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Disasters can happen to anybody: The case of Korea

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A B S T R A C T

In Korea, there is a pervasive feeling of invincibility to the point that people and organizations do not believe that disasters can strike them. This has impact on the level of preparedness for disasters. This study aims to delve into how Korea has to change its governmental policies/practices with some private partners' efforts to mitigate disaster risks. A case study was utilized as the major methodology by comparing exclusive management with inclusive management. These two approaches have been comparatively analyzed via four variables, namely the central government, the local governments, the incident commander, and other stakeholders. The major finding is that Korea's practices and policies have to evolve from the current exclusive management into future-oriented inclusive management. Moreover, the importance of communication, cooperation, collaboration, and multi-discipline coordination is discussed. Additionally, the problem of reductionism and equal participation among all stakeholders, as well as the resistance from vested interests, are recognized and elaborated for Korea and the international community.

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1. Introduction

In the field of disaster management, there are two groups considered: (1) those who belong directly to the field and are directly involved and (2) those who are not directly involved in its management; however, both groups can be directly affected by disasters. The former is usually informed or trained, whereas the latter is generally uninformed or untrained. To appropriately manage diverse disasters in each nation, it is not only critical to work on technological developments, but it is also necessary to address the management process or mechanism at the human level. The basic principle of disaster management is to mitigate or lessen the impact of a disaster through an efficient mobilization of a program where all stakeholders participate, are fully recognized and are involved (Dastous et al. 2008; Jay et al. 2007; Kelley, 2005). Stakeholders are those who directly or indirectly work for the field of disaster management; in this paper, they are the government institutions, business entities, disaster management agencies, mass media, disaster management researchers, and the public, in general.

Similarly, the participatory process is a significant factor to improve the goal of disaster management, which is the mitigation of human loss, economic damages, and psychological impact. When the participatory process is successful, a number of advantages, such as the improvement of disaster management quality and the reduction of economic costs, may be achieved (Vink et al. 2008). In general, disaster management efficiencies are positively influences on the outcome and effects of a disaster.

South Korea (hereinafter Korea) has had to deal with a series of local and global disasters (natural and manmade) recently. Three disasters, with two occurring in Korea, have had major impacts on the nation in a number of ways. First, the March 2011 earthquake with tsunami in neighboring Fukushima, Japan has caused much anxiety and worry to Koreans. Second, the ferry Sewol sinking in the south coast of Korea on April 2015 was a dark day for the nation. Only 172 out of 476 people were rescued due to complicated factors that included the negligence of the ferry captain, the first responders' inadequate performance, the government failures, societal corruption, among others (Hwang, 2015). Third, the Middle-East Respiratory Syndrome (MERS) hit one hospital in Pyungtaek, Korea in May 2015. Because of poor ventilation in the hospital; the lack of information sharing among governments, hospitals, and residents; government's failure to immediately respond; the lack of citizens' disaster awareness; the lack of a national disaster management framework; and others, MERS has spread to many parts of Korea. As a result, 36 people have died of the disease and 186 people have been infected in Korea as of September 30, 2015 (Ministry of Food and Drug Safety (MFDS), 2015).

Korea has had several problems and challenges with its disaster management system. The Ministry of Public Safety and Security (MPSS) has tried to manage all kinds of hazards without solid systematic coordination with other ministries. At the same time, the MPSS consists of just three groups of professionals, namely firefighters, civil engineers, and maritime police. Vertical relationship is supported fully among disaster management individuals and institutions whereas horizontal relationship is not considered or observed. Consequently, problems worsened as Korea failed to follow best practices of comprehensive emergency and disaster management. Above all, Korea has not acted
with awareness that disaster can strike anywhere, may affect anyone and everyone, thus creating a gap in preparedness and response; an important philosophy of “expecting the unexpected” is ignored (Weick and Sutcliffe, 2001). Until fundamental changes in focus, attitudes, and planning are made, Korea will continue to struggle to deal with the risks related to disasters.

Following the context of international best practices, we will examine Korea’s current practices and make recommendations for an effective disaster management approach that considers all disaster management stakeholders’ roles and contributions.

Surely, the fundamental principle in the field is that disaster management is not several stakeholders’ business only, but all stakeholders’ responsibility (Moe and Pathranarakul, 2006). For the ultimate goal of improving disaster management, this article aims to analyze how Korea has dealt with and should cope with the possibility of an occurrence of a natural or manmade disaster that may have serious effects on those affected by the disaster, whether direct or indirect victims. The focus of this research is to compare two opposite approaches to disaster management for Korea, both the current approach and the collaborative approach taken by other nations.

