

Spain is different. Online coverage of the Paris climate summit in five countries

Spain is different. Cobertura en línea de la cumbre del clima de París en cinco países

Spain is different. Cobertura on-line da conferência climática de Paris em cinco países

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ABSTRACT | Given the relevance of national contexts in adapting climate change communication to each country, this research aims to find to which extent the coverage in the Spanish media differs from that of other countries, regarding the volume of articles, topics, and sources. We conducted a content analysis of online publications (n=527) on the Paris climate summit (COP21, 2015) in 13 media outlets from five countries: the United States and the United Kingdom (from the Anglo-Saxon block), and Germany, France, and Spain (from continental Europe). The results indicate that the coverage provided in Spain differs markedly from that of other countries, including those of continental Europe. The ideological alignment of the Spanish media does not seem to affect the volume of coverage regarding climate change, contrary to what happens in the international arena. These results make it possible to nuance the conclusions of previous research and propose several recommendations for climate change coverage in Spain.

KEYWORDS: climate change; media coverage; COP21; online media; Spain.

HOW TO CITE

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RESUMEN | Dada la importancia de los contextos nacionales para adecuar la comunicación del cambio climático a cada país, esta investigación tuvo por objetivo averiguar si la cobertura realizada por los medios españoles es diferente de la de otros países en volumen de artículos, temas y fuentes. Realizamos un análisis de contenido de publicaciones en línea (n=527) sobre la cumbre del clima de París (COP21, 2015) en 13 medios de cinco países: Estados Unidos y Reino Unido (del bloque anglosajón), y Alemania, Francia y España (de la Europa continental). Los resultados indican que la cobertura realizada en España difiere notablemente de la de los otros países, incluidos los de Europa continental. El alineamiento ideológico de los medios españoles no parece afectar al volumen de cobertura sobre el cambio climático, como ocurre en el ámbito internacional. Estos resultados permiten matizar las conclusiones de investigaciones previas y proponer recomendaciones para la cobertura mediática en España.

PALABRAS CLAVE: cambio climático; cobertura informativa; COP21; medios en línea; España.

RESUMO | Dada a importância dos contextos nacionais para adaptar a comunicação sobre as mudanças climáticas a cada país, esta pesquisa pretende saber se a cobertura feita pelos meios de comunicação espanhóis difere da de outros países em volume de artigos, temas e fontes. Realizamos uma análise de conteúdo de publicações online (n= 527) na conferência do clima de Paris (COP21, 2015) em 13 veículos de mídia de cinco países: os Estados Unidos e o Reino Unido (do bloco anglo-saxão) e a Alemanha, a França e a Espanha (da Europa continental). Os resultados indicam que a cobertura oferecida na Espanha difere marcadamente da de outros países, incluindo a Europa continental. O alinhamento ideológico da mídia espanhola não parece afetar o volume de cobertura das mudanças climáticas, como acontece no cenário internacional. Esses resultados permitem qualificar as conclusões de pesquisas anteriores e propor recomendações para a cobertura da mídia na Espanha.

PALAVRAS CHAVE: mudança climática; cobertura informativa; COP21; mídia online; Espanha.

INTRODUCTION

In the 1960s, the Spanish Ministry of Information and Tourism launched a campaign to attract European tourists with the slogan *Spain is different*. To this day, the phrase continues to be used to justify political or social differences between Spain and other surrounding countries. In the same vein, this article investigates to what extent the media coverage of climate change¹ by the Spanish media is different from that of other countries. According to the European Environment Agency (2017), Spain is one of the European nations most affected by the impacts of climate change. However, in general, climate change is not a very prominent topic for the Spanish media (Lopera & Moreno, 2014). Specifically, the study focuses on the online media coverage of the Paris climate summit (COP21, 2015), considered the most important among those held in the last decade.

Globalization has led to a more deterritorialized journalism, in which news with international content abound (Berglez, 2008). Climate change is one of those issues that gets an international approach in the media. In fact, studies indicate that media coverage of climate change seems to be conducted in a relatively homogeneous way around the world, episodically revolving around events such as climate summits, and generating similar subtopics and debates in different countries (Painter & Schäfer, 2018). However, national contexts are important, as they shape specific discourses and actions on climate change (Harrison & Sundstrom, 2007), and journalists often abide by these domestic interests to interpret the topic (Kunelius & Eide, 2012). Therefore, comparative studies between countries are of great interest, since they help to provide communicative responses that contribute to address climate change considering the circumstances of each territory.

The most recent review of these comparative studies in this area is that of Painter and Schäfer (2018). These authors point out that differences such as the volume of coverage in each country and the greater or lesser contestation to the scientific consensus on climate change in the national public sphere configure three blocks of countries regarding climate change communication: Anglo-Saxon, Continental Europe, and Global South². The Anglo-Saxon countries give greater coverage to climate change and show a higher level of debate, followed by the Continental European block, and the countries of the Global South.

1. Climate change was defined by the United Nations as a change in the Earth's climate attributed, directly or indirectly, to human activity (CMNUCC, 1992). Another expression that refers to this phenomenon is global warming, which indicates the increase in the planet's average temperature, considered as the footprint of climate change (Wigley, 1999).

2. Global South is a term to refer to the third-world countries or the set of developing countries.

This article investigates to what extent media coverage of climate change in Spain differs from that made in other countries of the continental European block and the Anglo-Saxon one. The study is justified since, according to the European Environment Agency (2017), Spain is one of the European countries most affected by the impacts of climate change. It is considered necessary to know comparatively how the media coverage of this important challenge is being carried out to propose the appropriate recommendations. Therefore, we analyze three key aspects of climate change communication in the media: volume of coverage, subject, and sources used.

Coverage volume

The volume of news coverage has been one of the most frequently studied aspects. As shown in figure 1 from the open database Media and Climate Change Observatory of the University of Colorado, from a geographical perspective, both Anglo-Saxon and European media offer significantly more information than the media in the South.

In the case of Anglo-Saxon countries, economic and political interests converge to promote media coverage in which skeptical and denialist positions are more prominent than in other countries. In the United States, numerous authors mention the success of the fossil fuel industry in generating doubts about climate change (Zehr, 2000; Corbett & Durfee, 2004; McCright & Dunlap, 2003). Other studies point to the political polarization of United Kingdom newspapers in the face of climate change (Carvalho, 2005, 2007; Lockwood, 2009). In this regard, the increased newspaper coverage of climate change corresponds to the fact that it is a controversial issue in Anglo-Saxon countries, which adds news value.

