

Comparative Analysis of International Environmental Communication Practices of DPRK and ROK in the Perspective of Framing Theory

-- Taking Japan's Nuclear Sewage Discharge into the Sea Incident as an Example

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Abstract. Since the disclosure of the plan in 2021, the incident of Japan's Fukushima nuclear wastewater discharge into the sea has been strongly concerned by the international community, especially by the neighboring Asia-Pacific countries, and it has been intensifying in recent years, and it has triggered the world's public opinion once again before the official discharge of the plan in the summer of 2023. The media industry's coverage of this issue needs to consider the cross-cutting fields of environmental, health, and international communication, making it a good case for academic research. Meanwhile, the Democratic People's Republic of Korea (DPRK) and the Republic of Korea (ROK), which are located on the Korean Peninsula and have been greatly affected by the incident, have similar linguistic, cultural, and historical backgrounds, but the existing literature has not provided satisfactory comparative studies on the media industries of the two countries, especially on the mainstream media. In this regard, under the guidance of the framework of high and low levels, this paper selects the relevant reports of the Korean Central News Agency (KCNA) and the Korea JoongAng Daily (KJD) from June to July 2023, conducts content analysis and text analysis, reveals the main points of characteristics, similarities and differences, and provides an operational basis for the establishment of a diversified international communication system.

Keywords: Japan's Nuclear Sewage Discharge into the Sea; Korean Central News Agency; Korea JoongAng Daily; Frame Study.

1. Introduction

Media innovation urges the world to enter the era of network-sourced politics, and international communication is not only an information dissemination activity across national borders, but also a part of international politics and the struggle for international public opinion. Among them, environmental issues have become a new hot topic in recent years in the field of journalism and communication due to factors such as sustainable development and complex international relations.

Meanwhile, since the disclosure of the Fukushima nuclear wastewater incident in Japan in 2021, the international community, especially the neighboring Asia-Pacific countries, has been strongly concerned about the incident. As a result of the 2011 earthquake and tsunami, the core of Fukushima Daiichi nuclear power plant units 1 to 3 melted down, and Tokyo Electric Power Company (TEPCO) continued to inject water into the containment vessel of the units to cool down the core and recycle the wastewater. In April 2021, the Japanese government decided to start discharging the nuclear wastewater into the sea in the spring or summer of 2023 after treatment and to continue to discharge the wastewater into the sea for 20 to 30 years. This international issue concerning global marine ecology and environmental safety has intensified in recent years, and from June to July 2023 it retriggered a surge in world public opinion.

From the perspective of international communication, there are differences in the way of reporting, attitudes, and agenda choices of media in different countries and regions and under different institutional regulations on the same event. Such differences not only superficially reflect the media's own reporting characteristics and communication strategies, but also deeply map the compound factors of international relations, political environment, and media development.

The two Koreas, the Democratic People's Republic of Korea (DPRK) and the Republic of Korea (ROK), share the Korean Peninsula, and geographically they were the first to be affected by the Japanese nuclear sewage discharges into the sea. At the same time, the two countries share the same language and highly similar cultural and historical backgrounds but have very different political systems and long-standing tensions in their unilateral relations. How the media organizations of the two countries follow up on reports on the Japanese nuclear sewage discharge incident to express their own national voices and stances has a certain space for discussion and research value.

As a student majoring in Korean, the author gives full play to his linguistic expertise and chooses official media outlets with similar status and influence in the two countries--Korea Central News Agency (KCNA) and Korea JoongAng Daily (KJD). Under the guidance of Zang Guo-ren's framework theory, the author combed and counted the two representative media's reports on the nuclear wastewater discharge incident in Japan during June-July 2023 through a combination of content analysis and text analysis, to deeply study and horizontally compare the two sides' reporting content, stance and viewpoints, communication strategies and effects. This will not only clarify the similarities and differences between the media reports of the two Koreas, but also provide a reference case for international environmental communication, and understand the interaction between the media, international relations, and international public opinion from a broader perspective.

2. Research Design

In this paper, a sample of news related to the nuclear wastewater discharge incident in Japan published by the KCNA and the KJD from June to July 2023, a period of high public opinion, was used as the object of the study, and a total of 71 entries were collected. Based on Goffman's news framing theory and Zang Guo-ren's framing research model, a total of 6 secondary indicators and 23 tertiary indicators were statistically coded for the high, medium, and low-level, as shown in the table below.

