

Roles of Malaysian Online Newspapers in the Construction of Public Opinion on Rare Earth Risks¹

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Abstract

This study explored the representation of risks from the controversial Lynas rare earth refining as a risk event by five Malaysian online mainstream and alternative newspapers using qualitative content analysis. The aim is to uncover the role of the news media in the social amplification and attenuation of risks within the literature evidence as those roles are still uncertain. Content analysis is used to explore the online newspapers' roles guided by the Social Amplification of Risk Framework (SARF). The representations typified environmental, financial, health, occupational, property, radioactive, and technological risks and established connections between four risk types (environmental, financial, radioactive, and health risks). Radioactive risk was repeatedly associated with other risks, suggesting that the volume and information flow focused on radioactive risk as a key ingredient for amplification. This connection shows that the nature of the relationship between risks is multi-dimensional, contradicting the unidirectional type found in previous studies. Alternative online newspapers amplified and attenuated more risks, thus, providing more diverse coverage than mainstream sources. Consequently, this study provides evidence that risk representation from rare earth refining in a digital news

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environment is multidimensional and intensified or weakened in a multi-layered pattern. The stakeholders are engaged in a contestation by positioning their narratives to oppose or support their interests, which are amplified or attenuated by the online newspapers as social amplification stations.

Keywords: risk representations, online newspapers, Lynas, public opinion, human health, Malaysia

This study explores the representation of risks in Malaysian mainstream and alternative online newspapers from Lynas Advanced Materials Plant (LAMP) in Pahang, Malaysia operated by Lynas Corporation, an Australian mining company. The Atomic Energy Licensing Board (AELB) of Malaysia has, since 2008, permitted the Lynas Corporation to construct LAMP and to operate the world's largest rare earth plant there. There were fears, protests, and campaigns to stop the plant (AELB, 2020). The fears arose from huge toxic-related waste amid allegations that Lynas has no safe disposal plan for radioactive waste. Further, Tengku Ismail et al. (2016) and Ng (2014) highlight that public concern about the LAMP was the potential contamination of the environment and the adverse health impact from the mismanagement of radioactive waste, a fear reminiscent of Malaysia's first rare earth plant owned by Mitsubishi Chemicals, which was shut down in the 1980s and linked to cases of leukemia and deaths due to radiation exposure. Studying the representation of risks from the LAMP in Malaysian online newspapers is essential because as Hove et al. (2015) posit attributes of news reporting on risk affect public understanding and response to a risk, and how its uncertainty is presented affects the height of uncertainty and public response to the risk.

The pervasive discourse of the LAMP on the Internet is not unusual. A 2017 snapshot of the Malaysian media landscape shows that 94% of 15-24-year-old adults consumed both traditional and digital media, and smartphone penetration is 98% (Nielsen Consumer and Media View, 2018). The 2017 Reuters' Digital News Survey shows that 86% of Malaysians consume online news, and Malaysia's growing Internet

penetration is a main reason why online news portals are the medium of choice for many (Newman et al., 2017).

Notably, Kitzinger and Reilly (1997, p. 320) argue that “risk has become a defining concept in public debate and the mass media are seen to play a key role in this social transformation.” However, despite the pervasiveness of the discourse on the LAMP in several media forms and the uncertainty and apprehension regarding risks from rare earth processing amidst memory of fatal consequences in Malaysia, there is a dearth of research on media representation of risks on rare earth processing in Malaysia. Such studies include a survey of risk perception of youths in Kuantan communities (Nik Norma et al., 2018); Malaysian newspapers’ framing (sources and slant) of the Lynas project (Sualman et al., 2017); a survey of local community’s acceptance of the LAMP (Tengku Ismail et al., 2016); persuasive strategies used by Lynas and its supporters to engage environmental campaigners and residents (Phua, 2016); how social media platforms created digital environmental publics in online discourse about the LAMP (Kiranjit, 2015); and Malaysian mainstream print newspapers’ environmental reporting of the Lynas’ project (Mustafa, 2012). Past studies related to media and Lynas sought to examine the construction and deconstruction of the Lynas narrative by the Malaysian media and revealed that reporting is politically motivated (Sualman et. al., 2017; Kiranjit 2015; Mustafa, 2012).