While in the Anglo-Saxon sphere controversy is an important element, in continental European countries climate change does not become such a polarized political issue (Weart, 2021). Germany stands out for its high degree of consensus and commitment (Gavin, 2009), so that the media ignore uncertainties and focus on the need for immediate action against climate change (Weingart, Engels, & Pansegrau, 2000).

The Nordic countries also stand out as being at the forefront of pro-Kyoto policies, and their media coverage reflects this posture (Berglez, Höije, & Olausson, 2009). These consensus dynamics seem to be linked to a lower volume of coverage than when there is dissent.

In addition, a more recent comparative study links media attention to climate change to the legislative and economic contexts of each country. A greater development of regulations in this area corresponds to greater coverage. In contrast, countries with higher unemployment rates give it less coverage (Barkemeyer, Figge, Hoepner, Holt, Kraak, & Yu, 2017).

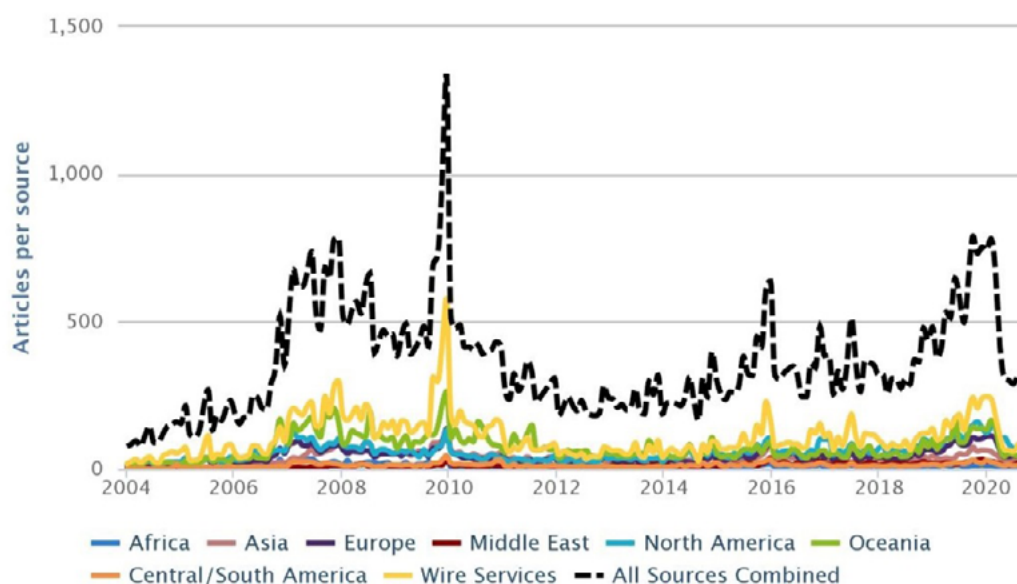


Figure 1. Global press coverage of climate change 2004-2020

Source: Media and Climate Change Observatory, University of Colorado (2021).

On the other hand, works that have studied the ideological role of the media show that the volume of climate change coverage was higher in left-wing media than in conservative media (Carvalho, 2007; Dirikx & Gelders, 2010; Dotson, Jacobson, Kaid, & Carlton, 2012).

Regarding media attention in Spain, the Media Climate Change Observatory (MeCCO), led by the University of Colorado, counts the coverage of climate change in the three most widely circulated Spanish newspapers (*El País*, *El Mundo* and *La Vanguardia*). From this monitoring, we know that the peaks of media attention are similar to those in other countries (Brossard, Shanahan, & McComas, 2004; Schmidt, Ivanova, & Schäfer, 2013). Fernández-Reyes, Raigada, and Águila Coghlan (2017) compared their results of coverage in Spain with those of other studies at the international level and concluded that there is a parallelism in the development of coverage over time, such that the peaks coincide, at the international level, with the publication of the IPCC reports and the most prominent climate summits.

Compared to other countries, Spain is below average in climate change coverage (Schmidt et al., 2013). According to the research conducted, in 2005, 2006 and 2011 this was a marginal topic. Only 0.2% of all information in the main national newspapers and 0.19% of the news on national channels focused on climate change in those years (León, 2014).

Thematic frames

As we have seen, the differences in the volume of media coverage of climate change between countries are related to the thematic frames, whether of

uncertainty and controversy or of certainty and consensus. We also refer to other common themes in news coverage.

In many countries, information on climate change is often framed as a political issue that, in addition to being present in the international arena, is also present in the national debate (Carvalho, 2007; Boykoff & Boykoff, 2007; Corbett, Young, & Davis, 2009). In Spain, the political approach is also predominant. This is because the bulk of information on climate change is published during the period of summits, in which international political negotiations play a fundamental role (León & de Lara, 2013; Blanco-Castilla, Quesada, & Teruel Rodríguez, 2013). However, the research conducted in Spain did not have a specific thematic analysis.

The thematic framings of climate change in the international sphere have been analyzed mainly by James Painter, who is taken as a reference author for the thematic analysis presented in this article. His successive works consider the skepticism framing (Painter & Ashe, 2012), the themes of risk and uncertainty (Painter, 2013), as well as those of disaster or catastrophe and opportunity (Painter, 2017). Faced with the predominance of the disaster or catastrophe framing, i.e., the presentation of the adverse impacts of climate change, the opportunity framing, understood as progress towards a more sustainable economic and social model, has been gaining ground (Painter, 2017). These studies, with samples from different countries, are not conclusive regarding the role of media ideology in relation to the predominant themes.

Sources

In recent decades, a number of reference sources on climate change have been consolidated for the media. Some have visibility on an international scale: participants in climate summits (politicians, NGO representatives, etc.), IPCC experts and even so-called celebrities (Anderson, 2011). Other political and civil society sources have national or local scope. Previous studies show an international prominence of political and governmental voices (Eide & Kunelius, 2010; Comfort, Tandoc, & Gruszczynski, 2020). Online news also bet on official sources, even more frequently than televisions or newspapers (Anderson, 2015). The Spanish media repeat this pattern: politicians are the prevailing voices in the information on climate change (Piñuel, 2013).

The journalistic norm of providing a balance between different points of view has led to skeptical sources having a strong representation in the media in some countries, mainly Anglo-Saxon ones (Boykoff & Boykoff, 2007). Petersen, Vincent, and Westerling (2019) found that 386 climate change skeptical voices, including academics, scientists, politicians, and businesspeople, had more visibility in the international press than the 386 most recognized climate scientists.

