

EXPLORING NEWS FRAMES, SOURCES AND EDITORIAL LINES ON NEWSPAPER COVERAGE OF NUCLEAR ENERGY IN SPAIN

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Abstract

Five nuclear power plants with seven reactors operate in Spain, one of the countries in the EU in which support for nuclear power is weaker. For understanding the public debate about nuclear energy is essential to know media discourse. The aims of this investigation are to find out how news is provided on nuclear power from an environmental point of view, who are the sources in the nuclear debate and to determine the editorial line with regard to the use of nuclear power in the seven national Spanish newspaper during five years (2008-2012). Applying the technique of content analysis for data collection, a qualitative analysis is carried out which identifies news frames a priori defined taking a deductive approach. The results show that the environmental perspective on nuclear power is relatively unusual. Using an eco-efficient frame, it is defined as a clean source of energy. Politicians play the greatest role and party political use is made of the nuclear power issue. Spanish nuclear coverage emphasizes the views of interest groups rather than those of scientists and other experts, ecologists or citizens. Thus, the press doesn't play the substantive role in public deliberation and doesn't connect with the different interests and sensitivities existing in the public sphere about nuclear energy.

Key words

nuclear power; media; framing; energy; Spanish press

1. Introduction

Nuclear power continues to arouse debate across the world. Public attitudes toward nuclear energy have been changing over the years since the beginning of technology, especially in connection with the Three Mile Island, Chernobyl and Fukushima nuclear accidents. Kim, Kim and Kim (2013) examined the effect of the Fukushima disaster on public acceptance of nuclear energy in a cross-national survey in 42 countries. They found that the significantly positive opinion about nuclear energy became considerably negative after the disaster. On the other hand, studies such as the one carried out by Siegrist and Visschers (2013) in Switzerland have shown that the negative impact was only moderate because people have prior beliefs and stable attitudes towards nuclear power.

Of the 27 countries in the EU, Spain's population is among those in which support for nuclear power is weak: in fact, the proportion of its citizenry who support a reduction in the use of nuclear power is the fourth highest in the EU (72,1% thought in 2007 that the share of nuclear energy should be decreased, as it poses safety problems like nuclear waste, or the danger of accidents), behind only Greece, Cyprus and Austria, according to Eurobarometer survey (2007). This antinuclear sentiment was less marked in May 2011 when Spain's Centro de Investigaciones Sociológicas (CIS, 2011) carried out a survey by means of 2482 personal interviews. In response to a question regarding their position on nuclear power, six out of ten Spanish people described themselves as being against it, which includes those who were against, completely against it and those who were more against it than for it. Only 25.8% said they were in favor of it. Clearly against nuclear power were the 31% who agreed with not building more plants and closing those in existence as they reached the end of their lifecycles; 13.9% wanted to close all nuclear facilities immediately. At the same time, 51.9% thought that the risks of nuclear power outweighed the benefits, with 31.9% taking the opposite view.

A very similar proportion thought that the related risks, compared to others in life, were exaggerated (30,8%), while 40.6% thought they were underestimated. Only 13.7% thought that the risks were perceived realistically.

As can be seen in the chapter on nuclear power by the Fundación Encuentro (2009), “the nuclear debate does not take place in a vacuum nor can it be reduced to a mere technical question of production costs, resource availability, power generation potential, nor how much pollution is emitted”. The history of nuclear power (and its relationship with nuclear weapons, radiation, the dangers of nuclear proliferation, the fear of what is beyond our control, etc.) helps to explain why many of the people living in developed countries do not approve of it. According to Polino and Fazio (2009), “the combination of catastrophic factors (in times of war and peace) eclipsed in the collective consciousness certain beneficial uses of nuclear technology, such as those linked to medicine and health”.

To understand the social processes behind the “energy debate” that we see in such surveys, we must consider the media discourse, which records the positions of the different stakeholders. The main political parties in Spain, the conservative Popular Party (PP) and the Socialist Party (PSOE) differ with respect to nuclear power. The Prime Minister during the 2008-2011 legislature, José Luis Rodríguez Zapatero, clearly bets on renewable energy as the 2008 PSOE's electoral program said: “We will maintain our commitment to gradually replace nuclear energy based on the fulfillment of their useful life with safer, cleaner and less expensive energies”. On the contrary, in 2011 Popular Party electoral program it was proposed to manage the permits of nuclear sites, so that the extension of its operation would result in a lower cost of energy for consumers.

The industry (electricity companies Iberdrola and Endesa, and Gas Natural Fenosa are the only owners of the five plants with seven reactors in operation in 2017) have expressed to the Government its interest in extending the life of the plants to 60 years.

The environmental movement seeks to gradually dismantle the Garoña nuclear power plant, as well as the closure of the rest and the abandonment of the nuclear cemetery project. In the nuclear debate scientists and experts are another key player to consider because of their function as the providers of authoritative information to citizens' concerns.

According to Nisbet, Brossard and Kroepsch (2003), in a “mediated democracy,” the events that take place in the policy sphere and the groups that compete in the political system are not only mirrored (or covered) in the media but also shaped by the media. The mass media is itself a social institution, having direct contact with policymakers, selecting and sampling from a range of possible news items and sources (p. 38). At the same time, in issues such as nuclear energy, the media play a relevant part in social amplification of risks (Farré and Gonzalo, 2009).