Table 1. Coding table for high, medium and low-level content

A High Level	a Form	1=Message, 2=Newsletter, 3=Commentary
	b Number of words	1=0-500, 2=501-1000, 3=1001-1500 4=1500-2000, 5=2001-3000, 6=3000+
B Medium Level	a Nationality of the main characters of the incident	1=Japan, 2=DPRK, 3=ROK, 4=China 5=Other countries, 6=International Organizations
C Low Level	a With or without pictures	1=With, 2=Without
	b With or without videos	1=With, 2=Without
	c Picture sources	1= YNA, 2= Original, 3=Other sources

With the assistance of SPSS software, the third chapter of this paper will be based on statistical data to analyze in detail the genre, content, length, visualization, and other information of the reporting samples, as well as attitudinal positions and scientific interpretations, to reveal the reporting styles and dissemination effects of the core media of the two countries in their coverage of international environmental issues.

3. Comparative Analysis of the Content of the Framework

3.1 High Level

3.1.1 Percentage of Japan-related Reports and Topics

As shown in Table 2, searching for the keyword "일본 (Japan)" in the official media websites of the two countries, it can be found that in the June-July 2023 time period, there were 152 and 2,033 Japan-related reports in the KNCA and the KJD respectively, which is a 13-fold difference between the two, of which there were 12 reports on the topic of nuclear wastewater (n=7.89%) and 59 reports

(n=2.90%), a five-fold difference between the two, and both account for less than 10%. Compared to DPRK, ROK's Japan-related reports have more pages and a wide range of topic types.

Table 2. Distribution of Japan-related Reports and Topics on Nuclear Wastewater

	KCNA	KJD
Total	152	2033
Frequency	12	59
Percentage	7.89%	2.90%

The difference in the total number of news items reflects the difference in the degree of activity in the development of journalism in the two Koreas and the level of attention paid to popular topics in the international community. Under the influence of agenda-setting, the media mimetic environment of audiences in the two countries is gradually formed.

3.1.2 Genre Distribution

Table 3. Genre Distribution of Nuclear Wastewater Reports

	KCNA		KJD	
	Frequency	Percentage	Frequency	Percentage
Messages	9	75%	1	1.69%
Newsletters	3	25%	56	94.92%
Commentaries	0	0	2	3.39%

As shown in Table 3, the KCNA limited itself to messages and newsletters in terms of reporting genres. Messages, which accounted for the vast majority (n=9, 75%), were brief, describing only the basic information on developments, and were mostly less than 400 words in length. In addition, three newsletters were over 1,500 words, including the one published on July 17, 괴뢰지역에서 역도퇴진투쟁 광범히 전개, 일본의 핵오염수방류 를 저지시키기 위한 실천행동에 진입 (Puppet region widely launched a retrograde struggle and entered into a practical action to stop Japan's release of nuclear-contaminated water)" rarely reached more than 2,500 words, and the article begins with the demonstration by ROK people against Japan's nuclear wastewater discharge and extracts the theme of "ROK people's dissatisfaction with the Yoon Seok-your government", which has a sense of "drunkenness" and an obvious political stance. The news genres of KJD include messages, newsletters, and commentaries. The message is rare (n=1, 1.69%), while newsletters account for a significant proportion (n=56, 94.92%), most of them integrating the views of multiple figures, and all of them are more than 600 words in length, with no shortage of reports of more than 2,000 words, such as the one published on July 15, "'오염수 '가짜 과학 ' 이 국민 혼 빼앗아 괴담으로 번졌다" ("Pseudoscience' of polluted water robs the nation of souls that has turned into a weird story")" amounted to more than 3,400 words. In addition, "[송호근의 세사필담] 해류는 몸을 뒤척이며 흐른다 ([Song Ho-geun's Thin Threads of Writings] The Sea Currents Tossing and Turning and Flowing)," released on July 11, is a current affairs commentary with more than 2,400 words, which is written in a literary style in prose and utilizes rhetorical expressions to show the scene of the impact of Japan's nuclear wastewater on all parts of the world, and to call on the international community to increase its attention.