This study contributes to knowledge on risk communication, specifically, on the role of the news media and news sources in the social amplification of risk. Existing literature shows a dearth of studies on media and risks in Malaysia, and Raupp (2014) corroborates that little evidence exists to understand the role of the news media and the precise ways in which the media actually amplify risks in public debates. Consequently, this study aims to uncover the roles of online newspapers, as a sub-set of the online news media, in risk amplification or attenuation in a digital news environment with the objective to explore the types of risks and their relationships based from rare earth processing as a risk event.

The Social Amplification of Risk Framework (SARF) is used as a guide for this research. The main thesis of the SARF (Kasperson, 2012, 2018; Kasperson et al., 1988; Pidgeon & Barnett, 2013) is that information processes, institutional structures, social

group behavior, and individual responses shape the social experience of risk and contribute to risk consequences.

In the SARF, Kasperson et al. (1988) argue that information mechanisms for social amplification of risk may be through personal experience and/or direct or indirect communication. The effect may reassure or alarm the receiver and/or provide feedback on the nature, extent, and manageability of the hazard. However, since many risks are not experienced personally or communicated directly, people learn about risk from other persons, groups, news media, and social media as Kasperson later added (2018). Meanwhile, information flow becomes a key ingredient in public response and acts as a major amplifier or attenuate through the following attributes: (i) volume (ii) degree to which factual or inferred information is disputed (iii) extent of dramatization and (iv) symbolic connotations from the information and terminology. This study argues further that not everyone who is likely to be affected by a risk will be directly exposed to it. Therefore, information flow in online newspaper news become channels of information for key actors and members of the public to understand risks from the Lynas rare earth processing in Malaysia.

Literature Review

Media and Public Perceptions of Risk

Sandman (1986) explains that, to the media, risk is about safety or danger, and Dunwoody and Peters (1992, p. 202) submit that “a study of media coverage of risk is likely to define risk information as part of a large, probably diffuse, package of information about such things as technological disasters (controversial) technologies, environmental issues, and health problems.” Kamrin et al. (1995, pp. 84-86) explain further that outrage is the emotional reaction to risk news and this plays a bigger role in the reaction of members of the public than scientific information provided by experts. The preceding has direct links with the central argument on the perceived risks from the LAMP in Malaysia because Kamrin et al. (1995, p. 84) argue that in a risk event, “when people are outraged, they may overreact. Conversely, if people are not outraged, they may underreact.”

However, there is no complete understanding of how perceived risk is represented in the mind of the individual, because the public seldom has a different perception from that of experts (Illing, 2001). Furthermore, Stern and Fineberg (1996, pp. 215-216) assert that “risk is a concept used to give meanings to things, forces, or circumstances that pose danger to people or to what they value.” Descriptions of risks are typically stated in terms of the likelihood of harm or loss from a hazard, and usually include an identification of what is ‘at risk’ and may be harmed or lost (e.g. human health, ecosystem, personal property, economic activity, etc), as well as hazards that may occasion those losses, and a judgment about the likelihood that harm will occur. Risk is also synonymous with probability of harm or expected mortality from a health perspective (Slovic, 2016, p. 25) or associated with threat and danger from the environmental perspective (Nik Norma, 2015). Therefore, perceived risk varies and could derive from lack of knowledge about a risk or risk event and its uncertainties and this can generate anxiety. Meanwhile, an increase in information can be used to overcome the uncertainty, and lead to the reduction of uncertainty and subsequently to the reduction of perceived individual or public risks. This study, therefore, explores the information used to represent perceived risks from Lynas’ rare earth project in Malaysian online newspapers.

Relationship Between Types of Risks in Media Representations

Empirical evidence in media representations shows that there is a relationship between risk types. Zhang and Zhong (2010) argue that some forms of risk, such as environmental risk, mostly cause other types of risks or incidents. This corroborates evidence from news representations of environmental and technological risks in Amberg and Hall (2008) and Metag and Marcinkowski (2014). Amberg and Hall (2008) performed content analysis on U.S. newsprint representations of environmental risk and benefit from aquaculture and found a relationship between environmental and health risk. Technological risk was also associated with health risks according to Metag and Marcinkowski (2014) who used content analysis of news coverage of nanotechnology as an emerging technology in Austria, Switzerland, and Germany.