This study focuses how nuclear power is portrayed in the Spanish press within the framework of a general analysis of the energy situation (Mercado, 2017), in order to determine the particular importance placed on this energy source by the media and to establish the way in which the debate around its use is framed in relation to environmental concern. This approach is based on main environmental discourses in industrial society established by Dryzek (1997): 'Survivalism' or 'the limits discourse' consider the economic and population growth will eventually hit limits set by the Earth's stock of natural resources and the capacity of its ecosystems. 'Sustainability' focuses on ideas about ecological modernization (green production technology), seeing economic growth and environmental protection as complementary. 'Environmental Problem Solving' recognized the existence of ecological problems but can be resolved with technique (CO2 catchment, nuclear fusion, etc.). 'Green Radicalism' rejects the basic structure of industrial society and proposes the establishment of a new social model. This research also responds to Ho's (2016) call for further studies on media

discourse in other contexts, such as Asia and Europe, because many of the empirical studies about nuclear energy are focused on the U.S. media.

2. News Coverage on Nuclear Energy

The news coverage of nuclear power has been widely studied because, although there is no scientific consensus on the explanation for the causes of the beliefs and opinions on nuclear energy measured in polls, media discourses can be considered to have an influence.

According to Gamson and Modigliani (1989), "the media discourse is an essential context for understanding the formation of public opinion on nuclear power".

From the origins of modern nuclear science has produced a system of meaning with mystery, potency, secrecy, and entelechy topics, generating "common sense" understandings of nuclear energy, explains Kinsella (2015). Gamson and Modigliani (1989) analyzed media discourse about nuclear energy in U.S. news media and identified the interpretive frames or packages - metaphors, catchphrases, visual images, moral appeals and other symbolic devices that characterize the discourse- on nuclear power from 1945 to the 1989: progress, energy independence, soft paths, public accountability, not cost-effective, the runaway narrative and the devil's bargain. Renzi et al. (2016) do notice the possible role that metaphorical language plays in the media discourse, for example, "the use of Old Testament cultural imagery in nuclear policy that reporting links this disaster to Final Judgment and things beyond human control contrasts with the language of intervention, care and medicine as means to solve climate related challenges".

A high number of studies on the media coverage of nuclear energy have been carried out taking into account the strong differences between different countries' media with respect to political or cultural influences. One of the most noteworthy studies because of the scope of the period analyzed (from 2004 to 2013) in the two mainstream Chinese newspapers showed that most of the articles were neutral in relation to support nuclear power, 21.8% of the articles were pro-nuclear and 0.7% were anti-nuclear (Wang, Li & Li, 2014). In a very different cultural context, the UK, Doyle (2007) has studied how the British media contributed to the recasting of nuclear energy as a low-carbon energy source. But much of the media studies on nuclear energy are focused on nuclear accidents coverage, with a particular focus on how the crisis situation of a nuclear disaster is conveyed, such as the Three Mile Island (for example, Rubin, 1987), Chernobyl (Gorney, 1992), and Fukushima nuclear accidents (Lazic & Kaigo, 2013; Gómez, Roses & Rivera, 2014). Ho (2016) provides an exhaustive overview of media discourses related to nuclear energy, standing out those in relation to climate change. After Fukushima, Friedman (2011) compared the media coverage across the three accidents. The main difference was that the last accident generated very widespread social media coverage and commentaries from the public that, at the same time, changed the way traditional media reported the accident. Koerner (2014) pointed out how coverage of the three nuclear accidents "overwhelmed scientific claims of safety and security in nuclear energy production". Overall, Fukushima had impact on the newspaper discourse surrounding nuclear energy.

3. Framing media issues

The approach to examine the news discourse is framing analysis with the primary focus on conceptualizing news texts into empirically dimensions (Pan & Kosicki, 1993).

The frame process involves the intervention of the productive routines of the media, the content generated and the use of these messages by the audience. According to de Vreese (2005, p. 51), the potential of the framing concept lies in the focus on communicative processes that involves frame-building, frame-setting (the interplay between media frames and audience predispositions) and individual and societal level consequences of framing: frame-effect (Scheufele, 2000). The frame-building process takes place in a continuous

interaction between journalists and elites and social movements, in short, the sources; their outcomes are the frames manifest in the text.

Entman (1993, p. 52) argued "to frame is to select some aspects of a perceived reality and make them more salient in a communicating text, in such a way to promote a particular problem definition, causal interpretation, a moral evaluation and/or treatment recommendation". In sum, framing is not the content of the news but rather something deeper, an organisational idea of the content of the news through the selection, emphasis, exclusion and elaboration of some specific aspects (Tankard, 2001).

Certain frames transcend thematic limitations and can be identified in relation to different topics, some even over time and in different cultural contexts. This "generic frames" are often inherent to the conventions of journalism such as journalistic norms and news values. Other frames are pertinent only to specific topics or events. Such frames may be labeled issue-specific frames (de Vreese, 2005, p. 54-55). Scheufele (2000, p. 307) explained the factors that may potentially influence in how journalist frame a given issue: social norms and values, organizational pressures and constraints (editorial line), pressure of interest groups, journalist routines, and political orientations of journalists. In relation to editorials lines, it should be noted that although, in discussing the news objectivity, McQuail (1987, p. 130) pointed out that "most European public broadcasting systems either legally require or expect news and information to be neutral (non-evaluative and factual) or balanced", the Spanish news media system have been defined as a polarise pluralistic model in wich media and political world are closely intertwined (Hallin & Mancini, 2004). Humanes et al. (2013) and Reig (2011) have showed the tendency by elite press to favour one or other of the two major political parties. Thus, the newspapers ABC, El Mundo, La Vanguardia and La Razón would be more close to PP (conservative, center-right party) and El País, El Periódico and Público to PSOE (progressist, center-left party).

