

MEDIA FRAMING OF NUCLEAR ENERGY
IN FRANCE BEFORE AND AFTER
FUKUSHIMA

By

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MEDIA FRAMING OF NUCLEAR ENERGY
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Abstract: Nuclear energy is an important part of France's industry and economy. Since the beginning of program, France set out to be a model country in the successful development of the nuclear energy. The French nuclear program has always benefited from strong support from the French government. However, the nuclear disaster at the Japanese Fukushima Daiichi Nuclear Power Plant in March 2011 awakened the debate between the supporters of the nuclear energy and the anti-nuclear activists. This study analyzes media framing of the nuclear debate in the French media before and after Fukushima. To analyze the articulation of media and government frames, I content analyzed newspaper articles (n=497) written over a 24 month period before and after the accident. These articles came from two of the France's leading newspapers, *Le Monde* (n=262), and *Le Figaro* (n=235). Taken together, these articles represent an excellent snapshot of national print media coverage of the French nuclear debate over this critical two year period.

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CHAPTER I

INTRODUCTION

Over the last several years, renewed interest in nuclear energy throughout the world has prompted actors on all sides of the issue to reinvigorate their efforts for and against nuclear power. There are currently over one hundred nuclear reactors operating in the United States, generating about twenty percent of the nation's electricity. The 1979 nuclear accident at Three Mile Island signaled a significant blow to the U.S. nuclear industry, effectively squelching plans for nuclear expansion in the country for nearly three decades. In 2007, however, the nuclear industry launched a major lobbying campaign and, as a result, several applications to build new nuclear reactors in the U.S. are currently pending. In comparison, European countries have been much less reticent to opt for energy policies heavily reliant on nuclear power. Most notably, France generates nearly eighty percent of its electricity from nuclear power plants. Indeed, France epitomizes what many tout as the *model country* for a successful nuclear energy program. Yet, while the French government, along with much of the public, has remained staunchly "pro nuclear," some segments of the population have remained anti- nuclear movement for decades.

Drawing from relevant research on framing, the objective of this study is to delineate the ways in which nuclear power is framed through the media in France. The findings will provide critical insights into the nuclear debate in France, specifically highlighting the power disparity between competing factions on the issue. The findings of this study have relevance for other countries, including the U.S. and China, which are currently bolstering their nuclear energy programs. Specifically, I address four guiding research questions related to how the issue of nuclear energy has been framed in the media before and after the nuclear accident at the Fukushima nuclear facility in Japan:

- 1. Has the general tone of media coverage of nuclear energy in France changed since the Fukushima nuclear disaster?
- 2. Are there differences in media coverage between conservative and liberal media outlets?
- 3. Has pro-nuclear framing of nuclear energy in the media changed since the Fukushima disaster?
- 4. Has anti-nuclear framing of nuclear energy in the media changed since Fukushima?

France is a unique country throughout the world as it has long relied on nuclear energy for the majority of its energy needs. The civil nuclear program in France began in the 1950s, spurred on back the lack of fossil fuel reserves such as oil and natural gas. The nuclear program in France was accelerated in the mid-1970s as a result of world-wide oil embargos (Topcu 2011). France developed a nuclear program based on three key elements: centralized management of the industry, active cooperation between the government and nuclear companies, and the recycling of nuclear waste (Cue 2009). French historian Gabrielle Hecht (2009: 4) has explained: “The history of the French nuclear program, therefore, is both a history of technology and a history of France.”

As the global leader in nuclear energy power, France is able to export its technology and expertise worldwide. Thus, nuclear energy not only fuels France but serves as a major commodity for business export. For example, French nuclear companies are currently building a nuclear reactor in Finland and working with China to build two new reactors (Cue 2009). Moreover, the French nuclear industry has drawn upon global concerns over climate change to argue that nuclear power is both safe and environmentally friendly. Companies like EDF routinely use environmental images on their official websites where they show, for example, a nuclear reactor surrounded by vast acres of flowers and green space.

Today the country's fifty-eight nuclear reactors are so prominent that French citizens are never more than 180 miles away from a nuclear facility (Godoy 2011). This close proximity to nuclear reactors, however, has not been correlated with increased fears and concerns. On the contrary, the French are proud of their technological sophistication in general, and their nuclear heritage in particular. In fact, scholars have argued that nuclear energy is part and parcel to France's national identity (Hecht 1996, 1998, 2009; Topcu 2008). In her research on nuclear energy in France, Hecht (2009: 300) concluded that the nuclear program in the country was an arena for "articulating and negotiating the meaning of a technological France. The image of a radiant and glorious France appeared repeatedly in the discourse of engineers, administrators, labor militants, journalists, and local elected officials. These men actively cultivated the notion that national radiance would emanate from technological prowess."

Even in the face of worldwide nuclear accidents the French government has maintained their steadfast support and promotion of nuclear power. Most notably, following the 1986 Chernobyl nuclear disaster numerous countries throughout Europe were warning their respective publics about the dangers of radioactive exposures. However, the French government continued to downplay the environmental health risk (Bess 1995). This pattern of government support for nuclear power was consistent following the Fukushima Daiichi nuclear disaster in Japan.

Following the event, the French government emphasized two technical points regarding the country's nuclear program: safety and transparency regarding public information (Topcu 2011).

The French government's promotion of nuclear energy and their subsequent reinforcement of their technological prowess has been correlated with public support from the majority of the nation's citizens. Public opinion polls historically show above average favorable responses to nuclear power, specifically when compared to their German neighbors who have also maintained a substantial nuclear energy program (Bess 1995; Cue 2009; Jasper 1988; Koopmans and Duyvendak 1995). The French anti-nuclear movement, once prominent in the country, had become largely obscure in the years prior to the Fukushima Daiichi nuclear power. Such was not always the case. In the 1970s French anti-nuclear groups organized massive demonstrations throughout the country. Demonstrations against the controversial Superphénix nuclear reactor in Creys-Malvillein brought together approximately 175,000 protestors (Kitschelt 1984). During the mid-1980s, and especially following the Chernobyl nuclear disaster, the French anti-nuclear movement was once again reignited.

However, in recent years the French anti-nuclear movement has largely remained dormant, what Verta Taylor (1989) referred to a period of abeyance. While there have been sporadic protests and ongoing activities by small groups of anti-nuclear activists around localized concerns, the campaign against nuclear power in France had largely been ignored by the mainstream media for the past two decades (Topcu 2011). In general, nuclear power had become largely accepted in the country by the mainstream and no longer a point of contention outside small circles of critics. Moreover, government leaders of various political leanings have continued to support the nuclear program (Patel 2011, Topcu 2011).

The March 2011 disaster at the Fukushima Daiichi Nuclear Power Plant, however, infused new life into the French nuclear debate, triggering a major reaction from the near-dormant anti-nuclear

movement. Consistent with past, the French government of President Nicolas Sarkozy immediately reaffirmed the country's commitment to nuclear energy and to its latest technological innovation, the *European Pressurized Reactor*. The French state-owned electric company, *Électricité de France* (EDF), repeatedly reassured the public that French nuclear reactors are exceptionally safe, and the French nuclear construction company *Areva* continues to contract with countries throughout the world to build their nuclear reactors. Nuclear power is not only a critical source of domestic energy for the country, but it represents a significant source of jobs and economic development. On the other side of the debate, the French anti-nuclear movement has emerged from obscurity and has mobilized significant support throughout the country since the Fukushima accident. Recent opinion polls have signaled a shift in attitudes toward nuclear power among the public. Moreover, the debate took center stage in French politics, as politicians and their representative parties competed for the presidency in 2012 were heavily divided over the country's nuclear future. Fukushima acted as a catalyzing event for anti-nuclear supporters because it showed the possible flaws in the safety of nuclear power plants. However, pro-nuclear ideology still permeates the country and tends to negate the importance of the issue even in liberal media outlets.

This study examines the shifting public debate over nuclear power in France through media coverage of the issue. To analyze the articulation of media and government frames, I content analyzed newspaper articles (n=497) written over the past 24 months. These articles came from two of the France's leading newspapers, *Le Monde* (n=262), and *Le Figaro* (n=245). Taken together, these articles represent an excellent snapshot of national print media coverage of the French nuclear debate over the past two years. The data allow me to examine changes in government and media framing following the Fukushima nuclear disaster. The newspaper articles were coded using a pre-designed coding device aimed at identifying the specific details of each article (i.e., date, substantive topic, sources), and documenting the use of derogatory

characterizations of anti-nuclear activists. The coding device allowed me to categorize the type of derogatory frame being used, and to link the discursive frame to its deployer (i.e., the source). I drew from archival documents as additional data sources for this project. I reviewed primary and secondary materials written about French nuclear power in general, as well as articles and books detailing the history of anti-nuclear activism in the country.

In the following sections I outline the theoretical literature that will guide my study. The project is informed by the theoretical literature on framing. I highlight the importance of media framing, as well as examine how frame disputes play out around scientific debates. I pay particular attention to the important role played by frame deployers in influencing controversial issues. Following my discussion of theoretical literature, I expand my discussion of the data and methods utilized in the project. My analysis is centered around qualitative and quantitative findings related to shifting media coverage of nuclear power in France before and after Fukushima. I conclude by outlining the broader significance of the study and suggesting future research.

CHAPTER II

REVIEW OF THEORETICAL LITERATURE

The theoretical literature guiding my study comes from the broad body of literature on framing. I begin with an overview of research examining media frames, followed by a discussion of framing disputes. I then outline relevant debates regarding the importance of linking respective frames to their deployers [i.e., speakers]. I then outline work on frame resonance and highlight some of the central concerns related to the framing of scientific debates.

Research on Media frames

Current literature suggests that framing processes are critical in defining public debates over controversial topics. While much of the literature focuses on the collective action frames of social movement activists, media frames have also garnered substantial attention (Gamson and Modigliani 1989; Ryan 1991; Gamson 1992; Gamson, Croteau, Hoynes, and Sasson 1992; Smith 1996; McCaffrey and Keys 2000; Rohlinger 2002). Media frames influence how the public perceives the importance of an issue through a variety of measures. For example, repetitive coverage of an issue by the media indicates to the public that an issue is significant and thus

worthy of their attention (Ryan 1991). Media frames also shape the ideological discourse. As noted by Ryan (1991: 18), “Research in the cultural studies tradition stresses media as an arena of ideological struggle in which social forces contend to define an issue and its significance.”

News agencies have hegemonic control over the news they publish and consequently they have tremendous power to shape and influence public debates (Tarrow 1998; Boycoff 2006). Sidney Tarrow (1998: 114) stresses that “The media are far from neutral in the symbols that they select and transmit.” Boycoff (2006) further argues that the manner in which media outlets relay the news illustrates their biases. Thus, media outlets are not objective in their coverage of controversial public issues. Studies of media framing indicate that news coverage is biased in favor of “official sources” (e.g., government officials, scientists) because journalists believe that representatives of social movements lack credibility (Gans 1979; Ryan 1991; Barker-Plummer 1997; Rohlinger 2002; Gans 1979; Gitlin 1980; Klandermans 1988; Ryan 1991; Rohlinger 2002). As a result, social movement activists are often neglected by the media, thus creating barriers and obstacles for the transmission of activists’ positions on controversial topics (Gans 1979; Tuchman 1987; Herman and Chomsky 1988; Smith 1996; Barker-Plummer 1997; Rojecki 1999; Rohlinger 2002)

Several studies have emphasized the role of bias in the coverage of issues (Gans 1979; Gitlin 1980; Klandermans 1988; Ryan 1991; McCarthy et al. 1996; Rohlinger 2002; Boycoff 2006). McCarthy et al. (1996) identified several types of selection bias in the media: 1) news gathering routines, 2) newsworthy pegs, 3) corporate hegemony, and 4) media issue attention cycles. News gathering routines refers to the fact that journalists tend to report on issues when their access to the information is convenient. McCarthy et al. (1996) also described the characteristics of news that are more likely to be broadcast. They further explained that events are newsworthy when they distinguish themselves by their uniqueness and broader appeal to the public. Corporate hegemony refers to the news media’s capacity to shape the news in order to please their sponsors.

Finally media issue attention cycles refer to the inconsistency of media consideration. In other words, newspapers do not always focus on the same issues which makes it difficult for certain events to be published.

The last two concepts -- corporate hegemony and media issue attention cycles -- are central to this study because they directly concern the debate over the nuclear energy in France. As for-profit businesses, newspapers are dependent on sponsors. As a result, they are less likely to publish news arguments or ideas critical to current or potential corporate sponsors (Gamson et al. 1992; McCarthy et al. 1996; Gans 1979; Gitlin 1980; Klandermans 1988; Ryan 1991; Rohlinger 2002). According to McCarthy et al. (1996:481), "They can be expected to select and shape news events in ways that do not threaten their own or their sponsor's interests." Thus, the perceived interests of the institutions who financially support newspapers shape how the news is presented to the public. News and events that conflict with the concerns of a newspaper's sponsor are less likely to receive coverage. For instance, pro-environment demonstrations are less likely to be published in a conservative newspaper.

By the same token, it is important to take into consideration media issue attention cycles in order to understand how a particular issue is covered over time. McCarthy et al. (1996) argued that media consideration for an event fluctuates according to its perceived priority. For instance, catastrophes and environmental disasters routinely attract the attention of journalists during a brief period of time following the event. Thus, in order to receive better coverage, situations have to occur within the short period of time during which media attention is focused on this particular problem. Given that the media do not always consider a piece of information to be relevant at a certain moment, the coverage of an issue or controversy might be delayed or even omitted altogether. In addition to temporal shifts in priorities, scholars have also argued that the coverage of controversial issues is fluid over time (Gitlin 1980, Ferree et. al 2002). Thus, media outlets

may shift their support for a particular controversy, which will be reflected in the nature and tone of their coverage over a period of time.

Studies have found that the State or other social movement opponents can strategically limit social movement influence on the media through a variety of means. First, they can alter and adapt social movement frames to fit their own objectives (Benford and Snow 2000; McCaffrey and Keys 2000; McCammon, Hewitt, and Smith 2004; Rohlinger 2006; Adams and Shriver 2011). Second, they can co-opt social movement frames to confuse the public (Gamson 1992; Ryan 1991; Rohlinger 2006). Third, they can organize events or talks simultaneously with social movement actors in order to draw away news coverage (Rohlinger 2006). Fourth, past research has shown that journalists tend to present the two sides of a debate in order to present the “illusion” of fair and balanced coverage when in fact their coverage clearly favors official sources (Meyer and Staggenborg 1996). Finally, government members themselves can control the media. Even in democratic societies the State can prevent newspapers or television channels from publishing or displaying information about their adversaries’ ideas. Linden and Klandermans (2006: 214) argued that the government does so through “soft” forms of repression rather than through more traditional forms of authoritarian style censorship. For example, a democratic government can argue that certain actions conducted by activists violate national security interests. Given the power of state actors to influence media messaging, social movement organizations often find themselves at a decided disadvantage in terms of media framing.

Social movements’ frames are less prominent in the media because it is difficult for them to exist in opposition to the official frames created by the government (Shriver et al. 2013). Analysts have argued that it is important to understand how state agencies are active participants in shaping public debates because of their active involvement in meaning construction. Sometimes elites resort to coercion in order to manipulate media coverage of public issues (McAdam and Snow 1997; Haydu 1999; Noakes 2000; Cunningham and Browning 2004). Ferree (2004) argued that

excluding an actor from the debate (e.g., social movement activists) is a powerful tactic because it prevents the actors' narrative from resonating. Debates are thus constructed around, on the one hand, an official frame supported by general institutions and, on the other hand, an oppositional frame supported by social movement activists that has far less media coverage. As noted by Noakes (2000: 673), "in terms of both material and cultural resources, state managers enjoy significant advantages over social movement entrepreneurs and that the official frames they construct have a greater chance of triumphing in the struggle for cultural supremacy than do collective action frames mobilized by social movement entrepreneurs. But I also argue that there are limits to official frames." While it is possible to challenge official frames through counterframing, it is exceedingly difficult given differential resources and media access (Shriver, Adams and Cable 2013; Zuo and Benford 1995).

