Chapter 4
Framing Effects on Renewable Energy News

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4.1 Introduction

In times when worries regarding climate change, scarcity of energy supplies, and the security and cost of energy are getting more critical on both national and global levels, the way the media frames the pros and cons of all energy sources poses greater conspicuity (Delshad & Raymond, 2013). The different presentations of the same reality can reveal some desired aspects while concealing the undesired facets to shape public opinion. Hence, framing effects were heavily employed in both conventional and contemporary media. Different scholars defined the framing in various concepts; however, the main idea prevails. Frames are the different presentations which cause agents to deduce diverse contexts of the same phenomenon. Entman (1993) summarises framing as making a selected piece of information more noticeable to the audience with the help of selection and salience. The famous Asian disease experiment was the most widely cited example of the power of framing and how it operates (Entman, 1993; Kahneman & Tversky, 1984; Tversky & Kahneman, 1981). This experiment exposed that decisions and preferences can shift drastically per the representations of the same truth. This simple notion brings forward the potential power of framing in shaping or changing public opinion.

As one of the most debated topics, renewable energy caused accelerated studies on its public acceptance and general public knowledge (Haber et al., 2021). The

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media is an intermediary in informing the public about the energy sector, as in all other sectors. Moreover, the representations employed by the media have influenced public opinion on policies (Dehler-Holland et al., 2021). Hence frames are embedded in all types and sources of media. As Wolsink (2020) underlined, framing is fundamental to political processes, including decision-making on renewables since the research regarding the social acceptance of energy innovation illustrated that energy is one of the most political domains ever (Martínez et al., 2022; Sun et al., 2022; Kafka et al., 2022; Mukhtarov et al., 2022). For example, with the effect of both national and international energy agencies, internet resources and global energy organisations' efforts to inform and promote individuals, solar energy, which very few people knew and benefited from until a decade ago, has become an important alternative energy source used by a significant part of the society (Özkul et al., 2010).

4.2 Frames and Framing Effects

The rational choice theory dictates that the choices should not be altered in response to different frames of the same stimuli. However, Kahneman and Tversky (1984); Tversky and Kahneman (1981) stated that people's preferences deviate from the rational course of action when the decision problems are formulated differently. Since then, framing effects have yielded many fruits in various disciplines. The framing effects cause the violation of the assumption of well-ordered preferences, hence depicting a departure from the rational choice theory (LeBoeuf & Shafir, 2003). As Tversky and Kahneman (1981) put it, the decision frames are the decision-makers' conceptions and the contingencies of the outcomes associated with particular decisions. Kühberger (1995) defined framing as the decision situations in that different presentations caused agents to deduce different contexts of the same phenomenon. Wolsink (2020) classified frames as biased problem definitions and mental shortcuts created to affect decision-making processes.

So, whenever the alternative depiction of the same reality is given, the predictability of the shifted decisions leads to the studies of framing effects (LeBoeuf & Shafir, 2003). Since the publication of Kahneman and Tversky's seminal paper, dozens of studies have documented framing effects. The framing effects have been applied widely in psychology, political science, decision-making rubrics, and communications studies (Nelson et al., 1997). Studies on manipulating decisions by employing framing effects are vast in medicine, voting, gambling, shaping public opinion, consumer judgment, and persuasion (LeBoeuf & Shafir, 2003).

Frames function to define problems, diagnose potential causes, assert moral judgments, and offer remedies (Entman, 1993). Tversky and Kahneman (1981) argue that formulating the concepts, agents' norms, habits, and personal characteristics have created the frames. According to Entman (1993), framing encompasses selection and salience so that some selected piece of information becomes more noticeable and memorable and makes more sense to the audience. For mass communication, literature identified framing as constructing and defining a social or

political issue for its targeted audience by a communication source (Nelson et al., 1997). Framing is about selecting specific aspects of any reality and making them more salient to promote a particular idea, definition, interpretation, evaluation, or recommendation (Entman, 1993). Leeper and Slothuus (2020) also agree with Entman (1993) and define framing as selectively presenting and interpreting issues and events.

