



A Comparative Analysis on Maritime Disaster Management between Korea and Sweden

Lock Namkung^{1*}

¹*Department of Security Management, Kyonggi University, Suwon, Gyeonggi, Republic of Korea.*

Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

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ABSTRACT

The purpose of this study is to illustrate the importance of crisis management planning and effective governance by comparing and analysing cases related to crisis management in disasters. Firstly, this study analyses the sinking of the MV Sewol of Korea, one of the worst ship accidents in the world, and criticise the crisis management plan. It also applies relevant methodologies to identify how to manage incidents and how to perform them for better management. Secondly, this analyses the sinking accident and crisis management plan of MS Estonia in Sweden which is one of the worst ship accident in the world. As a result, MS Estonia disaster triggered improvements in safety policies in Sweden.

This study argues that Korean government can learn important lessons from Sweden to avoid the "vicious cycle" that exists in South Korea's policy decisions related to safety issues. Compared with the case in Sweden, this study suggests that further measures are needed to end the vicious circle of low safety standards and low confidence in Korea. Compared to the case in Sweden, a few policy recommendations are suggested in this study.

Keywords: *Disaster management; maritime disaster; vicious cycle; MV Sewol; Ms Estonia.*

1. INTRODUCTION

The purpose of this study is to illustrate the importance of crisis management planning and effective governance by comparing and analysing cases related to crisis management in disasters. Firstly, this study analyses the sinking of the MV Sewol of Korea, one of the worst ship accidents in the world, and criticise the crisis management plan. It also applies relevant methodologies to identify how to manage incidents and how to perform them for better management. Secondly, this analyses the sinking accident and crisis management plan of MS Estonia in Sweden which is one of the worst ship accident in the world. As a result, MS Estonia disaster triggered improvements in safety policies in Sweden.

This study argues that Korean government can learn important lessons from Sweden to avoid the "vicious cycle" that exists in South Korea's policy decisions related to safety issues. Also it provides two figures. First, it presents relevant data on the safety levels of Sweden and Korea (and some other OECD countries) and analyses the fundamental structural reasons for the relative success and failure of the two safety policies. Second, this study analyses the theoretical framework through the Sendai framework of the tragedies of MV Sewol and MS Estonia.

2. THE SINKING OF MV SEWOL IN SOUTH KOREA

On April 16, 2014, the South Korean ship MV has sunk nearby the southwest of Jindo. This tragedy took away 304 people's life and students who made a school excursion to Jeju Island occupied a significant portion of the victims so numerous Korean people grieved throughout the country. The public was quick to pay attention to the fact that this disaster occurred artificially. If appropriate safeguards and crisis management procedures had been in place, it could have easily been prevented [1].

Media reports have focused on issues such as the failure of the Korean government to manage disasters and the unethical business practices of people related to Cheonghae Shipping, a MV-age holding company. The families of the victims waited months in the Pang-Mok harbor, hoping to find dead bodies in the sea. The pressure on the government's inability that was the main cause of the disaster spread widely. After the disaster, the

citizens in Korea visited approximately 2,204,224 people in the first 100 days after the sinking, and 67 memorials were established [2]. In addition, citizens expressed sympathy by wearing a yellow ribbon. They demanded that the government enact new safety laws and thoroughly investigate the events and punish those directly contributing to the chain of events. In summary, the MV Sewol sinking focuses on Korea's policy decisions with defined by Birkland [3]. Relatively uncommon; the potential to cause a potentially larger future can be identified or defined as harmful. It is harmful to a specific geographic area or community of interest. "It is known to policy makers and the public at the same time." Following a generally focused event is a series of new policy developments in the field. Therefore, the Korean government can adopt or develop new safety-related policies in response to the Sewol disaster [2,4].

Cheonghae Shipping has continuously pursued economic benefits. First, the company minimized security investments, accounting for only 0.001% of the 2013 safety training session gross revenue. Second, the company did not regard the crew as a top priority. Three of the five MV Sewol crew, including the captain, were temporary workers. Their overall salary was 20-30% lower than other coastline shipping companies paid. This poor environment and lack of safety education clearly affected the way the crew responded in the event of a disaster [5].

