

Overview of the 2020 White Paper on Fire Service

Materials created by the Fire and Disaster Management Agency were translated by the International Fire Service Information Center

**The Fire and Disaster Management Agency
(FDMA)**

[Special Feature 1]

Responses to Recent Large-scale Natural Disasters, and the Development of Fire and Disaster Prevention Systems

The damage from and response to the torrential rain in July 2020

[Extent of the Damage]

- Record heavy rain caused river floods, inundation, landslides, etc. in various areas, and **84 deaths and 2 missing persons, with more than 16,000 residential buildings damaged**, mainly in Kyushu (as of November 13, 2020).
- The isolation of some disaster-affected areas, damage to lifelines such as power and water outages, and transportation disruptions including the suspension of railroad services caused major disruptions in the lives of residents.

[Activities of Fire Service Agencies]

- The local fire department immediately conducted rescue and ambulance activities, which included the evacuation of residents, rescue operations using lifeboats as well as fire and disaster prevention helicopters, and searches for missing persons.
- The National Fire-Service Team, made up of **a total of 1,229 units containing 4,866 members, conducted activities, and rescued 369 people** over the 12 day period from July 4 to 15.
- The volunteer fire corps conducted rescue activities over an extended period, including searching for missing persons by boat, removing debris and driftwood, transporting supplies to villages isolated due to inundation, and conducting door-to-door visits to confirm the safety of residents.



Rescue activities with heavy machinery in Kuma Village, Kumamoto Prefecture (Courtesy of Shimonoseki Fire Department)

The damage from and response to Typhoon No. 10 (Haishen)

[Extent of the Damage]

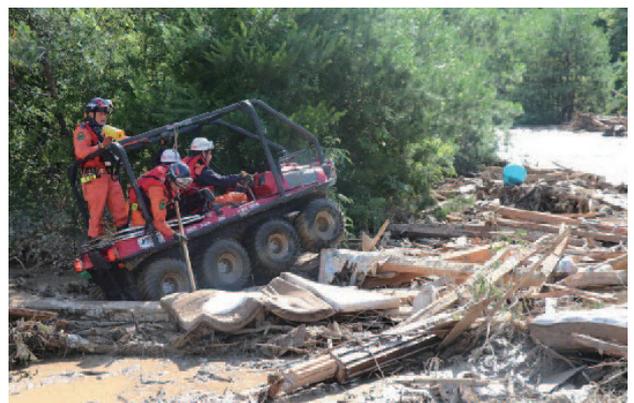
- Heavy rain and storms caused **3 deaths, 3 missing persons, and damage to more than 1,500 residential buildings**, mainly in Kyushu (as of November 13, 2020).

[Activities of Firefighting Agencies]

- The local fire department immediately conducted rescue and ambulance service activities, collected information from fire and disaster prevention helicopters, and searching missing persons by drone, etc.
- The volunteer fire corps called for early evacuation. In addition, particularly in Shiiba Village, Miyazaki Prefecture, they carried out sediment removal activities and searched for missing persons in rivers and dam lakes using drones and boats.

Efforts of the FDMA in “The three-year emergency response plan for disaster prevention, disaster reduction, and building national resilience”

- “The three-year emergency response plan for disaster prevention, disaster reduction, and building national resilience” was decided by the Cabinet on December 14, 2018 in order to maintain the functions of critical infrastructure, etc. in the event of a natural disaster, which is becoming an increasingly frequent and severe occurrence in recent years. Six measures were developed by the FDMA:
 1. Emergency measures related to **the National Fire-Service Team** for Disaster Response in order to respond to large-scale storms and floods and landslide disasters
 2. Emergency measures related to **aerial fire and disaster prevention systems** in order to respond to large-scale disasters
 3. Emergency measures related to **volunteer fire corps**, who play a central role in regional disaster prevention capabilities
 4. Emergency measures related to **the securing of disaster response functions of the government offices** where the disaster response headquarters are established, and the FDMA office
 5. Emergency measures related to **the securing of emergency communication measures** in local government offices, etc.
 6. Emergency measures related to **reliable information transmission to elderly households, etc.**



Search activities utilizing an amphibious buggy (Courtesy of Osaka Fire Department)

[Special Feature 2] COVID-19 Infection Control Measures

[Outbreak of COVID-19-infected patients and expansion status]

- Total number of the outbreak of COVID-19-infected patients in Japan is 149,913, total number of deaths is 2,171, and the number of serious cases is 488 (as of December 1, 2020)

[Initiatives taken by the firefighting agencies related to COVID-19 infection control measures]