Kahneman and Tversky offered the most widely cited example of the power of framing and the way it operates (Entman, 1993; Kahneman & Tversky, 1984; Tversky & Kahneman, 1981). The case is well known as the Asian disease experiment. According to the scenario, an Asian disease was expected to kill 600 people, and two different programs were proposed to combat it. The authors asked the participants the same question: select the best-fitting program to fight the disease. However, there was a manipulation, so the proposed program details were framed differently (positive/negative) for the two experimental groups. In the positive framing, subjects were informed that if program A were to be adopted, 200 hundred people would be saved. Whereas if program B was to be implemented, there is a 1/3 probability that 600 people would be saved and a 2/3 probability that no one would be saved. In the negative frame setting, subjects were informed that if program C were to be adopted, 400 hundred people would die. Whereas if program D was to be implemented, there is a 1/3 probability that nobody would die and a 2/3 probability that 600 people would die. Programs A–C and B–D were identical regarding consequences, with different frames. In programs A and B, the outcomes were described by the saved lives, while in C and D, the description was done by the lost lives. In the first setting, 72% of the subjects chose program A, while the twin option, program C, was elected only by 22% of the participants (LeBoeuf & Shafir, 2003; Entman, 1993; Kahneman & Tversky, 1984; Tversky & Kahneman, 1981). Even though the positive and negative frames suggested equivalent contingencies, the choices differed dramatically (LeBoeuf & Shafir, 2003). This simple example is a strong demonstration of the effects of framing on the cognition, reminiscence, evaluation, action, and choice of people. LeBoeuf and Shafir (2003) replicated Kahneman and Tversky's (1984) experiments with additional manipulations; they asked participants their intentions regarding the Asian disease scenario and others concerning health, monetary and voting preferences. Despite asking subjects to propose a justification for their decisions for each problem, the framing effect was found to be robust and statistically reliable (LeBoeuf & Shafir, 2003). So, the authors concluded that effortful thinking was not a remedy for framing effects. Controversially Kühberger (1995) replicated the Asian disease experiment with more explicitly described program options. For example, program A was described in more detail: 200 hundred people will be saved, and 400 hundred people will not be saved. However, he still reported prevailing framing effects with more moderate levels. Since plenty of studies presented robust framing effects, they became a danger for all decision-makers in different contexts. Simply because even when aware of multiple frames, people are prone to be pulled back and forth between the alternate depictions of the same decision problem (Kahneman & Tversky, 1984).

Hence, it became well-known that frames are subjective interpretations or emphases of objective reality (Carter, 2013). In different settings, frames serve the exact purpose; prime and emphasise specific elements to construct an argument and provide causation, evaluation, and solution (Entman, 1993). The power of frames comes from how they help the processor select and highlight some aspects of reality while omitting others. Carter (2013) agrees with Entman and states that frames make some aspects of stories more salient and influence individual and public opinion. On the other hand, Tversky and Kahneman (1981) argue that the frames are created by the formulation of the concepts and the agents' norms, habits, and personal characteristics. Carter (2013) describes frames as the socially shared organising principles which structure the social world. In the political communications field, framing was identified as defining a specific problem by underlying some particular social or political issues while outlining other (relevant) issues (Nelson et al., 1997). Then again, Leeper and Slothuus (2020) described the phenomenon as selecting some aspects of reality and making them more salient to promote a particular stance on any matter. According to Delshad and Raymond (2013), framing acts to influence public opinion by emphasising specific aspects of an issue. This process has been mainly carried out by news stories in newspapers or on TV Gamson and Modigliani (1989) claimed that formal production patterns, including media packages, are chosen by reporters or columnists according to political and cultural implications and prejudices. Despite the variation in definitions, the scholars generally agree on the general principles of framing to boost a selected facet of the issues.