Frame Disputes in the Media

As the previous literature indicates, social movement actors have to compete for media access and they face tremendous obstacles because of differential access to power, as well as the strategic efforts of their opponents who are often closely aligned with media outlets. Beyond the more incendiary barriers to media coverage faced by social movement actors, journalists are also limited by more innocuous constraints such as space limitations. As noted by several analysts, the media does not have infinite space available for the news coverage. As a result, journalists and editors are forced to screen and select the information they transmit (Entman 1993; Koopmans 2005; Neidhardt 1994; Noakes and Johnston 2005). Numerous studies suggest that media outlets have enormous influence over the information they publish and are thus actively engaged in meaning construction themselves (Entman and Rojecki 1993; McCarthy et al 1996; Baylor 1996; Gamson and Modigliani 1989; Klandermans and Goslinga 1996; Benford and Snow 2000). The media have the power to construct the meaning of the actions of social movements organizations and to shape how the public sphere understand and analyze those actions (Noakes

and Johnston 2005; Barker-Plummer 1996; Gitlin 1980; Entman 1993; Gamson and Meyer 1996). The media is thus responsible for broadcasting frames to wide audiences and potentially increasing their significance.

The notion of resonance is critical in the media framing literature. Resonance refers to “the mutually affirming interaction of a frame with a discursive opportunity structure supportive of the terms of its argument” (Ferree 2003: 310). Mueller (1992: 15) explains that in order for a frame to resonate among the target population it must “connect the collective action frame to cultural meanings and symbol systems of the movement’s audience”. As such, resonance is a central point of contention in the conflict for the appearance – or the non-appearance – of narratives in the media (Ryan 1991; Gamson and Modigliani 1989; Noakes and Johnston 2005). Social movements use different tactics to gain or to improve the media coverage of their demands. On the one hand, analysts have argued that social movements can “force” their way into media coverage by staging or facilitating dramatic events aimed at garnering attention from media outlets (Ashley and Olson 1998; Chan and Lee 1984; Noakes and Johnston 2005). On the other hand, given their overarching obligations to newspaper agenda setting, media outlets do not always cover the events fairly (Ryan 1991; Noakes and Johnston 2005; Gamson and Modigliani 1989). For instance, conservative newspapers are more likely to omit information that contradicts conservative policies. Moreover, the media attention cycle often shifts. As a result, the coverage of dramatic events is uneven and can decrease after a certain time frame. This can prevent the public from gaining access to all of the relevant details of a dispute over time. In addition, media producers may be hostile to social movement frames, which contradict their own values and beliefs. As a result, social movement frames may receive far less coverage than the frames of their more powerful competitors (Noakes and Johnston 2005)

Past studies have shown that *framing contests* are an important aspect of media framing (Coles 1998, Davies 1999, Krogman 1996, Neuman 1998, Williams 1995). These contests are often

complex mechanisms that influence the debate (McAdam 1996; Meyer 1995). Ryan (1991) argues that the public plays a central role in the elaboration of how social movement organizations and their opponents organize their framing processes. Through the media social movements can potentially reach several groups of actors based on their ability to adapt their frames. But in order to be successful it may be necessary for activists to conform to the expectations of the different populations. Past studies have showed that groups have different claims. It is important for the members of the social movements to address these requests. For instance, people who lack knowledge of global warming are not going to respond to the same stimuli as people who are familiar with climate change. Ryan (1991: 85) summarizes this important point: “At any time, a challenger may be using the media to reach one or more of five audiences: its active membership, inactive supporters; the general public which is unaware of the issue; a targeted foe (for example, media coverage helped Local 26 show the hotel owners and managers the strength of its base); and media workers themselves, as a force worth organizing in its own right.” The different audiences require unique narratives and frames because the variety of individuals present in the general population is more or less aware of the objectives or the actions of the social movements. It is thus necessary for social movements to develop their frames accordingly.

Ryan further explained that competing actors – social movement activists as well as their opponents - can utilize framing to attack their opponents, they can choose to ignore them, and/or they can absorb the opposing side’s arguments in order to confuse the public regarding the competing narratives (Ryan 1991). Thus, both social movement activists and their opponents can utilize a variety of mechanisms aimed at garnering an advantage. Social movement analysts have argued that social movements constantly redefine and transform their frames according to what their antagonists say or believe (Benford and Hunt 2003; Dugan 2004). Movement activists can attempt to discredit their rivals, as well as misrepresent and use stereotypes to mock the attitudes

of the opposite side. All of these efforts are aimed at convincing the audience to reject their opponents frames (Ryan 1991).

Framing contests continually play out as movement organizations and their opponents continually jockey for influence. Throughout this process media coverage become a critical mechanism for articulating respective frames. Past studies have illustrated the importance of counterframing in these dynamic relationships (Benford and Hunt 1994; Freudenberg and Gramling 1994; Ryan 1991; Snow and Benford 1988; Zuo and Benford 1995), Counterframing is defined as “attempts to rebut, undermine, or neutralize” the frames of your opponents (Snow and Benford 1988: 626). Thus, frames are developed and deployed not only to win support for a particular position, but they are also designed to discredit the frames of your opponents. Because these frames do not appear out of thin air, it is important to understand how the frames are linked to those who construct and articulate them.

Linking Frames to Frame Deployers

Past studies have suggested that there is a significant gap in the literature regarding the link between media frames and frame deployers (i.e., those that are attributed with articulating particular frames) (Ferree and Merrill 2000; Steensland 2008; Shriver et al. 2012). Analysts have argued that it is critical to study and analyze the relationship between frames and deployers because it elucidates the processes through which actors construct, structure, and/or alter their narratives over time (Ferree and Merrill 2000). Linking frames to their respective deployers “provides potential leverage for explaining changes within discursive fields in empirically tractable and theoretically informed ways” (Steensland 2008:1031). Shriver et al. (2012) argue that it is necessary for studies to study exactly which actors are cited in media coverage of controversial issues. Examining how media outlets attribute arguments to specific actors helps us

understand the role of power and authority in constructing arguments (Gitlin 1980; Herman and Chomsky 1988).

Analysts have distinguished between two types of media frame deployers: official specialists and outside sources (Entman and Rojecki 1993; Herman and Chomsky 1988; Steensland 2008).

However because of the former category is labeled as “official,” they tend to be cited more often by journalists (Gans 1979; Kielbowicz and Scherer 1986; Tuchman 1978; Rohlinger, 2006). As noted by Rohlinger (2006: 538), journalists draw heavily on those actors that they perceive as most “credible” and “legitimate” sources of information (see also Gans 1979; Kielbowicz and Scherer 1986; Tuchman 1978). Steensland (2008) argues that such reliance of the same sources stymies public debate and dialogue. In the context of public debates, journalists are therefore far more likely to rely on a standard set of experts [i.e., government and industry officials] as opposed to social movement activists. As such, the voices of activists may be overshadowed by those that are perceived to be more credible, according to the media.

Framing Scientific Debates

Controversial scientific debates present additional complexities for media framing (Dahniden 2002; Durant et al. 1998; Gamson and Modigliani 1989; Nisbet and Lewenstein, 2002; Nisbet 2009). The coverage of scientific issues in the media means that journalists have to interpret and present the issues in language appropriate for an audience that is not well versed in scientific jargon and technical details. Without appropriate translation various analysts argue that it would be impossible for the general public to grasp the issues that are at stake (Ho et al. 2008; Nisbet 2005; Nisbet 2009; Popkin 1991). Nisbet (2009: 5-6) argues that this requires the scientific community to fit the needs of the media, “Scientists and their organizations must also learn to focus on framing their messages in ways that engage specific audiences and that fit with the constraints of a diversity of media outlets.” By doing so they can help the population to better

define the problem. Likewise, social movement actors must be equally well versed in taking complicated scientific arguments and articulating messages that resonate with the general public. In doing so, they must strike a balance between science, politics and activism.

Nuclear power is a highly specialized industry with its own jargon and experts. Friedman (2011) emphasizes the need for experienced journalists to translate technical issues in debates such as nuclear energy. In doing so they must avoid the language barrier that exists between the different institutions, the media, the nuclear industry, and the government. Framing the debate over nuclear power thus means providing adequate information in a language and tone appropriate for the public to understand. As Nisbet (2009: 3), argues, “the popular science media should be used to educate the public about the technical details of the matter in dispute.”

Friedman (2011) recently compared American media coverage of three major nuclear catastrophes: Three Mile Island, Chernobyl, and Fukushima. She argued that all three shared similarities in terms of their media coverage because journalists had to react quickly to all of the events. According to Friedman (2011: 57), “Reporters covered all three accidents in real time as they unfolded over a number of days or weeks. This meant that for the first few days, the demands of breaking news required almost constant updates leaving little time to ensure accuracy.” Thus, the pace and timing of complicated environmental disasters shapes the immediate coverage that follows. In an earlier study, Friedman et al. (1992) argued that context is important when dealing with the coverage of the nuclear industry in general, and especially with regard to the coverage of nuclear disasters. Despite the fact that the reporters do not always have the time to gather enough knowledge about nuclear catastrophes and nuclear industry in general, it is necessary for them to “put that bad news into context.” (Friedman 1992:318). Research also indicates that frames associated with scientific debates such as nuclear power are likely to change over time (Friedman et al. 1992; Gamson and Modigliani, 1989; Nisbet 2009). As the industry evolves so too does the nature of the debate, and thus the associated framing activities. For instance, Nisbet

(2009) argued that the pro-nuclear movement in the United States used to emphasize how the civilian use of nuclear energy can help ease tensions caused by the Cold War and the race to increase nuclear armament. However, over time, as the chances of a nuclear war between the United States and the USSR decreased, the pro-nuclear movement changed its narrative to shift away from Cold War reasoning. Nowadays the pro-nuclear lobby focuses more on the role of nuclear power in reducing the negative impacts on climate change.

Summary and Relevance for Study

Frame resonance is a critical issue for any study of framing (Noakes and Johnston 2005; Ryan 1991; Gamson 1992; Berbrier 1998). In order for a frame to “resonate” with the public several things have to occur. First, it has to be available to the public. That is, frames that are not promoted in the public arena obviously cannot resonate with their target audiences. Differentials between social movement groups and more powerful government and industry officials often contribute to uneven coverage of particular frames. Second, frames that fit into the appropriate cultural atmosphere are more likely to resonate (Ferree 2003; Snow and Benford 1988). Conversely, frames that contradict culturally accepted norms and values will be less likely to resonate.

In the case of French society, nuclear power has long been associated with the nation’s technological prowess and national identity. Thus, nuclear power has remained part of the country’s cultural heritage and criticism of the industry has been tantamount to being unpatriotic. Finally, the credentials and related status of frame deployers contributes to the likelihood that a frame will resonate with its target audience. The media plays a critical role in media framing process. It not only screens and selects which frames to portray to the public, but media agents are actively involved in the generation and deployment of media frames. Thus, media actors screen and filter frames as well as construct and deploy them. They determine which frames to

include in their media coverage, as well as which respective actors to cite. All of which makes media outlets exceedingly powerful in shaping public opinion and attitudes regarding controversial public debates such as nuclear power.

CHAPTER III

METHODOLOGY

This research analyzes the extent to which media coverage of nuclear energy in France changed following the Fukushima nuclear disaster. To analyze the articulation of media frames, I developed a mixed method strategy involving quantitative and qualitative data analysis. For this thesis project, I focused primarily on the qualitative analysis of the data. However, I employed basic quantitative frequency counts to bolster the qualitative findings. Below I describe the data used for the study, followed by a discussion of how the data will be analyzed for the study. This exploratory study will address a series of open-ended research questions, including:

- 1. General tone of media coverage
 - a. Has the general tone of media coverage of nuclear energy in France changed since the Fukushima nuclear disaster?
 - b. If so, how?
 - c. What is the prevalence of pro- and anti-nuclear articles on nuclear power before and after Fukushima?

- 2. Differences between conservative and liberal media outlets
 - a. Are there differences in media coverage between conservative and liberal media outlets?
- 3. Changes in media framing of pro-nuclear frames
 - a. What are the primary frames proponents use to support nuclear power?
 - b. Have these pro-nuclear frames changed following the Fukushima disaster?
 - c. What types of pro-nuclear actors are most likely to be cited in media coverage and has that changed since the Fukushima disaster?
- 4. Changes in media framing of anti-nuclear frames
 - a. What are the primary frames opponents use to oppose nuclear power
 - b. Have these anti-nuclear frames changed following the Fukushima disaster?
 - c. What types of anti-nuclear actors are most likely to be cited in media coverage?

Data

In this section I describe the dataset used for the study. The study provides a comparison of the articles published in the twelve months before the nuclear catastrophe in Japan and those published in the twelve months following the accident. The content analysis is based on the evolution of the arguments of the opponents through time and their representation in the media outlets.

In order to examine the national dialogue over the nuclear debate in France, I selected newspaper coverage from the nation's two largest newspaper outlets: *Le Monde* and *Le Figaro*. According to OJD, the organization in charge of measuring the circulation of the newspapers, *Le Monde* and *Le Figaro* have the largest circulation among French daily national newspapers. In terms of circulation, *Le Figaro* had 323,992 units during 2011 and 2012, whereas *Le Monde* had a

circulation of 290,667 units. Thus, these two newspapers represent the two largest mainstream print media outlets in the country.

Le Monde is the main general-interest national newspaper in France. It can be considered as the equivalent to the New York Times, and thus more liberal of the two newspapers used in the study. *Le Figaro* represents the more conservative mainstream newspaper outlet. It is especially close to the former French government and to the conservative party l'Union pour un Mouvement Populaire (Union for a Popular Movement) also called UMP, which long-time conservative President Nicolas Sarkozy belongs to. These two newspapers were chosen in order to explore differences in coverage between politically distinct media outlets. It will be interesting to see if there is a difference in the framing processes of the anti-nuclear debate among *Le Monde* and *Le Figaro*. It is also important to see to what extent the difference in tone and in orientation reflects a different handling of the news over the anti-nuclear debate.

For my search of relevant news stories from these two outlets, I utilized Lexis-Nexis, which is one of the largest electronic archives of U.S. and international newsprint. I searched these newspapers using a variety of Boolean search strings that included: “nuclear energy” as a key word and “France” as the geographic location. The articles span a two-year period, between January 2010 and January 2012, in order to cover the nuclear debate in France before and after the nuclear catastrophe in Fukushima.

The search in Lexis-Nexis garnered an initial dataset of articles 740 articles from the two newspapers. However, 243 articles were selected out of the dataset because they were not directly related to nuclear energy in France. For example, some of the articles screened out of the initial dataset of articles covered international nuclear issues but they were not directly related to the French debate over the nuclear power. Other articles covered the issue of nuclear weapons in Iran, including the negotiations over the military nuclear program in Iran in which the French

government took an active part. Thus, articles that did not address issues related to nuclear energy in France were not included in the final sample. The final dataset included 497 articles, n=262 from *Le Monde* and n=245 from *Le Figaro*.

Analytic Strategy

I employed both quantitative and qualitative analysis of the newspaper data. I read and analyzed the newspaper articles in French. I also translated the representative quotes used to illustrate salient themes in the findings. Each article was coded according to a pre-established coding sheet developed from the careful reading of the existing literature on the topic (see Appendix or the actual coding sheet). This coding sheet was pretested with a sample of 10 articles and then modified in order to reflect necessary changes after it was apparent that some themes that did not appear in the coverage literature. For instance, I added a theme for “job security” to reflect a common frame related to how nuclear energy provides employment and economic stability for French citizens.

All of the articles were coded according to a list of selected themes supported in the articles. Each article was summarized for overall tone, including: Pro-nuclear, anti-nuclear, neutral, or both. There was a set of themes related to both pro- and anti-nuclear frames used in media coverage of nuclear power. Pro-nuclear themes included such topics as: jobs and economic security, safe, helps with climate change, energy independence. The pro-nuclear themes also included arguments related to how nuclear energy as a key for technical progress or for economic security. They also underlined the profitability and the availability of the nuclear power compared to other energy sources. Anti-nuclear themes included: dangerous and unsafe, health problems, accidents, and corruption. Other anti-nuclear themes stressed the aging of the nuclear reactors and the fact that they need repairs that would ultimately reduce the beneficial impacts of the nuclear power.

In order to link various frames to their respective deployers [i.e., speakers], I coded who was quoted in the articles. Thus, the coding sheet highlighted who made the pro- or the anti-nuclear comment. Relevant deployers coded for pro-nuclear frames included: government officials, industry representatives, private citizens, academicians, and nuclear workers. Relevant deployers coded for anti-nuclear frames included: government officials, activists, private citizens, academics, and workers.