- **Measures in emergency cases**
 - Request the fire department to call attention to COVID-19 infection and **to thoroughly disseminate the concrete procedure of the infection control measures in the ambulance services**
 - **Share information frequently with the related agencies such as the health centers, establish a communication system, and** request cooperation aimed for **inhibiting cases where emergency transport is difficult**
 - Utilizing the 2020 supplementary budget, **provide face masks, infection protective clothing, etc. to the fire department needing such supports**, for assuring safe transfer and transport of patient, etc. Further, utilizing the subsidy for maintenance of equipment and facilities of the National Fire-Service Teams, promote improvement and maintenance of ambulance as well as materials and machinery (isolator) for transporting patients, etc. in an isolated manner
- **Maintenance and securing the fire and disaster preventing system in the firefighting agencies**
 - Request the fire department **to consolidate the system with which the necessary work operation system can be continued**, including, to procure materials and machinery for infection prevention, to thoroughly take infection control measures in the fire department, and to prepare for cases if the number of firefighting members decreased due to an outbreak of infection, in addition to **thoroughly implement health control of the firefighting members**
 - Disseminate the examples of initiatives by the municipalities for sharing basic knowledge of the infection and for preventing spread of the infection by volunteer firefighters via the website of the FDMA
- **Measures related to the laws and ordinances on hazardous material safety and fire prevention**
 - Prepare the leaflet for **publishing and enlightening the general precautions in light of fire prevention**, since opportunities to use alcohol for sterilization of hands and fingers have increased, which is included in the hazardous materials under the Fire Service Act
 - Inform of facilitating quick and flexible operations of the fire prevention laws and ordinances for responding to the issues such as urgently increasing production of the alcohol for sterilization, while securing safety
 - Prepare the leaflet for disseminating precautions for fire prevention about **the splash-prevention sheets** to be installed in the shop counters, etc.
 - Revise the related laws and ordinances to take measures for reducing face-to-face procedure as much as possible, including **the abolition of affixing the stamp** of the applicant
- **Infection control measures in the event of disaster**
 - In connection with **the operation of places of refuge**, request that the places of refuge **should be open as many as possible, thoroughly implement** the basic **infection control measures** including washing hands, proper etiquette when coughing, etc., and **secure sufficient space**, etc.
 - Notify the fire department of **thorough implementation of the infection control measures in the rescue activities in the event of a natural disaster**
 - Notify of thorough implementation taking the infection control measures when contacting with the injured and/or patients in the operations of **the National Fire-Service Teams**, checking the health condition and measuring body temperature of the team members, avoiding the “3Cs” (Closed spaces, Crowded places, Close-contact settings) on occasions of meeting, dining, nap, etc.



The leaflet for publishing and enlightening on the precautions for handling sterilizing alcohol

[Special Feature 3]

Enhancing and Strengthening Regional Disaster Prevention Capabilities with Volunteer Fire Corps Playing a Central Role

Volunteer fire corps play a central role in securing the safety and security of local residents as the core local fire and disaster prevention system in the region, but **the number of volunteer firefighters** is declining year by year, and the number of members is **818,478** as of April 1, 2020 (down by 13,504 from the previous year).

[Policies to enhance and strengthen volunteer fire corps]

(Creation of discussions in municipalities, etc.)

- In order to further enhance and strengthen regional disaster prevention capabilities, the FDMA requests municipalities **to hold solid discussions together with a diverse range of local people, including residents, business establishments, volunteer fire corps, and voluntary disaster prevention organizations.**

(Promoting enrollment in volunteer fire corps)

- To promote the enrollment of students, women, employees, and public officials into the volunteer fire corps, efforts are being made such as **the “Volunteer Fire Corps Cooperation Establishment Display System”** and **the “Certification System for Students’ Volunteer Fire Corps Activities.”**

(Improving treatment of volunteer firefighters)

- The FDMA **requests** that annual compensation and dispatch allowances **be raised, particularly by organizations with low allowances.**
- We will hold **a study group** on improving the treatment of volunteer fire corps, and consider measures to secure the number of volunteer firefighters.

(Enhancing and strengthening equipment, etc.)

- **The fire pump vehicles equipped with rescue equipment and materials are lent** to volunteer fire corps **free of charge to support training, etc.**
- **The Volunteer fire corps facility development subsidy** (volunteer fire corps rescue capability improvement equipment emergency development project) enriches the equipment of volunteer fire corps and improve their disaster response capabilities.
- A new mutual aid program (My Car Mutual Aid) has been established to compensate volunteer firefighters for damage their private cars and other vehicles used during disaster activities, without the need for individuals to bear the cost.



Equipment subject to subsidy for Volunteer fire corps facility development



Recruiting poster for Volunteer firefighters

**[Special Feature 4]
Utilization of AI, etc. in the Society 5.0 Era**

[Direction of research and development]

- The major goal of the “Fire and Disaster Prevention Science Technology Sophistication Strategy Plan 2018” was to promote societal implementation of research results in addition to addressing the increasing risk of natural disasters and the vulnerability of society.
- An emphasis was placed on AI and robots, etc. in the Promotion Program for Scientific Fire and Disaster Prevention Technologies.

[State of research and development]

(Deployment of firefighting robot systems)

- **A firefighting robot system (Scrum Force) was developed**, and **a Special Equipment Unit** equipped with this system **was established** at the Ichihara City Fire Department in May 2019.
- Alongside the introduction of the latest technologies such as Quasi-Zenith Satellites, specifications will be compiled for mass production.