Entman (1993) primarily draws attention to a good understanding of the framing concept since it probes the attention to the details of how communication tools (such as news, texts, surveys, and speeches) utilise the power of framing. Kahneman and Tversky (1984) also hints that human reasoning (especially system I) is unsuitable for uniting differently framed pieces of information into abstract forms. Hence it is almost impossible to avoid the traps of framing while making decisions. Carter (2013) emphasizes the role of frames as constructive tools because they can blur the objective reality and influence public opinion.

4.3 Framing Effects in Mass Communication on Renewable Energy

The media is an intermediary in informing the public about the energy sector, as in all other sectors. In addition, media reports are essential in policymaking, interrelating politicians and the public (Dehler-Holland et al., 2021). Also, frames are embedded in all media types, like print or broadcast. Moreover, they convey meaning through the interaction between the audience and the message. Therefore, framing studies concern how meanings are transmitted across media because media reconstructs the social world by stating it in various ways (Carter, 2013). This reconstruction can be done by distorting the meaning of events by avoiding the

historical context, phrasing the reality differently, and placing the news in a specified paper column.

Furthermore, frames are critical determinants of public opinion since communication sources such as the news media frequently reckon on framing to structure the representations of information (Nelson et al., 1997). Delshad and Raymond (2013) suggested that since media is the primary source of information, it has a significant potential impact on public attitudes regarding political issues. Recent cases reported by Rochyadi-Reetz et al. (2019) also support the hypothesis that media can profoundly influence citizens' thinking and opinions towards social and political issues. Hence, framing becomes a valuable tool for potential persuaders to influence public or individual opinion and political behaviour. Bayulgen and Benegal (2019) also found that in the US, framing renewable energy policies in terms of costs has more influenced the attitudes than framing it in terms of economic benefits (Dong et al., 2022; Dinçer et al., 2022a, 2022b, 2022c; Zhang et al., 2022; Yüksel & Dinçer, 2022; Carayannis et al., 2022). However, positive frames in which renewable energy is linked to job creation and economic development seemed less effective. The researchers related this asymmetrical framing effect to the individual evaluation of the direct financial costs to themselves as more important than societal, economic benefits.

With the rise of the concerns aroused by climate change and global warming, many developed countries intensified their policies regarding green and renewable energy supplies (Li et al., 2022a, 2022b; Yüksel et al., 2022; Mikhaylov et al., 2022; Eti et al., 2023). The legislative and scientific efforts and media framing have focused on promoting green energy sources. These escalated and contested renewable energy policies also increased the importance of public stance in matters. Hence recently, most of the research on the media coverage of renewable energy heavily depends on framing the concept in favour of some specific perspective (Rochyadi-Reetz et al., 2019).

Previous research has established that the dominant frames in media on renewable energy bear traces of two main factors; national context and recent events (Rochyadi-Reetz et al., 2019; Djerf-Pierre et al., 2016). The national context is the structural condition of the country, including actual and historical matters such as the structure of the energy system, institutional settings, environmental politics, national ideologies, elite opinions, and societal stance. Whereas recently faced events such as natural disasters, wars, political unrest, and climate change consequences, nuclear accidents may serve as paradigm shifters for energy framings.

The existing literature suggests that national structural conditions have a considerable impact on the framing context of the issue; for instance, in the oil-extracting states of the USA, regional media proposed more opposition to biofuels. At the same time, Australian and Swedish newspapers were more concerned with natural energy resources like solar and wind power (Rochyadi-Reetz et al., 2019). Wright and Reid (2010) stated three media frames in the US press: economic development, environment, and national security. The authors claimed that using these three frames, the US media claim-makers try to link the benefits of green energy to the citizens' long-standing concerns. Rochyadi-Reetz et al. (2019) added one more aspect—economic,

technological, environmental, and societal—in existing US media concerning renewable energy news. Finally, Zukas (2015) analysed the online news sources in the US and claimed that stories had common frames for governmental, environmental, and societal issues.