Third, Cheonghae shipping did not comply with regulations to increase profits. Before the disaster, MV crew members forged the documents indicating the amount of cargo and the number of cargoes when reporting to the Korea Maritime Institute, which is responsible for passenger and cargo safety. The reported amount was 657 tons of cargo and 150 passenger cars. However, the ship actually had the cargoes of 2,142 tons, and 185 vehicles. The ship would have to have 1565 tons of ballast water, but only had 761 tons in the ballast water tanks which was not enough to actually stabilize the ship on the day of the disaster. This fabricated reporting risked the lives of passengers, yet the company falsified 56 of the 118 trips from January to April 2014 [6].

Fourth, the MV crew members were found to have contributed to the tragedy by committing bribes three members of the Incheon Coast Guard after the vessel was renovated. Thereby avoiding the Cheonghae Shipping from

submitting important documents. Finally, the Cheonghae Shipping lowered the ship's weight by 100 tons and over-estimated the ship's carrying capacity to be approved by the Korean shipbuilding company. Ultimately, the incompetence of the shipbuilding industry and the production of the Chunghaejin Shipping were jointly responsible for the tragedy of the Sewol [7].

3. THE SINKING OF MS ESTONIA IN SWEDEN

MS Estonia sank on September 28, 1994, and killed 852 people, including 501 Swedes and 290 Estonians. The ship was first introduced in 1980 by the Finnish company Rederiaktiebolaget and operated the routes between Turku (Finland), Mariehamn (Finland) and Stockholm (Sweden). It was sold to the Estline Maritime Company in Estonia in 1993. All members of the crew were qualified, and the language of communication on board was Estonian, which everyone understood [8].

MS Estonia departed from Stockholm at 7:15 pm on September 27, and 989 people boarded. The weather showed serene breezes and mild weather, but later weather worsened and some passengers reported seasickness immediately after midnight. At 1 am, one of the crews heard a loud sound like a wave of ship bow. He reported it as a normal occurrence, but there was no ordinary incident, MS Estonia's bow visor was dismantled at 1:15 am and seawater began to penetrate. At 1:20 am, the crew alarmed and the first call was registered at 1:22 am. The water entered the ship very quickly and completely disappeared from the radar at 1:50 am. An hour after the disappearance of Estonia, a rescue effort began and an ambulance helicopter finally arrived at 03:05. Also four rescue boats arrived at the accident site in short time. But, only 138 passengers were ultimately saved. During the next three days, 92 bodies were recovered from the water and the rest of the passengers were still unknown.

After the catastrophe, Estonia (MS Estonia) was constructed hastily and many parts of the ship were found to have been contracted by a Finnish manufacturer. This caused the ship to sink, including a broken bow visor at night of the accident. At the time of the disaster, the other boats also had a bow visor the Estonia had. According to the official report, the main technical reason for the disaster is "safety helmets do not have safety devices", "experience in the

shipbuilding industry was limited, and foundation work for the construction of the bow visor was not well established" [8]. Crucially, the report suggested that the accident was not caused by problems related to corruption, crew failure, or clear regulatory failure. Instead, the "Black Swan" catastrophe occurred and all existing safeguards overwhelmed due to weather conditions at night [8].

Since the sinking of MS Estonia, the Swedish government has worked with all interested parties to establish an agency to investigate the cause of the accident. Table 1 summarises the main activities of the first year after the accident.

Immediately after the accident, on 29 September 1994, after the meeting of the Prime Ministers of Finland, Estonia and Sweden, a joint accident investigation committee was formed to investigate the technical cause of the accident. The second group, "analysgruppen", was formed by the Swedish government to investigate the actions of all state bodies (including parastatal bodies) involved in dealing with accidents and their repercussions [8].

The commission initially consists of nine maritime and judicial experts from three countries, Sweden, Estonia and Finland, and has only one career politician. It was free to work independently of the government. The analyst group, discussed further in the next section, consists of five Swedish nationals (three scholars, one union leader and the head of the Swedish Red Cross).