Scrum Force

(Research and development of ambulance crew optimization toward the prompt ambulance service transport)

- A method was developed for the ambulance crew **to reduce the time required to reach the scene**. **Areas where high ambulance service demand is expected** are predicted using a mesh in real time based on the results of finalizing the relationship between fire department ambulance service activity data and weather forecasts utilizing AI, and **the medical crew is transferred and deployed in advance**.

(Research and development of G-spatial information system for firefighting support)

- A system has been developed to contribute to efficient and safe firefighting activities in large-scale facilities by sharing the location information of visitors and images of fire scenes captured by G-spatial information (indoor positioning system) and ICT among firefighters and members of fire defense organizations for self-protection.

**[Special Feature 5]
Initiatives for facilitating the installation of individual home receivers for disaster prevention administration radio system, etc.**

[Effectiveness of the home receivers]

- **A home receiver, etc.** installed in a house is an **effective** information communication method **for communicating information reliably to the residents, in the event of heavy rainfall or typhoon, or when the voices and sounds from the outdoor speaker cannot be clearly heard**

[Installation status of the home receivers, etc.]

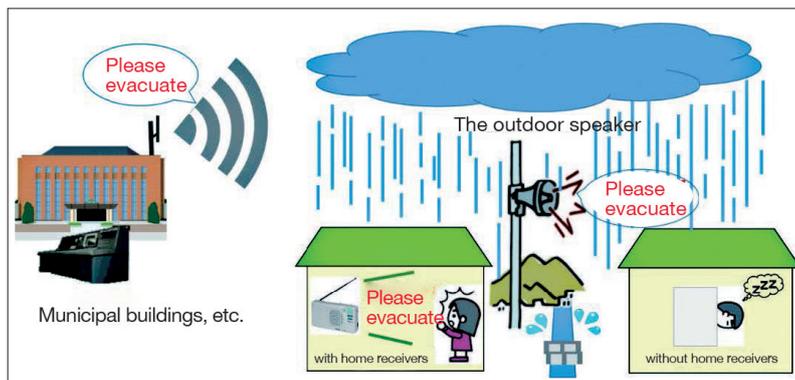
- Installation rate of disaster prevention administration radio system, etc. in all the municipalities in Japan is 87.0% as of the end of March, 2020
- 75.4% of all the municipalities in Japan have introduced the home receivers, etc.

[Initiatives for facilitating the installation]

- Facilitate the installation by utilizing the commercial bonds for emergency disaster prevention and disaster reduction, or by utilizing the special tax allocation
- Establish the standardized model with respect to the functions of the home receivers for the purpose of mass-production and cost reduction of the home receivers
- Dispatch the advisers who can give advice on the means for communicating disaster information
- Lend the home receivers, etc. for free to the municipalities in which the home receivers, etc. are not fully installed, by utilizing the 2019 and 2020 supplementary budgets



A sample of home receivers



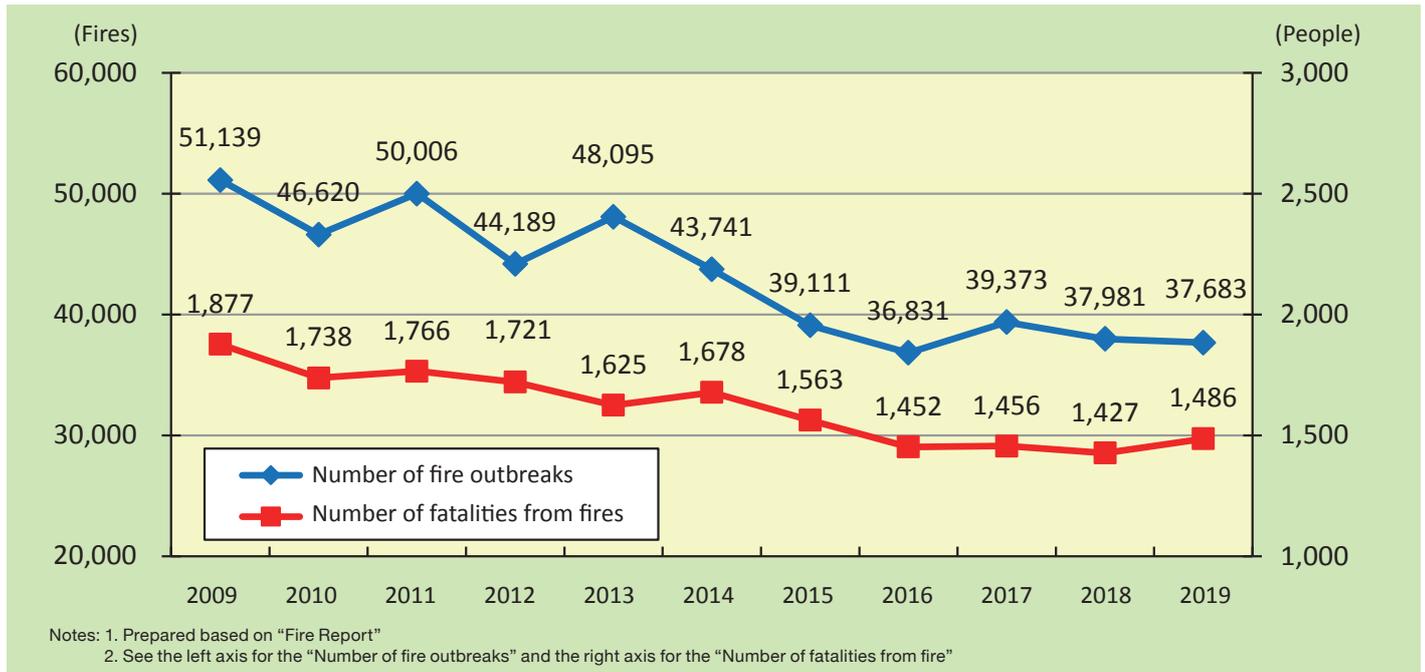
The necessity of home receivers, etc.