The research questions (QR) are:

1. How much importance is given to nuclear power within the general energy debate in the Spanish press?
2. What extent news coverage of nuclear power ever taking an environmental perspective?
3. How much presence do the different actors have in the media?
4. In what sense are the media positioned in terms of their editorial line?

The study' hypothesis are that nuclear power is a relevant topic within the general energy debate in the Spanish press (QR1), but this is not showed as an environmental issue (QR2), to a greater or lesser extent depending on media' editorial position (Q4). The stakeholders with political and economic interests dominate the media discourse. Media coverage provides little space to other actors such as scientists, environmental associations or citizens (QR3).

4. Methodology design

The analysis period covers five years, from 2008 to 2012, both included. In 2008 Zapatero was invested President of the IX Legislature coinciding with the beginning of the world economic crisis that would lead to an anticipated elections. The analysis includes the first year of the Popular Party government, which marked important changes in energy policy. The media analyzed are the seven printed Spanish newspapers for general information in the national territory (they all have also online version): ABC, El Mundo, La Vanguardia, La Razón (conservative press) and El País, El Periódico and Público (more progressist press).

Table 1. Sample of Spanish newspapers.

The units of analysis are all of the texts that make reference to the key words "energy" and/or "energetic" ("energy policy", "energy issue", "energy system", "nuclear energy", "renewable energies") in the random sample made up of information published during one week (from Monday to Sunday) of each month over the five years making up the period of study in the seven national newspapers examined (420 days). For identification, there will be a double search: in the digital archives of the online editions of the newspapers and through the MyNews clipping service, which offers the possibility of obtaining PDF pages from the newspapers.

Applying the technique of content analysis for data collection, the following variables are gathered from each unit of analysis: newspaper, date of publication, headlines, section, genre, topic, main actor and "eco" frames. The principal actors and topics are considered to be those reflected in the title and lead paragraph, where informative formats offer the most important elements. In informative texts, the main actor is the main source. In opinion texts, it will be deduced from who is spoken about or who is made responsible for something.

A qualitative analysis is carried out which identifies news frames a priori defined taking a deductive approach, the recommended by scholars. Four categories of "issue-specific frames" were defined (de Vreese, 2005), only relevant in the energy issue in relation to the environment:

1. eco-indifferent (there are no allusions to the environment in the text).
2. eco-efficient (places a minimum environmental risk/danger/problem linked to the energy system but only to reaffirm the advantages of technology and progress).
3. eco-sustainable (the environmental risks are more important than the economic benefits and it is mentioned the need to promote renewable energies or close nuclear plants, for instance).
4. eco-radical (the central idea of the text is the need for a change in the global production and/or energy system in order to guarantee the survival of the planet).

The eco-frames established derive from Dryzek' (1997) environmental discourses, previously mentioned, and use two of the four "semantic-narrative formations related to sustainable development and environmental problems", described by Lorente et al (2009) in the analysis of the media discourse on the Bali Summit for climate change.

Seven researchers held two face meetings to outline the variables, the data sheet and the definition of the frames explained in a codebook. To test the coding all analyzed the same 30 pieces of the sample to detect the variables in which a higher specification was needed. After, the analysis units were divided among 7 researchers. A coder reliability test was performed with two external coders, doctoral students, using a 10,3% (n = 170) random sample collected. They analyzed the two qualitative variables (frames and actors). Cronbach's alpha internal consistency coefficient is 0.969 for the frames and 0.955 for the actors.

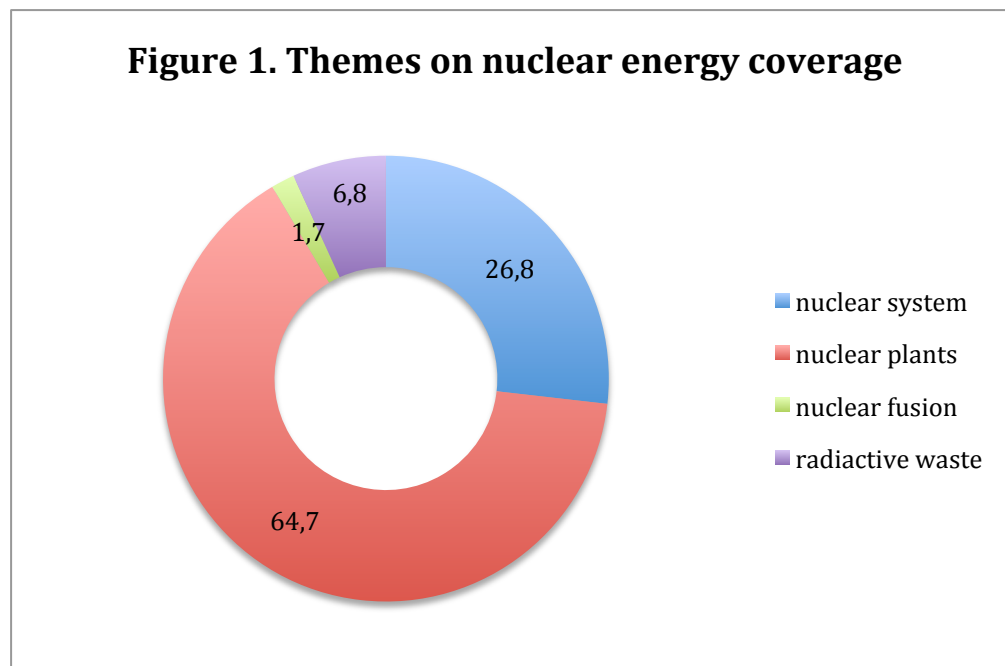
5. Results

Of 1955 units of analysis found, 255 were focused on nuclear power (12%), making it the second most commonly discussed in the sample period, behind renewable energy.