Delshad and Raymond (2013) analysed 600 articles from US newspapers from 1999 to 2008. Likewise, they classified the news's general frames into seven categories: national security, environmental costs/benefits, unfair/fair, and economic costs/benefits. This framing resulted in a relatively negative public opinion on the issue in a national survey conducted in 2010. These findings fortified the potency of the framing effect employed by media in shaping public attitudes. Likewise, Djerf-Pierre et al. (2016) identified the common frames in articles in two major newspapers in Australia and Sweden between 2010 and 2011. The typical framing categories they classified were economic, environmental, science and technological, political, and civil society. The authors deduced that the frames combined the limited growth worries with economic and technological progress in Sweden, hence remaining vague.

Johansen et al. (2020) investigated 309 news articles and tried to explain the objectification of energy efficiency and its connections in Norwegian media. According to their findings, the positive overtones surrounded the energy efficiency phenomenon and were used flexibly to include different meanings and effects. Furthermore, the authors stated that energy efficiency provided interpretive flexibility and linked incommensurable perspectives on the need to influence energy consumption. Finally, Lyytimäki (2018) studied the long-term coverage of biogas in two Finnish national newspapers. He claimed that the newspaper debates illustrate overly optimistic impressions of the current significance of biogas, and locally focused framings underestimate the future transformative potential of biogas. These finds are in support of the European concerns for environmental issues.

On the contrary, in Austria, frames seemed to be shaped by the conflicting forces of climate controversy, denialism, and the coal lobby. On the other hand, Delshad and Raymond (2013) documented an increase in the negative frames regarding biofuels in the USA, emphasising the potential adverse economic effects, especially between 2004–2008. The media's framing of green energy sources in the US tends to reflect the recent social and economic changes (Wright & Reid, 2010). Those findings supported the hypothesis that the dominant frames of the news were contingent on the ongoing discussions of renewable energy in those countries.

Dehler-Holland et al. (2021) collected approximately 6500 articles from five national newspapers in Germany between 2000–2017 to understand the changes in media framing of a renewable energy support act, the German Renewable Energy Act. The authors discovered that this shift occurred in 2011. Their findings indicated that media coverage has shifted from positive accounts of renewable energy toward the costs that the new act imposes on society. Stauffacher et al. (2015) analysed how different actors framed deep geothermal energy in Swiss media and discovered that the industry predominantly uses an energy transition frame while scientists emphasise a risk frame. Furthermore, the researchers underlined that the Swiss media frames were similar to German media frames but with less emphasis on morality,

ethics, and public accountability concerns. Finally, Mercado-Sáez et al. (2019) reviewed the Spanish newspapers from 2008 to 2012 and exposed that the environmental problems were less apparent while eco-efficiency was highlighted. In addition, they discovered that the Spanish press emphasised the views of interest groups and politicians rather than those of scientists and other experts, ecologists, or citizens.

Pan et al. (2019) examined the media coverage of COP21 from the US, the UK and China on the climate negotiations, reporting COP21 and declaring differing frames for countries. For instance, the Chinese mainly underlined that China contributed to the success of COP21 and played a proactive role in climate control. Furthermore, the researchers discovered that British and American news media shared more similarities; they both implied that COP21 was to present a rules-based order to solve climate problems.

Ersoy and İşeri (2021) examined three mainstream and one online media outlet to identify Turkey's nuclear program frames between 2011 and 2019. Their findings showed that one of the mainstream national newspaper's coverages remained pro-nuclear even after the Fukushima disaster despite the intense hostile coverage elsewhere, highlighting potential social progress and economic competitiveness. Contrarily one of the opponent newspapers kept an anti-nuclear stance emphasising the environmental risks and the debatable public accountability of the current government. On the other hand, Becerikli et al. (2017) tried to reveal how energy efficiency is handled in Turkish media's news and advertisement content. It is discovered that, instead of making more macro and social determinations about the energy problem, the media focuses on more micro frameworks. For example, it focuses on energy efficiency in homes and ignores national and international energy policy discussions. Media texts in Turkey seemed unable to expand their dimension and constantly repeated the narrative cycle of advising energy saving in houses, buildings or individually. The researchers stated that there is a need for diversification and democratisation of expert opinion (NGO representative, scientist, researcher, etc.) on the news to reach diversified views.