Current Status and Activities concerning Fire and Disaster Prevention

Current Status of Fires and Recent Trends (Chapter 1, Section 1)

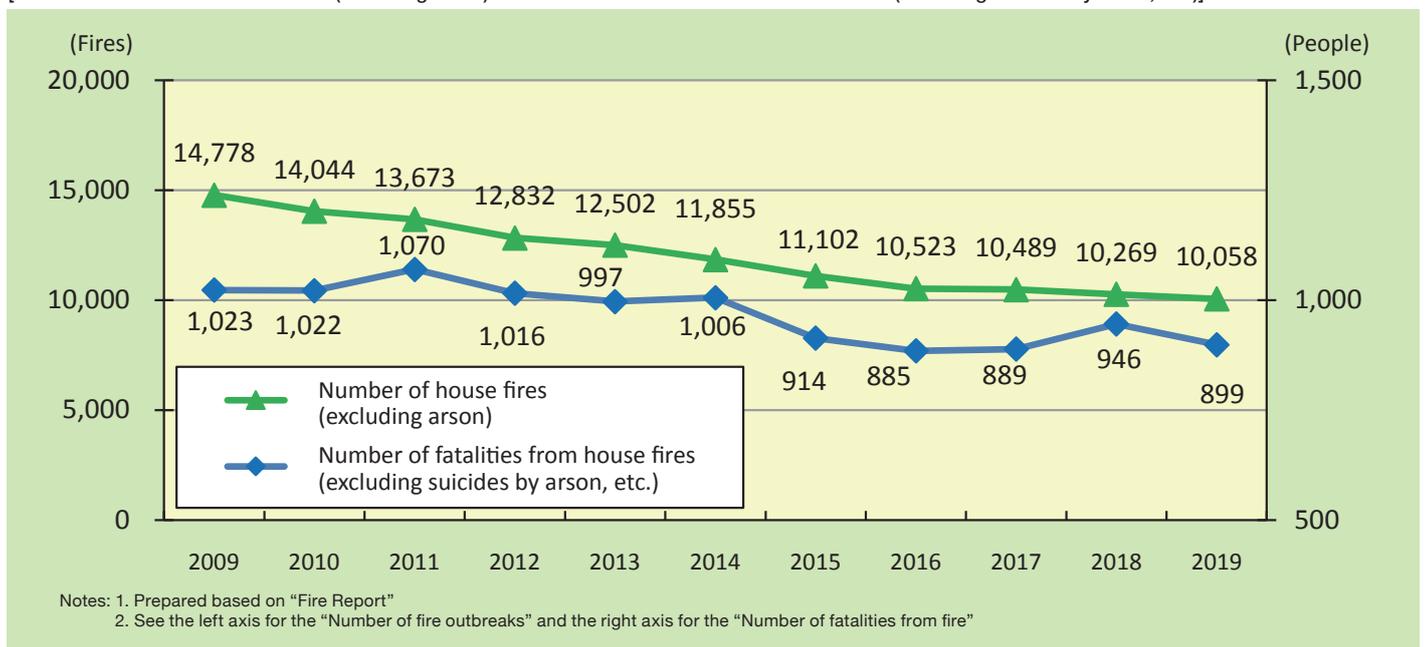
- The number of fire incidents and the number of fatalities from fires have been gradually trending downward over the past 10 years.
 - **The number of fire incidents** in 2018 was **37,683** (down by 298 from the previous year), equating to **73.7% versus 10 years ago**.
 - **The number of fatalities from fires** was **1,486** (up by 59 from the previous year), equating to **79.2% versus 10 years ago**.
 - There were 3,581 fires caused by cigarettes, which were the primary cause of fires (bonfires were the second and stoves were the third).

[Trends in the number of fire incidents and the number of fatalities from fires]



- **The number of house fires (excluding arson)** in 2018 was **10,058 fires** (down by 211 from the previous year), equating to 68.1% versus 10 years ago.
- **The number of fatalities from house fires (excluding suicides by arson, etc.)** was **899** (down by 47 from the previous year), equating to **87.9% versus 10 years ago**.
- The installation rate for home fire alarms is 82.6% (as of July 1, 2020).