The study by Amberg and Hall (2008) related environmental risks to the source or type of real, potential, or implied health problems. Meanwhile, the study of media

representation of technological risks from nanotechnology by Metag and Marcinkowski (2014) showed that technological risks can produce health risks. Notably, Martin (1996) defines technological risk as danger to the public from technological systems, due to breakdowns or normal operations. Thus, it can be concluded that if media representations of environmental and technological risks have been related to health risks, then media representations of rare earth processing (as an emerging technology) in online newspapers in Malaysia can also provide contemporary empirical evidence about the relationship between various forms of risks. This appears logical since the defunct Malaysian National Professors' Council and the Academy of Sciences Malaysia admit that rare earth elements have both environmental risks and potential economic opportunities that can be managed with improved technologies and better understanding of the implications on health and environment (ASM & NPC, 2011).

Therefore, the torrents of information on risks in Malaysian online newspapers provided by news sources may increase or reduce uncertainty depending on the nature of signals that are transmitted, considering the assumptions put forth in the SARF by Kasperson et al. (1988, pp. 178-179) that "risk events interact with psychological, social, and cultural processes in ways that can heighten or attenuate public perception of risk and related risk behaviors."

Public opinion construction by online media can be understood through the basic theory of framing that suggests news presented to the audience could influence the choices people make about how to process that information. This process is done by amplifying or attenuating the news for a period of time. Media drives the agenda by influencing how much importance people attribute to issues based on media coverage (Ardèvol-Abreu, 2015).

Methodology

This research employed qualitative content analysis to explore the evidence of representation of risks due to the Lynas rare earth project in Malaysian online newspapers. The news sample was comprised of news published from January 2011

to December 2015. The approval of the construction of the LAMP was granted in 2008, but it became an issue for public discourse in 2011 after a news report on the LAMP appeared in the *New York Times*. This attracted public attention in Malaysian and international media coverage. In February 2012, the Atomic Energy Licensing Board (AELB) of Malaysia granted a two-year conditional Temporary Operating License (TOL) and a two-year Permanent Operating License (POL) in September 2014, following which the controversy over the LAMP and the heightened media discourse faded.

The three most highly ranked alternative online newspapers (*Malaysiakini*, *The Malaysian Insider*, and *Free Malaysia Today*) and the two most highly ranked mainstream newspapers (*The Star Online* and *New Straits Times*) were sampled. Some text in the images used in the news were in the Malay language or Chinese and were translated into English for analysis. Online newspapers were studied due to the ubiquitous nature of online news, the widespread publicity of information on Lynas rare earth project in Malaysia online, and accessibility of information on the Internet by Malaysians according to statistics provided in the introduction.

In total, 1,098 news articles were purposively searched using the key words Lynas, rare earth, Gebeng, Kuantan, Pahang, and Malaysia. These articles were retrieved and saved in Portable Document Formats (PDFs) from each online newspaper archive for free, except *Malaysiakini*, which was accessed after subscription.

The news was coded using the units of analysis (headline, lead, photograph, caption, and body text) to uncover (sub)themes. A trial of randomly selected news items using NVivo software to pretest and refine the coding structure was conducted. Trial coding was guided by the research questions and several qualitative research coding propositions (i.e., Charmaz, 2008; Lofland et al., 2006; Ryan & Bernard, 2003; Strauss, 1987), and it randomly selected 150 news items from the 1,098 purposively searched samples to represent each newspapers. The trial coding process also revealed the need for translation services. Some of the write-ups in the banners and placards in the photographs used in the online newspaper news were, for example, in Malay language and Mandarin. The actual coding was conducted in NVivo too but using only the coding propositions in Charmaz (2008) and Lofland et al. (2006).