In addition, in order to explore the extent to which media framing reflected derogatory framing of anti-nuclear activists I coded a set of themes related to how such activists were characterized. These frames included characterizations of activists as: irresponsible, extremists, untrustworthy, anti-France, and unpatriotic. In addition, the deployers of these derogatory frames were also coded and included: government officials, industry officials, academicians, etc.

The coded data was entered in Microsoft Excel and then analyzed using Stata 12. The variables were reviewed for measures of central tendency and significant relationship. Analysis of these data included descriptive information about the tone and the deployers of the frames and frequencies of the coded themes discussed above. More advanced statistical procedures may be used to analyze changes in framing over time.

In addition to the quantitative coding of newspaper articles, qualitative analysis was conducted to delve deeper into the framing narratives that were used by both pro- and anti-nuclear actors (see Shriver et al. 2013). For example, in addition to measure the frequency of which a particular theme appeared (i.e., nuclear energy helps combat climate change), I provided illustrative quotes by respective pro-nuclear proponents. Likewise, in addition to anti-nuclear framing around health concerns I analyzed specific narratives reflecting this particular theme. Thus, the pre-determined coding sheet helped summarize the main themes in each of the articles, as well as the primary frame deployers.

Additional qualitative content analyses were conducted in order to emphasize the patterns in framing of both pro-nuclear proponents and anti-nuclear activists. This was a multi-step process. The first pass through the qualitative data included open coding that largely reflects the main themes as described in the initial coding sheet described above. Additional runs through the data (i.e., axial coding) was conducted in order to identify and organize the key themes (Charmez 2006; Strauss 1987). Finally, I utilized selective coding in order to compare and contrast the trends and patterns in the data over time and across newspapers (Charmez 2006; Strauss 1987). Illustrative quotes from the articles were utilized in order to highlight the narratives used in media framing.

CHAPTER IV

FINDINGS

In the first section of the analysis I will discuss the general distribution of newspaper coverage of the Fukushima nuclear accident. In the follow sections I provide more in-depth analyses of media framing of nuclear power in France before the Fukushima nuclear accident. Findings indicate that media coverage of nuclear power is overwhelmingly positive during the twelve months preceding the accident. Next, I analyze coverage of nuclear power following the Fukushima nuclear disaster. During both periods, before and after the accident, I highlight the prominent themes for and against nuclear power. Finally, I emphasize the importance of frame deployers in media coverage.

General Trends in Newspaper Coverage Before and After Fukushima

In this section of the analysis I will examine the general trends and patterns in newspaper coverage before and after the Fukushima accident. I examine patterns in coverage during the two time periods, as well as compare differences in coverage between the two newspapers,

the conservative *Le Figaro* and the liberal leaning *Le Monde*.

Table 1 contains the summary of the distribution of the 497 articles. Among the data set, 175 articles were published before Fukushima and 322 articles deal with events that occurred after the nuclear catastrophe in Japan. The data in Table 1 shows that there is significant relationship (Chi-square=7.94, $p<0.05$) between the tone of the articles and the period during which they have been published. It is interesting to notice that neutral articles represent about a third of the articles published both before and after Fukushima (33.71 percent and 34.78 percent respectively). These articles generally provide information about new developments in the nuclear industry such as the Prime Minister asking for an evaluation of the costs to repair the nuclear reactors or the appointment of new executive directors of EDF. The articles generally do not support or condemn the use of nuclear energy. Rather, they merely provide facts about the nuclear industry in general.

Table 1. Frequencies and Percentages of the Distribution of the Articles Before and After Fukushima, 2010-2012

	Before Fukushima		After Fukushima	
	<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>
Pro-nuclear articles	65	37.14%	107	33.23%
Anti-nuclear articles	18	10.29%	57	17.70%
Neutral articles	59	33.71%	112	34.78%
Both	33	18.86%	46	14.29%
Total	175	100%	322	100%

Notes: Data represent the total newspaper articles coded (N=497). Data comes from the following sources: *Le Monde*, *Le Figaro*. Chi-square=7.94, at $p<0.05$.

As shown in the Table 1, there are more anti-nuclear articles published after the nuclear accident in Fukushima (17.70 percent) in comparison to anti-nuclear articles published before the accident (10.29 percent). *Le Monde* and *Le Figaro* reflected the anti-nuclear voices that were eager to express their discontent with nuclear energy after the catastrophe. Perhaps not surprisingly, Fukushima triggered a strong response from the anti-nuclear movement in France and this is reflected in the media coverage. However, the actual percentage of anti-nuclear articles remains

fairly small in both periods. Moreover, the percentage of anti-nuclear articles published in both newspapers before and after the accident in Japan is smaller than the percentage of pro-nuclear articles published during the same periods.

As shown in the Table 1, there is a slight decrease in the articles supporting the nuclear industry after Fukushima (37.14 percent before Fukushima and 33.23 percent after Fukushima). However, the percentage of positive articles related to nuclear energy is greater than the percentage of negative articles. Moreover, the coverage of the issue which was mainly positive before the catastrophe shifted toward a more neutral coverage of the debate.

Table 2. Frequencies and Percentages of the Distribution of the Articles Published by *Le Monde* Before and After Fukushima, 2010-2012

	Before Fukushima		After Fukushima	
	<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>
Pro-nuclear articles	17	20.00%	31	17.52%
Anti-nuclear articles	16	18.82%	52	29.38%
Neutral	34	40.00%	67	37.85%
Both	18	21.18%	27	15.25%
Total	85	100.00%	177	100.00%

Notes: Data come from a subset of the total newspaper articles coded (N=497). Articles published in *Le Monde*: (n=262). Categories are not mutually exclusive Data comes from the following sources: *Le Monde, Le Figaro*. Chi-square=3.90.

Table 3. Frequencies and Percentages of the Distribution of the Articles Published by *Le Figaro* Before and After Fukushima, 2010-2012

	Before Fukushima		After Fukushima	
	<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>
Pro-nuclear articles	48	53.33%	76	52.41%
Anti-nuclear articles	2	2.22%	5	3.45%
Neutral	25	27.78%	45	31.03%
Both	15	16.67%	19	13.11%
Total	90	100.00%	145	100.00%

Notes: Data come from a subset of the total newspaper articles coded (N=497). Articles published in *Le Figaro*: (n=235). Categories are not mutually exclusive Data comes from the following sources: *Le Monde, Le Figaro*. Chi-square=0.97.

Tables 2 and 3 show the distribution of the articles published in each of the two newspapers examined in this study. The separation and the comparison between *Le Monde* and *Le Figaro*

allow a better understanding of the differences in the coverage of the nuclear issue in liberal and conservative media outlets. In both tables the Chi-square tests indicate that there is no significant relationship between the tone of the article and the period of the publication (Chi-square=3.90, $p=0.272$ for Table 2 and Chi-square=0.97, $p=0.81$ for Table 3). Thus, as shown in Table 2, *Le Monde*'s publications include mostly neutral articles (40 percent before Fukushima and 37.85 percent after Fukushima). The percentage of pro-nuclear articles (20 percent) and anti-nuclear articles (18.82 percent) written before Fukushima are equivalent. *Le Monde* thus offered roughly an equal amount of information coming from the two opponents in the debate over the nuclear energy. After the accident in Japan however, the journalists from *Le Monde* tend to favor anti-nuclear arguments instead of the narratives favoring the use of nuclear energy in France. In fact, the difference in quantity after Fukushima regarding the percentage of anti-nuclear articles published (29.38 percent) compared to the amount of pro-nuclear articles (17.52 percent) reflects this shift in the coverage of the issue.

As shown in Table 3, the conservative leaning *Le Figaro* provides a very different picture of the coverage of the nuclear debate. It is interesting to see that, both before and after Fukushima, *Le Figaro*'s coverage of nuclear energy is mainly supportive despite a slight decrease in the percentage of pro-nuclear articles published after Fukushima (53.33 percent before the accident and 52.41 percent after the meltdown). The coverage of *Le Figaro* reflects the tendency for conservative media outlets to support official frames in the framing of controversial issues. By the same token, it explains why the percentage of anti-nuclear articles published in *Le Figaro* is low compared to *Le Monde*. As shown in the third table, very few articles reflect a purely anti-nuclear analysis of the industry: only 2 articles before Fukushima (2.22 percent) and 5 after Fukushima (3.45 percent). The nuclear catastrophe in Japan also resulted in more neutral articles: 25 (27.78 percent) before Fukushima and 45 (31.03 percent) after Fukushima. Therefore *Le Figaro*'s coverage of the nuclear debate did not change after Fukushima. The conservative

newspaper, close to the French government at that time, did not question the value and the risks of nuclear energy after the Fukushima accident and did not shift its editorial policy and its agenda. It tends to favor a positive coverage of nuclear energy.

Table 4. Frequencies and Percentages of the Distribution of the Articles Pro-Nuclear and Anti-Nuclear Articles Published by *Le Figaro* and *Le Monde* Before and After Fukushima, 2010-2012

	Pro-nuclear articles		Anti-nuclear articles	
	<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>
<i>Le Monde</i>	48	27.91%	68	90.67%
<i>Le Figaro</i>	124	72.09%	7	9.33%
Total	172	100.00%	75	100.00%

Notes: Data come from a subset of the total newspaper articles coded (N=497). Pro- and Anti-nuclear articles published in *Le Figaro*: (n=131) and *Le Monde*: (n=116). Data comes from the following sources: *Le Monde*, *Le Figaro*. Chi-square = 82.59, at p<0.001.

Finally, Table 4 summarizes the distribution of pro-nuclear and anti-nuclear articles published in both newspapers during the entire period studied in this research. As mentioned above, I analyzed 262 articles from *Le Monde* (52.72 percent) and 235 articles from *Le Figaro* (47.28 percent). It is interesting to see that *Le Monde* published most of the anti-nuclear articles (90.67 percent) whereas *Le Figaro* published the majority of the pro-nuclear articles (72.09 percent). There is thus a clear distinction between the coverage of the nuclear debate in France between the two newspapers examined in this research.

The tables show and highlight the differences and the characteristics of the articles analyzed in this research. Table 4 shows that the differences in the distribution of pro- and anti-nuclear articles between *Le Monde* and *Le Figaro* are significant (Chi-square = 82.59, at p<0.001). The repartition of the anti-nuclear and pro-nuclear articles, as well as the neutral or balanced publications from the two newspapers, are central to understand the dynamics of the coverage that are going to be discussed later in this paper.

In this section, I will first analyze media framing of nuclear power in France before the Fukushima nuclear accident. Findings indicate that media coverage of nuclear power is

overwhelming positive during the twelve months preceding the accident. Next, I analyze coverage of nuclear power following the Fukushima nuclear disaster. During both periods, before and after the accident, I highlight the prominent themes for and against nuclear power. Finally, I emphasize the importance of frame deployers in media coverage.

Media Framing of Nuclear Power Before Fukushima

The government and the nuclear industry in France pride themselves on being the world's leader in nuclear power. The country's two major nuclear power companies, EDF and Areva, rely on their expertise to sell their technology abroad. The nuclear giant, Areva, touts its latest generation of nuclear reactor, the EPR (European Pressurized Reactor) to the international community. The EPR is designed to function for sixty years, and to be safer and more efficient than previous generations of reactors. The success of the nuclear companies worldwide gives France an aura of "superiority complex" that thrills supporters of nuclear power. Therefore, the coverage of the nuclear debate reflects this euphoria. However, nuclear skeptics argue that the development of the nuclear field is dangerous and tarnished by many flaws. Below I examine the anti-nuclear and other critical themes highlighted in the media, before turning my attention to the pro-nuclear themes. As the data show, pro-nuclear themes dominate the nuclear discourse in the pre-Fukushima period.

Anti-nuclear themes

The controversial nature of nuclear energy has periodically triggered protests and criticisms among the French public. Critics have emphasized the unwavering support of the major nuclear companies in France, along with the French government. In addition, they have charged the government and the nuclear industry with maintaining secrecy. For instance, Chafer (1985) argues that the government, along with nuclear companies, has kept secret the most important information about the industry in order to control regulation and public opinion. In the pre-

Fukushima era these efforts were largely successful in controlling the discourse and limiting outright criticism of nuclear power. Yet, there have been criticisms aimed primarily targeting the management of the nuclear industry. Below I present the central arguments found in the media discourse.

Before the nuclear catastrophe in Fukushima, newspaper coverage of nuclear power in both *Le Monde* and *Le Figaro* rarely challenged the fundamental idea that France should rely on nuclear power as its main source of energy. As such, the authors seldom tackled the “nuclear question” per se. Thus, negative newspaper articles never questioned the use of the nuclear energy in France. Moreover, media coverage before Fukushima rarely mentioned the dangers associated with nuclear energy. Instead, prominent themes that arise as critical or “anti-nuclear” revolve around management issues and related problems within the industry, including: the lack of solutions regarding the processing of nuclear waste, the internal wrangling between the major agencies in the nuclear sector that threatens the so-called “radiance of France,” and the weaknesses and impairments of the EPR that slows down the exportation of the technology. In the following sections I describe each of these prominent themes covered in the media that were critical of the nuclear industry.

Table 5. Frequencies and Percentages of Prominent Anti-Nuclear Themes Before Fukushima, 2010-2011

<i>Anti-nuclear themes</i>	<i>Frequency</i>	<i>Percentage</i>
No solution for nuclear waste	10	15.62%
Internal wrangling between the main nuclear agencies	17	26.56%
Flaws and impairments of the EPR	30	46.88%

Notes: Data come from a subset of the total newspaper articles coded (N=497). Articles published before Fukushima with anti-nuclear themes: (n=64). Categories are not mutually exclusive. Data comes from the following sources: *Le Monde*, *Le Figaro*.

Problems with Nuclear Waste

The first theme addressed in the articles examined in this study show that anti-nuclear complaints focus on the impossibility for the nuclear field to offer a viable solution to process and store the atomic debris. These articles represent 15.62% of the documents that address anti-nuclear themes before Fukushima. The issue of nuclear waste did receive negative or critical coverage in news media outlets, but much more so from the liberal leaning *Le Monde*. In fact, most of the debate over the problem of the processing and storage of nuclear waste is conducted in *Le Monde*.

In terms of frame deployers, the nature of the issue (e.g., criticism of nuclear waste) allows a wider range of actors to express themselves in the media. Anti-nuclear activists from anti-nuclear organizations and political parties are interviewed to give their opinion about the recycling of the nuclear waste. For instance, *Le Monde* published an interview of Kumi Naidoo, the executive chairman of Greenpeace, who came to France in 2010 to stop a train carrying nuclear waste on its way to Germany. He argued that instead of spending money in trying to improve nuclear power plants, countries should stop producing waste that they cannot handle and should developed renewable energy programs.

“The world has no solution to the problem of nuclear waste. Therefore we need to stop producing it. Did you know that the time required for certain waste to become harmless exceeds the history of the human species? As long as we do not find an indisputable solution to process and store radioactive waste, nuclear energy should not be an option.” (#367)

Nuclear waste is often described as a serious problem facing the industry. Journalists routinely stressed that it is necessary to recognize the dangers associated with nuclear waste, rather than postponing addressing with these issues and allowing future generations to grapple with these problems. They routinely argue that the processing and storage of nuclear waste needs to be

debated. A journalist from *Le Monde* reacted to a convoy carrying nuclear waste across France. He argues that so far the electricity companies are unable to offer a solution for the nuclear waste. They refuse to involve the public in the debate despite the long-life of the materials.

“This impasse is not peculiar to France or Germany: in the United States, in Great Britain, in Spain, no one knows what to do with nuclear waste whose radioactivity will last for thousands of years. However, almost all governments encourage the "nuclear renaissance," pushing back to their grandchildren the task to cope with this pile of garbage.” (#372)

According to anti-nuclear critics covered in the media during the period before Fukushima, the French government needs to change its policy towards the waste. They argue that the executives of the nuclear industry do not know how to efficiently recycle their waste. They note that waste is either buried or transported to another country (usually Germany), where the responsibility to deal with the waste is externalized to others. For Europe Écologie Les Verts (the French Green Party) it is the sign the French government is ashamed of its own inefficient policy because not only does it externalize nuclear waste to other countries but also attempts to hide these problems and refuses to engage into a meaningful debate with the public. One journalist writing in *Le Monde* explained that such an attitude is the opposite of the transparency policy the government promised.

