

# A Comprehensive Study on the Case of Declaring Special Disaster Zones in Korea

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**Abstract:** The purpose of this study is to find out the characteristics of special disaster zone by period, disaster type, and region of declaration through consideration of the basic contents of special disaster zone and analysis of current status. Special disaster zone is a region where support is provided at the national level when it is difficult to manage a disaster with the capacity of a local government itself. As a result of the analysis, special disaster zones are consistently declared every year in Korea, and in the case of natural disasters, declarations are concentrated in a specific month. In addition, changes in the frequency of declaration according to government and the period between the date of occurrence of a disaster and the date of declaration of a special disaster zone were explored. In order to find out the characteristics of each type, natural disasters and social disasters were analyzed separately, and to find out the characteristics of each region, GIS was used for analysis. Through this study, it can be expected to induce systematic follow-up empirical research on special disaster zones

**Keywords:** special disaster zone; natural disaster; social disaster; disaster recovery

## 1. Introduction

Along with the large-scale and complexity of natural disasters that occur every year such as typhoons, heavy rains, and heavy snow, the frequency of new types of disasters such as Sewol-Ferry sinking accident, infectious diseases such as COVID-19, and Itaewon stampede accidents increases, rapidly entering a dangerous society.

In order to minimize damage from such disasters, the disaster management process of mitigation and preparedness before the occurrence of a disaster, response and recovery after a disaster can be said to be very important. Among them, in the response and recovery stage, activities such as relief and emergency recovery of victims, medical support, removal of debris, damage assessment, and subsidies are carried out.

Special disaster zone is region that can receive national support for effective recovery of severely damaged areas in the response and recovery stage of disasters. Along with natural disasters that occur repeatedly every year, new types of disasters frequently appear, and as the scale and damage gradually increase, Special disaster Zone have been steadily declared about 1.8 times a year on average since they were first declared in 1995. In addition, the maintenance and discussion of related laws and systems are continuously progressing.

Policy studies on the improvement of the Special disaster zone system and some studies in connection with other research topics have been conducted, but research on the Special disaster zone itself is insufficient. Therefore, this study aims to find out the characteristics of each period, type, and region through analysis of all cases of Special disaster zone declared so far along with basic consideration of Special disaster Zone. In addition,

we hope to induce systematic follow-up empirical research on Special disaster Zone through these basic studies.

## 2. Materials and Methods

This study conducted a literature review on related laws and administrative data, such as 「Framework Act on the Management of Disasters and Safety」, to understand the basic contents of Special disaster Zone. In addition, to analyze the status of the declaration of Special disaster Zone, related administrative data and websites were referenced based on the contents of the natural disaster yearbook and social disaster yearbook, which are national statistical data on disasters.

In this study, an analysis was conducted on 53 cases of declaration of Special disaster zone declared from 1995 to 2023, when the first Special disaster zone was declared. The analysis data were modified, processed, and used according to the purpose of the study using data provided by government-approved institutions such as the natural disaster yearbook and social disaster yearbook. Statistical analysis and GIS analysis were conducted through the analysis data to investigate the characteristics of Special disaster zone by period, type, and region.

## 3. Special Disaster Zone

Special disaster zone is an area declared by the president in recognition of the need for special measures to effectively deal with damage or have a significant impact on the maintenance of national well-being and social order due to a certain scale of disaster. If disaster recovery is difficult with the local government's own capabilities, it will be supported at the national level.

Starting with the declaration of the Sampoong Department Store collapse as a Special disaster zone immediately after the incident in 1995, a total of 53 special disaster zones have been declared to date, including 40 cases of natural disasters and 13 cases of social disasters. In 2002, the 15th Typhoon Rusa resulted in damage in certain areas, leading to their designation as special disaster zones.

Previously, special disaster zones were designated at the Si/Gun/Gu level, but there were cases where certain Eup/Myeon/Dong that suffered significant damage were excluded from the designation (Office for Government Policy Coordination, 2017). In response to this, the 2018 amendment to the enforcement ordinance allowed for the assessment of damage on Eup/Myeon/Dong level.

