred in the southern Kanto area was run to practice emergency measures after a disaster occurred.

Based on the Fire and Disaster Management Agency's disaster response plans and manual for creating an emergency response system, the Fire and Disaster Management Agency practiced calling personnel to duty, setting up and running a disaster response headquarters and identifying the state of emergency measures. Also, communication drills between the national government and the prefectures were also run, using radios to coordinate emergency assistance over a wide area.

The Fire and Disaster Management Agency also deployed satellite vehicles and support vehicles to drill sites to practice communication drills.

2. Countermeasures to Earthquake Disasters of Local Governments

In order to promote countermeasures to earthquake disasters, local governments are upgrading fire-fighting capacity, building evacuation shelters and routes, imparting disaster prevention education to local residents, stocking supplies, running disaster prevention drills, and drawing up and reviewing their disaster prevention plans (that which regards countermeasures to earthquaketriggered disasters). The importance of all these measures is that they are being constructively tailored to the situation of the local area.

(1) Current state of disaster prevention plans (that which regards countermeasures to earthquake-triggered disasters)

As of April 1, 2000, all Japan's 47 prefectures have an independent volume of countermeasures to earthquake-triggered disasters in their disaster prevention plans.

On the municipality level, 1,537 groups, towns and rural communities have an independent volume of countermeasures to earthquake-triggered disasters, while 943 groups have a separate chapter on these countermeasures and 130 categorize them under "other disasters".

Of those which have an independent volume on countermeasures to earthquake-triggered disasters, 19 prefectures and 619 cities (wards), towns and rural communities specify crisis action based on the degree of disaster declared.

(2) State of assistance agreements for times of disaster

Because widespread damage is believed to come from a large scale earthquake, local governments have agreed amongst themselves and with other forms of public organizations to assist one another in times of disaster, in order to swiftly and accurately respond to disaster. This form of cooperation was constructively utilized in the Hanshin - Awaji Earthquake and, after that experience, many more new agreements have been made on the prefectural level (Table 7-6), while wide-area support systems have established on the national level.

(3) State of evacuation points and routes

Every year, more evacuation points have been designated. As of April 1, 2001, 71,315 buildings were designated evacuation shelters in cities (wards), towns and rural communities across Japan (Table 7-7).

Also, 249 cities (wards), towns and rural communities have designated evacuation routes.

Table 7-6 State of assistance agreements between local governments and other public organizations

As of April 1, 2001

Area of agreement	Broadcast	Emergency assistance	Transportation	Disaster recovery	Supplies
Prefectures	47	37	38	36	35
Municipalities	118	666	241	345	480

Table 7-7 State of evacuation points (designation) in municipalities

As of April 1, 2001

Designated ev points	Area (ha)	By size			By usage		
		Size	Shelters	Area (ha)	Usage	Q'ty	Area (ha)
71,315	116,371	20 ha and over	676	40550	Schools (Gardens and athletic fields)	29,951	45,768
					Daycare and kinder-garten playgrounds	4,044	1,370
					Parks and squares	17,349	39,034
		10 ha to 20 ha	868	11,946	Riversides	321	5,370
					Athletic fields (Other than schools)	3,614	7,301
		Less than 10 ha	69,771	63,875	Shrine/Temple grounds	2,772	925
					Other	13,264	16,603

(4) State of stocked supplies and storehouses

In order to be prepared for disaster, local governments are stocking daily essentials such as food and drinking water, medicine and first-aid supplies, and equipment needed to recover from disaster. Not only this, but they have forging agreements with private businesses in order to secure distribution and stocks of these supplies.

There has been a particular increase in the quantity of stocked supplies since the Hanshin - Awaji Earthquake (Table 7-8).

To store supplies, 45 groups in prefectures use 1,262 storehouses, while 2,397 groups in municipalities have 16,761, as of April 1, 2001.

Also, 25 groups in prefectures rent 426 storehouses, while 149 groups in municipalities rent 1,170.

(5) Construction projects for disaster prevention infrastructure

In 2000, prefectures spent 210.518 billion yen to build or promote building of disaster prevention infrastructure. Also, municipalities spent 81.531 billion yen on disaster prevention infrastructure (Table 7-9).

Table 7-8 State of major stocked supplies

As of April 1, 2001

Supplies	Supplies stocked by public organization												
	Dried bread	Instant noodles	Rice	Canned food		Water	Candles	Flashlights	Blankets	Tents	Fencing	Portable toilets	Water purifiers
				Staples	Subsidiaries								
Prefectures	27	2	17	14	8	13	9	7	41	19	12	20	15
Municipalities	855	43	700	401	336	409	394	1,271	1,710	1,069	929	672	568
Supplies	Supplies stocked by private business												
	Dried bread	Instant noodles	Rice	Canned food		Water	Candles	Flashlights	Blankets	Tents	Fencing	Portable toilets	Water purifiers
				Staples	Subsidiaries								
Prefectures	13	20	22	11	15	13	9	15	20	2	1	1	0
Municipalities	119	210	315	128	204	160	163	193	235	72	36	58	19

Table 7-9 Construction projects for disaster response infrastructure

2000 (Units: 1 million yen)

Project	Prefectural expense		Municipal expense	
	National subsidy	No national subsidy	No national subsidy	No national subsidy
Build evacuation points and routes	12,890	52,141	5,246	7,365
Build governmental emergency radio system	225	11,609	11,648	18,744
Build supply storehouses	33	993	479	1,499
Build disaster response centers	–	2,617	1,333	5,366
Procure emergency-response equipment	299	1,576	302	3,027
Build anti-seismic water reservoirs	478	67	5,955	7,835
Procure emergency-response vehicles	–	–	125	122
Purchase earthquake observation equipment	–	71	64	8
Procure emergency-response supplies	–	405	24	3,927
Others	66,394	60,720	2,119	6,343
Subtotal	80,319	130,199	27,295	54,236
Total	210,518		81,531	

(6) State of disaster prevention drills and education

In 2000, 46 prefectures (excluding Hokkaido where a disaster occurred) and 1,229 municipalities staged general disaster prevention drills.

Prefectures staged drills assuming the need for wide area assistance and involved governmental organizations, national public organizations, fire-fighting organizations within the prefecture as well as emergency fire-fighting teams and self-defense forces. On the other hand, many municipalities imparted drills on their own which focused on initial response in a crisis situation such as calling personnel to duty and disseminating information, as well as practical exercises such as fire-fighting, evacuation drills, firstaid and so forth (Table 7-10).

Other than these drills, all prefectures and 1,529 municipalities have other educational projects aimed at raising awareness and teaching local residents about disaster prevention, which includes publishing and distributing pamphlets, holding seminars and showing movies.

Table 7-10 State of disaster prevention drills in municipalities

(2000)

Type of drills	General	Individual drills							
		Personnel call-to-duty	Information dissemination	Fire extinguish drill	Evacuation	First-aid	Food/ Water supply	Emergency supplies transport	Other
Total times imparted	1,478	517	1,188	1,051	780	1,042	612	49	285
Personnel involved	2,332,753	77,272	238,194	171,223	294,587	149,314	117,562	8,415	225,570
Organizations involved	1,229	316	432	208	228	165	107	33	98