“Here is another example of the denial of a disturbing reality by those who act as our elite. At the end of this week, a train loaded with containers enclosing an enormous amount of radioactivity will cross France to Germany. We would not know anything

about it if Sortir du Nucleaire and Greenpeace had not informed us; on the government side, there is silence.” (#372)

A Green Party member was quoted in *Le Monde* denouncing the lack of transparency of the nuclear field. He argued that the nuclear elite want to exclude the general public from the debate. The civil nuclear program is an ideology from which it is difficult to escape.

“This is the magic of ideology to resist the facts, and the strength of the nuclear program - and of the lobby that defends and depends upon it – is that the State, who is the first support of atom, will never allow a contradictory evaluation of the policies conducted, which would allow citizens and taxpayers to get a more accurate idea than the one advertised by the operators.” (#394)

In a story published in *Le Monde* titled, “The recycling of nuclear fuel in France is less than 20%,” a journalist argued that the French nuclear company Areva is lying about its recycling capabilities. The journalist argued that the nuclear industry is protected by the *proress* of the nuclear field, the nuclear company twisted words to make the population believe that Areva is capable of recycling most of the materials necessary to produce nuclear electricity. According to a report cited by the journalist in the article only 17% of the radioactive waste is being recycled, as opposed to the reported 96% of the radioactive: “It does not recycle most of its resources, but instead produces a large volume of various radioactive materials, classified as waste by environmentalists.” (#410)

Media coverage of anti-nuclear activists indicates that they do not approve of the government policies regarding the radioactive by-products. Instead, they argue, the government buries its head in the sand and lies about the procession capabilities, which, in the end, discredit the nuclear

industry, the French government and the nuclear specialists. They argue that the situation would be improved through candid dialogue and discussion that acknowledges the fact that they do not know how to handle the nuclear waste. Mickaël Marie, a member of Europe Écologie Les Verts (the French Green Party) summarizes in *Le Monde* the social, financial, and technological consequences of the nuclear energy in France. He particularly underlines the irresponsibility of the public authorities in terms of the management of the nuclear waste.

“However, these efforts did not permit to resolve, despite solemn and repeated commitments, the fundamental problem of radioactive waste. Its dangerousness sometimes lasts hundreds of thousands of years all the same. [These efforts did not] validate the famous promise of energy independence, a myth that crumbles when one imports the ore, whose extraction conditions are for that matter unworthy of our country: health and environmental disasters, human rights violations, arrangements with notoriously corrupt governments...” (#394)

In the months prior to the Fukushima nuclear disaster, nuclear waste was by far the issue that received the most criticism. Anti-nuclear activists quoted mostly in *Le Monde*, and on rare occasions in *Le Figaro*, argue that as long as nuclear companies do not find a solution to the processing of the nuclear waste, nuclear electricity does not constitute a viable solution. For example, when a train carried waste to Russia, *Le Monde* published an article where the reporter explained that the attitude of the nuclear companies regarding the radioactive by-products is inconsiderate. The journalist argued that France turns a blind eye to the situation and simply ignores the consequences.

“And from where does the depleted uranium come? From France. A wonderful country illuminated by nuclear energy, an nuclear energy that does not produce waste, or just slightly, thanks to the wonderful invention of " the processing of irradiated fuel. [...]It is nuclear waste, and the truth is that France, who does not know what to do with it, hides it in Russia.” (#443)

Similarly, Kumi Naidoo, the International Executive Director of Greenpeace, claimed that the nuclear energy is simply too “dangerous and expensive” (#367). A journalist from *Le Figaro* explained in an article entitled, “Stopped in 1985, nuclear power plant will remain in place; Decommissioning received a negative answer,” that the board of inquiry of the dismantlement of old nuclear reactors refused to demolish the power plant located in Brennilis because of “the absence of a solution for the storage of the waste.” (#453)

Wrangling Within the French Nuclear Industry

The second theme that appears in the media regarding criticism of nuclear power is the constant tensions between the two main nuclear companies, EDF and Areva. As shown in Table 5, 26.56% of the articles mention the tension within the industry. During the first quarter of 2010 there was substantial coverage of political wrangling within the industry [30 percent]. The disagreement between the CEO of Areva, Anne Lauvergeon, and the CEO of EDF, Henri Proglio focused the attention of the media. The issues at stake between the companies/agencies involved the new organization of the sector imposed by the European Union (where the leadership of EDF is going to decrease to the benefit of other electricity companies), the aluminum supply of the power plants, the capital increase of Areva and the handling of nuclear waste. Both newspapers are reporting the difficulties between the two CEOs. For instance, *Le Monde* published an article

where the journalist criticized their attitudes. “The first two months of Mr. Proglie [as EDF’s CEO] were marked by controversies over the fact that he is wearing two hats [CEO of two energy companies] and over his fight with Anne Lauvergeon.” (#481) Francois Roussely, the former EDF CEO, deplored that Anne Lauvergeon and Henri Proglie cannot work together “without ulterior motive” (#405) which prevents the cooperation between the two nuclear companies from being successful.

In fact, tensions escalated to the point that a journalist for *Le Monde* characterized both companies as waging a “merciless war” (#361). Other journalists offered similar assessments of the relationship. The political wrangling within the industry is repeatedly linked to the country’s need to present a strong and united nuclear French team. Media reports point out that the conflict has essentially prevented France from being successful in exporting its technology abroad. One journalist bitterly assessed the failure of the French nuclear team in the United Arab Emirates and compared it to the success of two other French companies which managed to get a construction contract from the United Arab Emirates:

“This contract is doubly important for France because of its monetary value, of course. But also because of its symbolism of a successful team France - in this case mainly formed by the SNCF and Alstom - as opposed to the nuclear power team - EDF and Areva leading the way- which lost last year in Abu Dhabi.”
(#355)

The news articles stressed that the top executives involved in the production of nuclear energy recognize that the conflict between Areva and EDF influenced the commercial failure of French nuclear technology in the United Arab Emirates. Reports indicate that leading figures in the nuclear industry, including Henri Proglie, Claude Guéant (Secretary-General of the government),

and François Rousseley (former EDF CEO), emphasize that the main French nuclear companies need to cooperate to be more successful. A journalist from *Le Monde* summarizes his views of the nuclear field. “The troika agreed on the same diagnosis: the fiasco of Abu Dhabi, where France has failed to sell the EPR, the third-generation reactor, might have been avoided if the nuclear industry was better organized.” (#439)

The tensions between nuclear giants Areva and EDF tarnish the “radiance” of the French nuclear industry abroad, undermining the long held national tradition of prominence. In addition, the articles examined in this research show that these conflicts also limit the companies from addressing other current problems within the nuclear field. The powerful French government, which has always played a critical role in supervising and guiding nuclear companies, seems incapable of settling the problems within the industry. Journalists from *Le Monde* and *Le Figaro* criticize the lack of cooperation within the industry and repeatedly argue that it negatively impacts the international image of France as the nuclear leader. For instance, in an article entitled, “Areva and the mistakes of the State as the shareholder,” a journalist from *Le Figaro* explained that the lack of solidarity within the industry is one of the main weaknesses of the nuclear field along with the government’s inability to guide Areva and to channel Anne Lauvergeon’s energy.

“A nuclear industry’s weakness is the inability of government to silence the criticisms of the EPR, the third-generation reactor. These criticisms are largely due to the difficulties and delays in the construction of these reactors in Finland and Flamanville, but they are also due to a severe lack of solidarity within the France’s nuclear team, mostly made up of public enterprises.” (#365)

Criticisms of Latest French Nuclear Technology

The third prominent critical theme involves the new generation nuclear reactor, EPR. Coverage of the EPR accounts for over half of the negative media coverage of the industry (46.88 percent). Problems with the EPR are widely blamed in the media for slowing down the development of the nuclear field. Journalists repeatedly point out that the EPR is too expensive. Delays and unexpected problems increased the price of the new reactor even more impacting the attractiveness of the new technology. The media coverage of this issue stresses that because of its costs and other problems with the technology, nuclear companies EDF and Areva are going to have major problems selling the new reactor abroad. In an article published in *Le Figaro* entitled “Nuclear energy: EDF trapped by the complexity of the EPR,” a journalist discussed the problems of the EPR and of its costs.

“Indeed, the company took advantage of the publication yesterday of its bi-annual results to formalize the observation: the reactor Flamanville 3 will be finally put into service in 2014, instead of 2012 as it was originally planned. Therefore, the project cost rises to a considerable extent: EDF estimates it now at 5 billion euros, instead of 3.3 billion euros at the origin.”

(#402)

The new generation of reactors was widely criticized in the newspaper articles examined in this study. Media coverage repeatedly questioned the future of this technology, which has been touted by the industry and the French government for years. Articles characterize the technology as being overly complicated to the point that it simply generates problems. For instance, in a *Le Figaro* article titled “A very complex and expensive reactor to build,” the journalist explained that the construction problems impede the future development of the nuclear field in general,

noting that the reactor is “structurally impossible to build” (#414). He also notes that the reactor is currently only exportable to developed countries while the fastest growing international market is located in developing countries.

The price of the EPR, and to a larger extent its failure, is also related to its complexity. Journalists and anti-nuclear activists argue that the technology is not appealing to potential clients because the complications inherent to its creation are not worth the EPR’s final performances. Thus anti-nuclear organization, *Sortir du Nucleaire* explained that the new reactor is a “fiasco.” “They [the anti-nuclear organizations] said that the EPR program is an industrial and financial disaster. The EPR is archaic before being built. It is so complicated and burdensome that even its creators cannot build it.” (#404)

By the same token, even the report written by the former CEO of EDF, Francois Rousseley mentioned that the EPR is too complex. In 2010, he published a document that includes his recommendations to improve the nuclear field. A *Le Figaro* article summarized Rousseley’s recommendations and offered its own critical insights. According to a journalist from *Le Figaro* article, Rousseley advocated for changes in the conception of the reactor in order for the construction of the reactor to be easier, faster, and cheaper.

“In the now public version, one can read all the same that, the complexity of the EPR, which results from design choices, including the level of power [...], is certainly a handicap for its production and costs. The report encourages its optimization, which should be carried out not only by the manufacturer, Areva, but also by EDF.” (#407)

Media coverage prior to the Fukushima accident routinely covered the EPR, which was presented as the driving force of the new generation in the nuclear field, as an already out-of-date

technology. Media criticisms compared the EPR to the Concorde plane, which conjures up a negative image of the industry. The comparison to the Concorde plane is significant because, like the EPR, the infamous plane made a huge impression on the international community, garnering lots of attention to France's technological prowess. However, the company that built the Concorde never succeeded in marketing and selling the plane. Similarly, media criticisms of the EPR indicate that France invested too far too much effort in developing a new reactor that doesn't warrant the investment nor international attention. Thus, people quoted in the newspapers reviewed in this research see in the EPR the same risks that France took with the Concorde. In a *Le Monde* article, the manager from an electricity company offers this assessment of the new generation of reactors, "Let us be careful not to do the same mistake with the EPR that we did with the Concorde, which was both a technological prowess and a commercial flop." Similarly, a journalist from *Le Monde* in an article entitled, "Construction delays in the Flamanville EPR disturb the State" articulated concerns that the construction costs of the EPR will impact the professional image of France abroad.

"The initial cost of 4 billion euros will most likely be exceeded. The image of the nuclear power "made in France" suffers, while thirty countries launch or re-launch a nuclear power plant program. Firm orders do not flood in, and some do not hesitate to draw a parallel between the EPR and the Concorde." (#404)

Importantly, media coverage of the nuclear industry prior to the Fukushima accident is not "anti-nuclear" per se, but it does periodically invoke negative tones and criticisms of the industry, including various aspects of the latest technology, and the dysfunctional relationships within the industry. Regardless of the general tone of the newspaper, journalists reproduce the hesitations and concerns expressed by the politicians and the nuclear specialists. They argue that the tensions between actors weaken the French nuclear field and prevent France's radiance. Once again their

criticisms do not question the use of the nuclear energy. On the contrary they reflect the possible solution to improve the nuclear industry in France.

Most of the criticisms published in the newspapers thus appear to condemn the misconducts of the main actors as well as the flaws of the new generation of reactors. But the most critical concern related to the nuclear industry addressed by the media outlets is the issue of nuclear waste. Regarding the issue of waste, the media coverage was uneven with the liberal leaning *Le Monde* providing the majority of the critical coverage. In contrast, nuclear waste is seldom included in the conservative media outlets' articles about nuclear energy. Thus, significant discussions about nuclear power are largely missing from large swaths of *Le Figaro*, a leading general-interest newspaper. Moreover, the articles that deal with the nuclear waste issue, and which are thus mostly anti-nuclear in their tone, tend to ignore other aspects of the nuclear problem. Thus, it is difficult for the public to get a full picture of anti-nuclear concerns because of the lack of coverage in both liberal and conservative media outlets. Ultimately, this reflects largely uncritical media reporting on nuclear power prior to the Fukushima nuclear disaster. As highlighted in the next section, French journalists were generally favorable to nuclear power in general prior to Fukushima, which is reflected in their repeated assertions regarding the advantages nuclear power provides to the country in general.

Pro-nuclear themes

As mentioned above, the French nuclear program was designed to improve the energy supply of France and to ensure that the country remains its strong international position remaining the world's leader in nuclear technology. From the beginning of the program, prominent politicians like Pierre Mesmer and well-known scientists encouraged the French population to support nuclear power. This is reflected in past experiences with nuclear disasters. For example, in the days following the 1986 Chernobyl disaster, the chief scientist of the government argued that the

atomic power was safe: “I personally am ready to go and stand, without protection, a few kilometers away from the Chernobyl reactor, just to show you how small the danger is.” (Bess 1995: 831) Since the catastrophe in Ukraine, electricity companies such as EDF continued to develop the nuclear program and promote the French expertise worldwide.

Prior to the Fukushima accident the majority of the coverage in both liberal and conservative media outlets highlights pro-nuclear themes in the coverage of nuclear power. The primary pro-nuclear themes found in the data prior to the Fukushima accident included: technological prowess, profitable source of energy, and exportable source of energy [see Table 5]. As mentioned above, before Fukushima, the nuclear energy does not represent much of a risk for the majority of the actors.

Table 6. Frequencies and Percentages of Prominent Pro-Nuclear Themes Before Fukushima, 2010-2011

<i>Pro-nuclear themes</i>	<i>Frequency</i>	<i>Percentage</i>
Technological prowess	72	41.14%
Profitable source of energy	45	25.71%
Exportable source of energy	40	22.86%

Notes: Data come from a subset of the total newspaper articles coded (N=497). Articles published before Fukushima with pro-nuclear themes: (n=175). Categories are not mutually exclusive. Data comes from the following sources: *Le Monde*, *Le Figaro*.

Technological Prowess

The most prominent pro-nuclear theme is centered around the notion of France’s technological prowess (41.14 percent). Media coverage routinely highlights the advantages brought about by the nuclear field. As mentioned before, the French civil nuclear program was designed not only to improve France’s energy independence but also to develop the expertise of France in a highly competitive and highly specified field. This idea of technological prowess is defended in both of the newspapers examined in this study. While the conservative leaning *Le Figaro* overwhelmingly highlighted the positive attributes of nuclear power in the country, the liberal-

leaning *Le Monde* also routinely heralded positive nuclear energy as a technology that helps the international economic radiance of France.