The four Spanish newspapers which devoted most attention to nuclear power, were *El Mundo*, *ABC*, *La Razón* and *La Vanguardia*, those whose editorial line tends to be more conservative, with 169 texts, or 71.9% of the total. The remaining 28.1% is distributed across the three more progressive newspapers (*El País*, *El Periódico* and *Público*). Focusing only on opinion pieces, the contrast becomes even greater, with the conservative press making up 77.4% of the total pieces on the nuclear issue.

As for thematic content, the set of 235 texts on nuclear power can be divided into four subcategories: nuclear power itself as an energy source; nuclear power plants; nuclear fusion

as a possible future alternative; and the management of radioactive waste. The most frequently found is that concerning nuclear power plants. The next most common is that of nuclear power as an energy source, with 63 items. There are only four articles on nuclear fusion and its development, and 13 news items and three opinion pieces on the management of radioactive waste.



There is a clear reason why the majority of such items from the Spanish press concentrate on nuclear power plants: the controversy surrounding the Santa María de Garoña plant (n= 38). Its closure, mothballing and subsequent extension of its useful life have been the focus of much of the debate surrounding the presence of nuclear power plants in Spain.

Garoña is the oldest nuclear power plant in Spain, as it began operations in 1971, and it is also the oldest in the EU, from the same generation of power plants as Fukushima. Yet the controversy surrounding Garoña is not only due to its age, but also the political decision-making process regarding whether it would stay open or close, with this being complicated by a change in the governing party. In 2009, the socialist Spanish government set 6th July 2013 as the date of its definitive closure (“Zapatero digs in against Garoña”, *El Mundo*, 2009, May 31; “Garoña: at the mercy of the energy debate volcano”, *ABC*, 2009, May 31). The politicization of the decisions concerning the Garoña plant can be seen in other items published around the same time in other newspapers: “Zapatero to disregard expert opinion in his decision on the Garoña nuclear plant” (*El Periódico*, 2009, June 5) or *El País*, which, in keeping with its editorial line on the issue, characterized it as an opportunity for the Spanish prime minister to fulfil his electoral programme (“Nuclear shutdown: now or never”, *El País*, 2009, June 7).

The debate between the political stakeholders affected by the decisions on Garoña’s future was partly played out in the Spanish press. On the one hand, the regional government supports the plant’s reopening because it would create 1000 jobs, in contrast with the 150 who currently work at the mothballed plant. For example, *La Razón* reported that “The Junta considers appealing against Garoña’s closure” (2009, July 10). In contrast, at around the same time the regional government in the Basque Country, the neighboring region, requested the plant’s definitive closure on the grounds that it posed safety risks (“Álava will submit its initiatives to Madrid, requesting Garoña’s closure”, *El País*, 2009, May 29). Similar

announcements were made by organizations such as Ecologistas en Acción and Greenpeace, but their statements do not lead to items being published in the Spanish press in which they appear as one of the main protagonists: only 1% of the total number of texts in the Spanish press focus on the claims made by environmentalists.

At the national level, all the political parties, save the conservative Popular Party, disagreed with the reports issued by the CSN giving the green light to Garoña remaining open (“The CSN defends Garoña” (*La Vanguardia*, 2009, June 4). Despite safety concerns, the economic argument is dominant: the Foro Nuclear, which represents the interests of the Spanish nuclear industry, stated that the prolongation of nuclear plants’ useful life beyond 40 years was a “necessary” strategy for economic growth and in order to reduce CO₂ emissions. However, on August 2, 2017 the Government announced that Garoña would not reopen. The Energy Minister Álvaro Nadal acknowledged that the fact that the Popular Party is in a minority in Congress and the possibility that other political groups pass laws against the permanence of the plant prevent the existence of the “minimum tranquility” to the security investments that should be made by the companies that own the plant are profitable in the long term.

Alongside the controversy surrounding Garoña, the other main focus of these items on nuclear power plants was on the Fukushima disaster. For this reason, nuclear power is the energy issue with the greatest presence in the international sections of Spanish newspapers. Half of the 70 items on energy issues in these sections concerned nuclear power. Indeed, one out of every five of the overall number on nuclear power were to be found in the international sections. In addition to pieces on the post-tsunami state of the plant, items from this time seek to compare the Japanese and Spanish plants (“Fukushima I and Garoña: twin sisters”, *El Mundo*, 2011, March 13) or to portray the international uncertainty after the disaster: “Ukraine continues its support for nuclear despite Chernobyl and Fukushima” (*El País*, 2011, March 21); “Italy puts its plan to return to nuclear power on hold for a year” (*La Vanguardia*, 2011, March 24). Some space was given to other EU countries’ decisions on nuclear policy (“France and the UK back nuclear power together”, *El Periódico*, 2008, March 23) and to the lack of an EU-wide policy on the matter (“Energy which divides the EU”, *El País*, 2008, January 11; “Brown lines up alongside Sarkozy to defend nuclear power in the contrast with Zapatero’s rejection”, *El Mundo*, 2008, January 10).