[Trends in the number of house fires (excluding arson) and the number of fatalities from house fires (excluding suicides by arson, etc.)]



Status of Fire Service Organizations (As of April 1, 2020) (Chapter 2, Section 1)

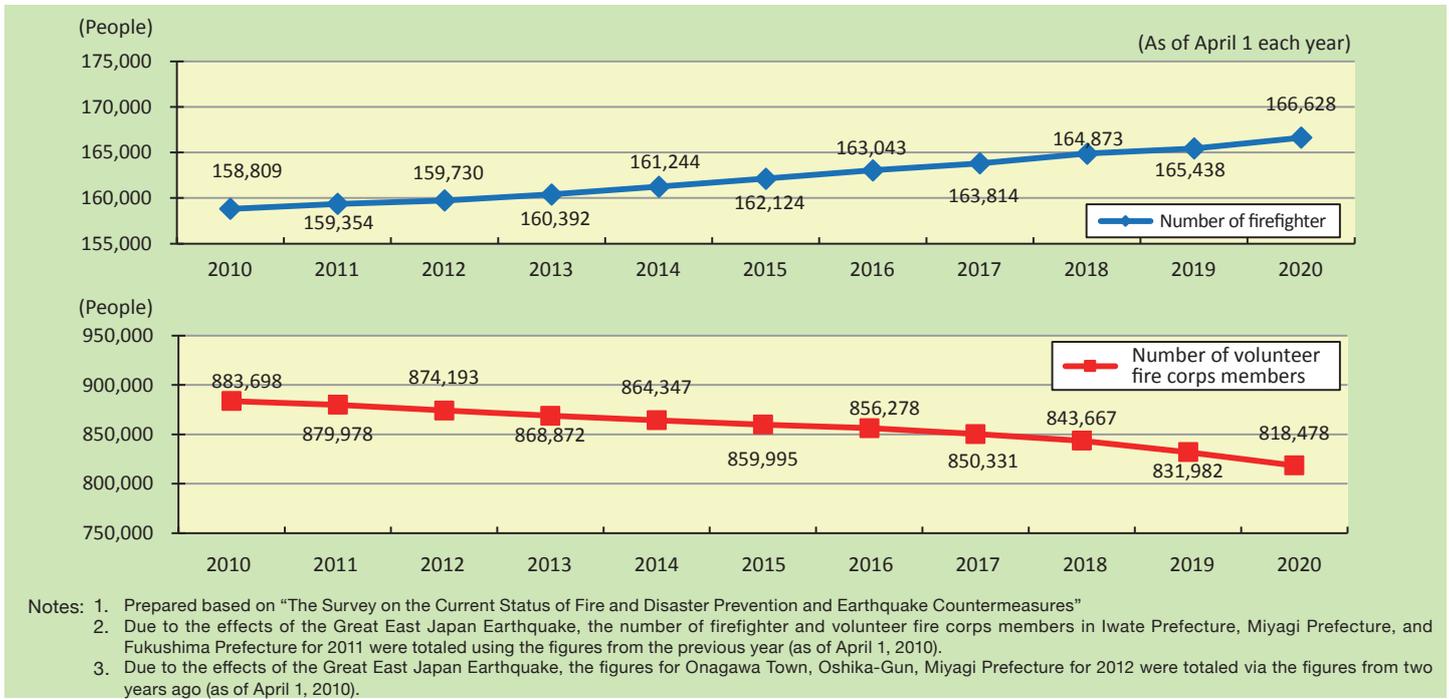
○ Fire departments

- 726 fire departments and 1,719 fire stations have been established, with **the number of firefighters totaling 166,628**
- The number of firefighters increased compared to the previous year (an increase of 1,190 people), equating to **104.9% versus 10 years ago**.

○ Volunteer fire corps

- The number of volunteer fire corps is 2,199 and **the number of members is 818,478**. Volunteer fire corps have been established in every municipality.
- The number of volunteer fire corps members decreased compared to the previous year (a decrease of 13,504 people), equating to **92.6% versus 10 years ago**.

[Trends in the number of firefighters and volunteer fire corps members]