Media outlets emphasize the idea that the atomic power is a great asset for the industry because it is considered to be a highly specialized and highly competitive field in which France has been in the international spotlight. The prowess of France in the nuclear field is illustrated by constant reminders about the expertise of the two main French nuclear companies. Despite the tensions mentioned above, *Le Monde* and *Le Figaro* both highlight the technological authority of EDF and Areva in the world. A journalist from *Le Monde* used this quote from then-President, Nicolas Sarkozy, when he appointed Henri Proglio as EDF's new CEO in 2009. According to the former French President, EDF is "the best company in France" (#344). By the same token, an author from *Le Figaro* took pride of the supremacy of EDF. He stressed that because of its expertise, EDF is attractive to foreign companies when they want to invest in nuclear technology. "No doubt that Mitsubishi cannot be indifferent to the remarks of the leader of the nuclear field." (#375)

In the months leading up to the Fukushima, news media outlets emphasized the global value of France's nuclear power, as well as their nuclear power technology. Even the liberal leaning newspaper, *Le Monde* often highlighted the fact that politicians support EDF because its expertise is valuable worldwide. The company is presented as a model that directly participates in the radiance of France. In 2011, an article printed in *Le Monde* entitled, "The Elysée [the President's office] makes EDF the leader of the French nuclear field" discusses the organization of the nuclear field and recognizes the importance of EDF: "EDF will also be the 'leader of the nuclear industry' for export." (#323)

Furthermore media outlets routinely praise the development of the nuclear companies and the signing of new contracts. Both *Le Monde* and *Le Figaro* emphasize the success of the two

companies, EDF and Areva. Areva also benefits from a positive reputation in the media. *Le Monde* stressed in November 2010 that the group developed a unique “French savoir-faire” (#370), which clearly indicates that Areva is not only successful but also reputable in other countries. For instance, in October 2010, several Areva workers were held hostages in Niger. Despite the danger, Areva executives renounced to evacuate the French employees. They argued their know-how was necessary for the uranium factory to function: “In the factory, one needs the expertise of French engineers and technicians.” (#378)

The newspaper outlets examined in this research repeatedly illustrated the accomplishment and the leadership of nuclear industry officials because they play an importance role in transmitting a positive and dynamic representation of France. And key industry leaders effectively promulgate pro-industry frames through the two largest media outlets. The media influenced the coverage of the debate by publishing quotes from successful companies. For example, Anne Lauvergeon, the head of Areva, is often quoted in the media for her praise of the company. For instance, in a 2011 article in *Le Monde* she is quoted as saying: “I am the leader of the world number one nuclear group, number one in Europe and the United States, fast-growing in China and India.” (#326) Quotes such as these reinforce the importance of nuclear power as an asset for the country’s future. Moreover, such coverage shows how Areva, as a leader in the industry, displays a good image of France’s capabilities. Anne Lauvergeon’s frame deployment is significant because she is a powerful woman managing one of the most well-known companies in France. Thus, when she states that the nuclear field is not like any other industry in France, that it is the main “national cause” (#326), journalists are more likely to spread the information.

By the same token, *Le Monde* published an interview where she has argued that it would not make sense for France to think about giving up the nuclear energy. The civil nuclear program is not designed to fluctuate as a function of other sources of energy.

“Then, the life span of the industry, particularly the life span of the nuclear field, is long. Changes over the course of the wind, minor arrangements, disputes between people that are not up to the stakes. The brand "France" needs a strong and durable strategy.” (#326)

Thus, the articles examined in this research repetitively transmit the arguments expressed by the pro-nuclear lobby, which repeatedly deploys frames promoting the strength of the French industry. The articles tend to show that this goal seems reachable only if France continues to follow the path of the nuclear energy.

Profitable Energy Source

Arising directly from the technological prowess the nuclear power provides to the nuclear field, the second main theme emphasized by the media before the Fukushima catastrophe portrays the nuclear energy as a profitable technology. This theme represented 25.71% of the pro-nuclear articles examined. In this context, media coverage highlighted how the French, nuclear industry is maintaining a lucrative source of energy. Coverage emphasizes the fact that France can export its technology to other countries when they want to develop their own nuclear program. In other words, France as a whole benefits from its nuclear expertise.

The findings indicate that both newspapers routinely published articles that supported the idea that the nuclear energy is profitable for France. They actively participated in the resonance of the impression that the destiny of France, and its radiance on the international scene, is directly linked to the fate of the nuclear industry. In 2010, a journalist from *Le Figaro* applauded the recent successes of EDF in expanding its network to three new countries.

“The French electrician can boast about accelerating its international conversion. This year, it should make more than

half of its sales outside its historical borders, instead of 48.7% in 2009, amounting to 32.3 billion euros, [...]. The result of the triple offensive conducted in Britain (with the acquisition of British Energy), in the United States (with Constellation) and in Belgium (with PES).” (#472)

Later in 2010, another journalist made the same observation about EDF succeeding in selling its reactors abroad, “In fact, France develops a strategy to get an agreement [with Malaysia] [...] Paris does not forget that Indonesia, Thailand, and Vietnam are also thinking about getting a nuclear energy program.” (#425)

In fact, throughout the pre-Fukushima period journalists from the newspaper outlets examined in this research seemed enthusiastic about the future. By leading the nuclear field, France increases its opportunities because the nuclear power has the wind in its sails.

“The nuclear energy - 16% of the electricity production today - has the wind in its sails. The prospect of the end of oil is combined with the fight against greenhouse gas emissions while energy needs will continue to grow.” (#460)

Exportable Energy Source

Beyond the profitability of the nuclear energy, a third main theme that is prominent in the literature revolves around the point that nuclear technology and French expertise are considered to be exportable (22.86 percent) to the rest of the world. Articles in both *Le Monde* and *Le Figaro* emphasized the financial aspects of the nuclear technology. In 2010, following an agreement between France and Italy, a journalist in *Le Monde* argued that this contract deals with the construction of reactors, but it can also imply the fact that French nuclear managers are going to

trained Italian workers and share with them their expertise: “After the two countries [France and Italy] signing an "agreement without limits" on nuclear energy in 2009, France will propose an "educational component" for Italian engineers.” (#447)

The media trust EDF and Areva with their ability to effectively manage both domestic tasks and international contracts, as evidenced by a journalist from *Le Monde* “The company owned by the government has the financial strength to manage successfully its infrastructure development in France, the first of its missions, and an international control.” (#392)

Media coverage indicates that the French government maintains strong trust in nuclear technology. Articles in *Le Monde* detailed how the government members envisioned the upcoming progresses in the field. They predicted a bright future for the French nuclear companies. In a 2010 article, a journalist from *Le Monde* described the future of the nuclear industry: “The government believes that the world is going to experience ‘a large increase in the demand for nuclear energy’ and that ‘about 250 plants will be built by 2030’.” (#405) With such expectations it is hard not to consider the nuclear energy as a viable solution. The explanation for the accomplishment of French nuclear technology abroad does not only come from the fact that EDF and Areva are leading the field. In fact, *Le Monde* reported that the two main French nuclear companies are attractive because they are able to provide cheap energy. In fact, EDF stressed that the price of nuclear electricity is “the price is 30% lower than the European average” (#431). Another article from *Le Monde* explained that France benefits from its low energy prices: “For twenty years, the French people have been accustomed to cheap electricity thanks to the nuclear power plants that EDF-subscribers taxpayers funded in 1970-1980.” (#392)

Therefore, the articles published before Fukushima published in this study show that media outlets convey the idea that the nuclear industry is a field of expertise that participates in the radiance of France abroad. The discourse of the anti-nuclear activists who condemn the lack of

solutions regarding nuclear waste is hidden among articles supporting the profitability of nuclear energy. However, the nuclear disaster in Fukushima changed the framing of the debate for the opponents.

Media Framing of Nuclear Power After Fukushima

On March 11th 2011 a considerable earthquake off the Pacific coast of Tōhoku in Japan engendered a massive tsunami that greatly impacted the nuclear power plant located in Fukushima. The accident caused the meltdown of the reactors 5 and 6 of the Fukushima power plant which in the end released radioactive products in the surroundings. The nuclear disaster in Fukushima is the most important nuclear catastrophe since the 1986 accident in Chernobyl. Fukushima triggered a string of reactions around the world, with governments and many agencies reconsidering their nuclear policies. In France, the catastrophe awakened the debate between supporters of the nuclear energy and their opponents.

Anti-nuclear articles Post-Fukushima

The nuclear catastrophe in Fukushima represents a clear dividing line in the coverage of the debate over the atomic energy in France. Both anti-nuclear and pro-nuclear articles emphasized themes that are different from the subjects discussed before the disaster. The tone of the debate clearly shifted. Importantly, the character of the anti-nuclear criticisms is more aggressive. Prominent themes that arise as “anti-nuclear” in the study period following the Fukushima disaster include: dangers associated with the nuclear energy and the safety issues stemming from that statement, the lack of control of the atomic power, the over confidence of the nuclear experts regarding their expertise, the lack of public debate to discuss the nuclear situation of France and eventually the alternative sources of energy, and the culture of secrecy developed by the French government around the nuclear field.

Table 7. Frequencies and Percentages of Prominent Anti-Nuclear Themes After Fukushima, 2011-2012

<i>Anti-nuclear themes</i>	<i>Frequency</i>	<i>Percentage</i>
Nuclear power is dangerous	101	91.81%
Nuclear accidents can occur in France	45	40.91%
Lack of transparency of the nuclear field	29	26.36%

Notes: Data come from a subset of the total newspaper articles coded (N=497). Articles published before Fukushima with anti-nuclear themes: (n=110). Categories are not mutually exclusive. Data comes from the following sources: *Le Monde*, *Le Figaro*.

Nuclear Power is “Dangerous”

The most prominent theme in the literature revolves around the idea that nuclear energy is dangerous, which represents a very large proportion of the anti-nuclear articles following the Fukushima accident (91.81 percent). Not surprisingly, Fukushima triggered vehement reactions from anti-nuclear activists throughout France and awakened the movement that has been largely dormant for many years. Both newspapers examined in this study publish quotes from the anti-nuclear advocates warn the public against the risks of the nuclear power. Critics explain that every single major nuclear catastrophe reminds the general population that the nuclear field is risky.

Media coverage of the accident reflects what tremendous consequences a nuclear accident would have for entire regions. The articles examined in the research emphasized how supporters of a nuclear phase-out claim that nuclear experts tend to forget about the dangerousness of nuclear energy. For instance, in *Le Monde*, an ecologist regrets that debates only occur in the wake of a disaster, point out that when everything works well, everyone forgets about the dangerousness of the atomic energy: “From Chernobyl to Fukushima, however, it seems that we have learned nothing.” (#175) He further explained that no matter how you develop it, the nuclear energy is “the most dangerous technology in the world” (#175). Newspapers also publish arguments from authority figures who advocate for vigilance regarding nuclear energy. In the wake of the accident, even nuclear specialists recognized via the media that nuclear technology should always

be understood with caution. For example, André-Pierre Lacoste, the head of the French Nuclear Safety Authority (Autorité française de sûreté nucléaire - ASN) explained in a *Le Monde* article that a nuclear accident is always possible not matter the circumstances and the precautions:

“Nobody can guarantee that there will never be a serious accident in France.” (#175)

Importantly, the Fukushima accident provides a media platform for anti-nuclear activists to increase their frame deployment. Anti-nuclear articles published in the media pointed out the safety concerns of the French nuclear power plants. And anti-nuclear activists were reported in the media refuted the arguments of the French government. Sophia Majnoni, a Greenpeace executive in charge of the nuclear question, argued that “there is no such thing as zero risk as far as nuclear energy is concerned” (#009).

Fukushima is different than Chernobyl in the sense that the nuclear accident in Chernobyl occurred in a developing country under the USSR domination and the media coverage of the consequences of the accident in Japan reflects this difference. Experts blamed the lack of safety measures and the lack of preparation of the nuclear companies in Ukraine. Thus, the nuclear accident was but another failure in the Communist system. Japan, however, is a developed country which means that the safety measures in Fukushima were more likely to be enforced. The articles examined in this research show that some even see similarities between the nuclear programs in Japan and France. For instance, a journalist from *Le Monde* wrote an article where he argued that, just like the Japanese reactors, the French nuclear power plants are vulnerable to a nuclear disaster:

“Nuclearly speaking, Japan is France’s twin: same policy, same techniques, same opacity, same arrogance from the nuclear specialists [‘nuclearists’], same passiveness from the politicians. Fukushima will impact us.” (#231)

Warnings of Domestic Nuclear Accidents

In addition to the idea that nuclear energy is dangerous, the second prominent theme in the post-Fukushima newspaper coverage indicates that nuclear accidents can also occur in France (40.91 percent). Thus, media of this theme emphasizes experts' assessment of the nuclear safety in France, noting that similar nuclear accidents can occur in other locations. Coverage highlights the nature and extent to which individuals questioned the safety of the nuclear power plants in France. In a 2011 story in *Le Figaro*, a researcher argued that Fukushima led the French nuclear experts to reevaluate their security standards because the accident in Japan challenged the safety measures in France: "I do not think that the buildings which house the [cooling] pools of the French nuclear power plants are sufficiently protected." (#275)

In the post-Fukushima period, news media outlets relied much more heavily on anti-nuclear activists as prominent frame deployers. Thus, in the aftermath of the disaster anti-nuclear activists, who had been largely absent from the media in recent years, garnered significant exposure. For instance, a nuclear critic questioned safety reassurances from both government officials and nuclear company managers, as indicated in this illustrative quote:

"The workers from the factory emphasized the aging of the nuclear power plants and its dangers. During a long interview, an executive of the production process said that even though the corporate executives, who decide how it is to work in a nuclear power plant without actually knowing the working conditions, admitted that, despite the necessary need for safety in the power plants, financial decisions come before safety measures."

In fact, articles show that critics pointed out the gaps in the safety procedures used by the nuclear workers. An article entitled "Four months to sift the safety of French nuclear facilities" from *Le*

Monde summarizes the ideas of nuclear critics. The anti-nuclear organization, *Sortir du Nucleaire*, stressed that the weak points encompass a wide range of issues.

“There are many absurd and scandalous omissions in the book of specifications, which do not take into account either the transport of nuclear waste, or the human error – which is the cause of the accident in Chernobyl - or malicious acts or the possible crash of an aircraft, [...]. Stress tests might be only "alibi tests," making us believe that we can continue to do the same for thirty years.”

(#177)

Therefore, according to media reports, many regret that the “stress tests” that were about to be conducted in the power plants after the catastrophe in Fukushima to assess the safety of the reactors do not take into consideration the most important safety problems. One Green Party member condemned the ignorance of certain factors conveyor of risks. In an article published in *Le Monde* entitled, “Nuclear safety tests divide Europe,” he claimed that some countries do not take the safety tests seriously: “The British and French authorities have succeeded, by their intense lobbying, to delete from the book of specifications the criteria dealing with the most dangerous risks.” (#179). Moreover, an IRSN (Radioprotection and Nuclear Safety Institute) executive argued that the safety guides disregard natural menaces.

“In some facilities, the safety standards are not consistent with our current knowledge of natural hazards [...]. In other words, security standards vis-à-vis earthquakes and floods are obsolete and need to evolve quickly.” (#057)

In order to prove their arguments, in December 2011, some Greenpeace activists trespassed in the nuclear power plant located in Nogent-sur-Seine (Aube) near Paris. They explained that they

wanted to show the public that the nuclear power plants were not safe enough and that they are vulnerable to human intrusion. Sophia Majnoni, the nuclear expert for Greenpeace France, stressed in *Le Monde* that the action conducted by her fellow activists indicated the flaws in the safety system of the power plants: “The goal is to demonstrate the vulnerability of the French nuclear facilities and how easy it is to reach the heart of the power plants.” (#036) Even though Nicolas Sarkozy condemned the intrusion as an “irresponsible” (#032) some politicians, adversaries to the atomic energy, approved the achievement of the activists. In the same article, Sophia Majnoni further explains that the intrusion of the activists underlines the security flaws within the facility: “If Greenpeace managed to trespass a nuclear power plant, imagine what could happen with terrorists.” (#032)

In the articles examined in this research during the post-Fukushima period there is significant coverage of anti-nuclear activists. Coverage highlights anti-nuclear activists’ expressed concerns regarding the weaknesses of the power plants. They argue that EDF and Areva should also consider the human factor as a threat to the nuclear safety. Ignoring this risk, as highlighted in media coverage, means that the nuclear specialists do not really know how to control the nuclear field. In a *Le Monde* article entitled, “People working for Areva, vote Green!” the journalist talks about the management of the nuclear field and explains that executives tend to forget hazards in their daily tasks: “The problem of nuclear power in France, in fact, is that it has been managed irrationally.” (#024) Therefore, the coverage of the debate reflects the anti-nuclear activists’ emphasis on the lack of control of the nuclear field.

This dimension of the debate, namely the safety concerns related to the industry’s inability to control the facilities, is primarily highlighted in the liberal-leaning newspaper, *Le Monde*. The right-leaning *Le Figaro*, on the other hand, largely sidesteps the problem of the management of the nuclear energy and this theme is seldom mentioned by the conservative newspaper. However, journalists for *Le Figaro* still highlight information regarding the dangers of the atomic power.