Charmaz (2008) suggests that to code is to find out: (1) What is happening? (2) What are people doing? (3) What is the person saying? (4) What do the actions and statements take for granted? (5) How do structure and context serve to support, maintain, impede, or change these actions and statements? Lofland et al. (2006) suggest that codes are about: (1) Acts (brief events) (2) Activities (of longer duration in a setting with people involved) (3) Meanings (what directs participants' actions) (4) Participation (people's involvement or adaptation to a setting) (5) Settings (the entire context of the events under study). The adaptation of the proposition was: (1) What is happening? and (2) What is a person [or group, organization] doing? Subsequently, the adapted coding structure addresses research question: What risks are represented from Lynas' rare earth project in Malaysia in the news?

Results

Risk Types and Relationships

Environmental, financial, health, occupational, property, radioactive, and technological risks were uncovered from the representations. A multidimensional relationship, which repeatedly associated radioactive risk with others, uncovered links between radioactive, health, environmental, and financial risks across five levels: radioactive-and-health risks; radioactive-environmental-health-and-financial risks; radioactive-health-and-financial risks; radioactive-environmental-and-health risks; and radioactive-and-environmental risks.

Environmental risk encompassed possible threats to air, land, and water and related habitats near the plant and environs as exemplified in Figure 1 and some extracts, for example: "Several containers of chemicals from the Lynas rare earth plant fell from a trailer... 13 of the 15 containers fell off the trailer's side... Four of them broke causing the NdPr chloride solution to spill..." (*The Star Online*, March 28, 2014); "A severely damaged ecology will affect fishing, agricultural and animal husbandry industries whose products will be contaminated..., said the group" (*The Malaysian Insider*, June 1, 2011); and "The rare earth industry will destroy the lives of people, wreck the environment and leave behind a trail of poison that will linger for billions of

years, Malaysian Civil Liberties Movement (MCLM) president said today” (Free Malaysia Today, April 4, 2011).

Figure 1

Typification of environmental risk (Malaysiakini, March 11, 2012)



Meanwhile, financial risk was represented as economic liabilities to the Malaysian people and government from the LAMP, and loss of livelihoods, including financial threats to the LAMP and Lynas Corporation such as the fall and rise in share prices, debts, and loans as follows: “...the installment time frame of five years for Lynas to pay the USD50mil security deposit has been increased to seven years. This means Lynas no longer has to pay USD10mil a year..., said an assemblyman...” (*The Star Online*, May 30, 2014); “...Costs associated with the ramp-up of the plant in January have weighed on the company's results, with non-cash depreciation and amortization charges in the half year rising by A\$8.5 million, a statement from Lynas says” (*New Straits Times*, March 11, 2014); “Lynas had said in April that delays in obtaining the licence for its facility, which was initially approved in January, may have very serious consequences for the RM80 billion worth of rare earth orders already received as it is sold out for the next 10 years” (*The Malaysian Insider*, July 26, 2012); “SMSL said today that Lynas’ failure to secure loans from major banks to finance the RM2.5 billion rare earth plant in Gebeng was a clear sign of the high risks involved” (*Free Malaysia Today*, January 25, 2012); “Kuantan is a tourism city. If the rare earths refinery starts operations, it will have a domino effect that will cause unimaginable impact on

Kuantan's economy, whether it is on fish, other seafood, bird's nests, plantations, property or tourism, Pahang PKR central committee member said" (*Malaysiakini*, March 13, 2012).

In terms of health risks, this was represented as how hazards from the LAMP threatens the people's exposure to birth deformities, rare diseases, and terminal illnesses, which are depicted in Figure 2 and as follows: "The government is concerned about the welfare and health of the people but efforts to attract foreign investors are also very important, MCA president told reporters" (*The Star Online*, March 16, 2012); "The construction of a rare earth plant in Gebeng... is not harmful to the people..., said Pahang Menteri Besar" (*Malaysiakini*, November 20, 2011); and "The Malaysian Medical Association (MMA) has warned that the Lynas rare earth processing plant will increase the risk of malignant cancers for those living in the vicinity" (*Free Malaysia Today*, June 2, 2011).