**Table 1.** Procedures, targets, and details of support for the declaration of SDZ

<b>Declaration</b>	Director of Central Disaster and Safety Countermeasures Headquarters → Deliberation by Central Safety Management Committee → Proposal → Presidential Declaration	
<b>Lift a Declaration</b>	The current law does not specify the details of the lift a declaration	
<b>Targets</b>	Natural Disaster	Si/Gun/Gu where damage exceeds 2.5 times of the damage standard amount subject to national treasury support. Eup/Myeon/Dong where damage exceeds 1/4 of the standard damage amount for state subsidies.
	Social Disaster	Disasters recognized as requiring support at the national level because it is difficult to manage disasters with the administrative or financial capabilities of local governments
<b>Details of Support</b>	A disaster deemed necessary to take special measures at the national level for the effective recovery and recovery of severe damage, such as loss of living base due to the occurrence of a disaster	
	Administrative, financial, financial, and medical special support necessary for emergency response and disaster relief and recovery	
	Natural Disaster	Along with additional support from the state, support for disaster relief, livelihood safety, and recovery projects.
	Social Disaster	Livelihood stabilization support, financial indirect support, damage recovery support, etc.

**Table 2.** Previous Study on SDZ

Researcher	Research Year	Main Content
Jung, Hwang	2012	Although the damage is currently the same area, it is often excluded from the declaration of a special disaster zone Quantitative criteria for declaring a special disaster zone according to the actual scale of damage are required
Lee	2014	Pointing out problems in the actual state of intervention in the informal process and execution of support funds in declaring special disaster zones
KDPA	2017	Suggestion of the need to expand the unit declared as a special disaster zone (Si/Gun/Gu unit → Si/Gun/Gu + Eup/Myeon/Dong)
KDPA	2021	Establishment of special disaster zones by eup, myeon, and dong units Establishment of government support standards Need to diversify criteria for declaring special disaster zone

#### 4. Current Status of Special Disaster Zone Declaration

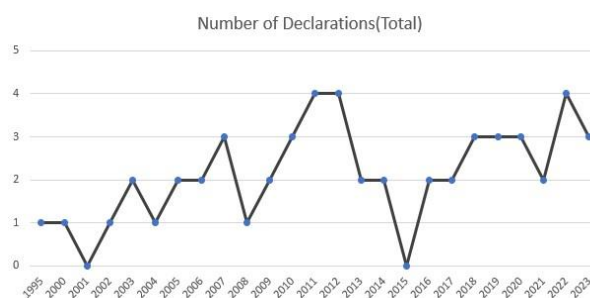
Since the initial declaration in the Seocho District of Seoul following the Sampoong Department Store collapse in 1995, a total of 53 special disaster zones have been declared in South Korea, with the latest being the Gangneung wildfire in April 2023. This indicates that large-scale disasters requiring the declaration of special disaster zones have consistently occurred, with an average of approximately 1.83 declarations per year.

This study analyzed the declaration status of special disaster zones by period, disaster type, and region through the collected data. Specifically, through the analysis of declaration cases by year and month, the characteristics of each period and the number of declarations by president who has the authority to proclaim were examined. In addition, disasters were classified by detailed type to explore their characteristics, and finally, the number of declarations of special disaster zones by region was investigated.

##### 4.1. Current status by period

When the number of special disaster zone declarations is classified by year, since the official introduction of the special disaster zone system in the 2000s, declarations have been made every year except for 2015. Due to the nature of annual natural disasters such as typhoons and heavy rainfall, the number of declarations for these types of disasters has generally been higher than for social disasters. In 2011, which experienced significant damages from heavy snow and heavy rain, the highest number of declarations occurred. special disaster zones for social disasters are rarely declared, but they have also been consistently declared. In the past five years alone, there have been six declarations, which is close to half of the total number of declarations for social disasters.

In the analysis of special disaster zone declarations by year, no visible pattern of increase or decrease could be observed. This irregular pattern of special disaster zone declarations appears to stem from the key characteristic of uncertainty in disasters.