Another significant aspect of framing context has been affected by recent occurrences such as war, political disturbance, and natural disasters. For instance, after the catastrophes like Chornobyl, nuclear energy plants were framed as dangerous. Afterwards, they were reframed as the technological solution to climate change because of the intensified concerns about global warming (Rochyadi-Reetz et al., 2019). Then again, after the 9/11 attacks, biofuels were elevated to alleviate USA's reliance on Middle Eastern oil (Delshad & Raymond, 2013). Rochyadi-Reetz et al. (2019) studied the framing of renewable energy before and after the Fukushima incident in two daily newspapers of Australia, New Zealand, the USA, Canada, Ireland, Great Britain, Austria, Germany, South Africa, Indonesia, and India. They found that in all 11 countries, the positive frames which emphasise the economic, social, environmental, and technological benefits dominated the articles. However, a controversial finding is that after the Fukushima incident, the technical and financial benefits frames increased in countries, which authors relate to the activities of lobbyists and other powerful interest groups.

Additionally, Park et al. (2016)'s results claim differences in coverage of energy issues in the US and German press post-Fukushima incident. The US portrayed the Fukushima incident as a natural disaster and partly blamed the Japanese government for the lack of regulations. Conversely, the German press was more focused on discussing non-nuclear energy sources.

Gamson and Modigliani (1989) investigated the relationship between the media discourse and public opinion regarding nuclear energy by analysing the four media sources in the US: TV news, news magazines, editorial cartoons, and syndicated opinion columns. Gamson and Modigliani (1989) draw attention to various frameworks in their studies of nuclear energy's media discourse worldwide. The first and the most dominant framework is the "progress package", in which nuclear power was related to society's commitment to technological and economic development. Hence this package was pro-nuclear; it was cultivated to deal with the accidents like Three Mile Island (TMI) or Chornobyl. This pro-nuclear package reigned the US media during the 50s and 70s; even after the Fermi accident in 1966, were not any critics in Times (Gamson & Modigliani, 1989). Nevertheless, an anti-nuclear discourse has risen with the energy crisis in the 70s. Especially after the TMI incident, the media displayed a somewhat anti-nuclear frame emphasising the non-cost-effectiveness and the lack of public accountability. Authors also claimed that after Chornobyl, the anti-nuclear frames in media have become more pervasive.

In their investigation on Swiss media framing, Stauffacher et al. (2015) reported that after the Basel earthquake in 2006, con arguments outnumbered pro arguments regarding renewable energy technologies. Furthermore, their study explored that Swiss newspapers were prone to be driven by contemporary events such as public votes, seismic events, and catastrophes like the Fukushima accident.

Du and Han (2020) analysed the media frames of nuclear energy between 2000–2016 by assessing the 1790 reports in national and local newspapers in China and enclosed a negative shift in the media's positive stance after the Fukushima incident. According to the researchers, the Chinese press supported nuclear energy until the Fukushima incident. Then, the accident increased the frames, focusing on the risks while decreasing the ones focused on the benefits. They also remarked that the national newspapers openly supported nuclear power while the locals tended to abstain.

