

Article

A Study on Disaster Management Investment and Resilience Enhancement

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Abstract: In South Korea, over the past 10 years ('12-'21), there have been 6,760 deaths have occurred as a result of social disasters. Numerous lives have been lost due to disasters, and even more people have experienced the sorrow of losing their loved ones. The government established the Safety Innovation Master Plan in 2014 following the Sewol ferry disaster. and after the Itaewon incident in 2022, it announced a comprehensive plan for the reorganization of the national safety system in January 2023. To ensure the efficient operation of these government disaster management measures, investment in disaster and safety management is essential. However, the possibility of disasters is uncertain, making it difficult to predict the severity of the damages. Consequently, budgets for disaster and safety management may be prioritized and allocated to sectors that have high demands or significant economic benefits driven by economic and social rationale. The aim of this study was to investigate the necessity of research on focus investment for securing disaster resilience through literature review.

Keywords: Disaster Resilience; Disaster Management; Investment plan

1. Introduction

On January 27, 2023, the Ministry of Public Administration and Security announced a comprehensive plan for the reorganization of the national safety system. The first area of focus is the prevention of crowd-related accidents. The basic direction is to establish measures that fundamentally prevent crowd accidents such as the Itaewon incident, prepare for new disasters, and comprehensively overhaul the national safety management system to effectively respond to them. [1]

Approximately 9 years ago, in 2014, the government revised the Disaster and Safety Management Basic Act to enhance its overall coordination and oversight functions for disaster and safety. It also delegated the authority of pre-budget consultations for disaster and safety-related projects to the Ministry of Public Safety and Security [2].

Additionally, in March 2015, the Ministry of Public Safety and Security developed the Safety Innovation Master Plan, which aimed to reevaluate the government's disaster and safety management system and establish fundamental safety innovation strategies. As part of this master plan, pre-budget consultations and project evaluation systems for disaster and safety projects were implemented.

Over the past 10 years ('12-'21), there were 250 deaths due to natural disasters and 6,760 deaths due to social disasters in South Korea. Following the Sewol ferry accident in 2014, which resulted in 335 fatalities and a total of 535 casualties, including injuries, the Safety Innovation Master Plan was established. Furthermore, after the Itaewon incident in 2022, which caused 159 fatalities and 196 injuries, the comprehensive plan for the reorganization of the national safety system was announced in January 2023 [3][4][5].

Disaster safety budgets are not discretionary investments but targets that require responsible allocation to protect the lives and property of citizens. Therefore, the government formulates disaster safety strategies, promotes relevant tasks, and invests budgets

in various disaster safety projects. In addition, based on Article 10-2 of the amended Framework Act on the Management of Disasters and Safety, the government has implemented a pre-budget consultation system for disaster and safety management projects in each ministry to professionally manage the central government's budget.

This study is a previous studies to prevent disaster and accidents and ensure the safety of the citizens. The purpose of this study is to verify the necessity of research on prioritized investment in disaster and safety management. Furthermore, the aim is to support the development of efficient investment policies.

2. Current Status of Disaster & Safety Industry and Management Budgets

2.1. Literature Review

In 2017, Ryu Hyun-Sook, Lee In-Won, and others conducted a study on improving the allocative efficiency of disaster and safety management budgets. They aimed to establish rational allocation criteria for disaster and safety management budgets and re-viewed the priority of projects through Focus Group Interviews (FGI). They also employed Analytic Hierarchy Process analysis (AHP) to derive weights between factors and detailed criteria and conducted a simulation evaluation focusing on the 2017 budget for marine vessel accidents and nuclear energy fields [6].

In 2018, Oh Yun-Kyung, Lee Je-Bok, and others conducted a study on the analysis of changes in disaster and safety management budgets in local governments. They defined items classified as disaster and safety management budgets and compared and analyzed the changes in budgets among local governments by constructing relevant data.

Since disaster and safety management is highly field-oriented, the direction and scale of investment in disaster and safety management by local governments significantly impact the improvement of disaster and safety management levels. Therefore, it is necessary to examine the trends in budget. To do so, they reviewed damage statistics, related budgets, and policy status, and sought policy recommendations through expert consultations [7].

2.2. Survey of the Disaster Safety Industry

According to the survey on the state of the disaster and safety industry conducted since 2017, the total number of employees in the disaster and safety industry has increased by approximately 41.5% from 311,584 in 2017 to 440,746 in 2021. In this study, an analysis of the current situation of employees in the disaster and safety industry by specific sectors was conducted to examine the changes in manpower requirements in the industry.

The disaster and safety industry is divided into five major categories (natural disaster prevention industry, social disaster prevention industry, disaster response industry, disaster recovery industry, and other disaster-related service industries) and 16 subcategories. As of 2021, the subcategories with the highest number of employees in the disaster safety industry were disaster insurance services (61,491), facility damage recovery industry (57,739), disaster situation management-related industry (47,838), and social disaster prevention industry related to fire, explosion, and collapse (41,288) [8].