The economy sections also give prominence to nuclear policy in different countries, especially European ones such as France, Italy, Russia and the UK, always placing emphasis on this energy source’s economic advantages (“Italy goes back to nuclear to make electricity cheaper”, Hernández Velasco, *El Mundo*, 2008, May, 23; “The Spanish Confederation of Business Organizations (CEOE) calls for ten new nuclear power stations”, *El Periódico*, 2008, October 6).

In these latter pieces, nuclear power is portrayed as a cheap alternative for industry, being praised for its low cost and its abundance in comparison with non-renewable fossil fuel options (“Nuclear power in the desert in case oil dries up”, *El Mundo*, 2008, July 8), or it is shown as the new direction of the large electricity companies (“Iberdrola ties up its purchase of a site for a new nuclear power plant”, *La Razón*, 2009, October 22). The Spanish energy deficit is the most commonly used argument against the closure of nuclear plants, seen as the differentiating factor for Spain in comparison with other countries: “Germany can afford it, Spain cannot” (*El Mundo*, 2011, September 23) was the argument put forward by the Spanish Minister for Industry, Miguel Sebastián, for the prolongation of the operating period of the Ascó nuclear power plant in September 2011, just six months after the Fukushima accident.

Given the abundance of items in the international and economy sections, the low, almost negligible, presence of the issue in the science or environment sections and supplements of Spanish newspapers is notable: only eight of the 173 news items on nuclear power appear here. It is only in such articles that, for example, the issue of nuclear fusion as a possible replacement for current nuclear technologies is discussed (“Fusion: a clean and safe alternative to nuclear power plants”, *El Mundo*, 2011, March 27)

With regard to the 62 opinion pieces of 235 total items, the first thing to note is their relative abundance when compared to pieces on other energy-related themes. While news items on nuclear power make up 10.5% of the total number of energy news items in the Spanish press, within this particular genre they make up 20.3%: so, one in five opinion articles on energy in the Spanish press concern nuclear power, revealing the importance of this source of energy in the general energy debate for the Spanish media.

However, the framing used in these 62 opinion pieces is such that, in general, either no mention at all is made of the environmental issues surrounding nuclear power or, when these are mentioned, the economic benefits of this "cheap" and "unlimited" energy is seen as being worth the risks it possesses. In only six of these pieces are environmental issues seen as more important than the economic ones, and just three argue for a change in the power-generation system across the world in which nuclear power would no longer be used, in order to ensure the survival of the planet and to preserve the environment.

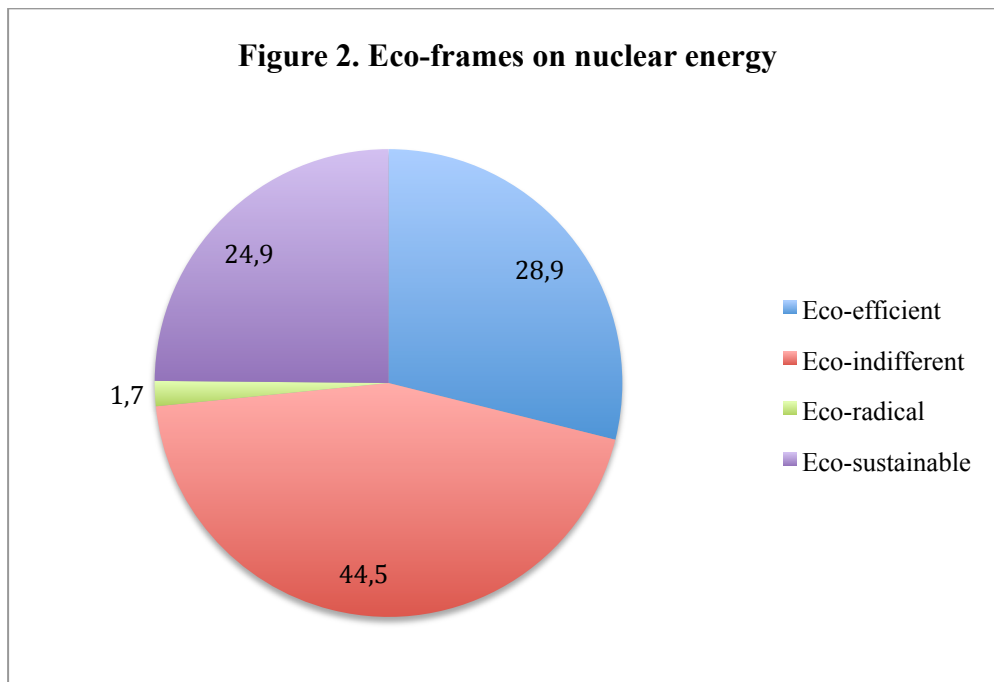
About the editorial positioning of the seven national newspapers, 33 editorials concerned energy issues in the period examined, and 8 of these focused on nuclear power. In other words, on almost one in four occasions on which the Spanish newspapers wished to make their editorial position clear on energy issues, they did so specifically with regard to nuclear power. This is in clear contrast with the attention given to other energy issues, such as renewables, which has the greatest presence in our sample, being found in 584 items, and yet only three editorials in the national press concern this issue.