The methodology used here is a single case study. To compare two approaches for Korea, we have examined four fundamental variables: the central government’s policy, local government’s strategy, the incident commander’s post, and other stakeholders’ (i.e., mass media, researchers, and business entities) and the public, in general) efforts. Our findings suggest that Korea has to evolve from an exclusive management into an inclusive management. Further, our findings imply that having full stakeholders’ equal participation in disaster management is critical to managing disasters and has international implications.

2. Literature review

Although it may be human nature for an individual to think that a disaster will never happen to them, the truth is, it can happen to anybody. Disasters can be unpredictable and sudden, but sometimes, they can have a pattern or some degree of predictability. However, disasters do not recognize national or international position, political authority, social class, cultural background, or psychological condition. Therefore, disaster management, to be effective, cannot afford to fall in the hands of those who can be complacent and who may ignore the possibility that disasters can strike anywhere, at anytime.

Researchers throughout the world have noted the importance of not having a narrow focus in examining disasters, but rather, the need to examine all those affected by disaster and all those who are involved in disaster management. Examples include the multi-faceted organizational relationship, networks and disaster management, and multi-level governance. Some have studied this subject in the emergency medicine domain, while others have focused on emergency planning. Although some have studied this topic in developed nations, others have done it in less-developed nations. In short, the topic has been widely recognized in the international field of disaster management (Kapucu, 2012).

To elaborate, researchers across the globe have made efforts to examine several sub-topics concerning all disaster management stakeholders including the people that have been frequently affected not only by a single hazard, but also by multiple disasters. Cascading effects or conjoint hazards cause critical impacts to human society. To deal with multiple risks, it has been repeatedly shown by research efforts that par- or conjoint hazards cause critical impacts to human society. To deal with only by a single hazard, but also by multiple disasters. Cascading effects examine several sub-topics concerning all disaster management stakeholders’ roles and contributions.

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Because a disaster may cause multiple failures, which may affect different stakeholders and infrastructures in different ways, researchers have maintained that the field of disaster management has to consider multiple perspectives in addressing a specific disaster. When dealing with various disasters, the field of disaster management needs to include all different thoughts or opinions from society. When relying on a single or partial perspective, it would be hardly possible to appropriately manage multiple risks (Turow et al. 2013).

Each stakeholder is likely to differ in his or her views on possible disaster management alternatives in part because of the locus of concern each holds and particularly depending on his or her geographical location or level of responsibility. Including different views of all stakeholders promotes better disaster management that can be more effective in mitigating multiple risks and concerns (Saldana-Zorrilla, 2008).

Dealing effectively with disasters requires inter-disciplinary planning and response (MacAskill and Guthrie, 2014). Indeed, effective decision-making in disaster management must involve groups from a variety of disciplines working together. Hence, in effective disaster management, a multidisciplinary approach has been used in many aspects such as planning, response, development and exercise of training, and creating guidelines for emergency managers. In addition, when coping with an unexpected disaster, multi-disciplines have to be immediately and efficiently utilized (Quick, 1998).

For disaster management, researchers throughout the world have found that a highly diverse team especially when the community affected is diverse. This has been found to promote more flexible plans, which can address the differing needs of a diverse community. Some of the characteristics of a diverse community are variety in language, communication, ways of thinking, and culture. In particular, effective disaster management that has included a diverse group of professionals in its planning and response has resulted in a reduction of human injury and death (Dean, 2001).

Researchers throughout the world have strongly recommended comprehensive emergency management by emphasizing the various needs of all disaster management stakeholders. While dealing with all kinds of hazards, all disaster impacts, or all the four phases (disaster prevention/mitigation, preparedness, response, and recovery) of disaster management lifetimes, the field has to allocate roles and responsibilities to each professional and the members of the public. In doing so, all stakeholders will work together to face and resolve disaster issues throughout its lifecycle (Federal Emergency Management Agency (FEMA), 2010).

For effective emergency management, disaster management groups have continued to engage the public in mitigating the impacts of disasters. In particular, the involvement of the public has been through their inclusion during planning and action formation, gathering information and other resources to and from the public, and sharing information through public hearings, seminars and workshops, and informal discussions (Ioannides et al. 2005; McGee, 2011).

Researchers across the globe have also continued to discuss an integrated disaster management approach while studying diverse networks among all professionals in the field of disaster management. As each stakeholder will have to deal with a disaster based on how it affects him/her, a network among the different stakeholders should be formed to ensure that all stakeholder needs are served. Moreover, considering that each stakeholder may not be able to effectively fight against a series of disasters alone, there is a synergistic benefit to the formation of networks among all stakeholders (Zinkhan and Balazs, 2004).

An integrated disaster management approach enhances the sustainability of disaster management. By stimulating motivation and knowledge, improving engagement with affected areas, and mobilizing and sharing many resources, an integrated disaster management approach can promote and sustain disaster management. To this point, diverse networks are more effective towards the goal of sustainability than official governance alone (Caniat et al. 2015).