Although this greater visibility of skeptical sources occurred even in media ideologically oriented towards the left, an analysis of newspapers in the United Kingdom, Germany, and Switzerland, conducted by Schmid-Petri (2017), concluded that certain conservative media showed more openness to this type of voices. However, in Spain, skeptical sources have not been detected to be relevant (de Lara, 2013).

RESEARCH QUESTIONS AND METHODOLOGY

With the aim of finding out to what extent Spain is a different country in its news coverage of climate change in online media (traditional and native), we pose the following research questions:

- Q1. Is the volume of coverage in Spain similar to that in other countries?
- Q2. Are the dominant thematic frames on climate change in the Spanish media similar to those in other countries?
- Q3. Are the sources cited in the Spanish articles similar to those cited in other countries?

The sample and data used were obtained from a previous study on the international coverage of the 21st United Nations Climate Change Conference (COP21) held in Paris in 2015 (Painter et al., 2017). This summit marked a milestone in the fight against climate change, as the international community reached an agreement to reduce greenhouse gas emissions from 2020. The previous relevant agreement, the Kyoto Protocol, occurred in 1997, which shows the difficulties of climate negotiation.

COP21 in Paris attracted a high level of media attention. A comparative study of its coverage in newspapers in 50 countries indicates that the volume of climate change coverage during this meeting was the highest since 2004, except for the Copenhagen summit in 2009. In Spain it also marked a peak in media coverage of climate change (Fernandez-Reyes, 2016). Therefore, the sample is still relevant, despite its relative age, due to the imprint of the event and the interest aroused.

We selected five countries for the study, two English-speaking (United States and United Kingdom) and three from Western Europe (Spain, France, and Germany), following two of the blocks indicated by Painter and Schäfer (2018) for climate change communication: the Anglo-Saxon block and the continental European block. For each country, we selected reference newspapers for the most representative ideological currents of the right and left, and three digital native media: the online editions of *US Today* and *The New York Times* (United States);

The Telegraph and *The Guardian* (United Kingdom); *Le Figaro* and *Le Monde* (France); *Frankfurter Allgemeine Zeitung* and *Süddeutsche Zeitung* (Germany). In Spain, *El País* and *El Mundo* were selected according to the criteria of circulation and ideological representation. *El País* had a weekly reach of 27% of online information users and *El Mundo* reached 22% (Negredo, 2018). In addition, *El País* is positioned in a center-left or left-wing political position, while *El Mundo* is defined as a liberal newspaper and close to right-wing positions.

The criterion for inclusion in the sample of digital native media was that the first study (Painter et al., 2017) contrasted their coverage with that of traditional newspapers in their digital editions. For the selection of new media, prominent examples were sought, with presence in all the countries of the study³, which are of special interest because they incorporate novel formats and give some editorial priority to environmental issues. These media were *Huffington Post* (a U.S. news and opinion blog platform), *Vice* (a website that originates from the Canadian magazine of the same name) and *Buzzfeed* (a U.S. online media focused on viral content).

In 2015, the year of the Paris climate summit, eight out of ten Spanish citizens connected daily to the Internet and digital news media enjoyed a high level of credibility (IAB Spain, 2015). Some of the new media gained relevance in a short period of time but had trouble sustaining themselves. For example, *El Confidencial*, *El Español*, *OKDiario* and *Huffington Post* were among the 15 most important websites in Spain, but the online versions of newspapers such as *El País* and *El Mundo* topped the list of the most read websites (Comscore, 2015). The audience of *The Huffington Post* (1%), *Vice*, (2%) and *Buzzfeed* (2%) is much lower than that of the Spanish reference newspapers (Negredo, 2018). At the beginning of 2019, some of the digital native media with the largest audience carried out significant cuts in their newsrooms. Even *Buzzfeed* –included in this study– closed its delegation in Spain and other countries (Rubio, 2019).

The sampling period was three weeks (Wednesday, November 25 to Wednesday, December 16, 2015), during which a daily search for articles was conducted in the selected online media. It included all days of the summit, plus the five days before and five days after. The search terms used were (in Spanish) “global warming” or “climate change”, and “Paris” or “COP21”, as well as their English, French, and German translations. The basic unit of analysis was the “article”. In this research, we define it as online content that can be presented in the form of text, video, images, or other formats, usually grouped around a headline (Painter et al., 2017).

3. The presence of these media in all the countries of the study is due to the fact that one of the objectives of the previous work was to compare how the respective national editions worked.

We obtained a total of 1883 articles in the five countries studied, used in the analysis of the coverage volume (table 2). Of these, 1237 articles (65.69%) were published in the reference online press and 646 (34.3%) in the digital native media.

Subsequently, a random sample of 27.99% of the total number of articles ($n=527$) was selected to make a quantitative content analysis⁴ feasible: 259 articles published in digital native media (40% of the total number of articles published by these media) and 268 articles published in traditional newspapers (21.66%). All articles from *Vice* and *Buzzfeed* were included in the sample, as they have a small number of publications in all countries and are the subject of study for the project that frames this work. In countries where *The Huffington Post* also had few publications (Spain and Germany), they were included in the sample in their entirety to establish the appropriate comparisons (table 1). Consequently, the subsequent analysis of the data obtained was validated based on percentages.

Coding was carried out independently by two coders, after a preliminary training process in which the coding manual was discussed in detail to establish homogeneous criteria. Finally, the following criteria were followed:

Themes. Following Painter (2013), several dominant themes were identified, defined as follows:

- Negotiations. Explicitly included details of the process and progress of the negotiations or their outcome. For example, discussion of the agreement text, the different positions of the participating countries, commitments to reduce emissions, etc.
- Scientific context. These were specific references to climate science that supports the need for an international agreement (e.g., to keep global warming below 2 degrees Celsius). Indicators included scientific reports from bodies such as the IPCC, or reports from the International Energy Agency and the World Bank, which mention the scientific context.
- Disaster. Consisted of descriptions or statements of possible negative (often dramatic) impacts or effects of global warming. For example, sea level rise, extreme weather events such as floods or droughts, food shortages, population movements, damage to coral reefs, reduced ice cover, etc.

4. The analysis of the communication's contents is a methodology based on the principle that by examining texts it is possible to know not only their meaning, but also information on how they have been produced and on the characteristics of their issuers. With this technique, an objective, systematic, and quantitative description of the study sample is achieved (Berelson, 1952).