In these editorials on nuclear power, the conservative press is strident in its defense, with pieces entitled “Nuclear? Yes, please” (*La Razón*, 2008, January 12) and “Nuclear power, the most reasonable option” (*El Mundo*, 2009, June 1). In *La Razón*, for example, two pro-nuclear arguments are employed and both are economic: “We import 80 per cent of the energy we consume and it gets more expensive every day” and “the major countries have reactivated their nuclear programs to ensure their future development”. Therefore: “It is no longer about the old debate between left and right which has conditioned so many European energy policies, but a question of economic survival”. A similar argument can be found in an editorial in *El Mundo*: “If the government wishes to cut the astronomical import bill and reduce our dependence on other countries, the only long-term solution is nuclear power, which is unlimited, cheap and non-polluting”.

Yet the Fukushima accident made the Spanish press revisit the issues surrounding safety. Thus, *El Mundo* called for “A real stress test for nuclear power” (2011, March 15) in the aftermath and *El Periódico* shows how split public opinion was at the time with an editorial entitled “Nuclear power: feared and needed” (2011, March 22). Despite energy dependence and its accompanying cost, the editorial concluded: “The only thing that we can definitely say is true is that the events in Japan have changed both public and government opinion about nuclear power, as can be seen by the EU’s decision to subject its 143 reactors to stress tests this year and also Spain’s stated intention to close those facilities which fail these tests”.

It is also notable that only one editorial on nuclear power was found in the sample in *El País*, the general-interest newspaper with the highest circulation in Spain: this concerned the key issue in this material – the closure of Garoña – and it took a strictly political perspective, concerning unfulfilled electoral promises regarding its closure. In the editorial, “A nuclear mess” (*El País*, 2009, July 8), the closure of Garoña “has become a first-rate political mess; now it is on the way to becoming a great legal mess too”. The text contains no references to environmental issues.

This study has found that the majority of items in the Spanish press concerning nuclear power use an eco-indifferent frame (44,5%), with the next most common being eco-efficient (28,9%). Only 3 texts were found with an eco-radical frame (1,7%), with those with an eco-sustainable frame coming in third position, after those of eco-indifference and eco-efficiency. With regard to energy issues in general, the eco-indifferent frame is still dominant (45,1%). However, in this case, second place is now taken by eco-sustainable frame (31%).



An example of the eco-indifferent perspective is an item reporting comments made by the provincial president of the Partido Popular in Guadalajara, who welcomed the possibility that Zorita (the town in which the José Cabrera nuclear plant is located, the first to be built in Spain and which closed in 2006) might be chosen as the site for future nuclear plants: “We have to think about the country’s future, about energy independence; about the fact that we need safe and affordable power; there needs to be a national debate about the generation of nuclear power and we should not rule anything out” (*ABC*, 2010, July 9). Another example is a feature entitled “Nuclear energy is the least bad option”, which claims that “we have no other choice. There are 450 plants in the world and, in comparison with the coal industry, the safety record is good; we will need this energy over the next 30 to 40 years” (*El Periódico*, 2011, March 24).

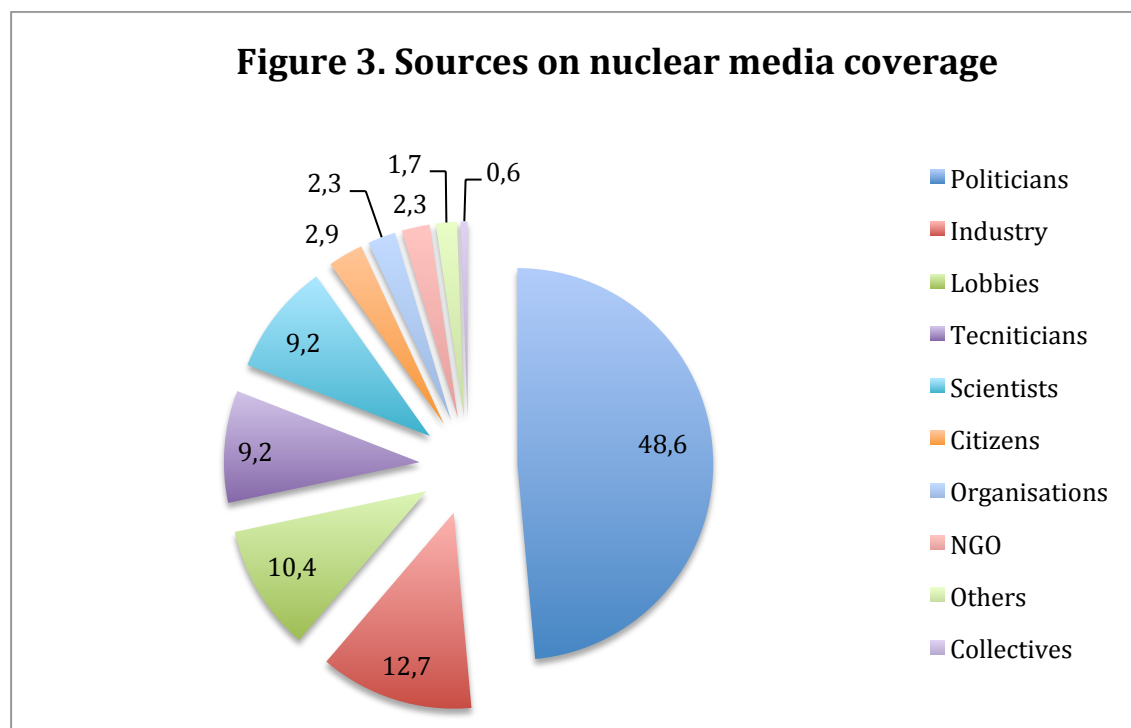
The eco-indifferent frame can also be seen in news items such as one entitled “Italy goes back to nuclear power to make electricity cheaper” (*El Mundo*, 2008, May 23), or in the feature headlined “Nuclear power, still irreplaceable” (*ABC*, 2011, September 19), in which the president of the Forum of the Spanish Nuclear Industry was quoted saying that nuclear power is a technology which does not emit CO₂, reduces dependence on fossil fuels and which guarantees electricity supply, as it was a source of constant electricity.