Despite a plethora of international researches revealing the possibility of an occurrence of a natural or manmade disaster, Korean researchers have not made similar efforts to study it. Even though some Koreans have discussed the role of specific professionals on disaster management, the majority of researchers have not attempted to systematically examine the importance of all disaster management professionals, particularly via the international perspective (Yeo, 2014).
Thus, this paper has potential value in terms of promoting insightful research activities.

Although some professionals or the public, in general, are willing to participate in disaster management in Korea, it does not mean that all of them can join every effort in disaster management because they may lack the skills to contribute effectively to these efforts. To be effective contributors, each stakeholder has to determine what role they can play and then let the managers of the effort know their skill set and that they are willing to help. In other words, each stakeholder has to assess his/her skills and knowledge that may contribute to disaster management (Smudee and Courtright, 2011).

Similarly, each stakeholder needs to be aware of issues that may occur when potential threats are ignored or misunderstood. For example, threat rigidity is all too common in organizations and individuals. It is human nature for organizations or individuals to respond to threats in habitual or routinized ways, which is rigid, and thus, maladaptive when the threat is new in any way. Because of threat rigidity, individuals or organizations may respond to a unique situation as though it were a familiar one (that is, underestimate or misunderstand the current situation) (Plotnick and Turoff, 2010). In short, not all threats are the same. Different threats may require different approaches although there are some that may require similar actions. The challenges and approaches associated with stakeholders during disaster management efforts will differ depending also on the situation.

In terms of governance in Korea, the function of command/control or the vertical relationship is evident in a number of ways. In general, the central government has more political power than any local government or incident commander. The hierarchy takes the form of a pyramid with the top of the pyramid (the central government) having the fewest people, but with the most power. Also, public organizations have frequently wielded more power than private institutions or regular citizens under the influence of Confucianism (Lee, 2012). Although the emergence of coordination/cooperation or parallel relationships have been considered recently, due to the development of local autonomy and the revolution of information and communication technology in Korea, governance among major professionals has been fundamentally based on either command/control or vertical relationship.

3. Methodology

Case study was used as the methodology for this paper. In particular, for situations dealt with by Korea and Korea’s disaster management policies, an in-depth examination of disaster management and its related context in Korea was undertaken. We used qualitative data and analysis such as of Korean policy documents, literature review, and observations of government agencies.

In terms of data collection and analysis, we collected and coded literature and government documents via Internet search engines. Regarding Korean policies, we mostly typed a specific term “Korean disaster management” via Korean KISS, DBpia, and the website of MPSS, and others, when thinking that not many data are available compared with international data. To know about the principles of international disaster management, we typed several terms such as “the principles of disaster management,” “disaster management and stakeholders,” “comprehensive emergency management,” and others via ScienceDirect, OUP, Google Scholar, and the like. Among many search terms and coding process, we took note of the lopsided aspect of Korean policies by utilizing Korean government’s white papers as well as the observation of government agencies. Also, data on comprehensive emergency management in the international community contributed to informing the conclusion in the paper.

When using a single-case study, generalization(s) cannot be made easily. However, this type of study has many advantages including the ability to obtain depth in data and analysis. Similarly, a single-case study cannot be generalized because the case may not be reflective of common occurrences in the area of study. However, a single-case study can provide a good opportunity for determining innovative solutions for the specific case or setting studied (Baxter and Jack, 2008).

We compared two approaches, namely the exclusive approach and the inclusive approach when it comes to disaster management in Korea. Following Fig. 1, the former approach (left side) is limited in who participates in disaster management, whereas in the latter (right side) includes collaborative efforts among a variety of stakeholders. Two big circles indicate the boundaries of the participation in disaster management. The comparison was made in the context of effectiveness, strategies used, and policies. Based on the comparison (a two-sided arrow) of the two approaches, we discussed implications on how to facilitate inclusive management in the international community by following a curved arrow.

In the exclusive approach, not all stakeholders are allowed to participate in disaster management, whereas in the inclusive approach, most, if not all stakeholders are represented and they participate. In other words, in exclusive management, disaster management is available only to certain professionals. On the other hand, in inclusive management, disaster

Fig. 1. Analytical framework of the case study.
management is open to everyone, not limited to certain professional. Our results will show that the latter is more effective and so Korea needs to change and adopt the latter approach.

In comparing the two approaches, we attempted to identify all stakeholders in the Korean field of disaster management including government employees, first responders, volunteers, residents, and others. The needs of different stakeholders may be in conflict with one another. In short, the inclusion of all stakeholders in disaster management has significantly increased the complexity of disaster management (Hernantes et al. 2013).