Figure 2

Typification of health risk (Malaysiakini, February 6; April 8-9, 2012)



Meanwhile, occupational risk was associated with hazard to Lynas' technical staff or engineers at the LAMP thus: "Opponents of the Lynas Advance Materials Plant in Pahang have renewed calls for the closure of the controversial rare earth refinery following the death of an engineer who drowned in a pond at the facility yesterday. [The] 33-year-old engineer... was believed to have slipped and fallen into a pond at

9am yesterday..." (*The Malaysian Insider*, December 14, 2013); Other examples stated that: "admittedly there is radiation, but the amount is minimal and not harmful. Every worker will adhere to safe operation procedures like in any other industries..." (*Malaysiakini*, April 25, 2012).

Additionally, property risk appeared as threat (or lack) to homes of residents in the vicinity and neighborhood of the plant in terms of value, and threats to commercial and private buildings (estates, resorts) in Pahang as exemplified below: "It is unaffected, the price has not increased until today... For the last five years, Lynas has not affected the supply and demand of properties in Kuantan, including areas that are close to Gebeng (where the plant was built), said [a] property valuer" (*Malaysiakini*, May 21, 2012); and "The controversial RM700 million rare earth plant in the Gebeng industrial zone is threatening to sink the local property market in Kuantan. The average housing development here has 40 to 50 units, with sales of two or three a month. Over the past few months, some developers have made no sales at all, a property valuer [said]..." (*The Malaysian Insider*, May 30, 2011).

Furthermore, radioactive risk was represented as hazards from toxic materials and radioactive substances and wastes from the LAMP as shown in the following extracts: "Lynas' radiological safety adviser has said that it can process the last residue and dilute radioactivity to below 1 Bq/g..." (*The Malaysian Insider*, June 28, 2012); "The Lynas rare earth plant has raised fears of radiation pollution and has faced many protests over the past year despite the Australian mining company reassuring the public that it had met local and international safety standards" (*New Straits Times*, May 23, 2012); "One resident said, Kuantan is a clean, fresh and beautiful town. I love the place. Radiation is colourless, odourless and dangerous. I have visited Bukit Merah and have seen the pain, the suffering of mothers and families there. I will do everything possible to stop the Lynas project. I do not want to be another victim of rare earth pollution..." (*Free Malaysia Today*, April 17, 2012).

In addition, technological risk was represented as dangers resulting from construction, design and engineering problems from the LAMP, including equipment failures as follows: "...it was informed that the fiberglass liners using its resin would be installed in concrete walled tanks that did not meet safety standards... AkzoNobel

is said to have refused to supply resins as the tanks – which will be used to mix hundreds of tons of rare earths with extremely corrosive acids – have problems with rising dampness in the floors and cracks in the walls” (*The Malaysian Insider*, February 3, 2012); “According to the *New York Times*, the problems detailed were structural cracks, air pockets and leaks in many of the concrete shells for 70 containment tanks, some of which are larger than double-decker buses. Engineers also accused Lynas of cutting corners by using products of a substandard quality, such as normal concrete instead of the costlier polymer concrete used in Western refineries” (*Free Malaysia Today*, June 30, 2011). Radioactive risk was also represented in images like Figure 3:

Figure 3

Typification of the LAMP as a 'Radioactive Factory' (Malaysiakini, May 6, 2011)