The response to the MS Estonian incident reflected Sweden's ability to collect crisis management in a number of ways. First, discussions on the MS Estonia accident were held among the leaders of all the parliaments in Sweden in 1994, 1996, 1997 and 1999, showing that all parties are jointly adopting crisis and risk management issues. Second, Oct. 2 was declared a day of mourning, and the National Memorial Hall was established in 1995 in Djurgården, Sweden, with a tax fund with the names of all the deceased, excluding the 37 families requested by the family. The memorial site guarantees that there is space to remember the tragedy, and architecture can be seen as an act of trust building. In 1995, along with Finland and Estonia agreed Sweden's decision to sanctify the Estonian shipwreck, protect the tomb, and build trust equally. Finally, a memorial ceremony was held every year for 20 years after the disaster.

Table 1. Swedish policy responses to the MS Estonia accident

	<p>September 28: the Swedish prime minister meets with the prime ministers of <i>Estonia</i> and Finland; they decide to set up the Joint Accident Investigation Commission.</p> <p>September 28: the Swedish prime minister establishes an emergency group, which has its first meeting that day and starts contacting different agencies to deal with the aftermath of the disaster.</p> <p>September 30: the Swedish Maritime Safety Inspectorate begins inspecting all passenger vessels arriving in Swedish harbors.</p> <p>October 2: national day of mourning.</p> <p>October 3: minute of silence in parliament. October 18: party leaders' meeting.</p> <p>October 19: the Minister of Communication announces that the government has instructed the Swedish Maritime Administration to conduct an analysis regarding how to handle the</p>
1994	<p>bodies of the victims of the accident.</p> <p>October 20: the Public Art Agency is instructed to investigate what is required to establish a place of mourning.</p> <p>November 3: a representative is appointed by the government to help the victims to promote their interest.</p> <p>December 1: the government decides to provide financial assistance to organisations of relatives of the victims.</p> <p>December 7: party leaders' meeting.</p> <p>December 12: party leaders' meeting.</p> <p>December 15: the government decides not to salvage the vessel and the disaster site is declared a graveyard.</p> <p>December 22: the government establishes the Maritime Safety Committee, which is charged with developing ways to improve maritime safety.</p> <p>April 7: the Joint Accident Investigation Commission publishes an interim report concerning technical aspects of the accident.</p>
1995	<p>June 1: the parliament approves the decision to sanctify the accident site.</p> <p>September 28: one year after the accident, several memorial events are held throughout the country.</p>

4. RESULTS AND DISCUSSION

In Korea, economic reductionism promoted deregulation policies and resulted in the tragedy of the MV. In Sweden, economic development balances historically strong welfare systems. This study analyses the above two cases using the Sendai framework, one of the crisis management theories. The Paris Agreement and the Sendai Framework provide an international social strategy for mitigating disaster risk. The strategy is shown in Fig. 1.

The Sendai Framework sets expectation benefits for a substantial reduction in economic, physical, social, cultural and environmental asset losses to individuals, businesses, communities and nations, as well as loss of life, livelihood, and health from disaster by 2030. Priority is set for this expected effect and specific action items are presented. The behavior priorities for the Sendai framework are shown as follows.

Behaviour priority 1 is understanding disaster risk and key issues are Risk assessment, evaluation,

information sharing. In practice, policies and practices for disaster risk management should be based on understanding disaster risks at all levels: vulnerability, competence, exposure of individuals and assets, and the nature and environment of the risk factors. This knowledge is used in the development and implementation of pre-disaster risk assessment, prevention and mitigation, appropriate preparation and effective disaster response.

Behaviour priority 2 is enhancing disaster risk governance for disaster risk management and key issues are Implementation system, governance / collaboration. Actually, Disaster risk governance at national, regional and global levels is crucial to addressing disaster risks effectively and efficiently. There is a need for solid vision, planning, competence, guidance, and inter-sectoral coordination as well as involvement of relevant stakeholders. Mechanisms related to disaster risk mitigation and sustainable development, and the promotion of collaboration and cooperation in the enforcement of various means by organisations.

