

## Dr. Juan-Ignacio CANTERO-DE-JULIÁN

Universidad de Castilla-La Mancha. Spain. juanignacio.cantero@alu.uclm.es.  
<https://orcid.org/0000-0002-6631-1915>

## Dr. José-María HERRANZ-DE-LA-CASA

Universidad de Castilla-La Mancha. Spain. JoseMaria.Herranz@uclm.es.  
<https://orcid.org/0000-0002-3667-2664>

### Environmental information coverage in Spanish media between 2018 and 2021

### Cobertura de la información sobre medioambiente en medios de comunicación de España entre 2018 y 2021

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#### Abstract

Climate change and the environment are issues that should involve all social agents with the capacity to act because of their vital importance for human subsistence. The media are one of them, but they are hesitant and unfocused on the issue. Delimiting the study sample to the period 2018-2021, the objective of this article is to identify the frequency and space or time devoted by the audiovisual media, television and radio, as well as the coverage they make of environmental issues. The methodology used will be a combination of quantitative and qualitative content analysis of the journalistic pieces broadcast in these media, focusing on the study of: two radio news programs, Radio Nacional España and Cadena Ser and two television news programs, Televisión Española and Telecinco. The intention of this research is to obtain a diagnosis of the environmental journalistic coverage for raising public awareness of the risk of environmental impact in this four-year period. It can be seen that in this four-year period, since the adherence of a good number of Spanish media to the "Decalogue of recommendations for reporting on climate change", there has been a gradual increase in the information published on the environment, but that this is still excessively based on major events and environmental catastrophes and often decontextualized and with little use of sources.

#### Keywords

Awareness; environment; environmental journalism; media; risk.

#### Resumen

El cambio climático y el medio ambiente son cuestiones que deben implicar a todos los agentes sociales con capacidad de acción por su vital importancia para la subsistencia humana. Los medios de comunicación son uno de ellos, pero se muestran dubitativos y poco centrados en el asunto. Delimitando la muestra de estudio al periodo 2018-2021, el objetivo de este artículo es identificar la frecuencia y el espacio o tiempo que dedican los medios de comunicación audiovisuales, televisión y radio, así como la cobertura que realizan de los temas ambientales. La metodología utilizada es una combinación de análisis de contenido cuantitativo y cualitativo de las piezas periodísticas que se difunden en estos medios de comunicación, centrándose en el estudio de: dos informativos de radio, Radio Nacional España y Cadena Ser, y dos informativos de televisión, Televisión Española y Telecinco. Se comprueba que en este cuatrienio, desde la adhesión de una buena cantidad de medios españoles al "Decálogo de recomendaciones para informar sobre el cambio climático", se ha dado un aumento paulatino de la información publicada sobre medioambiente, pero que esta sigue excesivamente basada en grandes acontecimientos y catástrofes ambientales y a menudo, descontextualizada y con poco uso de fuentes.

#### Palabras clave

Concienciación; medioambiente; medios de comunicación; periodismo medioambiental; riesgo.

## 1. Introduction

Since 1990, the Intergovernmental Panel on Climate Change (IPCC) has issued six appraisal reports pointing to scientific evidence regarding the link between climate change and the model of growth and development based on burning fossil fuels, as well as on patterns of consumption and production that are not energy-efficient.

The fifth report of the Intergovernmental Panel on Climate Change (IPCC, 2013; 2014a; 2014b) described this phenomenon as an irrefutable and “unequivocal” fact, giving a certainty rating of 95-100%. Therefore, the existence of climate change has been confirmed, and the only variable that can explain this phenomenon is human interference with the atmosphere (Warlenius, 2018).

On 9 August 2021, the IPCC published its sixth report entitled *Climate Change 2021: The Physical Science Basis*, which combines evidence from the past with current climate observations and simulations of various scenarios. Among the most compelling findings of the report is that the average global temperature increased by 1.1°C between 2011 and 2020, which is the exact same increment that occurred between 1850 and 1900. The consequence has been a recent rise in the sea level that is nearly three times higher than that which occurred between 1901 and 1971. This report also found that the current rate of global warming is unprecedented in the last 2,000 years. Moreover, the concentration of CO<sub>2</sub> in the atmosphere is the highest it has been for the past 2 million years, while the levels of methane and nitrous oxide are higher than they have been for the last 800,000 years.