**Figure 1.** Current Status of Declaration of SDZ by Year

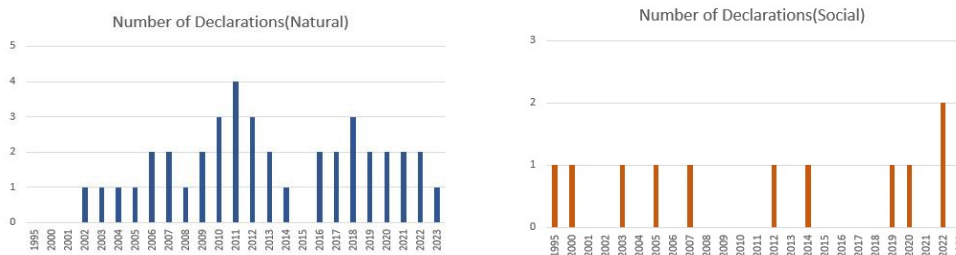


Figure 2. Current Status of Declaration of Natural / Social Disaster SDZ by Year

When the number of special disaster zone declarations is classified by month special disaster zones were declared in every month except for May and June. Particularly, during the summer months of July, August, and September, which are prone to wind and water-related damages, the frequency of special disaster zone declarations was high.

Unlike natural disasters that tend to occur during specific periods, the declarations of special disaster zones for social disasters were dispersed. This can be attributed to the fact that social disasters, such as the Sampoong Department Store Collapse, the Daegu Subway Fire Disaster, and Hebei Spirit Oil Spill Accident, are less influenced by climate factors compared to natural disasters. Most of the special disaster zones declared in April were related to forest fire, it shows the reality that large forest fires are frequently damaged due to dry weather and wind in spring.

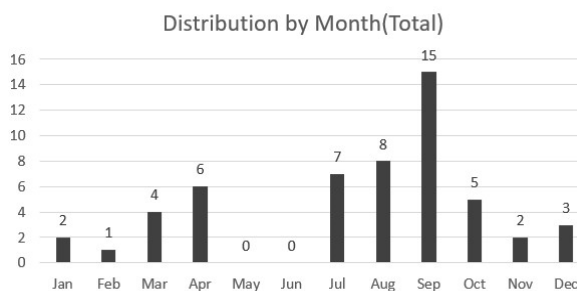


Figure 3. Distribution by Month

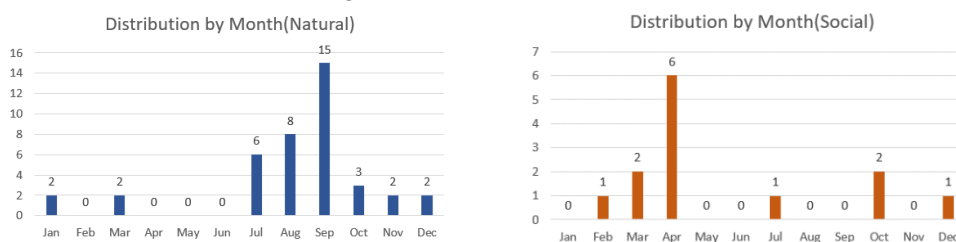
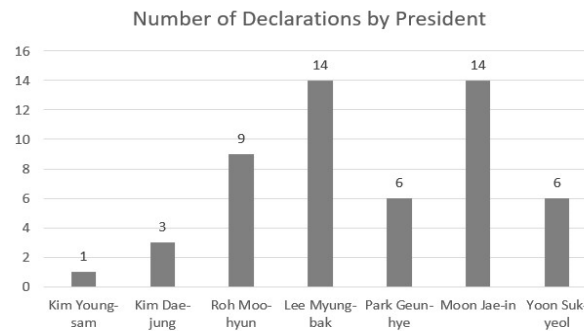


Figure 4. Distribution by Month (Natural / Social Disaster)

From the collapse of Sampoong Department Store during the presidency of Kim Young-sam to the presidency of Lee Myung-bak, the number of declarations of special disaster zones by administration steadily increased. During President Park Geun-hye's administration, there was a temporary decrease in the number of declarations. However, under the Moon Jae-in government, the number of declarations increased again due to large-scale natural disasters, forest fires, and the COVID-19 pandemic. Under the administration of President Yoon Seok-yeol, a total of six special disaster zone declarations have been made, but as this occurred in the first year of their presidency, the possibility of further increases cannot be ruled out.

Excluding President Park Geun-hye's tenure, the increase in the number of special disaster zone declarations by each administration can be attributed to the emergence of new types of large-scale disasters occurring in combination, leading to escalating damages. Additionally, changes in declaration criteria due to institutional improvements and a growing reliance on demands and expectations for Special Disaster Zone declarations, which may be influenced by informal factors such as political public opinion shaping, can also contribute to the increase (Lee, 2014).