3.2 Medium Level

3.2.1 National Subjects

Table 4. Distribution of Countries Involved in Media Reports on Nuclear Wastewater

	KCNA		KJD	
	Frequency	Percentage	Frequency	Percentage
Japan	3	25.00%	5	8.47%
DPRK	1	8.33%	0	0
ROK	1	8.33%	46	77.97%
China	7	58.33%	0	0
Other Countries	0	0	0	0
International Organization	1	8.33%	6	10.17%

In terms of the size and proximity of the affected countries, East Asian countries such as China, DPRK and ROK bear the brunt, followed by the Asia-Pacific region such as Southeast Asia, South Asia, North America, and Australia, and finally the whole world. The media of the two Koreas followed the corresponding relationship of closeness and proximity in their coverage, paying more attention to the neighboring countries and setting up issues.

The KCNA focused entirely on East Asian countries, especially on China (n=7, 58.33%), while paying less attention to the protagonist, Japan (n=3, 25.00%), and even less attention to its own country and the situation in ROK. Only one article stated the position of the government of the country as "Strongly condemn and never forgive Japan's discharge of nuclear wastewater", and the rest of the reports were mostly about the position of the foreign ministries of other countries, the voices of international organizations, and demonstrations and marches.

KJD is more diversified in terms of the countries covered, with more than half (n=46, 77.97%) being from their own country, and international organizations and exchanges between ROK and Japan taking up a certain portion of the coverage, with most of the coverage quoting statements made by the people involved and slogans from demonstrations. In addition, western countries such as Britain and the United States are also presented, and all of them are related to scientific research, i.e., providing an academic vision of the nuclear wastewater incident through the popularization of scientific interpretation by researchers from scientific institutions.

3.3 Low Level

3.3.1 Timeliness and Frequency

The reporting period of the KCNA is more concentrated. During the sampling cycle, there were three instances of zero news for 10 consecutive days: June 1-13, June 27-July 8, and July 22-31, respectively. In addition, the news was not timely, and the six news articles that explicitly mentioned the specific date of the event had a lag of 2 days or more, including "중국대표 일본의 핵오염수방류책동 비난 (Chinese representative condemns Japan's instigation of the flood spillage)," which had a lag of up to 4 days and was published on July 15 with a body of only 375 words.

KJD's news releases are more balanced in terms of time and frequency, with professional practices of continuous tracking and in-depth reporting. Specifically, the average publication interval was 1.2 days, and there were no cases of no news for several days in a row. In entries where the date of the event is mentioned in the main text, the news is all released on the same day, which has a strong timeliness. For example, four reports were released on June 26 because TEPCO said that the drainage tunnel was completed.

3.3.2 Graphic Forms and Sources

The official website of the KCNA has a white background and blue label, with no secondary headings, emphasis or indentation in the text, and no relevant links or advertisements around. The following figure is an example, and none of the 12 samples studied were accompanied by pictures or videos.

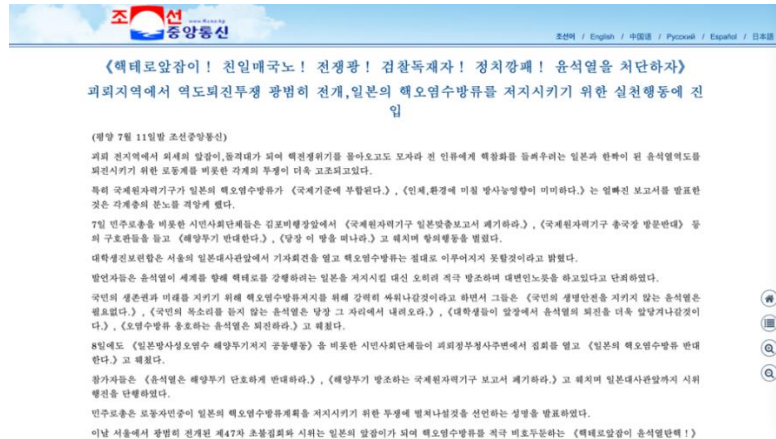


Fig 1. Screenshot of a report by the KCNA



Fig 2. Screenshot of KJD's official webpage

The design of the website of KJD is characterized by new media. The text is layered, with multiple ways of emphasizing the key points such as font size change and bolding, advertisements and hot stories of the day inserted in the text and on the right side of the page, and functions such as extended reading, topic labels, comments and like or unlike at the bottom of the page.