In another item on energy policy in Italy, we can find an eco-sustainable perspective: “Italy cancels its plan to return to nuclear power” (*La Vanguardia*, 2011, April 20). The frame can also be clearly seen in an interview with a Hiroshima survivor: “I could live with power cuts if that was the price of getting rid of everything nuclear. I’m against nuclear power. If all the money spent on the military had gone towards researching alternative energy, Japan wouldn’t have this problem now” (*El País*, 2011, March 21).

In most sections the eco-indifferent frame predominates, to a greater or lesser extent. From 72.2% in National Policy and 70,6 in Economics to 42.9 in Science or 38.7 in Society. The only section in which other is the dominant frame is International, with 50 percent of eco-sustainable pieces.

The relationship between frames and main actors shows a clear correspondence between eco-indifferent frame and politicians and industry. In 45.2 percent of the pieces on nuclear energy in which the politicians are the main actors (n = 84), the frame is eco-indifferent, being even more pronounced this percentage in the texts carried out by the industry: 63.7 percent. Technicians and scientists predominate in eco-efficient texts (43.8% and 37.5%, respectively), while in eco-sustainable NGO environmentalists are the dominant actors. In the case of citizens, who only are the main actors in 4 pieces, the type of frame is divided between eco-sustainable and eco-indifferent.

With regard to the main protagonists, politicians play the greatest role, as almost half of all the sources used are linked to them (48,6%). The expression of their position is polarized depending on the political party in question, which party is in government in the region in question, and which one controls central government at the time; in other words, party political use is made of the nuclear power issue, varying in nature depending on the region and who is in power or in opposition.



In Spain, the issue leads to confrontation between politicians from the major parties: “Carriedo (PP) denounces the ‘calculated ambiguity’ of López (PSOE) regarding Garoña”

(ABC, 2009, June 7); “Herrera (PP) hopes the Government (PSOE) show that ‘they are up to it’ and order Garoña to stay open” (ABC, 2009, June 6).

The second most prominent protagonists are the industry itself with 12,7 percent, for example: “Nuclenor finds a ventilation fault at the Garoña plant” (ABC, 2010, February 11); “Iberdrola ties up its purchase of a site for a new nuclear power plant” (*La Razón*, 2009, October 22), followed by pressure groups which clearly support nuclear power, using an eco-indifferent or eco-efficient frame: “We will need new nuclear plants by 2030” (*La Vanguardia*, 2010, May 25); “Refusing to use nuclear power won’t solve anything” (*El País*, 2011, March 11).

Expert groups, such as technical and scientific organizations, are used as sources of information much less often (9,2% each group): “Civil engineers attack Zapatero’s decision on Garoña” (ABC, 2009, July 7). Lozano Leyva, professor of nuclear physics at the University of Seville, stated that “two nuclear power plants would cover half the demand for energy in Andalucía” (ABC, 2008, October 22). For Steven Cowley, a British physicist, “nuclear power is finite but the construction of new plants is inevitable” (ABC, 2011, March 24).

Citizen voices, intergovernmental organizations and NGOs are poorly represented, 2,3 and 2,9%, respectively. Greenpeace is one of the NGOs, which does appear, in pieces with headlines such as “Against the nuclear cemetery” (*El País*, 2011, January 15); and “The nuclear revival runs into trouble in Ascó” (*El País*, 2008, April 24). Citizen voices are more prominent with regard to the events in Fukushima and also in the publication of surveys, such as that which appeared in *El Mundo* (2018, August 18): “40% now think the nuclear moratorium should end”. Other groups have no more than a token presence as sources of information (ranging between 0.6% to 1.7%), such as the farming organization Asaja, which supported the decision of the Council of Ministers to locate the temporary central storage facility for nuclear waste at Villar de Cañas: “Asaja says ‘yes’ to nuclear silo” (ABC, 2012, January 18).

6. Discussion and conclusions

Answering the first research question (RQ1), the nuclear question is the second most common energy issue discussed by the Spanish press in the period studied, second only to renewable energy and is the conservative press who offers more coverage. Two thirds of the news items and more than half of the opinion pieces focus on nuclear power plants, especially the political debate surrounding the continued operation or closure of Spain’s Garoña nuclear power plant, the second oldest nuclear power plant in Europe and tenth oldest in the world. Also prominent are the consequences of the accident at the Fukushima nuclear power plant. Fukushima and the nuclear policies of other countries cause the issue to have as great a presence in the international pages as in the economy sections, where the importance of this energy source is discussed with regard to reducing energy costs and Spanish energy dependence. In the science or environment section, the presence of items on nuclear power is minimal.

