

**Media analysis of fusion**  
**Executive Summaries for EUROFUSION**  
**April 2015**

---

**Public Discourse on Nuclear Energy before and after Fukushima**

**Authors:** Luisa Schmidt<sup>1</sup>, Ana Horta<sup>1</sup>, Sérgio Pereira<sup>1</sup>, Carla Oliveira<sup>1</sup>, Ana Prades<sup>2</sup>,  
Christian Oltra<sup>2</sup>, Radosław Sojak<sup>3</sup>, Łukasz Afeltowicz<sup>3</sup>, Piotr Stankiewicz<sup>3</sup>, Isabella  
Milch<sup>4</sup>, Julia Sieber<sup>4</sup>

<sup>1</sup> ICS-UL – Instituto de Ciências Sociais da Universidade de Lisboa; <sup>2</sup> CIEMAT; <sup>3</sup> Torun University;  
<sup>4</sup> EFDA Garching

---

- **Background and objectives**
- **Methods**
- **Summary of findings**

## Background and objectives

The aim of this task was to analyse public discourse on nuclear fusion and fission energy before and after the nuclear accident in Fukushima on 11<sup>th</sup> March 2011. The analyses focused on the way nuclear fusion was presented in the media since it could provide important insights about social representations associated with this technology.

Although fusion presentation was the main objective of the task, we also found important to assess if perceptions and representations of fission energy conveyed in the media after Fukushima had a negative effect on the image of fusion energy.

The analysis encompassed media coverage (number and evolution of articles published), thematic frames presented, actors and actors' positions, depth of information and focus on each subject, degree of association with nuclear accidents, especially Fukushima, and image construction (perception and representations) both for fusion and fission.

## Method

The task consisted of an international comparison of media analysis in three countries (Germany, Spain and Portugal) and in English language newspapers and magazines aimed at the transnational elite (Transnational print media). Although the study aimed to investigate media presentation of fusion energy before and after the nuclear accident in Fukushima, we also found relevant to analyse media presentation of fission, because it could add important elements for understanding public representations of fusion energy in comparison to public representations of fission.

For the German media analysis only articles about fusion were considered (complying with particular limitations of resources), without disregarding the premises and guidelines of the study.

	Germany	Transnational	Portugal	Spain
Fusion	174	95	105	166
Fission	--	569	848	486

*Number of sampled news-articles*

With regard to fusion, all types of newspapers and magazines were selected from national-based print media (German, Portuguese and Spanish study areas) and English language quality newspapers and magazines aimed at the transnational elite (Transnational study area). Since it was expected a greater (and probably unmanageable) collection of articles in the German case, it was considered enough to set the period of analysis between the first quarter of 2010 and

the first quarter of 2012. In contrast, it was expected a smaller collection in all other study areas, hence the period of analysis was set between the first quarter of 2008 and the third quarter of 2012. For searching and collecting the articles, all research teams relied on electronic databases of newspapers and magazines. The search words used were “nuclear fusion” or “fusion energy”. The database of news articles contains 540 texts.

For the collection of articles about fission only Portuguese and Spanish mainstream newspapers and transnational press were selected, covering one year before/ one year after Fukushima. This database contains 1900 texts.

This work was conducted in 2012.

## Summary of findings

We conclude that media coverage of nuclear **fusion** was very irregular and provided a low number of articles during the period of analysis for all study areas, with the exception of the German press that released more articles about fusion in a shorter period of time.

- The representation of fusion is mainly linked to scientific research and technologic achievements and scarcely associated with climate protection or safety issues. Accordingly, scientists are the main actors in discourse framing of fusion energy, expressing (along with other actors) their strong support to it.
- Fusion is consistently dissociated from nuclear accidents (such as Fukushima’s) and also from conventional nuclear energy, which indicates that there is no confusion between fusion and fission

Media coverage of **fission** is, conversely, much more regular (especially in Spain) and provided a great amount of articles related to a wide variety of themes, such as military use and international relations, energy policies, environment and safety issues.

- Safety and environmental issues were strongly discussed after the accident in Fukushima but only for a short period of time, since a few months later the accident ceased to be the major reference in media coverage of fission energy.

The image of **fusion** in the media is quite favourable and reflects positive perceptions about its most frequently mentioned advantages, such as safety, cleanliness and unlimited potential. Notwithstanding, doubts and disbelief rise when fusion is judged from the point of view of research costs, technologic feasibility and the possibility to be achieved in a reasonable period of time (it is considered too distant in the future).

On the contrary, **fission** is portrayed as a hazardous source of energy, expensive when compared to research costs of renewables, hardly a long-term energy option (especially in Spain and Portugal), and susceptible to contribute to the proliferation of nuclear weapons or rogue military use. After Fukushima negative views on fission were presented in a much more evident way.

Finally, the analyses revealed some adverse features in media communication of **fusion**, mainly in transnational press that are worth mentioning:

- a) the technologic feasibility of fusion constantly raises doubts;
- b) it is a long-term option – a constantly postponed project;
- c) research is very expensive;
- d) it is not strongly linked to climate change.

The linkage to renewable energy and to climate change seems to be crucial to capture public attention towards fusion properties and potentialities. It is also crucial to explain that the expenditure on fusion research will one day result in cheap and abundant energy.