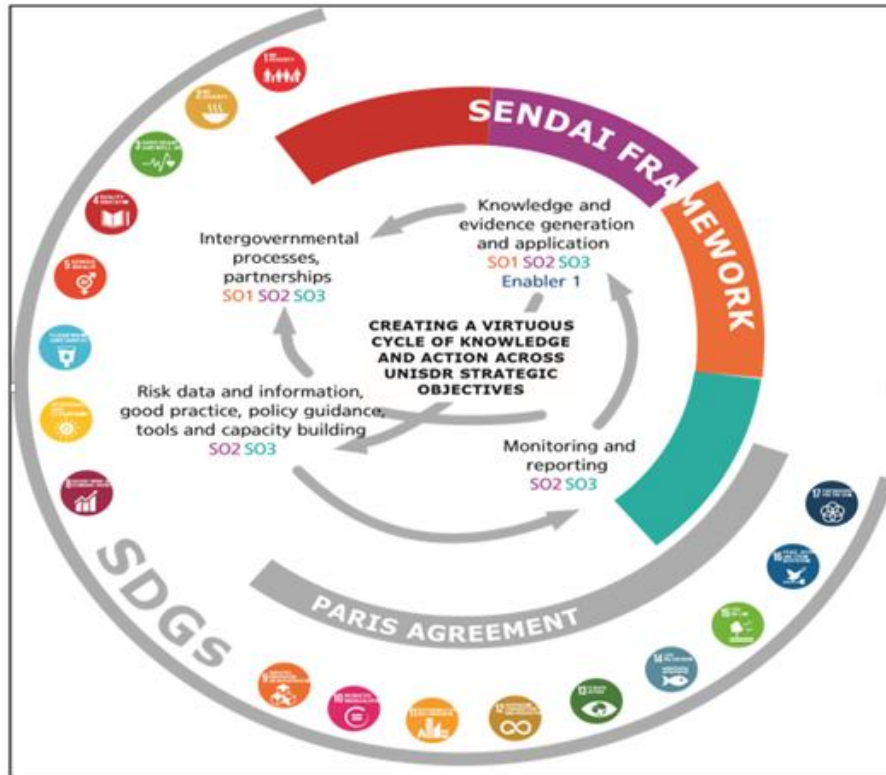


Fig. 1. SFDRR-SDGs-paris agreement [9]

Behaviour priority 3 is investment in disaster risk mitigation to build resilience and key issues are investment & finance. Indeed, Public and private investment through structured or unstructured methods in preventing and mitigating disaster risks is essential for enhancing economic, social, health and cultural resilience as well as the environment, as well as individuals, communities, countries and their possessions. These investments are cost-effective and can be a key factor in innovation, growth and job creation.

Behaviour priority 4 is enhance disaster preparedness for 'Build Back Better' for effective response and recovery/rehabilitation/reconstruction and key issues are Development Process - Disasters, Risk Reduction Integrated Equity. Practically, the increase in population and assets exposed to disasters and the steady increase in disaster risk show the need to ensure that the capacity for effective response and recovery at all levels is prepared. The key is to give women and the disabled the right to openly initiate and promote gender equality, universal access, response, recovery, and reconstruction methods. Build-Back-Better 'through methods such as integrating disaster risk mitigation into

development tools, and ensure that countries and communities have resilience to disasters [9].

Both the sinking of Sewol in South Korea and the sinking of Estonian in Sweden, both of which failed to practice the action priority 1 proposed by the Sendai Framework. However, in response to the Estonian sinking, the Swedish government has been doing well with the Sendai Framework's action priorities 2, 3 and 4 and has been widely discussing as a good example of disaster response until now. On the other hand, the South Korean government has acted to ignore the priorities of the actions proposed by the Sendai Prime Work and to cover their mistakes. The actions eventually resulted in even more horrible results.

After Estonia's sinking, the Swedish prime minister was promptly informed and held a press conference at 11:30 the next morning. Soon after, the Swedish government established a joint accident investigation committee and the government established a network of agencies to work with civil society members, the Swedish Church and other actors to address the crisis. The government appointed a negotiator to act as

an intermediary between the bereaved family and the relevant government agencies, and opened the national day of mourning.

Although the failure of the front line actors was equally important due to structural weaknesses in corruption and other disadvantages in triggering the Sewol disaster, Korea's political debate subsequently focused on reforming the central organisation. Conversely, the Swedish government has focused on improving the behaviour of frontline workers. In the case of Estonian accidents, corruption has not been a contributing factor since parliamentary auditors have exercised effective oversight. Since the Estonian disaster, the Swedish government has appointed a national analysis Gruppen as well as the Koint Accident Investigation Commission, an international investigative body. Analysts regularly met with people affected by the tragedy so that everyone could be represented and regularly expressed their views. The Swedish government therefore avoided a one-on-one fragmentary investigation of institutional deficiencies in June and August 2014. Also, the bereaved families in South Korea were often ignored by legislators and freed from public and media discourse.