This study shows that an environmental perspective on nuclear power is relatively unusual: only 1 in 4 items incorporate concerns about environmental risks (RQ2). Using the eco-efficient frame, it is defined as a clean source of energy, and one that is needed to combat climate change and move away from fossil fuels. The limited nature of environmental concern surrounding the nuclear issue can also be perceived in the infrequent use as sources of information of environmental NGOs or citizen voices speaking out against this energy source.

With regard to the third research question (RQ3), scientists and experts do not figure prominently in press coverage of the nuclear debate, when compared to the attention given to politicians and industry, consistent with previous research that suggest that non-science sources dominate the coverage of other issues as climate change. These results point to what Cottle (2009b, p. 75) said about other sociological studies of 'source fields', including environmental sources, that have generally found them to be structured by competing interests and identities and unequal opportunities to influence the news agenda and processes of news framing". Within this media frame-building process, as suggested (Nisbet, Brossard and Kroepsch, 2003), certain types of interests, including government sources and industry, are likely to be more influential in framing issues than others are.

The resolution of the Garoña case is a clear example of the politicization of the nuclear issue in Spain, taking into account the economic interests. The Energy Minister stated that "Garoña will close because it has been used politically". He accused the opposition of using the case as a "battlefield" against the nuclear plant and lamented the absence of a "quiet debate" on the sources of supply of the national electricity system. In addition, some media pointed out that the decision is a concession to the PNV, party who governs a region near the nuclear plant where closure is a historical claim, to support the budgets of 2018.

It is worth noting that the eco-efficient frame is used when scientists are the protagonists, as can also be seen in the analysis of the influence of scientists as sources of information on the definition of the issue-specific frame, using a sample of news items on nuclear power published three months before and three months after the Fukushima accident in the Spanish newspapers *ABC* and *El País* (Mercado, Herranz & Álvarez, 2014). The results showed that after the disaster there was an increased presence of scientists and citizen voices, practically invisible before the accident. At the same time, the eco-indifferent frame is that of politicians and industry.

One in five opinion pieces on energy in the Spanish press focus on the nuclear issue. The newspapers seek to encourage the use of nuclear power on economic grounds; environmental questions are irrelevant in these texts. For the press, nuclear power is cheap and unlimited, making it essential for a country such as Spain, with its high level of energy dependence on other countries (RQ4). Fukushima only has the effect of showing the need to strengthen safety measures rather than to reject nuclear power. The newspapers' position contrasts with the opinion of the Spanish public, as expressed in surveys.

Therefore, we can conclude that the Spanish conservative press position themselves editorially more clearly with regard to nuclear power, giving greater weight to economic benefits or political argument rather than environmental concerns or proposals to change the energy model. This approach is only softened by an emphasis on the importance of the safety of these facilities in the period after the Fukushima accident, in March 2011, although still without rejecting the use of this energy source. And all this occurs in Spain, a country in which public opinion is relatively unenthusiastic about nuclear power, even if nuclear is seen as necessary to reduce energy dependence on other countries, and in which the public are more enthusiastic about the development of renewable energy sources, for which Spain is ranked seventh in the world. These results are consistent with research on emphasis frames that has found only little evidence for media framing effects. Empirical studies suggest that variables such as age and prior attitudes (Slothuus, 2008) condition the effects.

In short, this research shows that environmental perspective on nuclear power in Spanish press is marginal. Using an eco-efficient frame, it is defined as a clean source of energy. Politicians play the greatest role and party political use is made of the nuclear power issue. Spanish nuclear coverage emphasizes the views of interest groups rather than those of scientists and other experts, ecologists or citizens.

From a normative standpoint, the public policy discussion and debate on nuclear energy should be based on credible information from multiple sources, which would allow for rational engagement. The media can play a far-reaching and substantive role in public deliberation and connect with the different interests and sensitivities existing in the public sphere and with the concerns of the general public (Romano, 2010). To connect with this concerns, all the voices that are present in the public sphere also must be in the debate reflected by means of communication, but they are not. The media are not fulfilling their function to inform the public and to enable for a reflected debate, considering that interpersonal communication contributes to citizens' opinion formation.

This study of news frames aims to encourage a more detailed appreciation of how news frames organize the representation of environmental issues, as the nuclear issue has been considered. The research have implications furthering the application of framing by utilizing a four issue-specific frames that can be used to find out whether the environmental perspective exists in the media coverage of certain topics, in any media and in any context. Thus, they can be used to compare coverage in different countries, taking into account the cultural differences and particular circumstances of the particular issue studied. In addition, the results provide a new point of view on nuclear energy studies, which are more focused on crisis and risk communication, providing new environmental frames that have not been taken into account until now, according to the Burscher, Vliegthart and de Vreese' (2016, p. 531) review of the most relevant media framing of nuclear power.

It can be noted the limits the generalization of the findings and conclusions to Spanish media system when we only have observed the print press. It would be convenient to extent the sample to digital native media and television news. In future studies, new channels such as social media must be considered, as voices have emerged there which have very little presence in the conventional press, such environmentalist NGOs and members of the public, as Ho (2016) also pointed out. In today's world, new media must be taken into account in the explanation of the formation of citizen's opinions on important issues such as energy sources.

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