**Figure 5.** Current Status of Declaration of SDZ by Government

Next, the period between the day the disaster occurred and the day the special disaster zone was declared was examined. The average of the special disaster zone declaration period after the occurrence of a disaster was 14.06 days, with the earliest declaration taking one day and the latest declaration taking 55 days. Natural disasters were declared on average 15.68 days after the occurrence, while the average declaration period for social disasters was 9.08 days, indicating a relatively faster declaration compared to natural disasters. In the case of COVID-19, there was a 55-day delay in declaring special disaster zones following the initial patient case in the country, due to the time gap between the onset of community transmission and the escalation of its severity. Therefore, excluding COVID-19, the average declaration period for social disasters decreases significantly to approximately 5.25 days.

As evident from the above information, there is an average difference of about 6 days between natural disasters and social disasters, which increases to approximately 10 days when excluding the unique case of COVID-19. This discrepancy is likely related to the scope and criteria for declaring special disaster zones specified in current laws and regulations. For natural disasters, the criteria for designating a disaster as a special disaster zone are based on the amount of damage exceeding 2.5 times the support standard for national government assistance in Si/Gun/Gu, and exceeding 1/4 in Eup/Myeon/Dong. In contrast, social disasters are considered as special disaster zones when it is recognized that the disaster requires national-level support due to the insufficient administrative and financial capacity of local governments.

While the criteria for natural disasters are more specifically defined, social disasters are declared as Special Disaster Zones based on abstract criteria. Therefore, it takes time after the occurrence of a natural disaster to assess and calculate the damage based on specific criteria. On the other hand, social disasters, which are declared based on abstract criteria, are influenced by various factors such as public attention and political influence, resulting in a shorter time for declaration compared to natural disasters.

**Table 3.** Period for declaring SDZ after a disaster

Total			Natural Disaster			Social Disaster		
Average	Maximum	Minimum	Average	Maximum	Minimum	Average	Maximum	Minimum
14.06	55	1	15.68	38	2	9.08	55	1

4.2. Current status by disaster type

According to the Framework Act on the Management of Disasters and Safety, disasters are broadly categorized into natural disasters caused by natural phenomena and social disasters such as fires, collapses, explosions, traffic accidents, and chemical incidents. Up to now, special disaster zones have been declared 40 times for natural disasters and 13 times for social disasters. It can be observed that there have been significantly more declarations for natural disasters.

When classifying the natural disasters for which special disaster zones have been declared, based on the disaster types provided by the National Disaster and Safety Portal, the graph under represents the distribution. Except for earthquakes, the majority of declarations were related to wind and water-related disasters such as typhoons, heavy rain, heavy snow, strong winds, and high waves. In particular, the declarations for typhoons and heavy rain amounted to a total of 33 occurrences, which is more than the combined total of the other types.

Similarly, for social disasters, special disaster zones have been declared for a total of eight different types of disasters. Among them, forest fires accounted for the highest number with six declarations, followed by building collapses, subway accidents, marine pollution accidents, chemical substance accident, Ship Accidents, infectious diseases, and Crowd Collapses, each with one declaration. The declaration of special disaster zones for social disasters is very small compared to natural disasters, but there are more types of disasters. Considering this, large-scale social disasters do not occur relatively often, but new and unpredictable disasters will occur, making it more difficult to respond.

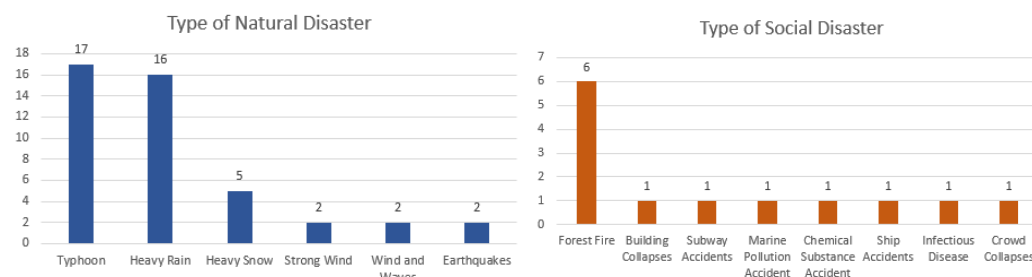


Figure 6. Current status by disaster type (Natural / Social Disaster)