Countries	Media	Sample size
U.S. n = 125	New York Times (left-winged)	22
	USA Today (right-winged)	20
	Huffington Post	23
	BuzzFeed	28
	Vice	32
United Kingdom n = 116	The Guardian (left-winged)	37
	The Telegraph (right-winged)	16
	Huffington Post	25
	BuzzFeed	24
	Vice	14
France n = 110	Le Monde (left-winged)	30
	Le Figaro (right-winged)	30
	Huffington Post	30
	BuzzFeed	10
	Vice	10
Germany n = 81	Süddeutsche Zeitung (left-winged)	31
	Frankfurter Allgemeine Zeitung (right-winged)	31
	Huffington Post	14
	BuzzFeed	0
	Vice	5
Spain n = 95	El País (left-winged)	26
	El Mundo (right-winged)	25
	Huffington Post	37
	BuzzFeed	0
	Vice	7
Total		527

Table 1. Sample for content analysis, by media and country

Source: Own elaboration.

- Uncertainty. This theme included i) statements or descriptions related to uncertainties about different aspects of climate science, including ranges of projections of temperature increases, sea level rise, location or severity of impacts, or unreliability of mathematical models, and ii) the presence of skepticism, in its different variants (impact, attribution, bias, or political).

- Opportunity. Content that referred to the advantages of taking measures to reduce the risks derived from greenhouse gas emissions, such as the advantages of moving towards a low-carbon economy, business opportunities, health benefits, energy security, etc.
- Climate justice. Explicit references to the different historical responsibility among countries for gas emissions and the different burdens of mitigating, adapting to or alleviating the consequences of climate change. It also incorporated references to any of the many ethical issues surrounding climate change, including the responsibility of the current generation towards future generations.
- Sources. Sources in which a specific name or position was mentioned (e.g., “the prime minister said”), cited directly or indirectly, were coded. Therefore, generic references to institutions, when the spokesperson, author or representative is not named, were not coded. Mentions of media staff journalists were not coded. Sources were classified into the following categories: politician from the media country; politician from another country; UNFCCC (United Nations Framework Convention on Climate Change) representative; representative of another international body (IPCC, other UN body, etc.); scientist or research center representative; representative of NGO, think tank, lobby, or strategic cabinet; businessman; ordinary citizen; religious leader, and other.

The reliability of the data collected by the coders was measured by applying the Lotus coefficient, developed by Fretwurst in 2015⁵. The results for this study are above 0.9 (90% agreement).

RESULTS

Coverage volume

The data on the volume of coverage show that, during the studied period, the Spanish media analyzed published a total of 242 articles. This means that the summit attracted less media attention than in other countries, as only the German media published fewer articles (152) than the Spanish media (table 2).

5. Lotus is a reliability coefficient that controls the percentage of improbable agreement considering the distribution of variables. See <http://www.iakom.ch/LotusManualEng.pdf>.

Country	Media	N° articles	Percentage
U.S. n=422	New York Times	110	5.84
	USA Today	21	1.12
	Huffington Post	230	12.21
	BuzzFeed	28	1.49
	Vice	33	1.75
United Kingdom n=537	The Guardian	361	19.17
	The Telegraph	63	3.35
	Huffington Post	75	3.98
	BuzzFeed	24	1.27
	Vice	14	0.74
France n=530	Le Monde	202	10.73
	Le Figaro	149	7.91
	Huffington Post	157	8.34
	BuzzFeed	12	0.64
	Vice	10	0.53
Germany n=152	SZ	65	3.45
	FAZ	68	3.61
	Huffington Post	14	0.74
	BuzzFeed	0	0.00
	Vice	5	0.27
Spain n=242	El País	103	5.47
	El Mundo	95	5.05
	Huffington Post	37	1.96
	BuzzFeed	0	0.00
		7	0.37
Total		1883	100

Table 2. Coverage volume in the selected media*Source: Own elaboration.*

On the one hand, the Anglo-Saxon countries included in our study (United States and United Kingdom) provided much more extensive coverage than the countries of the continental European block, except for France. The extensive French coverage is related to the fact that COP21 took place in Paris, which meant added media interest, due to the proximity factor. However, there are also notable differences between the volume of coverage by the other two continental European countries –Germany (152) and Spain (242).

In Spain, as in most other countries, the digital native media published fewer articles than the traditional media. *The Huffington Post* is the exception, since in the United States it published more articles than any of the other medium, and in the United Kingdom and France it was slightly above the traditional media with the lowest volume of coverage. Moreover, in Spain, the digital native media not only published fewer articles than the traditional media, but their coverage volume was significantly lower than that of their editions in the other countries (with the sole exception of Germany, where coverage was even lower than in Spain).

It is also worth noting that, in Spain, *El País*, a traditional left-leaning media outlet, published a greater number of articles than its right-leaning competitor (*El Mundo*). This trend is repeated in most other countries. However, in Spain and Germany the difference between the number of articles published by the left- and right-wing media was very small. In Spain, *El País* published only eight more articles than *El Mundo*, while in Germany the right-wing media (*Frankfurter Allgemeine Zeitung*) published even three more articles than its left-wing competitor (*Süddeutsche Zeitung*).

Topics

Regarding the articles' main topics, the Paris summit negotiations attracted the most media attention, while uncertainties was the topic with the least notoriety. The coverage by the Spanish media was relatively similar to that of the other countries, with the notable exception of climate justice, which was more sparsely represented (table 3). Furthermore, it is worth noting that this topic was covered by all Spanish media to a lesser extent than their equivalents in other countries, regardless of their political leanings or business background.

The second area in which there was the greatest difference between Spain and the average for the rest of the countries was opportunity. In this case, in contrast to climate justice, the percentages of the Spanish media were sometimes higher and sometimes lower than those of the equivalent media in the other countries. Although the traditional media and *Vice* gave greater weight to this topic, the lower frequency with which it appears in *The Huffington Post* reduces the difference for the country.

The medium that paid most attention to climate change opportunities was *El País* (54%), with a percentage only surpassed, among the traditional left-wing media, by *The Guardian* (68%). Moreover, in the case of Spain, the newspaper *El País* published fewer articles on disaster/catastrophe than its center-right competitor. In the other four countries, on the contrary, climate change as a catastrophe was more recurrent in progressive newspapers. Another noteworthy fact is that the German edition of *The Huffington Post* stood out in the topics disaster/catastrophe (64%) and opportunity (86%) above all other media in the sample.