Among many disaster management professionals, we have identified four major stakeholders (as shown in Fig. 1): the central government, local governments, incident commander, and other stakeholders. The category of other stakeholders includes many such as mass media, researchers, business enterprises, and the public, in general. These four major stakeholders are the most important players in the Korean field of disaster management, if examining the extent of their influence via not only government documents, but also the observation of government agencies on Internet websites. They also interact during the occurrence of a disaster. The first three variables are drawn from the government groups, while the fourth one is done from the other stakeholders. The first three stakeholders may be considered major stakeholders and the fourth one, the ‘minority’, if you look at their current roles, which are minimal or nonexistent, in Korea’s current practices.

4. Results on the comparison between exclusive management and inclusive management in Korea

4.1. Exclusive management

4.1.1. Central government’s policy

Recent past Korean presidents were unable to pursue and implement a national emergency operation framework (Ha and Oh, 2014). Consequently, roles and responsibilities for each stakeholder were also not addressed. Reliance on existing policies and specific professionals in the field prevailed during this period instead of a collaborative disaster management. For example, the National Emergency Management Agency (NEMA) allowed only firefighters and civil engineers to work in its emergency operations. After the sinking of the ferry Sewol in April 2014, the MPSS launched its operation and included maritime police in its response. According to the official website, the MPSS as a single national disaster management institution is supposed to take care of all kinds of hazards in Korea including not only natural disasters but also manmade emergencies. Nevertheless, its policy has still focused on exclusive management, as listed in Table 1.

4.1.2. Local governments’ strategy

The MPSS was formed by the end of 2014. Before its establishment, both fire stations and the local emergency management departments worked on disaster management in their local regions. While firefighters focused on extinguishing fires, civil engineers made efforts to deal with floods accompanied by typhoons. Similar to the case of the central government, only two categories of professionals, namely firefighters and civil engineers were allowed to work for the local governments.

Following the MPSS’ policy guidelines in 2015, local governments have recently begun to deal not only with natural disasters but also with social disasters in their regions. However, the local government workforce includes only three categories of professionals: firefighters, civil engineers, and maritime police, and excludes other professionals who could be helpful in disaster management. This demonstrates the pervasiveness of exclusive management in Korea (Yeonggwang-Gun Government, 2015).

4.1.3. Incident commander’s post

About 10 years ago, there was little discussion in the literature or press about who would be the incident commander during a specific disaster (Lee and Kim, 2015). As Korea has been traditionally an authoritarian country under the influence of Confucianism, official rankings have had great importance for disaster management. Accordingly, the highest-ranking official, among many professionals, became the incident commander for each situation.

Following Korea’s recent experiences with disasters such as the Yongsan housing-dismantling accident in 2009, the sinking of the ferry Sewol in 2014, the outbreak of MERS in 2015, and others as well as indirectly experiencing earthquakes with tsunamis in Fukushima in Japan in 2011, an increasing number of experts such as professional emergency managers have criticized the existing paradigms used to determine who will serve as incident commander and initiated discussions about how the commander should be chosen. However, their attempts have not focused on which individual will be the incident commander. Rather, they maintain strict adherence to the concept of limiting participation and have fiercely argued about which profession among firefighters, civil engineers, or police’s hegemony would prevail so that someone from their ranks would be the incident commander.

4.1.4. Other stakeholders’ efforts

Even in Korea, there have been cases of professionals who have earnestly felt sympathy for the disaster victims and so they volunteer for disaster-related activities, although in Korea, this is neither common nor planned. Similarly, many residents in Korean communities have been willing to do their part, perhaps motivated by their own need for survival. Therefore, both professional volunteers and members of the public have not always adhered to the exclusive management paradigm in Korea.

On the other hand, in general, the mass media, researchers, and businesses have relied solely upon exclusive management. Mass media have concentrated on coverage that focuses on select stakeholders’ visible actions during disaster. While conducting research, not all researchers have included the perspective of practitioners. An increasing number of corporations have set up or implemented business continuity plans but have done so without including each sector or entity that has a stake in the business (Cha and Im, 2014). Having a business continuity plan does not guarantee effective disaster management, especially if the plans and actors do not include all stakeholders. For example, even Chaebols, which have developed business continuity plans, have experienced manmade disasters that may have resulted from the narrow perspective of their business continuity plans. In another example, more than 500 people were killed during the collapse of Sampoong Department Store in 1995. During the construction of Lotte World Tower from the year of 2010, a number of incidents have occurred that resulted in workers’ deaths. There were also cases of structural