Table 3. Period for declaring SDZ after a disaster

<b>Natural Disaster</b>	Typhoon	Typhoon 'Rusa' (2002)	<b>Social Disaster</b>	Forest Fire	Gangneung Forest Fire (2023)
	Heavy Rain	Heavy Rain in the Central Region (2022)		Building Collapses	Sampoong Department Store Collapse (1995)
	Heavy Snow	Heavy Snow Damage (2004)		Subway Accidents	Daegu Subway Fire Disaster (2003)
	Strong Wind	12.4-6 Strong Wind and Waves (2009)		Marine Pollution Accident	Hebei Spirit Oil Spill Accident (2007)
	Wind and Waves	12.4-6 Strong Wind and Waves (2009)		Chemical Substance Accident	Hube Global Hydrofluoric Acid Leak Accident (2012)
	Earthquakes	Pohang Earthquake (2017)		Ship Accidents	Sewol-Ferry Sinking Accident (2014)
				Infectious Disease	Covid-19 (2019)
				Crowd Collapses	Itaewon Stampede Accident (2022)

#### 4.3. Current status by region

In order to find out the characteristics of the declaration of special disaster zones by region, the number of times declared by metropolitan governments is summarized and shown in the following table. On average, a special disaster zone was declared about 7.1 times in one metropolitan government, natural disasters were declared about 5.8 times, and social disasters were declared about 1.3 times.

Through the table below, it is evident that the number of declarations in special cities, metropolitan cities, and special autonomous cities is lower compared to provinces and special autonomous provinces. At the city level, the average number of declarations was only about 2.1, while at the provincial level, the average number of Special Disaster Zone declarations was 11.6, showing a difference of more than fivefold. This is likely because when calculating the damage costs at the provincial level, there are often significant damages to agricultural and maritime areas, as well as public facilities, resulting in larger scales of calculation compared to city-level damages.

**Table 4.** Status of SDZ Declaration by Region

	Total Disaster	Natural Disaster	Social Disaster
Seoul	4	2	2
Busan	3	3	0
Daegu	2	0	2
Incheon	1	1	0
Gwangju	2	2	0
Daejeon	2	1	1
Ulsan	3	3	0
Sejong	0	0	0
Gyeonggi	10	9	1
Chung-buk	6	5	1
Chung-nam	10	8	2
Jeon-buk	8	7	1
Jeon-nam	19	16	3
Gyeong-buk	18	14	4
Gyeong-nam	13	13	0
Gangwon	16	11	5
Jeju	4	4	0

The region with the highest number of declarations was Jeollanam-do province, with a total of 16 declarations for natural disasters and three declarations for social disasters, including forest fires, marine pollution accidents, and ship accidents. The Gangwon area had the highest number of special disaster zone declarations for social disasters due to frequent occurrences of forest fires and the consequent damages in the region's specific characteristics.

In the overall map representing the distribution of Special Disaster Zone declarations, it is evident that regions other than the Seoul metropolitan area and Chungcheong region have higher frequencies of declarations. In particular, it can be seen that the declaration frequency is very high in Jeonnam, Gyeongbuk, Gangwon, and Gyeongnam regions. The map representing the frequency of declarations for natural disasters also shows that Jeonnam, Gyeongbuk, and Gyeongnam provinces have a denser representation compared to other regions. This is likely due to the influence of typhoon paths that progress from the southwest to the northeast, impacting these regions more significantly. For social disasters, regions such as Gangwon Province, which experiences frequent damages from forest fires, and Gyeongbuk Province, which suffered damages from subway fire accidents, chemical substance accidents, and COVID-19, are more prominently represented.