For instance, a movie director interviewed in *Le Figaro* about his new movie, which deals with nuclear waste, explained that the nuclear technology is unstable: “Nuclear power goes beyond our comprehension, says Michael Madsen. It oversteps what we [can] control ...” (#173).

Furthermore, a professor claimed in another article in *Le Figaro* that the nuclear technology still has remaining issues.

“Only the energy produced from the fusion would provide, because of the deuterium and lithium, inexhaustible reserves, but it is not mastered yet technically speaking - except for bomb making - and it is not certain that it will never be.” (#272)

Thus, while the liberal leaning *Le Monde* was more likely to include coverage of safety concerns, such issues were also mentioned in the right leaning *Le Figaro*, albeit much less often.

Post-Fukushima media coverage of concerns related to domestic nuclear accidents is related the idea that France is too confident about the nuclear technology. Thus media outlets show that critics argue that pro-nuclear activists simply do not acknowledge the risks in France because they refuse to take into consideration the fact that the weaknesses of the nuclear field overcome its advantages. However anti-nuclear activists claimed that Fukushima should be the occasion for the nuclear experts to reconsider the state of the nuclear field in France and to finally “imagine the unimaginable” (#165): the possibility of an accident that France refuses to envision.

Following Fukushima there was an increase in media coverage highlighting the potential pitfalls associated with nuclear power. In fact, since the government considers the French nuclear companies mastered nuclear technology, the threat of a major nuclear accident in France is negligible and the newspapers analyzed in this research reflect upon. For instance *Le Monde* published an article by Jean-Philippe Colson, a professor who wrote a book in 1977 about the nuclear energy entitled “The accident in Marcoule reveals the failure of the French nuclear

model.” He explains that one of the main problems of the nuclear field in France, besides the lack of public debate and the culture of secrecy instilled by the government, is the intense lobbying to ensure that the public does not question the expertise of the nuclear specialists.

“The third constant [of the French nuclear field] is that it would be right [to] trust the nuclear technicians. At every level: safety of the power plant, radioprotection, management of the long-lived radioactive waste, etc. Thus, since its origins, the French nuclear law is nothing but the codification of the confidence that we are imposed to have for the nuclear technicians and scientists. For this ‘nucleocracy’ [nuclear elite], the atom is a matter of technique, not democracy.” (#094)

Lack of Transparency in French Nuclear Industry

The third major anti-nuclear theme found in the newspaper coverage following Fukushima deals with the lack of transparency of the nuclear field. This theme represented 26.36% of the total anti-nuclear themed articles following the accident. Within this context, media coverage highlighted critics’ claims that the French government and the nuclear industry in France are purposively concealing information from the public. The central theme of these stories is that in order to prevent the nuclear field from any modification of its organization, the nuclear companies are willing to alter safety standards to make them match the existing equipment. A politician, for instance, pointed out in *Le Monde* how the nuclear companies misbehave.

“In 2003, the federation Nuclear Phaseout [Sortir du nucléaire] revealed the falsification of seismological data by EDF to avoid costly work/renovation. While seismic standards must be based on an augmented earthquake for safety purposes, the Nuclear

Safety Authority [l'Autorité de sûreté nucléaire] noted that EDF used lower standards than those set by the Institute for Radiological Protection and Nuclear Safety [l'Institut de radioprotection et de sûreté nucléaire].” (#271)

Anti-nuclear activists are highlighted in media coverage arguing that it is an old habit for EDF to conceal documents and evidence. A WWF [World Wildlife Fund] official noticed in an article printed in *Le Monde* entitled, “Mr. Sarkozy accepts an audit of nuclear field by the Court des Comptes [Court of Audit],” that nuclear companies refuse to share their knowledge to impede drastic transformations in the field: “The antinuclear activists emphasize the fact that EDF has mastered the art of withholding information to avoid any debate about the economic relevance of the sector.” (#182)

In fact, Jean-Philippe Colson , an environmentalist, who is opposed to the nuclear power, explained in *Le Monde* that the nuclear energy is dangerous because the French population is bound to trust the nuclear technocrats when they publish reports about the state of the nuclear power plants.

“The second constant of the nuclear policy in France is secrecy. The list of those secrets is long, dealing, of course, with nuclear weapons, but also with the transport of radioactive materials, and especially with the accidents on sites (Saint-Laurent, Blaye, The Hague, Tricastin Paluel, etc.). Nuclear hazards, concealed like this by secrecy, are also made dangerous by the publication of comforting statistics about the supposed low probability of a major nuclear accident.” (#094)

The lack of transparency is directly linked to media coverage highlighting the more general lack of public debate over the nuclear issue in France. Critics argue that the general public is essentially *excluded* from the discussions about the development of the nuclear field because nuclear specialists have the upper hand on the situation and do not want to change their policies. Anti-nuclear activists claimed that this is not a democratic way to handle the question of the evolution of the nuclear energy in France. According to a *Le Monde* article entitled, “A referendum about nuclear power in France!,” environmentalists ask the government to consider a referendum on nuclear energy. Instead of letting the experts debate the nuclear issue, they argue, the French government needs to involve the citizens in the debate: “The question is to finally confront democracy and citizenship with the most dangerous technology of the world.” (#175)

Media coverage of anti-nuclear activists highlights the fact that leading nuclear actors are unconcerned with the public’s perceptions of nuclear power. Otherwise, they argue through media outlets following Fukushima, France would have decreased its reliance on nuclear energy a long time ago. In fact, anti-nuclear activists argued that the nuclear field is the protected territory of a few men and women that do not try to share their expertise with the rest of the population. For example, in an article entitled “Fukushima forces France to rethink the security of its facilities,” a journalist from *Le Monde* argues that a significant problem with nuclear power in France is related to the fact that the dangers associated with nuclear power are *only* discussed among specialists they are less likely to acknowledge the risks: “As a more or less closed group of experts deals with this topic, one may wonder if there are still people in this milieu who have the courage to point out serious problems.” (#240)

In the end, the media coverage of the nuclear energy in *Le Monde* and *Le Figaro* conveys the idea that instead of being the model industry that makes the pride and joy of the French government, the nuclear field appeared to be undermined by internal secretcies. For instance Cécile Duflot, the secretary of *Europe Écologie Les Verts* (the French Green Party), was quoted in an article printed

in *Le Figaro* about the opinions of the different French political parties about the nuclear energy, explaining that the “prevailing opacity about the real risks” (#304) represents a danger for the democratic process. It is time for the French population to open its eyes, to acknowledge the risks of the nuclear energy, and to ask for the government and the nuclear companies to change their policies. Furthermore, another politician from the Green Party stressed in an article published in *Le Monde* titled, “Seismic and terrorist hazards: France is not protected from danger,” that nuclear energy is not the solution because the flaws in the technology makes it more dangerous than useful: “Nuclear power asks more questions than it answers. That is why we must turn the page of the atom and give up the nuclear energy.” (#271)

There was a significant shift in media coverage of nuclear power following the Fukushima nuclear accident, both in terms of the volume and substance of anti-nuclear coverage. Prior to the accident, the critical and anti-nuclear themes centered largely around concerns related to waste and the latest French nuclear technology (i.e., the EPR reactor). Following Fukushima, the anti-nuclear coverage highlights much stronger criticism of the industry, including calls to halt nuclear power. Moreover, the media relies much more heavily on activists as frame deployers (as shown in Table 10). Anti-nuclear supporters strongly reproach the French government and the main nuclear companies for concealing information and refusing to open the debate to the public. They further argue that the lack of transparency in the development of the nuclear field is eventually going to impact the confidence level toward atomic power. However, the anti-nuclear activists develop their narratives in response to the overwhelming presence of the pro-nuclear supporters whose enthusiasm about the atom industry did not decrease after the meltdown of the reactors in the Japanese power plant.

Pro-nuclear articles Post-Fukushima

While the Fukushima catastrophe ignited critical commentary on the front pages of various newspapers regarding fears about nuclear energy and its risks, nuclear supporters in France continued voraciously to advocate for the use of the atomic power. The central message expressed in the pro-nuclear media coverage centers around the idea that the disaster in Fukushima can lead France to increase the safety of its power plants but it does not mean that the country has to give up its main source of energy. Thus, in the same way Fukushima triggered a strong anti-nuclear feeling among the critics, the supporters of the atomic power deployed a greater number of frames to detail the advantages of the nuclear energy. The French government devoted more time to reaffirming its commitment to nuclear power.

Prominent pro-nuclear media coverage following Fukushima centers around five themes, including: comparison to other countries, both France's lack of fear and the safeness of the French nuclear program, the importance of nuclear power to the domestic economy, and the backwardness of other sources of energy that do not fit the need of a industrialized country.

Table 8 Frequencies and Percentages of Prominent Pro-Nuclear Themes After Fukushima, 2011-2012

<i>Pro-nuclear themes</i>	<i>Frequency</i>	<i>Percentage</i>
France vs. other countries	24	6.5%
Nuclear energy is safe and France does not fear it	93	25.2%
Nuclear energy is important for the economy	39	10.6%
Nuclear energy needs progress	19	5.1%

Notes: Data come from a subset of the total newspaper articles coded (N=497). Articles published before Fukushima with pro-nuclear themes: (n=369). Categories are not mutually exclusive Data comes from the following sources: *Le Monde, Le Figaro*.

Comparing France to Other Countries

The first prominent theme that appears in the newspapers compares France's ability to utilize nuclear energy compared to other countries that abandon or discredit it. This theme is represented in 6.5% of pro-nuclear articles examined during the post-Fukushima period. As mentioned before, the nuclear supporters are proud of the nuclear industry because it provides France with

an highly specialized technology that can exported to other countries throughout the world. Moreover, they argue that it allows France to remain energy independent. Following the Fukushima disaster, pro-nuclear media coverage compared France to other countries regarding their attitudes toward nuclear energy.

Much of the comparison centered around Germany, which had long been a nuclear trading partner with France. After the Fukushima nuclear meltdown, Germany renounced its use of nuclear energy. The decision of the German government was critical because of the strong economic relations between the two countries. Thus, choices made by Germany regarding nuclear power clearly have direct economic and policy influence in France. However, France responded to Germany's decision, doubling down their commitment to nuclear power in the region. Moreover, nuclear supporters in France are keen to prove to the French public that Germany's choice was misguided and irrational. For instance, in an article titled, "The future of Europe and the reason of the nations," a journalist from *Le Figaro* claimed that Germany's abandonment of the nuclear energy is "selfish" (#004). Similarly, a journalist from *Le Monde* described how nuclear supporters view Germany's disavowal. He argued that giving up the nuclear energy is "premature" and "thoughtless" (#001). Therefore, advocates of atomic energy discredit the decision of giving up the nuclear technology and continue to use France as a model country for its technological prowess. Furthermore, in an article published in *Le Figaro*, "Without nuclear energy the energy bill of France would skyrocket," Bernard Bigot, the head of the CEA [Atomic Energy and Alternative Energies Commission], argued that Germany is going to pay for giving up the nuclear energy. He further explained that: .

"The cost of this decision has recently been estimated at 250 billion euros in Germany. What would happen if France would have to make the same choice? [...] As for France, whose nuclear capacity is more than three times larger than the German fleet, I

believe that, at this stage, no figure can reasonably be put forth, because alternative resources [in the two countries] are not the same. The impact might be even heavier than the simple application of a cross-multiplication.” (#085)

By the same token, the articles examined in this study stress that France is not going to give up the nuclear energy solely based on Germany’s decision that followed the nuclear catastrophe in Japan. According to some news media coverage of the issue, France’s nuclear specialists believe that the nuclear energy has a bright future and that rejecting nuclear technology now is unreasonable. For instance, *Le Monde* published an interview of Dominique Finon from CNRS [National Centre for Scientific Research] about the consequences for France to give up the nuclear energy. He explained why the situation in France is different from the situation in Germany and explained why France should continue to develop its civil nuclear program.

“I do not see why we should abruptly consider a nuclear phase-out in France because a country made this choice, provided that we would learn something from the Fukushima disaster regarding the safety of the reactors. The issue is primarily about the lack of global governance of nuclear safety. Thus, it is not the German choice that will lead the Chinese and other emerging countries to abandon the nuclear option if [Germany’s] choice means that the world must abandon this technology.” (#153)

The articles examined in this research point out that nuclear energy is the only solution to the increase in electricity needs. For example, nuclear workers and supporters of the nuclear emphasized the fact that Germany did not take a step back to think through its decision to give up the atomic power. In an article published in *Le Figaro* entitled, “The agreement over the nuclear

energy is irresponsible, the CGT says," Virginie Gensel from the union General Confederation of Labor (CGT) argued that since Germany has stopped its nuclear program they will be incapable of producing the necessary amount of clean energy it needs:

“Nobody makes concrete proposals for us to know with what we would replace the nuclear energy. Take Germany, where it is said that renewable energy will be developed: in the meantime, thermal power plants are put to work, and it slowly increases the greenhouse.” (#055)

While most of the media coverage comparing France to other nations is centered on Germany, there was also coverage that compares France to Japan. After the catastrophe in Fukushima, journalists compare the situation of the nuclear facilities in Japan that led to the accident to the situation in France. The gist of these arguments, as highlighted in multiple media stories, was that Japan is vulnerable to earthquakes and natural disasters while France is in fact much safer. They stress that the events at the power plant in Fukushima should not influence the future of the nuclear energy in France. In an article published in *Le Figaro* titled, “Nuclear transparency,” a reporter explained that Japan’s nuclear field lacks transparency, which impacted the manner in which the problems spread after the tsunami. The journalist also argued that France benefits from an independent agency that prevents France from such a catastrophe to happen:

“But Japan is not France or Germany. This archipelago is exposed to all natural hazards, with whom the country learned to live anyway. It is therefore in with full background knowledge that Japan has built its power plants. A program that was thought to be protected by the greatest safety precautions. [...] For five

years, France can, in turn, rely on the Nuclear Safety Authority, an institution which independently makes all the checks.” (#310)

Finally, while he acknowledged that the nuclear accident at Fukushima should encourage France to increase the safety of its facilities, he cautioned that France’s response to the meltdown should be tempered to “avoid general conclusions that can condemn the nuclear energy.” (#310)

Furthermore, two politicians from different parties pointed out that France cannot give the nuclear energy “in the blink of an eye/ all at once” (#200). In *Le Figaro* they explained that nuclear technology is the best solution for France’s energy needs. Thus, nuclear supporters look upon other countries with disdain that have decided to give up the nuclear power. In an article published in *Le Monde* entitled, “The phase-out of nuclear power,” a citizen interviewed argued that countries that decide to give up the nuclear energy do not think about the consequences of their actions. He further explained that even though it is a laudable attempt, in practice the goal is going to be difficult to achieve.

“If countries such as Germany, Austria, Switzerland have such an irrational fear of civil nuclear energy, which is respectable, they have to be consistent with their beliefs, they have to commit, in case of shortfalls and failures of their electricity production, to not purchase nuclear electricity produced by their neighbors (especially France) to get themselves out of a mess. One should be logical, consistent and virtuous all the way.” (#253)

Therefore, the comparison between France’s deep analysis of the situation and other countries’ hasty verdict about nuclear energy also reflects a prominent theme in the framing of the nuclear debate in the articles examined in this research.

France's Lack of Fear and Safeness of Industry

The second prominent theme emphasizes the safeness of the industry and the fact that France is confident in its nuclear technology and thus does not fear nuclear power (25.2 percent). For instance, two members of the French Parliament wrote an article in *Le Figaro* in order to draw the consequences of Fukushima in France. They claimed that France cannot give up the nuclear energy because of what happened in Japan:

"The critical situation of nuclear power plants located north-eastern Japan greatly concerns us. However, after these dramatic events, some require a nuclear phase-out. We do not agree. One cannot stop an entire sector after an accident, but one learns from past mistakes to make the field more secure. [...] In France, the seismic risk was also taken into account, and safety features have been incorporated for the power plants to endure an earthquake."