	Media	France	Germany	U.K.	U.S.	Spain	Difference
Negotiations	Right-wing newsp.	37	81	88	35	36	-24
	Left-wing newsp.	53	61	73	41	77	20
	Huffington Post	50	79	60	13	62	12
	Vice	40	20	43	34	43	9
	BuzzFeed	0		50	39		-22
	Country avg.	42	69	64	33	58	6
Scientific context	Right-wing newsp.	23	55	56	40	52	9
	Left-wing newsp.	23	35	38	41	46	12
	Huffington Post	17	29	40	52	27	-8
	Vice	0	40	36	50	57	26
	BuzzFeed	0		42	36		-20
	Country avg.	17	42	42	44	41	5
Disaster	Right-wing newsp.	27	35	50	45	44	5
	Left-wing newsp.	27	45	57	55	38	-8
	Huffington Post	33	64	44	52	49	1
	Vice	20	60	50	44	43	-1
	BuzzFeed	10		46	50		-27
	Country avg.	26	46	50	49	44	1
Uncertainty	Right-wing newsp.	17	19	31	40	12	-15
	Left-wing newsp.	10	13	16	23	12	-4
	Huffington Post	3	7	0	22	11	3
	Vice	0	40	7	13	43	28
	BuzzFeed	10		8	11		-7
	Country avg.	9	16	12	20	14	0
Opportunity	Right-wing newsp.	30	42	50	35	48	9
	Left-wing newsp.	23	35	68	14	54	19
	Huffington Post	20	86	76	52	35	-24
	Vice	20	20	21	22	43	22
	BuzzFeed	10		21	18		-12
	Country avg.	23	46	52	27	44	7
Climate justice	Right-wing newsp.	10	61	63	10	24	-12
	Left-wing newsp.	47	42	65	23	23	-21
	Huffington Post	33	64	48	30	35	-9
	Vice	60	20	71	56	14	-38
	BuzzFeed	0		25	39		-16
	Country avg.	30	52	53	34	27	-15

Table 3. Distribution of topics by media, country, and ideology (%)

Source: Own elaboration with data from Painter et al., 2017.

In other topics, such as negotiations and scientific context, there were relevant differences between equivalent media in Spain and other countries. Leaving aside the digital natives, we can provide the following analysis: the Spanish newspaper *El País* published more about negotiations than the rest of the left-wing newspapers in the sample. The right-wing media *The Telegraph* (UK) and *Frankfurter Allgemeine Zeitung* (Germany) were the ones that most covered the summit negotiations. They were also the two newspapers that provided the most scientific context (in general, this was provided to a greater extent by right-wing newspapers than left-wing ones), and only *The Guardian* (UK) paid more attention than them to the issue of climate justice. However, the introduction of uncertainty in relation to climate change was more frequent in right-wing than left-wing newspapers.

Sources

After counting the different types of sources cited in the 527 articles in the sample (table 4), it is evident that the two Anglo-Saxon countries led in the number of sources cited, while among the three continental European countries, France provided the largest number of sources, and Spain is in last place.

The sources that appeared in more articles correspond to interest groups, especially in the United States and the United Kingdom. This was followed by national and foreign politicians. However, in the case of the Spanish media, this general trend was not reproduced. Foreign politicians were cited more frequently (4.43%) than interest group representatives (2.9%) and national politicians (2.21%). Thus, Spain was the country that relies the most on foreign political sources and the least on domestic ones.

Scientists were prominent sources in articles related to the Paris summit, but Spanish media reports gave them less prominence than the rest of the international media. Unlike the Anglo-Saxon media, the European media gave little space to the so-called *vox populi* (citizens), and Spain is also last for this type of sources.

Representatives of the United Nations Framework Convention on Climate Change were more relevant to the media of the summit's host country than to the rest, which may simply indicate a more direct access of the French media to these sources. The least cited sources were religious leaders. Among the countries in the sample, Spain included the most articles in this area.

	Spain	Germany	Grance	United Kingdom	U.S.	TOTAL
National politician	2.21	3.32	3.18	3.73	4.70	17.15
Foreign politician	4.43	3.32	1.80	3.46	3.60	16.60
Representative of the United Nations Framework Convention	0.83	0.55	2.21	0.69	0.00	4.29
Representative of a foreign organization	0.69	0.83	0.83	1.24	1.66	5.26
Scientist	1.38	2.90	1.94	2.90	2.49	11.62
Stakeholder representative	2.90	2.63	3.60	5.26	5.39	19.78
Businessman	0.97	1.24	1.24	1.38	1.24	6.09
Citizen	0.28	0.83	0.83	2.49	3.18	7.61
Religious leader	0.83	0.28	0.41	0.28	0.69	2.49
Others	1.38	0.55	3.04	1.38	2.77	9.13
TOTAL	15.91	16.46	19.09	22.82	25.73	100

Table 4. Sources (%)*Source: Own elaboration.*

DISCUSSION

The discussion below confronts the results of the content analysis with the proposed existence of three blocks of countries in relation to climate change coverage (Painter & Schäfer, 2018).

Coverage volume

The results of this work endorse the previous comparative analysis of Schmidt and colleagues (2013), which places the level of attention to climate change in the United Kingdom and the United States above the average of a set of 27 countries. In the case of France, it is at the average, and Germany and Spain are below the average. These data could be interpreted as a ratification of the geographical blocks of media coverage of climate change (Anglo-Saxon and continental European) noted by Painter and Schäfer (2018). However, the marked differences in the volume of coverage between the continental European countries included in the study (France, Germany, and Spain) indicate that we cannot actually speak of a homogeneous block. Likewise, in this case it is Spain that is ahead of Germany in number of articles, when works such as Schmidt et al. (2013) have had inverse results. In this regard, what Barkemeyer and colleagues (2017) indicated regarding the fact that the media in countries with more legislative development on climate change and better economic data offer greater coverage does not hold true.

If this criterion was correct, Germany would be the European country with the highest volume of information, but the results place it behind France and Spain.

Similarly, during the period studied, the volume of coverage in the traditional Spanish media does not follow the international trend (especially regarding the Anglo-Saxon block), according to which media attention on climate change varies significantly depending on the political alignment of each media outlet, with greater coverage by left-wing media (Carvalho, 2007; Dirikx & Gelders, 2010; Dotson et al., 2012). In Spain –as in Germany, but unlike France–, climate change seems to be a settled issue on the agenda of traditional media, regardless of their editorial line. This fact is relevant, as it represents a change in trend with respect to the coverage of other previous milestones on climate change. It is worth remembering that in December 2009, coinciding with the Copenhagen summit, which marked the historical maximum of coverage in Spanish newspapers, *El País* published 281 articles, compared to 156 in *El Mundo*. In general, up to that time *El País* published more articles on climate change than *El Mundo*. However, since that date, *El Mundo*'s monthly coverage has generally been more extensive (Fernández-Reyes, 2018).

In our study, the coverage data in Germany place the traditional media in this country in a similar situation to that of Spain. However, the data provided by Boykoff and colleagues (2018) indicate that the tendency for the right-wing media (in this case, the newspaper *Die Tageszeitung*) to give less coverage to climate change does continue. Therefore, Spain differs again from other countries of the continental European block.