| Units | Examples | Sources |
|-------|----------|---------|
| ① Central government’s policy | In 2015, more than 90% (= 9090 employees) of MPSS’ human resources (= 10,045 employees) consist of three groups of professionals: firefighters, civil engineers, and maritime police. | MPSS (2015) |
| ② Local governments’ strategy | Only two (Gyeongju City and Yeonggwang-Gun) out of four local governments, which have nuclear power plants in Korea (i.e., Gyeongju City, Gijang-Gun, Yeonggwang-Gun, and Uijin-Gun), have included the issue of their nuclear power plants’ radiological emergency in the scope of their disaster management. | MOTIE (2015) |
| ③ Incident commander’s post | For example, firefighters have frequently maintained that they ought to become the incident commander during any disaster on the land, while setting up own national firefighting agency. | MPSS (2015) |
| ④ Other stakeholders’ efforts | Most industry organizations have not created business continuity plans. Only conglomerate corporations, which are called Chaebols, have business continuity plans. | MPSS (2015) |
safety concerns, loose doors, an aquarium’s water seepage, small sink-holes, traffic congestion around construction sites, the rise of land prices, and other public concerns (Chung, 2015).

4.2. Inclusive management

4.2.1. Central government’s policy

The results of the literature search and analysis of data collected for this research suggest that the next president of Korea, if not the current one, should adopt an approach to disaster management that encourages collaboration between major stakeholders. The central government has to pursue a comprehensive disaster and emergency management plan that represents, for its human resources, all who are involved in disaster management. A restricted approach with only limited stakeholders will not be effective, as it cannot address the variety of stakeholder needs. Instead, stakeholders should be composed of the central and local governments, the incident command post/group, and the general public, including volunteer groups and non-governmental organizations (NGOs), small business entities, and community residents and families (Jung, 2014).

The MPSS can be the party that initiates discussions on the all-inclusive approach. Representatives of all the relevant stakeholders, with MPSS, should work together to draft and finalize policies including the roles and responsibilities for each stakeholder (Cronin et al. 2004).

Unlike Korea, the federal government in the United States has directly or indirectly played its own role in managing infrastructures under the guidance of the National Infrastructure Protection Plan (NIPP), even though the US NIPP has still faced many thorny issues (Turoff et al. 2009; Turoff et al. 2015). Collaboration is not easy to accomplish. Agencies, even in the United States, have reluctance or difficulty in sharing information and plans. This is evidenced by the lack of collaboration and communication between agencies prior to the 9/11 terrorist attacks. Sharing of information between agencies may have caused the real threat of the attacks to surface. Partially because of the vulnerability or the lack of collaboration, in 2002, the Department of Homeland Security was formed, which combined 27 agencies into one umbrella agency (Bush, 2002; Department of Homeland Security (DHS), 2015). Therefore, the importance of all stakeholders should be considered in the Korean central government and in all parts of Korean field of disaster management in the near future (Lee and Kim, 2015). Table 2 provides suggestions on which stakeholders should collaborate in disaster management of some of the major critical infrastructures. We have also utilized Korean governments’ series of white papers on disaster management as well as the observation of government agencies to determine the potential stakeholders on critical infrastructures.

4.2.2. Local governments’ strategy

Local governments deal with all kinds of hazards in their regions. At times, they make changes such as official names of relevant groups, in accordance with MPSS’ policy guidelines. Whichever institutional names they adopt, that workforce composition is likely to change or diversify. By restricting the scope of disaster management to three groups of professionals, their efforts to procure the best personnel for the workforce will be very limited (Sahebjamnia et al. 2015).

Examples of how a collaborative effort might improve effectiveness in disaster management during the four phases of disaster management lifetime are given in this section. Each stakeholder may collaborate during various phases if inclusive management is used. During the prevention phase, a city mayor may legalize building codes for solar architecture and wind power plants with the support of a local assembly. Also, a comprehensive team to include lawyers, architects, emergency managers, and others can be assigned to inspect how each building or critical infrastructure has implemented the Firefight Act or the Basic Act on Emergency and Safety Management. Inclusion of these disparate, but relevant stakeholders will provide for a more robust plan. During disaster mitigation, local meteorologists can be included as they have the capability to quickly distribute information on climate change by utilizing cutting-edge technologies such as satellite photos and maps, mobile phones and applications, and geographical information system. To fight against house fires, residents in a community may consider purchasing and using fireproof roof for their rooftops.

For disaster preparedness, trainers may use computer-supported training and exercises to prepare for infrequent emergencies such as tsunami, radiological emergency, and the outbreak of a new disease, while computer programmers and developers create appropriate websites to share information and applications for this effort. Also, not just one or two groups of professionals, but the whole community can participate in developing local disaster management plan(s) through public meetings to elicit the community’s feedback and recommendations. Professionals (e.g. physicians, trained members of public organizations such as the Red Cross) might volunteer to work with firefighters to search for and treat disaster victims in a timely manner during the phase of disaster response. During recovery, farmers could repair or improve the banks of rice ferries affected by flood or typhoon, while they manage debris around their farms. In addition, local school authorities could offer the use of their school buildings as emergency shelters after fires, earthquakes, or other incidents (Hiltz et al. 2010). Another benefit of opening disaster management to those not usually involved is the possibility of local governments expanding their collaboration with the military in their areas. Mutual aid agreements and utilization of heavy (military) equipment are areas where local governments and the military can be more flexible and create more timely and efficient response.