(#292)

Similarly, in both newspapers various politicians express the safeness of the nuclear energy which means that power plants are not safe. Members of the French government especially denounce countries that lack a broader perspective in the evaluation of the situation. Nathalie Kosciusko-Morizet, the former Minister of Ecology, Sustainable Development and Energy, in an article printed in *Le Figaro* entitled "Nicolas Sarkozy defends the French [nuclear] sector, the Left is divided," argued in support of keeping nuclear power as the primary source of energy. Nathalie Kosciusko-Morizet explained that, "French nuclear plants were built to cope with the most severe natural disasters and that they were upgraded every ten years." (#304)

The next day, *Le Monde* published an article claiming that European countries have different views about the nuclear energy after the accident in Fukushima. Nathalie Kosciusko-Morizet

explained that she “understands the ‘questioning’ that perturbs some countries (Germany and Switzerland, among others), but, she says that the nuclear debate has already taken place in France.” (#301)

Therefore, through various news stories published in both *Le Monde* and *Le Figaro* supporters of nuclear energy emphasize France’s superior expertise in the field. In a *Le Monde* article titled, “The Right sticks together to defend the national industry,” a journalist stressed that government members would not change their opinions about the nuclear energy after the meltdown occurred in Fukushima, emphasizing their trust in the safety of French nuclear facilities:

"The French nuclear power plants, which are characterized by a high degree of homogeneity, are subject to regular visits by the Nuclear Safety Authority. An independent authority, it is responsible for checking the level of security and, when appropriate, to enhance them. New construction programs prioritize the safety of the reactors, regardless of the cost."

(#219)

In an article from *Le Figaro* dealing with Nicolas Sarkozy’s visit to the nuclear power plant in Northern France to reaffirm France’s choice to keep nuclear energy, a reporter pointed out that the nuclear industry is very important for the French President. According to the story, the journalist argued that countries that are giving up nuclear energy after Fukushima are overreacting: “The loss of sang-froid of a number of those who should look forward instead of reacting emotionally is extravagant.” (#184).

Notably, in the newspaper articles examined in this study a prominent theme that emerges centers around the idea promulgated by journalists, politicians and nuclear experts that the Fukushima accident was related to “natural causes.” Jean-Pierre Chevenement, from the political party

Mouvement Republicain et Citoyen [Citizen and Republican Movement], argued that France should trust the technology because the country is protected from the reasons that caused in nuclear meltdown in Japan: “The Fukushima accident is primarily a natural accident.” (#121) By the same token, Henri Proglio, EDF’s CEO, explained in *Le Monde* how he envisions the future of its company after the difficulties he had to face during the last few months. He stressed that “the accident does not challenge the nuclear technology.” (#164) In fact, he further claimed that the managers of the power plant in Fukushima are directly responsible for the catastrophe. In comparing France to Japan, he argued that French nuclear workers would have prevented such an accident:

“But it is not the earthquake that caused the accident because the facilities resisted well, it is the tsunami that caused a disruption of the cooling system. And it had serious consequences because the supporting measures were a few days late. [...] The power plants operators are responsible for the nuclear industry.” (#164)

Furthermore, in an article from *Le Monde* summarizing the official government position on nuclear power, a government member was quoted stating: “The Fukushima disaster, if it has raised awareness about the nuclear energy, did not however rattle the French doctrine in this area.” (#219) Thus, the analysis of the articles published in the newspaper examined in this research indicates that supporters of nuclear power emphasized the technological prowess of France regarding the nuclear energy.

Proponents of nuclear power continue to emphasize the “safety” of nuclear power plants in France. The articles analyzed in this study show that France has no reason to fear nuclear energy because the facilities are carefully controlled and managed. In fact, EDF and Areva, who supervise the power plants, continuously argue that their long term experience in terms of the

development of the nuclear program tremendously increased the safety of the French power plants. For instance, in an article printed in *Le Monde* entitled, “Tepco accepts Areva’s assistance to decontaminate Fukushima,” the journalist explained that Anne Lauvergeon, Areva’s CEO, “highlighted what she calls the basic triangle of nuclear power (safety, security and transparency)” (#196). While Areva is assisting the Japanese nuclear company that manages the facilities in Fukushima, she highlighted France’s superior expertise regarding nuclear safety. By the same token, Henri Proglio also promotes the ability for France to provide safer nuclear reactors. In both newspapers, he praised EDF’s capacities regarding the security of its power plants. One month after the Fukushima catastrophe, *Le Figaro* published an interview of EDF’s CEO where he explained how EDF deals with the nuclear risks to protect the power plants:

“First and foremost, safety is a constant concern for EDF. We do not start a meeting without talking about it. In the past, the disasters at Three Mile Island and at Chernobyl led us to significantly strengthen our security measures.” (#198)

Moreover, Henri Proglio wrote an article for *Le Monde* entitled, “The safety of our facilities is our obsession” where he reasons why France should keep the nuclear energy and why EDF is efficient in managing nuclear power plants and developing the nuclear power:

“I share this emotion [about the nuclear accident in Fukushima]. It is inseparable from the highest priority for EDF: the safety of its installations. This culture, this obsession with safety is in the genes of our field. It is a school of humility, a continuous mobilization. Because, in that industry, nothing can ever be taken for granted. It is a school of realism, too: there is no error- or risk-free technology. Managing this risk is part of our daily

routine. This is the foundation on which we rely to provide our fellow citizens and our customers a safe, reliable, and affordable electricity.” (#269)

Thus, analyses of newspaper coverage indicate that French nuclear companies are aware of the risks of the nuclear power. However, they believe that the French nuclear program is advanced and sophisticated enough to overcome the dangers.

Importantly, the pro-nuclear articles examined in this research identify politicians as a significant category of frame deployers who use nuclear safety as an argument to conserve the atomic program. Politicians, and especially Nicolas Sarkozy, are at the forefront of the promotion of the nuclear safety. For instance, *Le Figaro* published an article that summarizes the opinions of the main French political party about the nuclear field. The journalist stressed that the French President is a fervent defender of the nuclear energy. He always “praised the French nuclear technology that is ten times safer” (#304). Moreover, in another article printed in *Le Figaro* entitled, “Sarkozy defends its ecological evaluation query,” that deals with the environmental program the French President developed during the past 5 years, Nicolas Sarkozy argued that the nuclear power plants in France are safe and are about to become safer:

“In response to the new concerns provoked by the Japanese drama in Fukushima, the President stated that 1 billion would be dedicated to improve the safety of the entire French nuclear facilities to allow ‘our plants to always be the safest in the world’.” (#074)

According to media coverage, it is clear that Nicolas Sarkozy is not the only government member who believes in the safety of French nuclear reactors. In fact, his entourage relays the same type of information in media outlets. A journalist from *Le Monde* explained in an article entitled, “In

France, the nuclear question bursts into the campaign,” that nuclear energy has a tremendous importance in the unfolding of the presidential campaign. Based on analyses of newspaper coverage of nuclear power, government members have remained supportive of the nuclear program and do not hesitate to mock the doubts expressed by their opponents, as highlighted in this illustrative quote:

“Among the president's entourage, it is repeated that the nuclear energy is safe and that the French power plants are even safer: ‘In Japan, it was not a nuclear safety issue but it was a problem caused by a tsunami. What is at stake is the geographical location of the plant: to my knowledge, there are no tsunamis in Bavaria.’” (#160)

The pro-nuclear articles analyzed after Fukushima not only present official narratives emphasizing the safety of nuclear facilities, but they always portray residents as being equally optimistic and supportive. In newspaper coverage following the event French people living near a power plant were interviewed to talk about their experiences living near nuclear reactors. For instance, right after the nuclear catastrophe in Japan, *Le Monde* published an article about the local population living near Fessenheim, the oldest French nuclear reactor. The journalist asked how they perceive the events in Japan and how the power plant in Fessenheim influences their lives. According to the news story, many individuals remained satisfied with the power plant and trusted its safety. In this illustrative quote, a local resident is quoted explaining how she believes that nuclear companies are able to manage the risks: “I think that in France, safety is guaranteed, said Sandrine Hammon. Exercises are often conducted; many parents work at the power plant and know how things work.” (#289). *Le Monde* published another article entitled, “Sacred union at Fessenheim to defend the nuclear energy,” which emphasized the local support for nuclear reactors. The article suggests that the local population believes that the aging power plant remains

safe despite its age. Local residents thus refuse to advocate for its dismantling. Various citizens are interviewed and expressed their support to the facility in the story, including this quote:

“I do not believe in the dismantling, we like the power plant,
"says [resident name], a butcher located in the heart of the
village. The storekeeper takes aback the arguments of the anti-
nuclear supporters. [The power plant is] too old? Everything has
been removated, this is one of the most modern power plant in
France. [The power plant is] dangerous? I am more afraid of
Rhodia chemical complex, located a few kilometers away from
the village, that of the nuclear power.” (#013)

Importance of Nuclear Power to Domestic Economy

The emotional attachment of the local residents to their power plants is directly related to the economic importance of nuclear energy, a theme that represents 10.6% of the pro-articles following Fukushima. This theme essentially addresses a pragmatic economic aspect of the nuclear energy in France: its importance for the job market. The possibility of abandoning the nuclear energy triggered reactions throughout the news press that highlight the importance of the field in the economy.

Once again the articles examined in this study show that Nicolas Sarkozy is the primary frame deployer of pro-nuclear themes. He explained several times that the nuclear field provides France with many jobs and giving it up would mean renouncing to these jobs and leaving the people unemployed. For instance, in December 2011, the French President visited the Tricastin power plant in southeastern France. *Le Monde* published an article quoting Sarkozy in which he claimed that France cannot afford to lose the nuclear field: “Can we afford to destroy hundreds of thousands of jobs during an economic crisis?” (#016) Similarly *Le Figaro* printed a report of

Sarkozy's visit to another power plant located in Gravelines where he again expressed his string support to the nuclear energy in France. In this article entitled, "On Tuesday, visit of the power plant in Gravelines," the French leader emphasized that renouncing to the atomic program would eventually lead France to shot itself in the foot: "In Japan, the drama came from the tsunami. Unless we considered that there is a tsunami risk at the center of France ... I wonder why France would cut off its own arm." (#185)

In fact, the pro-nuclear articles analyzed in this study following the Fukushima accident continually emphasize the "dramatic economic consequences" associated with potentially ending the nuclear program in France. In an article entitled, "EDF, Areva and GDF Suez vulnerable; The French nuclear giants have much to lose with a partial nuclear phase-out," a journalist from *Le Figaro* argued that a decrease in France's reliance on nuclear electricity would be the "worst case scenario" (#058). Moreover, the article states that France should not give up the nuclear power because it is one of its national specialties.

Journalists and nuclear experts thus promote the nuclear industry by emphasizing its economic importance to the country. Through newspaper stories they published the number of jobs that would be lost if France gives up the nuclear energy. Coverage includes actual numbers of jobs potentially lost, along with a wide range of practical consequences that clearly influences public discourse on the topic. Such rhetoric and corresponding media coverage is likely to have significant impacts on public discourse and opinion related to the future of the French nuclear program. For instance, a journalist from *Le Figaro* published an article that talks about cost for France to give up the nuclear energy. He highlights the central role of the nuclear energy is the economy:

"The significant role that this industry plays in the national economy is underlined: 125,000 direct jobs (4% of the industrial

employment) and 410,000 jobs in total (direct and indirect), 450 specialized companies and a 12.3 billion euro of added value which contributes to 0.71% of the GDP.” (#86)

By the same token, *Le Monde* also issued an article entitled, “Stopping the nuclear industry would be costly in jobs for France,” that investigates the cost of a nuclear phase-out. The journalist argued that many people in France today work directly or indirectly for the nuclear field:

“Therefore, we can say that the shutting down of a reactor destroyed 12,500 jobs. The closure of 24 reactors implies the loss of approximately 300,000 jobs, the termination of all plants 400,000 jobs.” (#332)

The media coverage of the nuclear energy also promotes the economic significance of the nuclear power by presenting how pro-nuclear advocates highlight the future opportunities of the industry. The nuclear field is attractive because it creates jobs and it is going to continue to create jobs to keep pace with the energy needs. For instance, a reporter wrote an article in *Le Monde* entitled, “Nuclear power still has a bright future ahead of him,” that explains that despite the Fukushima accident, the nuclear field is still a strong job provider open to everybody:

“The nuclear industry employs unskilled and skilled labor. In this sector that continues to hire, you can start with a CAP [Certificat d'aptitude professionnelle the “lowest” French degree] or an engineering degree. [...] In 2011, nuclear graduates will enter a rather narrow and privileged world where students have no trouble finding a job.” (#141)

Nuclear Power Represents Technological “Progress”

The final theme that appears in the post-Fukushima pro-nuclear articles examined in this study reflect the idea that nuclear energy is equated with “progress” in the minds of the supporters. This

theme represents 5.1% of the pro-nuclear newspaper articles analyzed in the post-Fukushima period. The articles examined in this research show that politicians, in particular, are the primary frame deployers utilizing this narrative to defend the nuclear energy. The French President mentioned several shock-phrases in his defense of the nuclear energy to catch the attention of the public. For instance, in an article published by *Le Monde* entitled, “Progress vs. the return of the candle,” a journalist detailed Nicolas Sarkozy’s speech about the nuclear energy. She explained that he compared his vision of the issue to François Hollande’s vision [his opponent during the election campaign and now the current French President]. Nicolas Sarkozy argues that nuclear energy is “France’s superior asset.” (#041) He believes that is why it is critical for the country to continue to develop the nuclear industry:

“Should we be the only country that turns its back to progress? If we turn our backs to the nuclear technology, we will soon challenge the aerospace engineering, the robotics, the automotive industry. (...) My intention is to leave a more modern society to my successors.” (#041)

Furthermore, in another article printed in *Le Figaro* Sarkozy praised nuclear energy and explained why it is the best choice for the future. The French leader ridiculed “the irrational medieval fears” (#181) that seem to motivate his opponents, and especially the left-wing parties. According to Sarkozy, renouncing the use the nuclear energy is tantamount to renouncing engagement in the “modernizations process.” Finally, *Le Figaro* published an article about another speech directed against the Socialist party where Nicolas Sarkozy refused to declare a moratorium for the nuclear industry because it goes against the development and the interests of France: “A moratorium [about the nuclear energy] would be irresponsible; it would be the choice of the Middle Ages.” (#059) The journalist reported that the French President is attached to the prowess provided by the atomic electricity because it is a significant technological improvement:

“I will not let this advantage being sell off, this industrial heritage being wasted. [...] The nuclear energy is political issue; it is not a liberal issue, not a conservative issue, it does not concern only the opposition, or the majority, the nuclear energy is France.” (#059)

Similarly, *Le Figaro* issued an article sarcastically entitled, “The Gallic village and the Amish temptation,” where the journalist criticized the attitude of the anti-nuclear activists. He argued that not only do the nuclear detractors try to scare the population but they also prevent the economic development of the country and the march towards the future:

“How could our children have confidence in the future when they are told to be afraid of the atom? [...] Our "old exhausted country never tired being on the lookout for in the light of a new day", as General de Gaulle wrote in the conclusion of his memoirs, becomes "Gallic village" surrounded by palisades to protect themselves from the "progress" as Asterix's fellow companions sought to defend themselves from the Romans.” (#255)

Thus, the nuclear catastrophe in Fukushima prompted and even exaggerated the pro-nuclear narratives used in support of atomic power. Nuclear companies and official institutions remained at the forefront of the dispute and they continually emphasized the technological superiority of the atom, while blaming the anti-nuclear activists for their lack of ambition for France.

Official Frames and Frame Deployers

The final section of the analysis examines issues related to frame deployers. The findings of this study indicate that access to the media is not the same for all actors in the nuclear debate. Past

studies showed that media outlets are powerful tools for shaping public debate (Gamson and Modigliani 1989; Ryan 1991; Gamson 1992; Gamson, Croteau, Hoynes, and Sasson 1992; Smith 1996; McCaffrey and Keys 2000; Rohlinger 2002). Researchers emphasize the influence of “official frames” in the construction of narratives (Gans 1979; Ryan 1991; Barker-Plummer 1997; Rohlinger 2002; Gans 1979; Gitlin 1980; Klandermans 1988; Ryan 1991; Rohlinger 2002). Media outlets have only limited space to offer to cover issues and the literature emphasized the necessity for reporters to choose which news are worth to publish (Entman 1993; Koopmans 2005; Neidhardt 1994; Noakes and Johnston 2005). Thus, because of the lack of space, journalists tend to rely on government members or nuclear managers to get information about the field. Anti-nuclear activists have been largely neglected in the French media, particularly in the period preceding the Fukushima accident. This has effectively preventing their frames from resonating with the French population, and has limited the public consumption of critical information on the nuclear industry in France. Frame resonance plays an important role in the success of a social movement (Ryan 1991; Gamson and Modigliani 1989; Noakes and Johnston 2005). That is why it is important for social movement organizations to understand the tactics of the media in order to get a better attention from the media and the journalists.