Compared to 2017, there were 13 industries that saw an increase in the number of employees in 2021, including disaster insurance services (1047.9% increase), facility damage recovery industry (216.3% increase), natural disaster prevention industry related to earthquakes and volcanic activities (114.1% increase), and disaster situation management-related industry (100.2% increase). On the other hand, there were three industries that saw a decrease in the number of employees, including disaster response medical and hygiene-related industry (-81.9% decrease), disaster-related education, counseling, and consulting industry (-61.2% decrease), and disaster-related safety facility management, hazardous material storage, security, and protection industry (-8.8% decrease) [8].

In particular, it is necessary to consider the industry's sales figures in addition to the number of employees in the disaster and safety industry. The number of employees in the top-ranking sectors in terms of sales in 2021, such as the facility damage recovery industry, disaster insurance services, and disaster situation management-related industry, increased significantly. However, the number of employees in the low-ranking sectors in terms of sales, such as disaster response medical and hygiene-related industry, disaster-related education, counseling, and consulting industry, and disaster-related safety facility management, hazardous material storage, security, and protection industry, decreased significantly.

Especially during the COVID-19 situation from 2019 to 2021, the number of employees in the disaster response medical and hygiene-related industry (-81.9% decrease) and infectious disease-related social disaster prevention industry, including infectious diseases, chemical and biological weapons, and environmental pollution-related industries (22.8% increase), decreased significantly or did not increase significantly. This suggests that even in our society, where disasters are increasing or the scale of damage is growing, the principles of the economy drive manpower in the disaster and safety field toward industries with higher sales figures.

2.3. Budget for Disaster and Safety Management Projects

The budget for disaster and safety management projects has been compiled and implemented based on Article 10-2 (Prior Consultation on Budget for Disaster and Safety Management Projects) and Article 10-3 (Evaluation on Disaster and Safety Management Projects) of the Framework Act on the Management of Disasters and Safety since 2014. These measures aim to enhance the investment efficiency of disaster and safety budgets in each government department.

Subsequently, Article 10-4 (Prior Consultation on Budget for Disaster and Safety Management Projects of Local Governments) was added to the Framework Act on the Management of Disasters and Safety in 2021 (June 9, 2020), which introduced a preliminary review of disaster and safety budgets by local governments.

The budget for disaster and safety management projects increased from 14.6 trillion won in 2016 to a requested amount of 23.1 trillion won in 2022. The requested amount by sector in 2022 was 12.1 trillion won (52.2%) for social disasters and safety accidents, 5.5 trillion won (24.0%) for natural disasters, and 5.5 trillion won (23.8%) for common areas such as disaster relief and recovery. In particular, the four major investment directions for the disaster and safety budget were: first, proactive preparation for new disasters; second, strengthening safety in daily life; third, improving infrastructure and living facilities' safety; fourth, expanding national responsibility for citizen safety.

In this situation where the budget for disaster and safety management is increasing, it is not easy to determine which disasters and accidents should be prioritized for prevention or response. Even if the budget is allocated to the prevention stage, which focuses on minimizing damage, it is difficult to measure or recognize the results. Furthermore, it is challenging to determine whether a disaster has been prevented [9].

3. Disaster Resilience

The term "resilience" is derived from the Latin words "resiliere" and "resilio," which mean to bounce back or return to the original state [10].

The United Nations Office for Disaster Risk Reduction (UN-DRR) defines resilience as the "ability of a system to prevent or effectively respond to disasters in a timely manner, absorb the impact, and protect and restore its essential structures and functions" [11].

Disaster resilience refers to the ability of individuals, communities, and organizations to adapt, recover, and manage changes in the face of disaster risks and shocks. Since Timmerman (1981) defined the capacity to absorb and recover from natural disasters as resilience, various discussions on resilience have taken place [10][13][14][15].

In previous studies, Mayunga (2013) categorized resilience into social capital, economic capital, physical capital, and human capital, and identified their correlation with the four phases of disaster management. Investment in disaster and safety management can be considered an important element of economic capital for securing disaster resilience[10][14].

4. Conclusions

The occurrence of disasters is characterized by high uncertainty, making it difficult to predict the intensity of the damages they may cause. As a result, it is challenging to determine the direction of concentrated investment in disaster and safety management and analyze its tangible outcomes. According to previous research, the allocation of local government budgets for disaster management is influenced more by structural, political, and financial factors of the local government rather than demand-driven factors. Furthermore, from the perspective of local governments, allocating budgets to education and social welfare, which provide immediate and visible benefits to residents, rather than focusing on disaster management services, is considered a politically realistic alternative [12].

This study aimed to highlight the necessity of research on focused investments to enhance disaster and safety management resilience. Disasters continue to occur, and as a result, the budgets for disaster and safety management have been increasing. However, it has been observed that in our society, even as disasters increase or the scale of damages grows, human resources in the field of disaster safety tend to gravitate towards industries with higher revenue. Additionally, the investment and evaluation directions of disaster and safety-related industry have been following conventional approaches.

In the future, empirical research is needed to examine policy directions for preventing disasters and accidents, ensuring the safety of citizens, and establishing efficient public investment strategies for disaster and safety management. It is also necessary to analyze the correlation between budgets for disaster and safety-related projects and the occurrence of disasters and accidents, as well as to demonstrate the impact of the central government's budget for disaster and safety management projects on disaster resilience. Through these efforts, directions can be provided on how to increase disaster resilience through focused investment in disaster management.

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