Table 2

A list of potential stakeholders on 16 critical infrastructures in Korea.

| Critical infrastructures               | Central government                                                                 | Other institutions                                                                 |
|---------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Chemical                              | Ministry of Environment                                                            | Local governments                                                                   |
| Commercial facilities                 | Ministry of Trade, Industry & Energy                                               | Local governments, Construction Association of Korea                               |
| Communications                        | Ministry of Science, ICT & Future Planning                                         | Korea Information Comm. Contractors Association                                     |
| Critical manufacturing                | Ministry of Land, Infrastructure & Transport                                       | Federation of Korean Industries                                                     |
| Dams                                 | Ministry of Public Safety & Security                                              | Local governments, Korea Disaster Prevention Association                           |
| Emergency services                    | Ministry of Public Safety & Security                                              | Local governments, Korea Fire Safety Association                                   |
| Information technology                | Ministry of Science, ICT & Future Planning                                         | Korea Information Comm. Contractors Association                                     |
| Nuclear reactors, material, & waste   | Ministry of Trade, Industry & Energy                                               | Local governments, Korea Waste Association                                         |
| Food & agriculture                    | Ministry of Agriculture, Food & Rural Affairs                                      | Korea Foodservice Industry Association                                              |
| Defense industrial base               | Ministry of National Defense                                                       | Local governments, Federation of Korean Industries, regional military camps         |
| Energy                                | Ministry of Trade, Industry & Energy                                               | Local governments, Korea Environment Protection Association                         |
| Healthcare & public health            | Ministry of Food & Drug Safety                                                     | Korea Federation of Banks                                                           |
| Financial services                    | Ministry of Strategy & Finance                                                     | Local governments, Korea Water Line Association                                     |
| Water & wastewater systems            | Ministry of Public Safety & Security                                              | Local governments                                                                   |
| Government facilities                 | Ministry of Government Administration & Home Affairs                              | Local governments, Citizen Coalition for Safety                                     |
| Transportation systems                | Ministry of Land, Infrastructure & Transport                                       |                                                                                     |
All these examples demonstrate how skills and tools of those outside the usual actors in disaster response can help to expedite and improve the outcomes of activities during the various phases of disaster management.

4.2.3. Incident commander’s post

When a disaster happens, the person with the most skills related to the incident should be chosen as the incident commander to take full responsibility in the management of related disaster, in particular without regard to his or her profession. The key criteria for the post of incident commander should only be his or her abilities and availability to serve most effectively as commander in disaster management for the current situation. If the incident commander is chosen by rank and profession alone, there is too great a chance that he or she may lack the necessary skills to act effectively.

During the beginning of a disaster, before an incident commander is chosen, the first professional who arrives at the scene of disaster should be assigned the role of incident commander. Otherwise, there will be a gap in time when there is no incident commander, which is inadvisable, as there will not be any coordination of activities during that time. This assignment may be temporary. If there is someone who is more suitable to the role, she or he would then be assigned as incident commander and an orderly transfer of the role will take place in a timely manner, following predefined procedures (FEMA, 2013a, FEMA, 2013b).

4.2.4. Other stakeholders’ efforts

Both professional and civilian volunteers need to be guided by procedures and policies in their efforts to achieve the goals of effective inclusive management. Volunteers must not attempt to join a disaster response effort independently as that can put them at risk, cause confusion, and reduce effectiveness of the coordinated response effort. Rather, they need to coordinate with other professionals and act as affiliated volunteers. Moreover, all residents need to more actively associate with other stakeholders, such as local governments, while working towards ensuring disaster preparedness for themselves and for their homes (Arima and Arima, 2011; Thomar et al. 2014).

Mass media should disseminate news about the disaster including its tangible and potentially intangible social impacts to all stakeholders so that there is situational awareness for all who may be affected by the disaster. Researchers should include communication with practitioners to understand their needs. Similarly, not only conglomerate corporations but also small-sized businesses must be encouraged and assisted, if necessary, to develop business continuity plans (Alexander, 2007; Pasquare and Pozzetti, 2007).

5. Discussion on how to promote inclusive management in the international community

In Korea, the majority of powerful individuals or institutions still believe that a single stakeholder’s viewpoint may be sufficient for disaster management operation (Kang, 2015). This is the basic philosophy of exclusive management. However, it is widely known in the international community that not any single stakeholder or single government institution can manage a disaster alone, mainly because the scope of a disaster can be too complicated to be handled by only one sector (Raungratanaamponr et al. 2014).