Table 9. Frequencies and Percentages of the Distribution of the Pro-nuclear Deployers Before and After Fukushima, 2010-2012

	Before Fukushima		After Fukushima	
	<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>
Government members	30	17.44%	82	30.15%
EDF	15	8.72%	28	10.29%
Areva	16	9.30%	18	6.61%
CEA	4	2.33%	2	0.73%
Citizens	2	1.16%	6	2.20%
Academic/Professors	6	3.49%	18	6.61%
Business	5	2.90%	9	3.31%
Nuclear Workers	2	1.16%	4	1.47%
Other (including journalists)***	93	54.07%	105	38.60%
Total	172	100.00%	272	100.00%

Notes: Data come from a subset of the total newspaper articles coded (N=497). Deployers expressing pro-nuclear arguments: (n=444). Categories are not mutually exclusive Data comes from the following sources: *Le Monde, Le Figaro*. *** = p<0.001, ** = p<0.01, * = p<0.05.

Table 10. Frequencies and Percentages of the Distribution of the Anti-nuclear Deployers Before and After Fukushima, 2010-2012

	Before Fukushima		After Fukushima	
	<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>
Politicians**	7	5.98%	45	20.93%
Anti-nuclear activists	12	10.26%	41	19.07%
Citizens	1	0.85%	7	3.26%
Academic/Professors*	2	1.71%	17	7.91%
Business***	8	6.84%	0	0.00%
Nuclear Workers	2	1.71%	2	0.93%
Other (including journalists)***	85	72.65%	103	47.91%
Total	117	100.00%	215	100.00%

Notes: Data come from a subset of the total newspaper articles coded (N=497). Deployers expressing anti-nuclear arguments: (n=332). Categories are not mutually exclusive Data comes from the following sources: *Le Monde, Le Figaro*. *** = p<0.001, ** = p<0.01, * = p<0.05.

Data from the two newspapers examined in this study, *Le Monde* and *Le Figaro*, shows that the distribution of deployers of “official” frames on the one hand, and anti-nuclear activists on the other hand is uneven. Table 9 summarizes the distribution of pro-nuclear supporters before and after Fukushima, whereas Table 10 summarizes the distribution of anti-nuclear advocates during the same two periods. It is interesting to note that the evolution of the presence of the journalists as deployers of pro-nuclear themes is significant at p<0.001. There is a higher percentage of journalists expressing pro-nuclear ideas in the articles I examined in this study before Fukushima than after Fukushima. As shown in these two tables, the articles examined in this study refer to government members 30 times before Fukushima, but they only mention the discourse of the anti-nuclear activists 12 times. Importantly, government officials are the group that expresses the greatest support for nuclear energy in the media, along with journalists. Nuclear companies also display their narratives in favor of the nuclear power in the media. Together EDF and Areva represent nearly one-fifth (18.02 percent) of the pro-nuclear deployers before Fukushima while government members represent 17.44 percent during the same period.

Fukushima represents an interesting dividing point to analyze the distribution of the deployers. On the one hand, Table 9 shows that the percentage of government members mentioned in the media after Fukushima increased. Journalists from *Le Monde* and *Le Figaro* rely on politicians nearly one-third of the time (30.15 percent) to provide information about the nuclear technology. Importantly, French President Nicolas Sarkozy and the Industry Minister are at the forefront of the pro-nuclear movement and after the nuclear catastrophe in Japan they engaged in an extensive media campaign to reinforce their support for nuclear power. On the other hand, Table 10 shows that the presence of politicians who are opposed to the nuclear energy increased considerably after Fukushima. 5.98 percent of the articles containing anti-nuclear ideas before Fukushima include politicians while anti-nuclear politicians represented 20.93 percent of the anti-nuclear deployers. It also shows that this increase is significant at $p < 0.01$.

The distribution of anti-nuclear deployers changes significantly after the nuclear catastrophe at Fukushima. The importance of journalists' opinions decreases significantly even if it remains present in a high number of publications (47.91 percent). This evolution is significant at $p < 0.001$. However, media outlets tend to rely more heavily on politicians opposed to the nuclear energy (20.93 percent) and on anti-nuclear activists (19.07 percent). It is interesting to see that professors' expertise is used more frequently after Fukushima as pro-nuclear deployers. Reliance on professors' pro-nuclear expertise nearly doubled following Fukushima, but remained fairly small (3.49 percent and 6.61 percent respectively). As shown in Table 10, the nuclear catastrophe in Fukushima also resulted in more analysis of the nuclear situation in France by professors or members of the scientific community. In the same way, scientists who support the nuclear technology provided their assessment of the situation; anti-nuclear researchers received a greater attention from the media outlets. Table 10 shows that this greater reliance on scientists as deployers of anti-nuclear arguments is significant at $p < 0.05$. Finally, it is interesting to notice that

newspapers did not publish any anti-nuclear argument coming from business representatives whose companies are related to the nuclear industry. This decrease is significant at $p < 0.001$.

The analysis of the deployers of the frames in the media increases our understanding of the dynamics of the coverage of the debate over the nuclear industry. Anti-nuclear activists are cited far less often in the articles examined in this research than deployers of official frames such as the French government, EDF, and Areva. It is thus more difficult for anti-nuclear narratives to reach the general population. This finding is particularly relevant given that the French government engaged in a *crusade* to increase public trust in the nuclear technology following the nuclear accident that threatened the French public's perceptions of the safeness of nuclear energy.

CHAPTER V

CONCLUSIONS

Nuclear energy has long been considered an important asset for France. Since the 1950s, the French government controlled and supervised the development of the nuclear industry in order to provide France with a competitive advantage. The civil nuclear program has been designed to improve the country's energy independence and to make France's nuclear companies, EDF and Areva, the world leaders of the nuclear technology (Topcu 2011, Cue 2009). Despite widespread acceptance by much of the population in France, nuclear power does have domestic critics, including anti-nuclear non-governmental organizations. Anti-nuclear activists point out the inherent dangers associated with nuclear power, as well as the related risks for French society.

Despite the existence of viable anti-nuclear organizations, the larger anti-nuclear movement has remained largely hidden from media exposure. The lack of media coverage of anti-nuclear activities in France is due, at least in part, to the overwhelming government support of the industry, which provides both jobs and economic revenue to the country (Patel 2011, Topcu 2011). Thus, the media has not been inclined to provide coverage to the voice of anti-

nuclear factions in the population. The nuclear catastrophe in Japan in March 2011, however, forced media outlets to provide additional coverage of anti-nuclear activists. Thus, following Fukushima media coverage of nuclear power continued to highlight pro-nuclear arguments, but also offered the counterweight of anti-nuclear concerns. This finding suggests that a “critical event,” such as a nuclear disaster, can prompt more balanced media coverage of scientific and technical debates.

This research examined media coverage of the nuclear debate in France and the influence of the nuclear catastrophe of Fukushima through the analysis of newspaper articles from *Le Monde* and *Le Figaro* published during a two-year period before and after the event. The analysis of articles published in *Le Monde* and *Le Figaro* allowed me to examine coverage of a controversial issue both in liberal and conservative media outlets. Analysis of media coverage of nuclear related issues before Fukushima reveals a focus primarily the problem of nuclear waste. In particular, *Le Monde* offered coverage showing the lack of solutions to nuclear waste remains a significant domestic concern.

Beyond nuclear waste concerns, the other critical elements of the coverage prior to Fukushima are rarely indictments against the nuclear industry. Instead, media discussions considered to be critical of nuclear power tend to include assessments and weaknesses of management within the industry. The new reactor, EPR, is at the forefront of the criticisms. The articles examined in this study emphasize the costs and obsolescence of this newer generation French nuclear technology. In addition, newspapers covered the ongoing tensions and disagreements between the two main nuclear companies, EDF and Areva, which prevent France’s radiance abroad. Media coverage indicates that this discord projects a negative image of the French nuclear industry.

In summary, in the period prior to the Fukushima accident there was very limited negative coverage of the nuclear industry and, when it did occur, it tended to focus on management issues

rather than on true anti-nuclear positions. Moreover, anti-nuclear activists were seldom even acknowledged in the media during this time and when they were it was in reference to a single problem: nuclear waste.

In terms of pro-nuclear coverage prior to Fukushima, research shows that the pro-nuclear coverage of the debate emphasized the official frames displayed by the actors of the nuclear industry and the French government, which remains the major proponent of nuclear power. Media coverage tended to reflect this position. Journalists from *Le Monde* and *Le Figaro* wrote reports about the France's technological prowess regarding nuclear energy. This expertise is directly followed by two corollary themes presented in the media: nuclear energy is both profitable and exportable for France. The coverage of the debate shows that the pro-nuclear lobby insists on the economic advantages of the industry. The media reflect the pragmatic narratives of the nuclear advocates.

Fukushima represents a clear dividing line. It prompted a higher volume of publications in the French media about nuclear power. Moreover, the accident prompted both supporters and opponents to nuclear power to redefine their discourses to respond to the challenges and questions caused by the nuclear accident in Japan. On the one hand, anti-nuclear supporters received more attention from the media. And importantly, newspaper coverage transmitted the previously ignored issue that nuclear energy is "dangerous." Thus, the substance of anti-nuclear coverage shifted, and focused on the inability for the nuclear experts to guarantee the absolute safety of the industry. Moreover, journalists highlighted the idea that some experts may be concealing information from the general public, thus refusing to involve them in public debate.

On the other hand, findings indicate that the pro-nuclear articles that were published after Fukushima reflect a more prominent role the government in defending nuclear energy. The articles show that the government increases its presence in the media to convince the population

that the nuclear power is safe to use. This aspect of the coverage supports the fact that media focus more on official frames than on activists' narratives when it comes to the coverage controversial scientific and technical issues. Thus, the coverage of the nuclear debate emphasizes, on the one hand, the developments and advancements that the nuclear field allows while it criticizes, on the other hand, the backward minds of the anti-nuclear supporters who refuse to support accept the progress and want to return to the Middle Ages.

The nuclear debate in France is thus an important political issue, as well as a highly scientific and technical issue, that takes on a critical significance in the media. The media coverage of the debate has tremendous importance on the public's perception of the issue. In the near future, France is going to decide whether or not to continue with nuclear energy as its primary energy source. This will obviously have profound impacts on the country's energy policy, as well as on the economic structure of France, well into the future. Public opinion is likely to have a profound impact on this debate, and the media plays a critical role in shaping public attitudes and opinions.

There is already some indication of a sea change in the country. The French government has always been the country's leading supporter of the nuclear energy. However, since the research was conducted, François Hollande was elected President. During the election campaign, he argued that France should *decrease* its reliance upon nuclear energy. This shift in the French leader's vision of the nuclear industry might significantly change media coverage of the nuclear debate, thus providing new opportunities for skeptics and anti-nuclear activists to garner greater media attention.

Therefore, it would be interesting for future research to study the influence of the new Socialist French government on media framing of the debate. The same type of comparison between conservative and liberal media outlets would provide a good understanding of the evolution of the coverage of the issue as the French government and the policies it enforces become more liberal.

Future research could also include interviews with anti-nuclear activists in order to grasp their understanding of the situation and their analysis of the media coverage of the nuclear energy, their lack of presence in the media outlets, and their interpretation of the changing dynamics surrounding nuclear power in France.

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APPENDICES

The appendices include the pre-designed coding sheet used to code and analyze the newspaper articles from *Le Monde* and *Le Figaro*.

ID Number: _____

CODING SHEET FOR FRENCH DATA

Date Article Published: _____
Newspaper Source: _____ *Le Monde*
_____ *Le Figaro*

Author of Article: Male: _____ Female: _____

ARTICLE SUMMARY

Summarize the Main Theme of Article (*1-2 sentences, short description*):

Overall tone: _____ Pro-Nuke _____ Anti-Nuke _____ Neutral _____ Both

PRO-NUKE STATEMENTS

Characteristics of Person(s) being cited/quoted in article (*mark one for each positive comment*):

- _____ Government Politicians [Specify name, level and type of position: _____]
- _____ *Électricité de France SA (EDF)*
- _____ *Areva SA*
- _____ *Comité a l'Energie Atomique (CEA)*
- _____ Private Citizen cited
- _____ Academic/Professional (e.g., professors, environmental professionals, doctors)
- _____ Business Community (e.g., project developers, contractors, workers)
- _____ Nuclear workers (including unions)
- _____ Other [Please Specify: _____]

Pro-Nuclear Themes (*check all that apply*):

- _____ Nuclear = Progress
- _____ Jobs & Economic Security
- _____ Safe
- _____ Clean
- _____ Helps with *climate change* (n= _____) “*climate change*”
- _____ *Plentiful & Available* (unlike other energy sources) [easy access]
- _____ *Energy independence* (for France) (n= _____) “*Energy Independence*”
- _____ *Exportable* energy & profitable (for France)
- _____ Necessary to keep pace with increased energy needs
- _____ France’s technological prowess / Trust in technocrats
- _____ Part of France’s history
- _____ French are not fearful of this technology, unlike rest of world
- _____ France compared to Europe and rest of world
- _____ *Transparency* of Government & Industry
- _____ Other [Please Specify]:

Illustrative Examples of Pro-Nuclear Framing (*direct quotes with page numbers*):

ANTI-NUKE STATEMENTS

Characteristics of Person(s) being cited/quoted in article:

- _____ Government Politicians [Specify name, level and type of position: _____]
- _____ Anti-nuclear activists [Specify organization name and position: _____]
- _____ Private Citizen cited [Specify if it is local resident near reactor: _____]
- _____ Academic/Professional (e.g., professors, environmental professionals, doctors)
- _____ Business Community
- _____ Workers
- _____ Other [Please Specify: _____]

Anti-Nuclear Themes (*check all that apply*):

- _____ Dangerous & unsafe
- _____ Health Problems/Illness/Cancer
- _____ References to actual accident(s) in France
- _____ References to potential accidents in France (i.e., Chernobyl, Fukushima)
- _____ Current reactors old and in need of repair
- _____ Nuclear reactors are expensive
- _____ Citing European countries STOPPING nuclear programs (i.e., Germany)
- _____ Citing decreased public support in France
- _____ Links to government-corporate misconduct/corruption
- _____ Emphasizes Reduction in Nuclear Energy Reliance
- _____ Other [Please Specify]:

Illustrative Examples of Anti-Nuclear Framing (*include any details on public opinion polls*):

DEROGATORY FRAMING OF ANTI-NUKE ACTIVISTS

Details of person(s) deploying derogatory frame (source of comments):

- _____ Government Politicians [Specify name, level and type of position: _____]
- _____ *Électricité de France SA (EDF)*
- _____ *Areva SA*
- _____ *Comité a l'Energie Atomique (CEA)*
- _____ Private Citizen cited
- _____ Academic/Professional (e.g., professors, environmental professionals, doctors)
- _____ Business Community (e.g., project developers, contractors, workers)
- _____ Nuclear workers (including unions)
- _____ Other [Please Specify: _____]

Illustrative Examples of Anti-Nuclear Framing (include any details on public opinion polls):

Derogatory Framing of Anti-nuclear activists (*Article may include multiple examples*):

- _____ “Irresponsible”
- _____ Extremists (e.g.: terrorists, radicals, rebels, enemies)
- _____ Untrustworthy (e.g.: compensated from outside sources)
- _____ Anti-France / Unpatriotic
- _____ Distorting the information, even lying
- _____ Catering to Public Fear -- fear mongering
- _____ Activists Exploiting Fukushima for Personal Gain
- _____ Other: Please specify: _____

Exemplar Illustration of Derogatory Framing:

Are specific targets of attack (i.e., names) identified?

Yes: _____ No: _____ Specify who:

Does Article Include Personal and Character Assaults of activists?

Yes: _____ No: _____ If yes, examples: _____

Other Notable Political Events or Updates Mentioned: _____

Julie’s Notes (*if needed*): _____

VITA

Julie Schweitzer

Candidate for the Degree of

Master of Science

Thesis: MEDIA FRAMING OF NUCLEAR ENERGY IN FRANCE BEFORE AND AFTER FUKUSHIMA

Major Field: Sociology

Biographical:

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