Furthermore, the frequency of extreme weather has increased significantly. There has been a rise in the number of heat waves, and precipitation has become delocalised, with its seasonal regularity having changed as well. Since 1950, the temperature of the atmosphere has increased, which has led to a decrease in the size of glaciers and ice caps, and ocean levels have risen at a much faster rate than in the past. Since the mid-19th century, the rate of increase in the sea level rise has been higher than the average of the two previous millennia.

This crisis is not only an ecological problem, but a predicament that concerns all human life as well, so the dimension of the problem is socio-ecological (Riechmann, 2008). We are living through a situation that has come to be known as a “planetary emergency”, and it goes far beyond climate change and the environment to include the following consequences: pollution and deterioration of ecosystems, resource depletion, uncontrolled growth of the world’s population, and more. In fact, the Oxford Dictionary designated *climate emergency* as the term of year in 2019 (Gropp and Verdier, 2020).

In some countries, however, media debates regarding whether or not climate change even exists, or doubts about it being caused by human activity, are still widespread despite broad consensus in scientific literature (Cook et al., 2013). However, this is not the case in Spain, where scepticism and denial are in the minority (Meira et al., 2013; Tranter and Booth, 2015).

The Sustainable Development Goals, which were approved in September 2015 as part of the 2030 Agenda, include environmental objectives aimed at fostering prosperity and protecting the planet’s resources while pursuing economic, social and environmental sustainability. However, these commitments are only a framework, which requires the involvement of governments, companies, the media, and citizens.

As pointed out by Sauv  (2014), making the public aware of the problem is essential in order for the population to look inward and become empowered as social agents capable of taking action that is both individual and collective. In other words, awareness is necessary in order for people to become competent eco-citizens. In short, there is a need to develop citizens who are aware of the seriousness and global nature of the problem, and who are prepared to participate in making appropriate decisions.

For Kalmus (2019), in addition to the importance of political initiatives and major intergovernmental agreements, the everyday actions of citizens are crucial for avoiding disaster. He emphasises the importance of a cultural transformation in making the current climate emergency a real issue in the mind of the public.

In this public opinion space, environmental communication is defined from ethical points of view oriented toward raising awareness (Anderson, 2014; Corbett, 2006; Hansen, 2011a). Its field of study includes governmental initiatives, environmental organisations and groups, ecological depiction in citizen culture, the media, advertising, communicating environmental risks, as well as public participation and the resolution of environmental problems (Cox, 2010; Hansen, 2011b).

For many years, climate change has been firmly established in political, media and social discourse, with evidence from environmental movements that is real and acknowledged. However, now that there are

unprecedented youth movements spearheaded by Swedish activist Greta Thunberg (Wahlström et al., 2019; Vera and Herranz, 2020), the media has renewed its interest in this matter and its coverage has grown exponentially (Fernández-Reyes, 2019).

By including this type of content in the media agenda, people can learn more about the issue, making it easier for them to become actively involved in the cause, as most of the knowledge people have about environmental problems and risks comes from the media.

The true value of the media lies in their role as an intermediary between information and the citizen. At the environmental level, they mediate, interpret and translate scientific data to make it understandable to citizens. Journalists have the opportunity to translate often alienating and jargon-laden content into information that all sectors of the public can understand (Sklair and Boykoff, 2020).

A large number of people become aware of environmental issues through the work of journalists. If that were not the case, such issues would receive little attention from the public and politicians (Hannigan, 2002). Journalists play an important role in portraying the social reality and shaping public opinion, and they also act as legitimate intermediaries between the public, on the one hand, and social issues and actors on the other. As such, they help define the problems that affect society as a whole. Social problems are determined by a perceptive cultural factor, and the collective understanding of problems is arbitrated by the media, just as attention to certain events is influenced by their work as well.

Studies based on agenda-setting (McCombs, 2005) and framing theories (Hansen, 2011a), among others, show that this influence is decisive in the case of complex risks that are difficult to perceive directly, which have long-term effects, such as environmental damage (Howard-Williams, 2011: 28).