The Spanish digital native media follow the international trend of publishing fewer articles on the Paris summit than the traditional media, except for the U.S. and French editions of *The Huffington Post*. In the first instance, this fact should be interpreted as an indicator that those responsible for these media consider that climate change is not a matter of great interest for the mostly young audience they are targeting.

Given that the three digital native media analyzed are companies with an international presence, all three had easy access to articles on COP21 produced by their companies' subsidiaries in other countries. However, only *Vice* translated and published those contents produced by their Paris delegation that they considered of interest to their audience. Therefore, from the low number of articles published (7) it can be deduced that the subject was considered unattractive. Interest was even lower on the part of *Buzzfeed*, which did not publish any articles on the summit. In the case of *The Huffington Post*, the number of articles published (37) was higher than that of the other Spanish digital native media, but much lower

than that of other editions of this medium, such as those in the United States and the United Kingdom. Therefore, in this aspect, the coverage data of the digital native media place Spain within the continental European block, where interest in climate change is lower than in the Anglo-Saxon block.

Topics

The results of the analysis do not allow establishing clear trends in each of the geographical blocks, since the frequency percentages vary significantly from one country to another and from one media to another. It should be noted that, compared to the emphasis on disaster/catastrophe issues detected in previous studies (Painter, 2013), these results point to a certain balance between the catastrophic and the opportunity approach.

In general, the coverage in Spain had a lower presence of the topic of climate justice, but additional data would be necessary to analyze the causes of this difference with respect to the information offered by the other countries. What has been detected is a differentiated thematic treatment in *El País* compared to the other left-wing newspapers: it is the second left-wing media that paid more attention to the opportunities of climate change (for example, with the article by the innovation director of Green Business Spain, Luis Morales Carballo, entitled *Hacia el final de una economía basada en las energías fósiles*) Towards the end of an economy based on fossil fuels) and the only one of this ideology that did not emphasize the disaster/catastrophe frame over the national conservative newspaper.

Finally, although the right-wing media are prolix in publishing articles on climate negotiations, critical content was been detected in this regard. For example, following the Paris agreement, in Germany, the *Frankfurter Allgemeine Zeitung* considered that such collective agreements were never fulfilled and mentions the dangers of the climate pact for German industry. In the United Kingdom, the *Telegraph* complained about the harshness of the agreement for the country, and the French *Le Figaro* offered an interview with economist Rémy Prud'homme, who defends the French energy industry. On the other hand, in Spain, *El Mundo* (right-wing) stated that the measures agreed upon are limited.

Sources

In general terms, there were some similarities in the use of sources in English-speaking countries, which place interest group representatives in first place, followed by domestic and foreign politicians, with similar proportions. In this regard, the Anglo-Saxon block did not conform to the results of other studies that place political and governmental voices ahead of interest groups (Eide & Kunelius, 2010; Comfort et al., 2020). Continental European countries did not show such a uniform trend in the sources used, so they cannot be considered as a unitary block at this point.

Spanish media stood out for their scarcity in the use of sources (García Santamaría, 2010). Access to sources is often directly related to the availability of resources, so this may be a plausible explanation as to why, unlike other countries, Spain uses fewer sources in its articles. In addition, Spanish media made greater use of political and international sources (often from agencies). Thus, the results of our research endorsed those of previous studies (Piñuel, 2013).

On the other hand, the fact that Spain is the country that relied the most on foreign political sources and the least on national ones could indicate a lower presence of national political debate on climate change than in the United States and other European countries. The presence of quotes from religious leaders, in the Spanish case, was partly linked to Pope Francis. The coverage in the Spanish newspapers *El País* and *El Mundo* of the encyclical *Laudato Si* has been studied by Fernández-Reyes (2016), who points out that it contributed to a greater media presence of climate change.

CONCLUSIONS

The results of this study allow us to qualify the existence of the Anglo-Saxon and European-continental geographical blocks in the coverage of climate change, pointed out in previous works (Painter & Schäfer, 2018), since Spain was notoriously different from other surrounding countries in terms of online media coverage of climate change.

In general terms, these blocks were here confirmed by the trends in coverage, although there were also differences between the countries of the continental European block. The different volume of coverage in Germany, France, and Spain did not support a comparison among these countries.

As for the articles' topics, no clear trends could be seen in each of the geographical blocks. The coverage in Spain did not differ greatly from that of the countries of the Anglo-Saxon block or the other countries of the continental European block, except for climate justice, an issue that seems to be less consolidated in the Spanish media agenda than in other countries, although we are not aware of the reasons for this.

Online coverage by the Spanish media was also different from that of other countries in the continental European block in terms of the type of sources used. In Spain, there was a greater specific weight of foreign political sources compared to national ones, which suggests a lower presence of the political and social debate on climate change at the national level, an issue that future research could address.

Our study also allowed us to conclude that in 2015 climate change was a relatively consolidated topic on the news agenda, regardless of the editorial line of each media outlet. Unlike other countries, both in the Anglo-Saxon block and in continental Europe, the coverage conducted in Spain broke the international trend according to which media politically aligned to the left publish more articles on climate change than those aligned to the right.

The five media selected in Spain were not necessarily a representative sample of the Spanish online. However, the sample of media analyzed is the one that allowed us to achieve the proposed objective, to compare the coverage made by the Spanish online media with the same media or with other media of similar characteristics in other countries.

The specificities detected in the Spanish press coverage of climate change led us to formulate the following recommendations:

- To focus on greater media attention, given the seriousness of the impacts of climate change in Spain and its implications.
- Expand the number and diversity of information sources, so that climate change moves from being a predominantly political and international issue to a relevant issue in the national context, in which political, scientific, and civil society voices are heard.
- Continue to keep climate change out of the media's ideological polarization.

REFERENCIAS

- Anderson, A. (2011). Sources, media, and modes of climate change communication: the role of celebrities. *Wiley interdisciplinary reviews: climate change*, 2(4), 535-546. <https://doi.org/10.1002/wcc.119>
- Anderson, A. (2015). News organisation(s) and the production of environmental news. In A. Hansen & R. Cox (Eds.), *The Routledge handbook of environment and communication* (pp. 176-185). Abingdon, United Kingdom: Routledge.
- Barkemeyer, R., Figge, F., Hoepner, A., Holt, D., Kraak, J. M., & Yu, P. S. (2017). Media coverage of climate change: An international comparison. *Environment and Planning C: Politics and Space*, 35(6), 1029-1054. <https://doi.org/10.1177/0263774X16680818>
- Berelson, B. (1952). *Content Analysis in Communication Research*. Glencoe: Free Press.
- Berglez, P. (2008). What is global journalism? *Journalism Studies*, 9(6), 845-858. <https://doi.org/10.1080/14616700802337727>
- Berglez, P., Höjjer, B., & Olausson, U. (2009). Individualisation and nationalisation of the climate issue: Two ideological horizons in Swedish news media. In T. Boyce & J. Lewis (Eds.), *Climate Change and the Media* (pp. 211-223). New York, NY: Peter Lang.