The structure of the current approach being that of exclusive management has failed in Korea; a participatory one would have had a greater probability of success. When the great fire broke out around Goyang Bus Terminal in May 2014, the firefighters responded quickly. This did save many lives. However, the power grid went down for an extended period of time. The utilities were not part of the planning or response team. Had they been participants in those activities, the power to the wider community could have been restored much more quickly (Yonhap News, 2014). This would have resulted in reduced panic and reduced loss of revenue for businesses that were not able function during the outage.

As in Korea, many other nations are in the midst of globalization. In this age and in the context of globally advanced economies, being a disaster-resilient nation will help sustain development (Okazumi and Nakasu, 2015). The United Nations/International Strategy for Disaster Reduction (UN/IDSR) is an international organization that can assist nations in achieving significant steps towards an efficient disaster management through programs such as Disaster Risk Reduction (Djalante, 2012).

Additionally, the case of Korea is a good topic to discuss in the international field of disaster management. Even though Korea started its modern disaster management in 2004 by setting up the NEMA, their efforts still have many problems because of the historical reliance on limited participation. Therefore, nations that have similarities to the Korean environment may learn important lessons from Korea. In addition, they may develop their own model to include all stakeholders in their fields of disaster management.

Globally, all countries, both developed and developing, can benefit from an exchange of ideas about disaster management, especially on validating views about exclusive or selective management and all-inclusive management.

A basic requirement of a society for stakeholders to be involved effectively in disaster management in that society is the understanding that anyone can be hit by a disaster anywhere or anytime. This realization or awareness is important to enable acknowledgement of the need to move to an all-inclusive approach to disaster management (Hatipoglu et al. 2014; Satapathy and Walia, 2007).

Communication in disaster management is a complicated process that should include sending, receiving, interpreting, and responding to related disaster information among all stakeholders. With communication comes awareness, and with awareness comes recognition of a particular need and course of action. With the practice of proactive communication and information exchange, experts in the field of disaster management are able to address concerns and incorporate various perspectives into their decision-making processes (Khan and Gerrard, 2006; Turoff et al. 2004).

All stakeholders should continue to collaborate with one another to help resolve complex issues such as political conflicts and disputes among professionals. As each stakeholder has different experiences, perspectives, and expertise collaboration with one another may not be easy, but by using communication technologies and other collaborative tools, it is possible to improve collaborative efforts and make them successful (Minato and Morimoto, 2012; Xie et al. 2015).

Similarly, multidisciplinary efforts should be encouraged both in Korea and globally. When electricity is out for one week in an urban area in Korea, about 200 organizations will wait for generators (Ban et al. 2009). This is something that has happened in Korea. However, under the current structure of disaster management in Korea, it would be almost impossible for firefighters, civil engineers, or maritime police to reach a decision about which of these organizations should be sent generators first as each of the active parties would be focusing narrowly on the interests served by their individual profession. With multidisciplinary groups assessing the situation and priorities, decisions can be arrived at using inclusive management, which would consider together all the needs of the affected stakeholders. Likewise, when an epidemic spreads to Korea such as the outbreak of MERS in 2015, those three groups of professionals can do things but not with a realistic perspective that includes all parties involved. With a collaborative effort, health professionals, who have the most expertise in disease management, may play a major role in managing it, but would also have the support of other stakeholders and close partners so that a broad, realistic perspective of the impacts of decisions is attained.

There are other scenarios that exemplify the justification of multidisciplines. When heat or drought causes human death, not just one
or two groups of professionals but multidisciplinary groups should handle this situation, like in the case of Pakistan or India in 2015. Namely, after the United Nations Development Program strongly encouraged those two nations to respond to multi-year drought by fully utilizing multidisciplinary thinking via management networks, related multidisciplinary efforts knowingly or unknowingly contributed to reducing the drought's physical impact, economic impact, and social impact in the region, following many cases in Africa and Asia (United Nations Development Program (UNDP), 2015). To address hazardous materials during flooding, it is necessary for multidisciplinary experts to analyze the complexity of the problem. In particular, floodwaters contain many hazardous materials such as biological agent, physical agent, and chemical agent, multidisciplinary approaches would work best in these situations (FEMA, 2013a, FEMA, 2013b). If a dirty bomb goes off in a congested area, having multi-disciplined groups, not just one group of professionals, are ideal to address and manage the complexity of particular radiation-related events and impacts.

Emergency Managers formed the Virtual Operations Support Team (VOST), while fighting against the Shadow Lake Fire around the U.S. Pacific Northwest in 2011. The VOST, which included civilian volunteers, played a role in monitoring communication via social media and coordinating thorny activities. As a result, fighting massive fires were aided and succeeded with the support of VOST (Denis et al. 2012). Korea and other nations may learn from these examples, not necessarily by pulling together thousands of advisors at one point, if not feasible and needed, but by recognizing and valuing multidisciplinary networking given the prevalence of today's technologies that can enable such collaboration in more effective ways than ever before (Banuls et al. 2013).