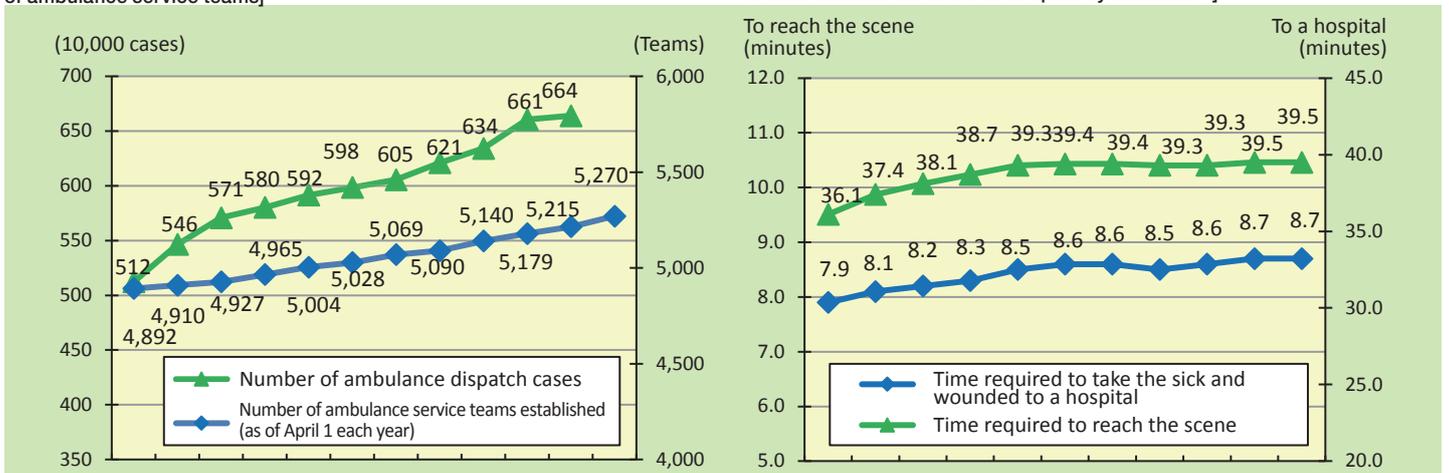


Implementation Status of Ambulance Services (Chapter 2, Section 5)

- The number of times ambulances have been dispatched for emergencies has kept on an upward trend. In 2019, they were dispatched at **a record high of around 6.64 million**, which is **roughly a 30% increase compared to 10 years ago**.
- The number of ambulance service teams established as of April 1, 2020 is **5,270 teams (an increase of 55 teams compared with the previous year)**, which is **roughly a 7% increase compared to 10 years ago**.
- **The average time required to reach the scene was 8.7 minutes** in 2019 (0.8 minutes longer than 10 years ago).
- **The average time required to take the sick and wounded to hospital was 39.5 minutes** in 2019 (3.4 minutes longer than 10 years ago).

[Trends in the number of ambulance dispatch cases and the number of ambulance service teams]

[Trends in the time required to reach the scene and the time required to take sick and wounded to hospital by ambulance]



- Notes: 1. Prepared based on "The Annual Reports on Ambulance Service"
 2. In the graph on the left, see the left axis for the "number of ambulance dispatch cases" and the right axis for the "number of ambulance service teams established (as of April 1 each year)".
 3. In the graph on the right, see the left axis for the "time required to reach the scene" and the right axis for the "time required to take someone to a hospital".
 4. Due to the effects of the Great East Japan Earthquake, the figures for the right-hand graph were totaled by excluding the data for the fire department at the Otsuchi District Administrative Affairs Association in Kamaishi and the fire department in Rikuzentakata City in 2010 and 2011.

About Earthquake and Fire Prevention

- **When a large-scale earthquake occurs**, it is likely to occur fires simultaneously in multiple places, resulting in **large-scale fire in densely built-up areas, etc. with a high possibility**. Occurrence of so-called **“fire by energization”** is also a concern, which arises when re-energizing after the restoration from the electric outage.
- In the FDMA, introduce the mechanisms of the earthquake/fire occurrence based on the past incidents, and **prepare visual materials and leaflets** for disseminating the needs of taking **fall-prevention measures for furniture**, installing **vibration sensing breakers**, etc., as the daily measures against earthquake/fire.



The leaflet to inform people about earthquake and fire prevention

Initiatives for Expanding Employment of Female Firefighting Officers

As it is expected that the number of female firefighting officers will increase in the field of firefighting and that they will play actively leading to improvements of services for the residents and strengthening of the firefighting organizations, issue a notification to the fire department requesting initiatives aimed for securing female firefighting officers

- Example in Shimamoto-cho fire department (Osaka prefecture)
Employed one female firefighting officer in 2019. Utilizing the special tax allocation for improving the female-only facilities, worked on securing the environment where female firefighting officers can conduct their firefighting work at ease, by **improving the female-only facilities** (nap room, bathroom, lavatory, etc.).
- Example in Matsuura-city fire department (Nagasaki prefecture)
Set up female-only facilities, and held **an internship for women only** in June 2018, for the purpose of promoting workplaces where women can work comfortably. Internships and information communication on Facebook worked well, resulting in an increase of the number of women candidates to 5 in 2019, while there was no women candidate in the previous year, and finally employed 2 women.