Of the 59 articles in the sample, 54 articles, or 91.53%, were accompanied by pictures. The images include scenes of meetings and events, ID photos of protagonists, visualization charts, etc., and involve full, medium, near, and special views.

Table 5. Distribution of Image Sources in KJD Reports on Nuclear Wastewater

	Frequency	Percentage
Reprinted from YNA	33	61.11%
Media Premiere	15	27.78%
Other Sources	6	11.11%

In terms of image sources, KJD considers both our original and other media reproductions, with Yonhap News Agency (YNA) as the source for more than half of the images (n=33, 61.11%), much more than our own or other sources.

In contrast, the visual design of the official website of the KCNA is relatively simple, and the "notification" release mode eliminates all interference, but the readability and attractiveness are weak; the rich and intuitive page design and all-media presentation form of the official website of KJD meet the aesthetic needs of readers in the era of intelligent media and help readers understand and grasp the key points of the report, but it can also overload the user experience due to numerous elements.

3.3.3 Video Content

In addition to pictures and texts, there were seven other stories on the official website of KJD with videos inserted in the main body of the news, accounting for 11.86% of the total, all of which were reproductions of the event scene. Its page design is flexible, and after the main screen slides, take the "방류 점검에 한국전문가 참여... 윤 대통령, 기시다에 게 요구 (ROK experts involved in the water discharge inspection... President Yoon asked Fumio Kishida)" published on July 13 as an example, as shown in the figure below, the video will be narrowed down to the lower-right corner with a floating window. The video will continue to play or can be closed.

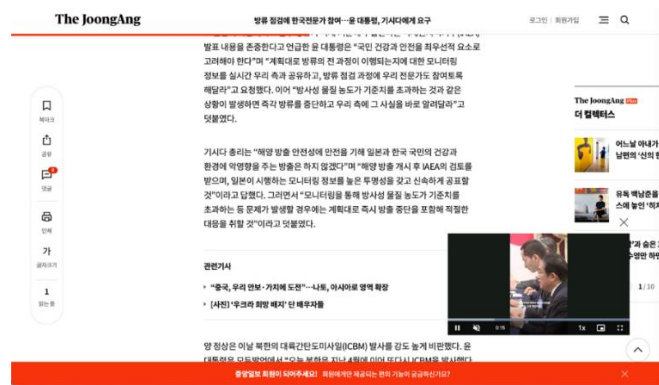


Fig 3. Screenshot of a video presentation by KJD

Based on the analysis of pictures, the differences in the development of media culture and digital economy between the two Koreas are reflected in the communication strategies and news forms, which further shape the different reporting styles and communication characteristics of the two sides.

4. Textual Analysis

4.1 International Environmental Communication: Position First vs Interpretation of Science

How to report on Japan's nuclear sewage discharge and how to improve international environmental communication? The approaches of the two media are different:

The KCNA takes a clear position, firmly opposing the discharge of nuclear wastewater from Japan, and the news events and people's remarks it selects and quotes have obvious tendencies, mainly involving civil protests and demonstrations and authoritative speeches against them. Even the news agency, which has always called ROK a "괴뢰지역 (puppet region)," uncharacteristically reported on events related to ROK people's protests of the discharge and took the same stance as it did. Reading through the text, the report does not provide readers with the space for independent thinking and critical thinking, taking a position more than interpreting it.

KJD seldom reveals a clear position, but selects American scientists, international organizations, and reactions of neighboring countries, and combines environmental issues with science and technology communication and health communication as much as possible, giving readers space for independent thinking and judgment, and interpreting more than taking a position. In addition, some of the reports with strong attitudes mostly focus on ROK's political groups or popular protests and demonstrations, more inclined to the mode of social news.

DPRK's media behavior can be interpreted as political propaganda, and the protests, demonstrations, and opposing statements cited in the reports help to reinforce specific ideological or

persuasive goals. However, such position-oriented reporting may lack objectivity and diversity, affecting the audience's understanding of the big picture. On the contrary, Korean media display a more open and balanced approach to communication. The strategy of borrowing words seems to attempt to provide readers with more information, which is more in line with journalistic objectivism by circumventing the blunt manifestation of the media's stance and helping audiences to think and judge on their own as much as possible.

In addition, the differences in reporting stance and interpretation also involve the interaction between the media and the audience. The KCNA favors providing audiences with specific viewpoints, while the KJD focuses more on providing information, which is more in line with the concept of "audience is the producer" in modern communication.