In reality, it has been hard for various individuals and institutions to cooperate with one another in the field of disaster management, mainly because each stakeholder has their own concepts, leadership style, identified strategies, background, and even culture. Further, when thinking that the issues of disaster management are complicated and nonlinear ones, it is still difficult to describe who should be cooperating with whom in Korea. However, before, during, and after a disaster, emergency managers with the support of other stakeholders have to play a key role in arranging formal and informal meetings among diverse stakeholders, and thus, contribute to cooperative disaster management. In doing so, emergency managers have to use common language, while respecting each stakeholder’s cultural sensitivity (Waugh and Streib, 2006: 134–135).

The lack of communication, collaboration, coordination, and/or use of multidisciplinary expertise can be a result of hierarchical reductionism. If, in order to divide the works so that only a restricted set of professionals work on any one chunk of work, complex disaster-related problems are broken into smaller and simpler parts, doing so may critically damage the probability of problem resolution because a holistic view is neglected, especially during problem solving. As a result, disaster management will fall short of achieving its goals (Turoff, 2015).

Due to lack of coordination among stakeholders in the United States, specific problems have been examined (Ibid.). One example is that many infrastructures in the United States have been managed independently by various agencies without collaboration among them. Electrical utilities do not collaborate with agencies and experts in the fields of energy, medical services, police, or road networks. Joint planning has not taken place among these stakeholders and so the probability of human injury or death is increased in the event of a disaster, as joint response is not planned. Another example of potential problems that can occur without collaboration are these: if a center is supposed to direct ambulance distribution in the suburbs when there is an emergency, but residents do not call that center and call either the police or fire departments, time will be wasted rerouting the information to the managing center. This time can be critical for saving lives and properties.

Only a key lesson from the Korean case is the need for an opportunity for all stakeholders including the population with special needs, such as children and the aged, foreign-born employees, and people with disabilities, to be involved, and thus, all stakeholders can really make a difference. We posit that participation of all stakeholders will contribute to reaching disaster management goal. This paradigm shift is important throughout the world, not just in Korea. All stakeholders should be able to participate in disaster management in a way that is appropriate for their skills, expertise, and risks. Participation of all stakeholders in disaster management has the potential to increase positive outcomes (e.g., safety, rescue, and survival) for all stakeholders when disaster strikes.

However, inclusion does not mean inclusion without consideration of appropriateness of the way stakeholders are included. Stakeholder ownership of respective duties and responsibilities is important. Having a clear understanding of one’s roles is also critical. These are imperative in an efficient disaster management (Soste et al. 2015).

It must be understood that a shift from the existing limited participation paradigm will be most likely met with resistance. This critical obstacle may be encountered before inclusive management commences. Those currently given authority will not want to give up on their power and position in disaster management. Several Korean professionals have been historically handling all important decision-making using exclusive management. They have a vested interest in maintaining the status-quo. Similar resistance towards exclusive management may be a problem in other countries as well. Solving this will require education and many discussions to develop support for this paradigm shift. Public discussions, education, development of training for those now excluded from participation may all contribute to a growing acceptance of the need for, and the benefits of, a shift to collaborative efforts.

6. Conclusion

Current practices and policies in Korea were described and compared with alternate, participatory practices and policies that are being adopted elsewhere in the world. We could recognize such practices and policies by mainly utilizing observations from government agencies, white papers from Korean governments, and international data on comprehensive emergency management. Our main recommendation is that Korea needs to evolve from an exclusive or selective approach to an all-inclusive approach. If this is not done, Korea runs the risk of not succeeding in effective disaster management.

The issues, difficulties, and recommendations discussed in this paper are relevant for all countries that have a selective-participation approach to disaster management. Countries hoping to move to a more participatory approach need to do so cautiously with an understanding of the difficulties and benefits inherent in making such a change. They have to consider not only the improvement of related awareness, communication, cooperation, multi-disciplines, and coordination, but also the negative aspect of reductionism and the resistance from parties who have power and dominance in a restrictive disaster management environment. Without considering all these issues, moving towards a participatory approach will be fraught with difficulty and may ultimately be a failed effort.

However, if issues are addressed globally, a greater awareness of the advantages of a participatory approach can be achieved. Diversity, comprehensiveness, and integration should all be included as goals of such a shift.

Future research can compare the analyses and recommendations of studies of other nations’ approaches to disaster management. Additional research should be undertaken with a focus on Korea’s approach to disaster management and how to best promote changes in it. Overall, the long-term goal is towards an efficient disaster management in Korea that considers all individuals and institutions, not only a select
few. If success can be achieved in Korea, it will provide an example of how to make this shift for nations worldwide.

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