Women-only facilities that have been improved



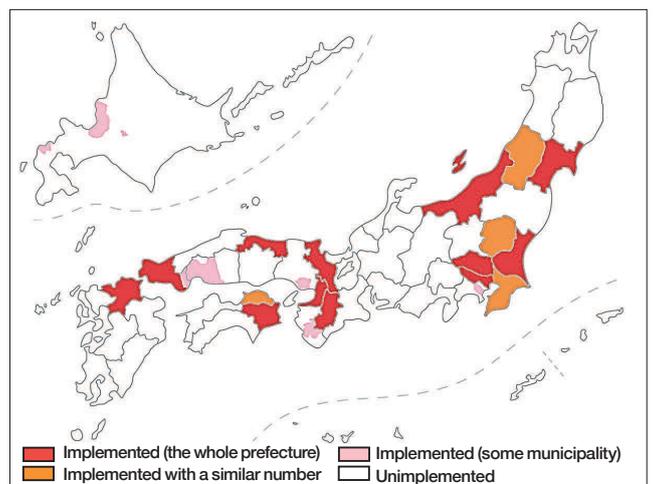
Scene of an internship for women only

Promotion of the Ambulance Advice Center Project (#7119)

In addition to ensuring that the limited number of ambulances in the region are able to reach injured and sick people with urgent symptoms as quickly as possible, we will promote the nationwide implementation of the "Ambulance Advice Center project (#7119)," a telephone consultation service to assist residents in seeking medical care in a timely and appropriate manner.

[Dissemination Status and effects of the ambulance advice center project (#7119)]

- The project has been **implemented in 17 regions of Japan** as of October 1, 2020.
- From a firefighting perspective, effects have been confirmed such as the detection and rescue of latent patients with severe symptoms, a reduction in the transfer ratio of patients with mild symptoms, and control of non-urgent ambulance services dispatch, etc. have been confirmed.
- From a medical perspective, effects have been confirmed such as a reducing in the burden on medical institutions and the optimization of medical costs have been confirmed.
- Local government staff engaged in operation have been dispatched as an adviser **utilizing the dissemination promotion adviser system**, which began in May 2017 and **37 advisers** in total have been dispatched to **16 regions** as of the end of April 2020.
- **PR activities targeted at a wide range of people have been conducted utilizing internet media** in order to improve the awareness and understanding of residents regarding #7119 and promote its utilization.



Status of dissemination of the Ambulance Advice Center project (#7119)

Efforts to Ensure the Safe Operation System of Fire and Disaster Prevention Helicopters

[Repeated fire and disaster prevention helicopter crashes]

- 4 fire and disaster prevention helicopter crashes have occurred since 2009, and 26 firefighters, etc. have died (August 2018: Gunma Prefecture, March 2017: Nagano Prefecture, July 2010: Saitama Prefecture, September 2009: Gifu Prefecture).

[Standards for the operation of fire and disaster prevention helicopters]

- Based on the discussions at the “**Conference on Standards for the Operation of fire and disaster prevention helicopters operation**”, the “**Standard on fire and disaster prevention helicopter operation**” was announced as a recommendation by the commissioner of the FDMA, concerning the two-pilot system, requirements for the captain and co-pilot, training, etc.

[Formulation of onboarding requirements and training review program]

- In March 2020, based on the results of these studies and the items indicated in the standards, the operational organizations formulated a plan for the requirements for and training of fire and disaster prevention helicopter pilots. The “**Onboarding requirements and training review program for fire and disaster prevention helicopter pilots**” was also formulated as a guideline for implementation.

Revision of the action plan of the National Fire-Service Teams in the event of the Nankai Trough Earthquake

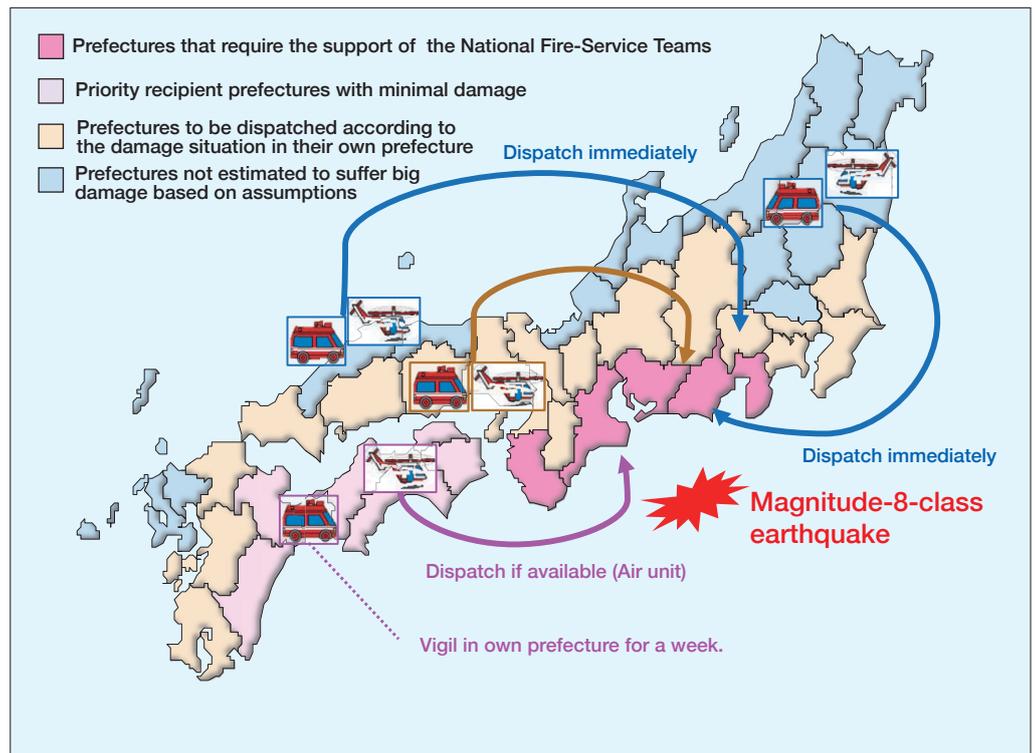
[Action plan of the National Fire-Service Teams]