Interestingly, natural disasters or catastrophic accidents are not the only frame shifters in media. Mišić and Obydenkova (2022) analysed the Serbian mass media's environmental framing of small hydropower plants (SHPs) by covering 359 articles published by major national online newspapers and news portals between 2000–2020. Their findings disclosed two opposite views, which engaged confronting frames regarding the SHP publicity. The pro arguments accentuated the various advantages, such as new job opportunities, taxes for local municipalities, national energy security, and potential EU membership were dominant during 2000–2014. On the contrary, the opponents stressed the disadvantageous aspects, such as the risks of diminishing water supply and the legality of the current projects, which were dominant between 2015–2020. The authors offered the protests and movements led by local communities and environmental organisations as the source

of this drastic framing shift. Bayram (2020) studied the representations of Turkey on social media in the Eastern Mediterranean energy competition and tried to cover energy competition and socially constructed realities. The study aimed to reveal the constructed representations of Turkey on social media, which plays a vital role in the international energy competition with the Eastern Mediterranean region. The tweets made with the Eastern Mediterranean Hashtag (#Eastern Mediterranean) are analysed on Twitter, covering the dates between January first and December 31st, and collected 566 tweets about #EastMediterranean. The findings illustrated three different representations of Turkey in the Eastern Mediterranean energy competition, which depicted Turkey as the owner, the right holder, and the rising power (Bayram, 2020). This study showed that those frames aligned with the country's contemporary economic plans.

4.4 Conclusion

As Tversky and Kahneman (1981) put it, the decision frames are the decision-makers' conceptions and the contingencies of the outcomes associated with particular decisions. Kühberger (1995) defined framing as the decision situations in that different presentations caused agents to deduce different contexts of the same phenomenon. However, with the various definitions scholars offered on framing, the primary purpose of the phenomenon remains the same across all fields: changing opinions, attitudes or behaviours by presenting an alternative depiction of the same reality. Therefore, frames and framing are applied broadly in various disciplines, such as marketing, psychology, sociology, political science, medicine, decision-making rubrics, consumer judgment, and communications studies (LeBoeuf & Shafir, 2003; Nelson et al., 1997). Eventually, framing becomes a valuable tool for potential persuaders to influence public or individual opinion and attitudes and even political behaviour. Hence they are essential for policymakers to shape public opinion on specific issues. Moreover, the people must support any policy to be successfully implemented. So the media and press offer the necessary tools and methods for communicating with the masses.

The US press seems mainly concerned with national security, economic development and environmental costs (Delshad & Raymond, 2013; Rochyadi-Reetz et al., 2019; Wright & Reid, 2010; Zukas, 2015). On the other hand, European media pointed out the long-term achievements of societal benefits and energy efficiency (Dehler-Holland et al., 2021; Djerf-Pierre et al., 2016; Johansen et al., 2020; Lyytimäki, 2018; Mercado-Sáez et al., 2019; Stauffacher et al., 2015). The optimistic view is another typical frame in European media regarding renewable energy. Then, the Chinese press seems to approach the issue from an international contribution view, focusing on promoting the Chinese contribution to the solutions to the climate crisis (Pan et al., 2019).

Apart from the current political or economic agenda, natural disasters, nuclear accidents, political unrest or wars drastically influence the presentations of

renewable energy in media. For example, in the USA, issues such as Three Mile Island Accident (1979), Chornobyl (1986), and the Fukushima incident (2011) had limited influence on the way the press framed renewable energies. However, the global energy crisis (the 70s) and the 9/11 attacks had immediate shifts in framing (Delshad & Raymond, 2013). On the other hand, countries Australia, New Zealand, Canada, Ireland, the UK, Austria, Germany, South Africa, Indonesia, and India promoted nuclear energy's potential economic and technological benefits even more after the Fukushima event (Rochyadi-Reetz et al., 2019). Contrarily in China Fukushima accident had a reversal effect; it increased the frames, focusing on the risks while decreasing the ones focused on the benefits (Du & Han, 2020).

In sum, the literature on energy and media revealed the deficiencies, mistakes and orientations of news and reporting practices by indicating the dominant stance. Furthermore, the findings proved that the communication tools employed by national presses are framed to serve a pre-determined cause regarding renewable energy technologies and sources (Li et al., 2022a, 2022b; Haiyun et al., 2021; Yuan et al., 2021; Fang et al., 2021).

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