An Analysis of Media Reports on Nuclear Accidents and Nuclear Safety

SeongKyung Cho [a], Hansoo CHANG [b*]
[a]*Myongji Univ., 116 Myongji-ro, Cheoin-gu, Yongin-si, Gyeonggi-do 17058*
[b]*Korea Institute of Fusion Energy, 169-148 Gwahak-ro, Daejeon 34133*
[*]*Corresponding author: jjang@kfe.re.kr*

1. Introduction

The natural disaster caused by the climate crisis and the continued impact of overseas nuclear accidents are spreading a social concern of the response to nuclear accidents. Responding to the accident and ensuring the safety of nuclear power plants are not only scientific and technological measures but also social trust in them is very important. In this study, we will analyze the media reports related to nuclear accidents and nuclear safety, and based on the results, we would like to draw up implications for improving the response system for nuclear accidents and establishing related policies.

2. Methods of Research

2.1 Data collection

Subject to analysis are major newspaper articles (Kyunghyang Newspaper, Dong-A Ilbo, Munhwa Ilbo, Chosun Ilbo, JoongAng Ilbo, and Hankyoreh Newspaper) and broadcast reports (KBS, MBC, SBS, and YTN) for two years from January 1, 2020 to December 31, 2021. The nuclear accident, radiation accident, nuclear disaster, radioactivity prevention, and nuclear regulation were extracted by using Big Kinds[1] as search words.

2.2 Subject and method of analysis

Among the extracted articles, a total of 1,618 cases (522 in 2020 and 1,096 in 2021) were analyzed except for those with very low relevance. This included 1,180 newspaper articles (410 in 2020, 770 in 2021), and 438 broadcast reports (112 in 2020 and 326 in 2021). It was analyzed using Vantage Point[3] and Gephi[2].

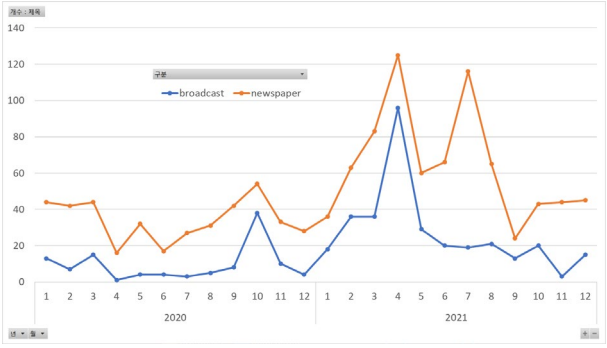

Fig. 1. In the number of monthly articles by media, the number of newspapers is higher than the number of broadcasts.

3. Research results

3.1 Results of Network Analysis of Press Release

The newspaper's top keywords on nuclear accidents are in the order of Japan, Fukushima, Korea, the United States, contaminated water, de-nuclear power plants, and the commission (Nuclear Safety and Security Commission). Wolseong NPP and Shin-Kori NPP were identified as the Korean NPP, and tritium and radiation were identified as the issues. In the case of broadcasting, Japan, Fukushima, contaminated water, the committee (Nuclear Safety and Security Commission), Tokyo, Tritium, and Korea were shown. In broadcasting on also, Wolseong NPP and Shin-Kori NPP were identified as the Korean NPP, and tritium and radiation were identified as the issues. This means that the response to the nuclear accident should include not only at the time of the accident but also continuous measures through the tracking of the impact of the accident. It also shows that the responsibility lies with the Nuclear Safety and Security Commission.