- Blanco-Castilla, E., Quesada, M., & Teruel Rodríguez, L. (2013). From Kyoto to Durban. Mass media editorial position about climate change. *Revista Latina de Comunicación Social*, (68), 420-435. <https://doi.org/10.4185/RLCS-2013-983en>
- Boykoff, M. T. & Boykoff, J. M. (2007). Climate Change and Journalistic Norms. A Case-study of US Mass-media Coverage. *Geoforum*, 38(6), 1190-1204. <https://doi.org/10.1016/j.geoforum.2007.01.008>
- Boykoff, M. T., Daly, M., McAllister, L., McNatt, M., Nacu-Schmidt, A., Oonk, D., & Pearman, O. (2018). German Newspaper Coverage of Climate Change or Global Warming, 2004-2018 - April 2018 (data set). <https://doi.org/10.25810/RXTV-EB29.1>
- Brossard, D., Shanahan, J., & McComas, K. (2004). Are issue-cycles culturally constructed? A comparison of French and American coverage of global climate change. *Mass Communication Society*, 7(3), 359-377. https://doi.org/10.1207/s15327825mcs0703_6
- Carvalho, A. (2007). Ideological Cultures and Media Discourses on Scientific Knowledge: Re-reading News on Climate Change. *Public Understanding of Science*, 16(2), 223-243. <https://doi.org/10.1177/0963662506066775>
- Carvalho, A. (2005). Representing the politics of the greenhouse effect. *Critical Discourse Studies*, 2(1), 1-29.
- CMNUCC. (1992). *Convención Marco de las Naciones Unidas sobre el Cambio Climático* (United Nations Framework Convention on Climate Change). Retrieved from <http://unfccc.int/resource/docs/convkp/convsp.pdf>
- Comfort, S. E., Tandoc, E., & Gruszczynski, M. (2020). Who is heard in climate change journalism? Sourcing patterns in climate change news in China, India, Singapore, and Thailand. *Climatic Change*, 158(3), 327-343. <https://doi.org/10.1007/s10584-019-02597-1>
- Comscore. (2015). Top 20 España Junio de 2015 (Top 20 Spain June 2015). Retrieved from <http://www.comscore.com/esl/Prensa-y-Eventos/Market-Rankings/Top-20-Espana-Junio-2015>
- Corbett, J. B., Young, L. E., & Davis, B. L. (2009). Teoría del conflicto e información sobre el cambio climático: interacción entre medios, ciencia, política, industria y audiencias (Theory of conflict and information: interaction among science, politics, industry and audiences). *Infoamérica: Iberoamerican Communication Review*, (1), 5-23. Retrieved from https://www.infoamerica.org/icr/n01/infoamerica01_corbett.pdf
- Corbett, J. B. & Durfee, J. L. (2004). Testing public (un)certainty of science - media representations of global warming. *Science Communication*, 26(2), 129-151. <https://doi.org/10.1177/1075547004270234>
- De Lara, A. (2013). Las Fuentes Periodísticas y la Información sobre el Cambio Climático en los Medios Españoles: Televisión y Prensa (Journalistic sources and information on climate change in Spanish media: television and press). In B. León (Ed.), *El Periodismo ante el Cambio Climático. Nuevas Perspectivas y Retos* (Journalism faces climate change: new perspectives and challenges) (pp. 71-84). Barcelona, Spain: Editorial UOC.
- Dirikx, A. & Gelders, D. (2010). To Frame is to Explain: A Deductive Frame-Analysis of Dutch and French Climate Change Coverage during the Annual UN Conferences of the Parties. *Public Understanding of Science*, 19(6), 732-742. <https://doi.org/10.1177/0963662509352044>

- Dotson, D. M., Jacobson, S. K., Kaid, L. L., & Carlton, J. S. (2012). Media coverage of climate change in Chile: A content analysis of conservative and liberal newspapers. *Environmental Communication: A Journal of Nature and Culture*, 6(1), 64-81.
<https://doi.org/10.1080/17524032.2011.642078>
- Eide, E. & Kunelius, R. (2010). Domesticating Global Moments. A transnational study on the coverage of the Bali and Copenhagen Climate Summits. In E. Eide, R. Kunelius, & V. Kumpu (Eds.), *Global Climate-local journalisms* (pp. 11-50). Bochum, Germany: Projekt verlag.
- European Environment Agency. (2017). *Climate change, impacts and vulnerability in Europe 2016*. Retrieved from <https://www.eea.europa.eu/publications/climate-change-impacts-and-vulnerability-2016>
- Fernández-Reyes, R. (2016). La Encíclica *Laudato Si* en El País y en El Mundo (The *Laudato Si* Encyclical in El País and El Mundo). *Intexto*, (36), 183-199.
<https://doi.org/10.19132/1807-8583201636.183-199>
- Fernández-Reyes, R. (2018). Spanish Newspaper Coverage of Climate Change or Global Warming, 2000-2018. Universidad de Sevilla and Center for Science and Technology Policy Research, Cooperative Institute for Research in Environmental Sciences, University of Colorado, Media and Climate Change Observatory Data Sets.
<https://doi.org/10.25810/37f9-1j65>
- Fernández-Reyes, R. F., Piñuel Raigada, J. L., & Águila Coghlan, J. C. (2017). Contraste de la cobertura periodística del cambio climático y del calentamiento global en España y en el ámbito internacional: IV-V Informes del IPCC y Bali-Copenhague-París (A contrast between journalistic coverage of climate change and global warming in Spain and internationally). *Revista Latina de Comunicación Social*, (72), 1165-1185.
<https://doi.org/10.4185/RLCS-2017-1213>
- García Santamaría, J. V. (2010). Crisis del periodismo de fuentes. Las prácticas del periodismo en España en el accidente de Spanair (The crisis of informational sources. The journalism practice in Spain in Spanair's accident). *Revista Latina de Comunicación Social*, (65), 516-537.
<https://doi.org/10.4185/RLCS-65-2010-916-516-537>
- Gavin, N. T. (2009). Addressing climate change: A media perspective. *Environmental Politics*, 18(5), 765-780. <https://doi.org/10.1080/09644010903157081>
- Harrison, K. & Sundstrom, L. M. (2007). The Comparative Politics of Climate Change. *Global Environmental Politics*, 7(4), 1-18. <https://doi.org/10.1162/glep.2007.7.4.1>
- IAB. (2015, January 11). Los medios de comunicación online son los soportes digitales que mayor credibilidad tienen (Online media are the digital media that have the greatest credibility). *IAB España*. Retrieved from <https://iabspain.es/los-medios-de-comunicacion-online-son-los-soportes-digitales-que-mayor-credibilidad-tienen>
- Kunelius, R. & Eide, E. (2012). Moment of Hope, Mode of Realism: On the Dynamics of a Transnational Journalistic Field During UN Climate Change Summits. *International Journal of Communication*, 6, 266-285. Retrieved from <https://ijoc.org/index.php/ijoc/article/view/1405>
- León, B. (2014). El Cambio Climático en los Medios: Una Visión Pluridimensional (Climate change in the media: a pluridimensional view). In B. León (Ed.), *Periodismo, Medios de Comunicación y Cambio Climático* (Journalism, Media and Climate Change) (pp. 11-27). Salamanca, Spain: Comunicación Social.