- For the large-scale earthquakes such as the Nankai Trough Earthquake, Tokyo Inland Earthquake, etc., formulate the action plan so that the director of the FDMA can dispatch the National Fire-Service Teams on a nationwide scale to swiftly and properly act in the damaged area.

[Features of the revised action plan]

- Features of the action plan for the National Fire-Service Teams in case of the Nankai Trough Earthquake given the revised “Plan for the concrete actions to take emergency measures in case of the Nankai Trough Earthquake” as of May 29, 2020 are as follows:

1. If the Nankai Trough Earthquake occurs, swiftly dispatch all the available National Fire-Service Teams altogether
2. Based on the pre-formulated support organization plan, swiftly decide where to dispatch
3. Change the dispatch destination flexibly based on the damaged status, etc.
4. Instruct the battalion of other prefectures not estimated to suffer big damage to go into action once this action plan is applied, so that quick initial action can be ensured
5. Prepare to be able to swiftly go into action for traffic disruption or to dispatch from a remote area, assuming various means of going ahead in advance, such as going ahead utilizing a ferry or transport of vehicles of the National Fire-Service Teams utilizing the vehicles of the Self-Defense Forces
6. When a subsequent earthquake occurs, change the destination to provide support, move the teams, etc., as it becomes necessary, taking into consideration the damaged status due to the subsequent earthquakes, the status of the area damaged by the first earthquake, etc.



Outline of the dispatch on the Current Status of Fire and Disaster Prevention

[Special Feature 1]

Responses to Recent Large-scale Natural Disasters, and the Development of Fire and Disaster Prevention Systems

1. The damage from and response to the torrential rain in July 2020
2. The damage from and response to Typhoon No. 10 (Haishen)
3. Efforts of the FDMA in “The three-year emergency response plan for disaster prevention, disaster mitigation, and building national resilience”

[Special Feature 2]

COVID-19 Infection Control Measures

1. Outbreak of COVID-19-infected patients and expansion status
2. Initiatives taken by the firefighting agencies related to COVID-19 infection control measures

[Special Feature 3]

Enhancing and Strengthening Regional Disaster Prevention Capabilities with Volunteer Fire Corps Playing a Central Role

1. Current status of volunteer fire corps
2. Policies to enhance and strengthen volunteer fire corps

[Special Feature 4]

Utilization of AI, etc. in the Society 5.0 Era

1. Direction of research and development
2. State of research and development

[Special Feature 5]

Initiatives for facilitating the installation of individual home receivers for disaster prevention administration radio system, etc.

1. Multiplexing and diversification of means of communicating disaster information to residents
2. Effectiveness of the individual house receivers
3. Installation status of the individual house receivers, etc.
4. Initiatives for facilitating the installation

[Chapter 1]

Current Status of and Challenges for Disasters

- Section 1. Fire Prevention
- Section 2. Countermeasures to Disasters at Facilities for Hazardous Materials
- Section 3. Countermeasures to Disasters at Petroleum Industrial Complexes
- Section 4. Countermeasures to Fires in Forests and Fields
- Section 5. Countermeasure to Storm and Floods
- Section 6. Countermeasures to Earthquake
- Section 7. Countermeasures to Nuclear Disasters
- Section 8. Countermeasures to Other Disasters

[Chapter 2]

Fire and Disaster Prevention Organizations and Activities

- Section 1. Fire Service Structure
- Section 2. Promotion of Integration of Fire Department
- Section 3. The Activities of Firefighting Personnel
- Section 4. Education and Training Structure
- Section 5. Ambulance Service System
- Section 6. Rescue System
- Section 7. Aerial Fire and Disaster Prevention System
- Section 8. Integrated Fire Service Support and National Fire-Service Team for Disaster Response
- Section 9. The Disaster Prevention Systems of National and Local Government
- Section 10. Promoting the Computerization of Fire and Disaster Prevention

[Chapter 3]

Responses for Public Safety

- Section 1. Efforts for Public Safety
- Section 2. Response to the Case of a Ballistic Missile Launch by North Korea

[Chapter 4]

Voluntary Fire and Disaster Prevention Activities and Building Communities that are Resistant to Disasters

[Chapter 5]

Responding to International Challenges

[Chapter 6]

Research and Development on Science and Technology for Fire and Disaster Prevention

[Attachment]