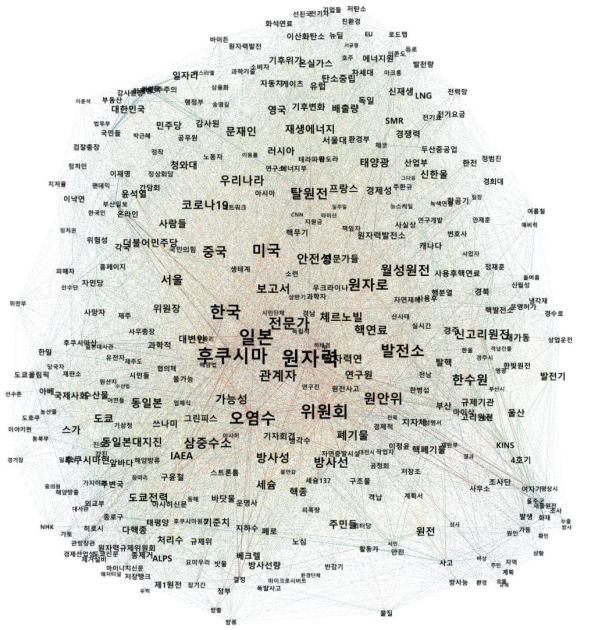

Fig. 2. Co-occurrence Network of Newspaper Keyword

According to network analysis, both newspapers and broadcasters accounted for the high proportion of the issue of contaminated water emissions from the Fukushima NPP in Japan. This means that the response to the nuclear accident should not only be at the

domestic level, but also is necessary at the international level. This shows the need for close international cooperation. In other words, it is difficult to control the risks caused by NPP just by tightening safety regulations on domestic NPP, and it is desirable to have an international accident response system and increase transparency in regulations.

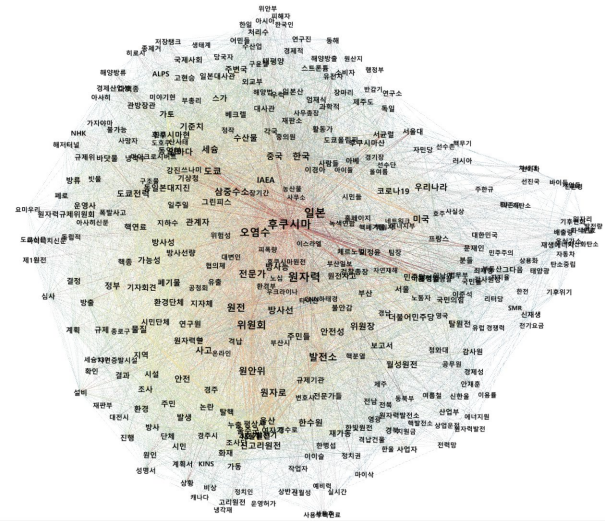

Fig. 3. Co-occurrence Network of Broadcast Keyword

3.2 Accident Relevance Network Analysis

The subject matter that was mentioned with the accident in the newspaper's entire network was emergency and citizen, and radiation showed a link of 87.5%. Operation, fire, leakage and residents ranked next. In the case of broadcasting, the situation was the highest related to accidents at 87.5%, followed by leaks, emergencies, progress, results, causes and investigations. The connection to the fire was 25%. The newspaper focuses on protecting residents from accidents, while broadcasting focuses on causes and results.

3.3 Fire Relevance Network Analysis

In the newspaper's entire network, the most relevant control of fire is radiation, followed by leaks, investigations, causes and planning. This can be interpreted that the newspapers are the first to be alert to whether or not there is a radiation leak when a fire breaks out in a NPP. In the case of broadcasting, cooling materials were mentioned with the fire, followed by a statement and the cause. The fact that NPP in operation, such as Sinwolseong, Ulju County, Saeul NPP Singori NPP, Hanbit NPP, and Wolseong NPP, are related to fire seems to reflect the characteristics of broadcasting that should be expressed through image. In other words, the broadcast can be interpreted as showing interest in external responses to fire rather than the fire itself.

4. Conclusion and implications

There is little chance of a nuclear accident and it should not occur. However, the effects of unexpected natural disasters, aging of facilities, and the possibility of human error always exist. The possibility can also lead to anxiety. The ultimate purpose of responding to nuclear accidents is to protect residents and people. If social trust is not formed in responding to nuclear accidents, it could disrupt the protection of residents and people. According to network analysis, the government's active intervention in the release of contaminated water in Fukushima is likely to have a significant impact on enhancing social trust. As for domestic issues, it is desirable to reorganize physical protection, nuclear emergency preparedness, tritium management, and fire protection system from the point of view of the citizens

REFERENCES

[1] Bigkinds, https://www.bigkinds.or.kr
[2] Gephi, https://gephi.org/
[3] VantagePoint, https://www.thevantagepoint.com/