- León, B. & de Lara, A. (2013). Ciencia y cambio climático. Estudio de la cobertura del cambio climático en la prensa española (Science and climate change. A study of climate change coverage in the Spanish press). In R. Fernández-Reyes (Ed.), *Medios de Comunicación y Cambio Climático* (Media and Climate Change) (pp. 91–104). Sevilla, Spain: Fénix.
- Lockwood, A. (2009). Preparations for a Post-Kyoto Media Coverage of UK Climate Policy. In T. Boyce & J. Lewis (Eds.), *Climate Change and the Media* (pp. 186–199). Nueva York: Peter Lang.
- Lopera, E. & Moreno, C. (2014). The uncertainties of climate change in Spanish daily newspapers: Content analysis of press coverage from 2000 to 2010. *Journal of Science Communication*, 13(01), A2. <https://doi.org/10.22323/2.13010202>
- McCright, A. & Dunlap, R. (2003). Defeating Kyoto: The conservative Movement's impact on US climate change policy. *Social Problems*, 50(3), 384–373. <https://doi.org/10.1525/sp.2003.50.3.348>
- Media and climate Change Observatory, University of Colorado (2021). MeCCO Media and climate change observatory. Retrieved from https://sciencepolicy.colorado.edu/icecaps/research/media_coverage/index.html
- Negredo, S. (2017). Los Sitios Web de Periódicos Afrontan la Creciente Competencia de Televisiones y Nativos Digitales (Journalistic websites face increasing competition of television channels and native digital media). *Digital News Report*. Retrieved from <https://www.digitalnewsreport.es/2016/los-digitales-de-periodicos-afrontan-la-creciente-competencia-de-televisiones-y-nativos-digitales/>
- Painter, J. (2013). *Climate change in the media: reporting risk and uncertainty*. Oxford, United Kingdom: Reuters Institute for the Study of Journalism.
- Painter, J. (2017). Disaster, risk or opportunity? A ten-country comparison of themes in coverage of the IPCC AR5. In R. Kunelius, E. Eide, M. Tegelberg, & D. Yagodin (Eds.), *Media and Global Climate Knowledge* (pp. 109–128). New York, NY: Palgrave Macmillan.
- Painter, J. & Ashe, T. (2012). Cross-national comparison of the presence of climate scepticism in the print media in six countries, 2007–10. *Environmental research letters*, 7(4), 044005. <https://doi.org/10.1088/1748-9326/7/4/044005>
- Painter, J., Erviti, M. C., Fletcher, R., Howarth, C., Kristiansen, S., Bienvenido, L., ... & Schäfer, M. S. (2017). *Something old, something new: Digital media and the coverage of climate change*. Oxford, United Kingdom: Reuters Institute for the Study of Journalism.
- Painter, J. & Schäfer, M. S. (2018). Global similarities and persistent differences: a survey of comparative studies on climate change communication. *Climate change in the media*. New York, NY: Peter Lang.
- Petersen, A. M., Vincent, E. M., & Westerling, A. L. (2019). Discrepancy in scientific authority and media visibility of climate change scientists and contrarians. *Nature communications*, 10(1), 1–14. <https://doi.org/10.1038/s41467-019-09959-4>
- Piñuel, J. L. (2013). El Discurso Hegemónico de los Media sobre el Cambio Climático (Riesgo, Incertidumbre y Conflicto) y Estrategias de Intervención (The hegemonic media discourse on climate change –risk, uncertainty and conflict– and intervention strategies). In R. Fernández-Reyes (Ed.), *Medios de Comunicación y Cambio Climático* (Media and Climate Change) (pp. 27–44). Sevilla, Spain: Fénix.

- Rubio, J. (2019, February 3). La nueva prensa digital se enfrenta a su primera gran crisis (The new digital press faces its first large crisis). *El País*. Retrieved from https://verne.elpais.com/verne/2019/02/01/articulo/1549038378_127709.html
- Schmidt, A., Ana Ivanova, A., & Mike S. Schäfer, M. S. (2013). Media Attention for Climate Change around the World: A Comparative Analysis of Newspaper Coverage in 27 Countries. *Global Environmental Change*, 23(5), 1233–1248. <https://doi.org/10.1016/j.gloenvcha.2013.07.020>
- Schmid-Petri, H. (2017). Do conservative media provide a forum for skeptical voices? The link between ideology and the coverage of climate change in British, German, and Swiss newspapers. *Environmental communication*, 11(4), 554–567. <https://doi.org/10.1080/17524032.2017.1280518>
- Weart, S. (2021, February). *The Public and Climate Change*, [online]. Website The Discovery of Global Warming. Retrieved from <https://history.aip.org/climate/public.htm>
- Weingart, P., Engels, A., & Pansegrau, P. (2000). Risks of communication: Discourses on climate change in science, politics, and the mass media. *Public Understanding of Science*, 9(3), 261–283. <https://doi.org/10.1088/0963-6625/9/3/304>
- Wigley, T. M. L. (1999). *The science of climate change: global and US perspectives*. Washington, DC: Pew Center on Global Climate Change.
- Zehr, S. C. (2000). Public representations of scientific uncertainty about global climate change. *Public Understanding of Science*, 9(2), 85–103. <https://doi.org/10.1088/0963-6625/9/2/301>

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