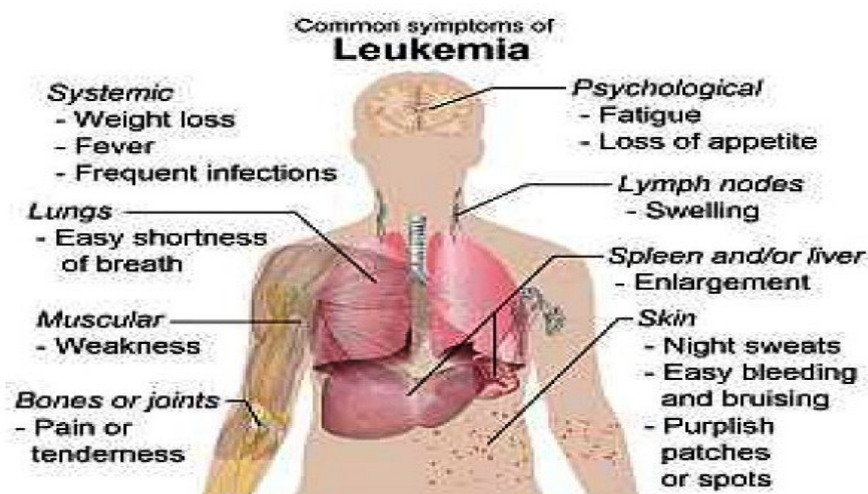


In terms of association between risks, radioactive and health risks were attributed to residents of Kuantan, Malaysian and foreign environmental NGOs, and specified sources (e.g. Figure 4), to highlight health implications in alternative online newspapers only where, “Residents in the vicinity of Gebeng had expressed fears that the disposal of Lynas’ radioactive materials would affect the health of about 700,000 people...”, emphasizing that the plant “...produces a by-product known as Thorium, which is a radioactive element that can cause cancer” (*Free Malaysia Today*, June 23, 2014). Equally, “Environmentalists and Kuantan residents have raised questions over radioactive waste being produced and stored at the plant, fearing a repeat of the last rare earth factory in Bukit Merah..., which has been linked to birth defects and at least

eight cases of leukaemia in the past five years, seven of which were fatal” (*The Malaysian Insider*, May 3, 2011). Figure 4 below used the human anatomy to highlight the deadly nature of exposure to radiation and implications like leukemia, a deadly disease allegedly resulting from radiation exposure at Malaysia's first rare earth plant.

Figure 4

An illustration associating radioactive and health risk (The Malaysian Insider, March 10, 2011)



Consequently, the representations associating radioactive, environmental, health, and financial risks, from former political opposition, NGOs, and residents, appeared only in alternative online newspapers to highlight waste disposal problems and how exposure to it can cause contamination of water by radioactive elements and destruction of sources of income. Opposition politicians said, “... I have two concerns, the leech water and the actual waste... would definitely seep into the ground and reach the water bed, which would be dangerous as the Sungai Balok was nearby and this could affect water supply in the area. And Kuantan is a big fishing port, so this will affect the fishing industry” (Free Malaysia Today, March 10, 2011). Likewise, the Malaysian Civil Liberties Movement (MCLM) highlighted that “the fact that the new refinery will generate RM5 billion a year in exports... equal to nearly one per cent of the entire Malaysian economy may be a tempting prospect. But not when human lives and safety are at stake... This water along with the waste will be flushed out into the nearby Sungai Balok. About 5km from the proposed plant site is a fishing village... The

villagers, mainly Malays, supply fish for consumers in Kuala Lumpur, Petaling Jaya, Penang, Johor Baru and Singapore...” (The Malaysian Insider, March 10, 2011).

Subsequently, the association between radioactive, health and financial risks, which also appeared in alternative online newspapers only, including images (e.g. Figure 5), was attributed to residents who fear a repeat of the radioactive leakage at Malaysia’s first and defunct rare earth factory. It was reported in the news analyzed that, “Some residents in the area fear that the running of the plant may see a repeat of the 1987 Bukit Merah disaster, where a leak resulted in cases of leukaemia, followed by seven deaths... [and] clean-up process worth RM300 million” (Free Malaysia Today, November 14, 2011); A Kuantan resident also “...pointed out that the cleaning and medical costs that the government would have to bear if pollution from the “toxic” plant got out of hand would run into the hundreds of millions, negating any returns from its operation” (The Malaysian Insider, May 7, 2011). In Figure 5 below, residents from Kuantan using a local delicacy called Keropok (fish cracker) and fish type, Ikan Masin (salted fish) in the association between radioactive-environmental-health-and-financial risks. Salted fish is abundant in Kuantan waters.