4.2 International Hot Events: Not a Matter of Concern VS. Watching the Fire From the Other Side of the Fence

4.2.1 National Involvement

The two Koreas have shown opposite stances on whether they are involved in Japan's nuclear sewage discharge into the sea:

Of the 12 samples of news from the KCNA, only one sample featured the DPRK as the main protagonist of the incident, more through the mouth of other countries, standing on the sidelines to observe the evolution of events, reducing the "sense of presence". DPRK's attitude reflects its government's emphasis on internal stability and its political image, avoiding involvement in international disputes and reducing international attention and pressure.

On the other hand, 77.97% of the events reported by the KJD featured ROK as the main protagonist, and the high degree of involvement reflects the social openness and international influence, which also influences the audience's willingness to participate in the discussion of the international issues, and thus influences the international community's perception of ROK. In addition, JoongAng Daily's coverage of ROK-oriented events was equally weighted toward official government statements and parties out of power, with the highest level of attention paid to the Democratic Party (DP), ROK's largest party out of power, and coverage focused on the activities of party lawmakers and related demonstrations.

4.2.2 Attention to Other Countries' Attitudes

Japan, China, DPRK, and ROK are the four countries that have been at the center of attention for Japan's nuclear sewage discharge, while DPRK and ROK media outlets have focused on the other two countries, China and Japan, in different and similar ways.

In response to China's move, both media outlets focused on the Chinese Foreign Ministry's position statement.

In response to Japan's initiative, the KCNA mostly reported on the protests and demonstrations of the Japanese people in support of their position, while the KJD focused on the Japanese government's statement to "set the record straight," such as quoting Japanese officials as announcing that "the content of radioactive elements in the seawater after the sewage discharge is reasonably up to the standard," and other conclusions.

The differences and similarities mentioned above reflect the unity of opposites and ultimately serve the national interest. This also reflects the fact that the media is not only a transmitter of information, but also a participant in the communication process, providing voices and support for specific viewpoints and positions.

5. Prospects for Communication in the International Environment

In general, the KCNA and the South Korean JoongAng Daily (SJD) have each performed with their characteristics, strengths and weaknesses in their continued coverage of the Japanese nuclear wastewater discharge into the sea. Specifically, the KCNA shaped the public opinion atmosphere

with its distinctive position and tendency reports, but lacked objectivity and balance; the KJD focused on the display of pendant information and interpretation of scientific information, but also concealed partisan bias.

With the development of economic globalization and political mediatization, international hotspots, including environmental issues, need more and more diversified and professional voices. Based on the above, the author believes that it can be further standardized in the following aspects:

First, objective and neutral visualization of reports, taking into account multiple sources and opinions. The media should focus on improving the objectivity and credibility of their reports, and avoid overemphasizing their positions and tendencies; for environmental issues with long duration, intertwined interests and difficult-to-understand information, they can increase the proportion of visual reports and in-depth reports, and seek for complementary sources and attitudes, including governments, international and civil society organizations, experts and scholars, etc., to balance the positions of the various parties in the reports, and provide the facts from all angles, and give the readers room for analysis and judgment. This is to balance the positions of all parties in the report, to provide facts in all aspects and give readers room to analyze and judge.

Second, focusing on global trends and impacts to build a community of human destiny. When reporting on international environmental issues, the media should pay attention to the global impact of events, take into account the views and impacts of a wider range of countries and regions, and establish the concept of a community of human destiny for the audience, which is "infinite faraway places and infinite people are all related to me", to open up a global perspective from top to bottom;

Finally, encourage public participation and improve national quality and media literacy. The media should speed up the construction of interactive discussion and education programs on the platform, encourage the audience to participate in the expression of opinions and refutation, and further enhance the citizens' media literacy and sense of social responsibility.

6. Conclusion

Under the background of globalization, international environmental issues have intertwined interests, prominent status, and complex elements, and the influence of the media in constructing the issues has become increasingly important. This paper focuses on the nuclear wastewater discharge incident in Japan, compares and analyzes the representative media of DPRK and ROK horizontally and vertically, and finds that the two countries show more similarities and differences under the premise of safeguarding their interests. It helps to strengthen the understanding of journalism in the same language and different systems in the two countries, and then provides a reference for countries to carry out accurate communication in Korean.

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