In the case of the MS Estonia investigation, analysts of the Joint Accident Investigation Commission gathered factual information and delivered a final report, then set up an archive called the Estonia Samlingen, which allowed the general public to access the findings. The research also contributed to the improvement of international maritime safety policies and to national and international policy learning.

5. CONCLUSION

In conclusion, Compared with the case in Sweden, it strongly suggests that further measures are needed to end the vicious circle of low safety standards and low confidence in Korea. Compared to the case in Sweden, five policy recommendations should be considered: (1) appoint a nonpoliticised task force capable of carrying out thorough investigations without a predetermined deadline for final reporting. (2) To establish the public Sewol archive similar with the Estonia Samlingen. (3) Expand resources available to frontline workers in charge of safety and rescue. (4) Moving the national audit body to the legislature. (5) Internationalisation of policy lessons derived from the tragedy of the MV Sewol.

Firstly, nominating an independent investigation task force is essential to the policy development of joint surveys and analysts in Sweden case. For Scandinavian and Swedish institutions, members drafted primarily marine and legal experts, with one exception for career politicians. Both groups were autonomous and allowed unlimited time to conduct inquiries. In Korea, the Special Investigative Committee is politically discussed to the extent that the government and the opposition demand that 10 out of 17 conventions be filled. Although fair research is most important in future crisis management. It is also necessary to scrutinise the entire Korean society in order to pursue reforms holistically and avoid institutional fragmentation. There is a risk that Korea's special investigation committee will be subject to party politics and be placed in a time frame too limited.

Secondly, a public, state, and national administrative archive should be established that collects all information related to the MV Sewol tragedy along the Estonia Samlingen line in Sweden. Although one observer [10] has proposed to establish a private archive that is not subject to state control, such an approach may be short, assuming that the content of state control can be subject to political interference. It requires vision because it requires confidence in compliance with future safety policies. Further, the substantial resources needed to maintain such archives should be provided by the South Korean government. Installing a public archive can increase confidence in the government and break the vicious cycle of low trust.

Third, reform of the safety policy should focus on the front line rather than the top-down reform. Workers at the forefront need enough resources to handle disasters directly and do so. Unfortunately, the policy discourse triggered by the intense event of the MV Sewol tragedy was largely about central government agencies, and issues related to frontline actors were rarely discussed. When firefighters raised their voices to require better equipment, not only did they hear their voice, but they must also follow government's decisions to reduce the use of temporary workers in safety-related jobs [11].

Fourth, consideration should be given to moving the system oversight of the Audit Office, currently located under the president's office, to the National Assembly should be considered. From a normative point of view, the Legislature represents a wider range of actors and wider citizens compared to a president elected by

majority rule in a single period of five years. This institutional change requiring constitutional reform could potentially provide a more independent auditing agency for investigative activities. Separating the safety zone audit from the executive can also help limit the influence of bureau-fia in the future.

Finally, internationalisation of policy lessons derived from the Sewol disasters is important. The Korean coastal ship industry currently fails to meet international standards, and initial deregulation contributed to the accident. The International Maritime Organisation imposed ISM (International Safety Management) regulations in the maritime shipping industry after the famous tragedy of Titanic in 1912, and Sweden contributed to the elaboration of this rule since the tragedy of MS Estonia. The Korean coastwise vessel industry must also actively participate in international maritime issues. This is because important lessons can be learned from the tragedy of the MV Sea. This may be another step in breaking the vicious cycle of prioritising the economic growth of the shipping industry on passenger safety.

In order for Korea's modernisation to progress, it is necessary for the national institution to continue to have significant milestones. The five policies presented here will allow the Korean government to restore confidence. A higher level of government trust is important because it provides one of the prerequisites for ending the vicious cycle of Korea. Trust building policies can break the vicious cycle. But the government must first gain this trust. Only a more credible government can link Sweden with an "imagined community" to modernise institutions and to collect risk management. Therefore, the transition to a virtuous cycle of comprehensive modernisation should be the desire of Korean policy makers.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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