Figure 5

Radioactive-health-environmental-financial risks highlighting implications of radioactive exposure from the LAMP to people, environment and economy of Kuantan by Residents (Free Malaysia Today, August 29, March 30, 2011; The Malaysian Insider, April 1, 2011)



Discussion

The types of risks from the LAMP found in the representation were: environmental, financial, health, occupational, property, radioactive, and technological risks. In establishing relationships between risks, the connection between radioactive and health risks were attributed to residents, NGOs, and unspecified sources and amplified more in alternative online newspapers. The relationship between radioactive, environmental, health, and financial risks were attributed to political opposition, NGOs, and residents, while the relationship between radioactive, health, and financial risks were attributed to residents. These were amplified only in alternative online newspapers. Meanwhile, the relationship between radioactive, environmental, and health risks were attributed to experts, and amplified by alternative online newspapers only. However, the relationship between radioactive and environmental risks were attributed to NGOs, local entrepreneurs, political opposition, and experts and amplified in both alternative and mainstream online newspapers.

These relationships between risks transmitted by news sources infer no direct personal experiences since there were no incidences of radioactive exposure from leakage or wastes, even after Lynas got its Temporary Operating Licence (TOL) and Full Operating Stage Licence (FOSL). The closest direct experience of risk from rare earth was from a third-party – a toxicologist and public health consultant who reportedly treated cancer patients from the Bukit Merah rare earth plant in the 1980s. Yet, several types of risks and relationships between risks were derived from the information conveyed by news sources. Observably, radioactive risk was iterated in the association between risks. This implies that there was a high volume of information on radioactive risk. Kasperson et al. (1988) explains that where direct experience is lacking or minimal, individuals learn about risk from other persons and from the media. Subsequently, information flow becomes a key ingredient in public response and acts as a major agent of amplification. Kasperson et al. (1988) assert that the goal is to direct public attention toward risk problems. Hence, repeatedly associating radioactive risk to other types of risks meant the volume and flow of information focused on radioactive risk as a key ingredient for the amplification of other types of risks from the LAMP.

Furthermore, the amplification of more risk types in alternative online newspapers is evidence that Malaysian alternative online newspapers offer a robust platform to echo voices more extensively than their mainstream counterparts. This equally showed that the alternative online newspapers provided more voice for the opposition to the LAMP compared to the mainstream online newspapers. This paper argues further that the volume and repetition of radioactive risks and the amplification of the association between radioactive and several other risk types was to direct public attention to the imminent radioactive risk and several multi-dimensional risks.

The current study also found relationships between radioactive and health; radioactive, environmental, health, and financial; radioactive, health, and financial; radioactive, environmental, and health; and radioactive and environmental risks. In this study, radioactive risk was simultaneously related to three risk types (health, environmental, and financial), in an interconnected and spiraling relationship, where radioactive risk led to health and environmental, health and financial, environmental and health, and environmental risks. Therefore, the nature of the relationship between risks in the current study was multi-dimensional, differing from the unidirectional type found in previous studies.

Conclusion

This study used online newspaper news representations of a risk event (rare earth processing) in Malaysia by an Australian company (Lynas) to uncover evidence of the role of the news media in the social amplification of risks. These encompassed amplification, attenuation, typification, association, and description of risks. Radioactive risk was the most amplified and key ingredient in amplification. It was portrayed as the underlying risk with a multi-dimensional impact on other risk types based on its association with health, environmental, and financial risks at five levels. This corroborates existing evidence about the relationship between risks in media representations and new evidence on relationships between other risks in media representations to include: radioactive, environmental, health, and financial risks. This

also showed the vortexed-nature of media representations of the relationship between risks, where radioactive risk is linked in intertwined patterns as the resultant effect of several types of risks.

The representations of risks differed between the alternative and mainstream online newspapers. The former amplified more risks, while the mainstream online newspapers amplified/attenuated fewer risks when conveying risk information. Nevertheless, Malaysian alternative and mainstream online newspapers were instrumental in legitimizing narratives of Lynas, the Malaysian government, and the International Atomic Energy Agency (IAEA) in manufacturing consent and influencing people. In this case, news discourse in society enacted, reproduced, or legitimized dominance of the official narrative. This was done by assigning prominent roles to powerful proponents of the Lynas Advance Materials Plant (LAMP) through direct and indirect quotations of their statements in key news reports. These assertions are made based on the evidence that the statements conveyed by Lynas, the Malaysian government, and IAEA de-emphasized risks from the LAMP. It can be concluded that the description of risks by news sources may have been a signal to the public to form their opinions on the risks of Lynas.

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