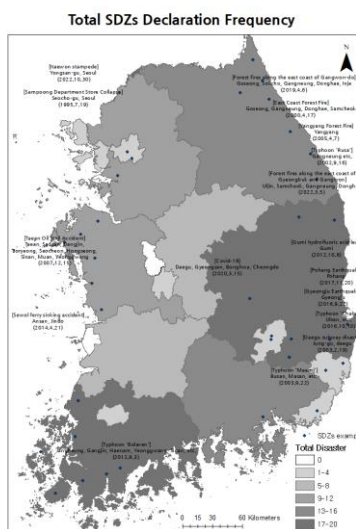


Figure 7. Status of Declaring SDG by Metropolitan Government

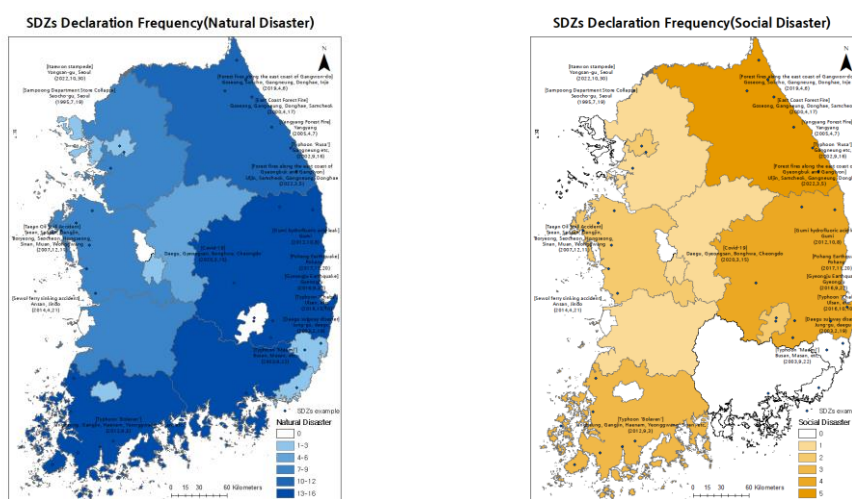


Figure 8. Status of Declaring SDG by Metropolitan Government (Natural / Social Disaster)

### 6. Conclusions

In this study, the concept was reviewed to understand the basic contents of the special disaster zone system itself, and the characteristics of special disaster zone declaration cases by period, type, and region were reviewed through analysis of the current situation conducted by collecting related data.

First of all, the current status of special disaster zone declarations was classified by year and month to find out the characteristics of each period. By year, special disasters were declared about 1.83 times a year on average due to natural disasters that occur steadily every year, but no significant trend such as increase or decrease could be found due to the uncertainty of disasters. However, in the case of social disasters, it was significant that there were 6 special disaster zones declared in the last 5 years, representing nearly half of the total number of social disaster declarations. When analyzing the status of special disaster zone declarations by month, climate-related special disaster zone declarations, such as storm and flood damage and forest fires, were mostly concentrated in a specific month, so it was possible to see the influence relationship with climatic characteristics.



The declaration of special disaster zone by government is showing an increasing trend, except for one case. This may be due to the increase in the frequency of disasters with large damages, but informal intervention in the improvement and declaration of laws and institutions cannot be ignored. The period from the day the disaster occurred to the day the special disaster zone was declared was much shorter for social disasters than for natural disasters. This is judged to come from the fact that natural disasters are concrete, whereas the criteria for proclaiming social disasters are abstract.

Second, in order to find out the characteristics of each type, cases of declaration of special disaster zones were divided into natural disasters and social disasters, and classification was made by detailed type based on the National Disaster and Safety Portal. In the case of natural disasters, typhoons and heavy rains were declared a total of 33 times, which is higher than the sum of all other declarations, confirming the impact of typhoons and heavy rains.

In addition, although social disasters show a lower frequency of declaration than natural disasters, the types of disasters are more diverse in social disasters. As such, social disasters are more likely to occur in new types than natural disasters, and there will be difficulties in disaster response.

Third, statistical analysis and GIS analysis were conducted to identify regional characteristics. It was confirmed that the frequency of declaration of special disaster zones by provincial-level metropolitan governments was higher than that of city-level metropolitan governments. In addition, in the case of natural disasters, areas located along the path of typhoons and metropolitan governments frequently declared special disaster zones were similar. In the case of social disasters, there was not a relatively large regional difference, but it was found that the declaration frequency was high in Gangwon, where forest fires often occur due to the influence of the topography.

The period between the date of the disaster and the date of declaring a special disaster zone was shorter for metropolitan governments at the city level than for metropolitan governments at the provincial level. City-level metropolitan governments averaged 12.38 days, and provincial-level metropolitan governments averaged 16.64 days.

There are several limitations to this study. First, the focus was on the characteristics of special disaster zone declarations by period, type, and region. Future studies should consider specific damage situations, mobilized resources, changes in organization and manpower, and conduct more empirical research. Second, the results of this study may not represent general disaster characteristics. It would be beneficial to consider cases of large-scale disasters that did not result in special disaster zone declarations. Third, this study can be considered as an initial exploration and understanding of the basic concepts and current situation. It is intended to be utilized and developed through further research on disasters and related topics.

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