In terms of positive coverage, fusion requires trans-nationality and cooperation of knowledge and technology, which could be presented in a very positive light. While nuclear fission is very much associated with war, fusion could become associated with a policy of peace and cooperation. The analysis carried out on public discourse on fusion over different studies has allowed us to conclude that fusion energy is suffering from a problem of science communication. The communication is insufficient, fragile and crude, creating a growing distance between people's perceptions and the scientific project of fusion.

---

## **Confrontation of fusion and other future energy technologies’ representations in the public discourse – media analysis (Portugal and Spain)**

**Authors:** Luisa Schmidt<sup>1</sup>, Ana Delicado<sup>1</sup>, Sérgio Pereira<sup>1</sup>, Ana Prades<sup>2</sup>, Christian Oltra<sup>2</sup>

<sup>1</sup> ICS-UL – Instituto de Ciências Sociais da Universidade de Lisboa; <sup>2</sup> CIEMAT

---

- **Background and objectives**
- **Methods**
- **Summary of findings**

## **Background and objectives**

Taking advantage of the database of news collected for the previous task and bearing in mind that media analysis content can be a powerful method to achieve such an understanding of social representations and the degree of public acceptance of emerging energy technologies, including fusion, this study draws on a comparative analysis of media discourse in Portuguese and Spanish newspapers.

The emerging energy technologies selected for analysis are wave and tidal power, hydrogen, deep sea offshore wind power, energy applications of nanotechnology, biofuels from microalgae and IV generation nuclear fission (in the case of Spain).

The analysis concerned the coverage, thematic frames, valuations, risks or benefits associated with the various energy technologies, paying particular attention to the comparisons between nuclear fusion and other emergent energy technologies.

---

## **Method**

The sample was extracted from a collection of written news published on online editions of national mainstream and business newspapers between January 2007 and June 2013.

All section of newspapers (editorials, economic, political, scientific sections, etc.) and all forms of presentation (news in brief, opinion columns, interviews, reportage, etc.) were considered for the articles search and sampling. In order to produce a more balanced sample, a subsample was extracted, by selecting only the articles published in the first two weeks of each month concerning the technologies more abundantly covered

The subsample for Portugal comprised 311 articles, 44% of which were published by Público, considered the standard of quality for Portuguese daily newspapers, followed by Diário de Notícias, with 30% and Jornal de Negócios, with only 25% of the total records. Of the 404 articles that comprise the Spanish subsample, the top three highest values correspond to the articles published by three of the major general-interest daily newspapers in Spain: ABC, with 33%, El Mundo, with 21.5% and El País, with 18% of all records. These are far ahead from all the other newspapers especially from Público.es (a daily national) and La Vanguardia (a nationwide daily written in Catalan).

The work was conducted in 2013.

---

## Summary of findings

The quantitative analysis of the articles regarding emerging energy technologies shows some **common trends and differences between Portugal and Spain** that are worth mentioning.

First, it is possible to conclude that nuclear fusion is less covered than offshore wind power and hydrogen in both countries and, additionally, wave power in Portugal.

The differences in the proportion of articles written about nuclear fusion are minor when comparing the two countries, whereas the approaches clearly diverge: **news coverage in Portugal is more enthusiastic and in Spain more critical.**

In the Portuguese case, it is possible to identify a strong concentration on sea energy related technologies such as offshore wind and wave power (with the exception of tidal energy). This trend reflects the greater political and economic support that was given to these technologies at a time when renewable energies were a political priority. The centrality of the global financial crises, mainly from 2009 onwards, led to a steep decrease in the rate of articles published about these and other future energy technologies. In both countries the proportion of articles about nuclear fusion reached its peak in 2010 (the year of an important meeting of the board of directors of ITER), declining sharply afterwards. This also indicates that media interest on nuclear fusion is primarily linked to the decision processes, research activities and budgetary issues that arise from the ITER cooperation framework.

Portugal and Spain differ significantly with regard to the **overall evaluation of the emergent energy technologies**. In Portugal there is a clear orientation towards a positive evaluation of all the technologies surveyed, especially in the cases of nanotechnology, biofuels from microalgae and offshore wind power and less in the cases of nuclear fusion and wave power. In Spain there is a more neutral orientation in the coverage of all technologies, with the exceptions of nanotechnology and wave power, which are more frequently evaluated in a positive way. Finally, it is in Portugal that we find a more diverging trend in the evaluation of nuclear fusion: more articles with positive assessments mainly linked to its low environmental impact and unlimited energy, but also more articles with negative assessments, mainly linked to the fact that the technology is still not ready.

**Nuclear fusion** is primarily appreciated in both countries for its low environmental impact, unlimited production of energy and the possibility to replace nuclear fission and fossil fuels.

**Other technologies** such as wave power, biofuels from microalgae and nanotechnology in Portugal, or wave power and IV nuclear generation in Spain, are also valued for its low environmental impacts; we have also found that a considerable number of news articles from Portugal and Spain present hydrogen and biofuels from microalgae as credible alternatives to fossil fuels. Additionally, wave power is also frequently considered as an unlimited source of energy in Spain.

Nuclear fusion is negatively evaluated in Portugal, especially with regard to its stage of development (incipient) and costs of investments. It is also considered the only technology that consumes more energy than it produces. In Spain, fusion is considered the most costly technology of all, but still shows less negative evaluations when compared to hydrogen with regard to the stage of development and to IV nuclear generation with regard to public acceptance and future prospect.

---