Among the initiatives considered essential by these authors in promoting sustainability education, which reinforce the thesis of Picó (2019), are access to relevant, reliable, understandable and contrasting information on environmental effects, as well as the involvement of the media in educational programmes.

Specifically, environmental journalism and related news are required for developing concerned, educated, and active citizens in this area. The role of communication and journalism is crucial, not only to define the environment as a concept and domain, but to attract public and political attention to environmental issues and problems as well (Picó, 2017: 70).

Apart from formal education, the media are the main source of information for the public regarding the environment and a platform for various actors not necessarily related to the scientific field (Heras, Meira and Benayas, 2018).

The media "shape perceptions and opinions, and they influence the spectrum of responses to climate change", as argued by Boykoff and Luedecke (2016). Moreover, the public tends to pay more attention to the media, which citizens consume on a regular and nearly passive basis. Meira et al. (2013) summarised three demoscopic studies on attitudes and public opinion among the Spanish population regarding the portrayal and perception of climate change (USC-Mapfre surveys).

In the three waves of the surveys, questions were asked about the backgrounds of the sources or commentators on climate change, and it was found that more than half of the people interviewed (57.3%) had listened to a journalist commenting on climate change in the previous month.

However, this is no guarantee that the public trusts the information. Other reports indicate that scientists, experts and academics are the most trusted sources of information for all sectors of the public, according to the following: data from the Digital News Report (Vera et al., 2022); the survey entitled, *Valores, actitudes y conducta medioambiental de los españoles* [environmental values, attitudes, and behaviour of Spanish people] of the BBVA Foundation (2022); and the Reuters Institute (Nielsen, Schulz and Fletcher, 2021).

Along the same lines, at the end of 2018 several organisations collaborated in gathering researchers and communication professionals to draw up a Decalogue of commitments on how to disseminate information about climate change. The institutions included the following: *Fundación Ecología y Desarrollo* (ECODES) [foundation for ecology and development]; the European Climate Change Foundation; and the *Grupo de investigación Mediación Dialéctica de la Comunicación Social* (MDCS) [research group for dialectical mediation on social communication] of Complutense University.

This "Decalogue of recommendations for reporting on climate change" (ECODES, 2019) includes a series of items and suggestions for better and more rigorous coverage of the issue. Among the recommendations are the following: promote frequent and continuous information on climate change;

include the causes and solutions in the content, not only the impact; and try to link climate change to extreme meteorological phenomena and encourage specialisation in the subject by journalists and newsrooms.

Between 2018 and 2019, more than 80 Spanish media and agencies signed the Decalogue (ECODES, 2019). The Decalogue is a tool that is essential in giving the media a key social role in meeting the objectives set out in the Paris Agreement. The *Diseño del Observatorio de la Comunicación Mediática del Cambio Climático* [the design of the observatory for media communication on climate change] (Teso et al., 2019), includes a pilot test that has revealed an increase in the volume of information published and in the quality of communication regarding the items in the Decalogue.

Journalistic coverage of a topic affects people's understanding of an issue (Aruguete, 2017). Consequently, if information on the environment is scarce and intermittent, citizens might start to believe the environment is not an important topic, and they might even disregard it (Martínez-Garza, 2019).

Each country has its own peculiarities with regard to environmental coverage in relation to the method used, frequency, and timing of the reports, but there is a general trend of ups and downs, mainly determined by environmental events (Weingart, Engels and Pansegrau, 2000; McComas and Shanahan, 1999).

A study by Boykoff and Roberts (2007) addressed the coverage of "climate change", or "global warming", from 1987 to 2006. The research involved 17 countries on five continents, and concluded that 40 of the world's most influential English-language newspapers showed that peaks in media attention are mainly determined by international landmark events.

In Spain, according to research by Fernández-Reyes and Jiménez-Gómez (2019), environmental media coverage has been similar to that of other countries, with peaks of news and information occurring with the publication of the fourth IPCC (2007), at the Copenhagen COP (2009), and at the Paris Summit (2015).

Paradoxically, while scientific certainty about the human-related cause of current global warming has increased with each new IPCC report, both the media and society have shown less interest in climate change in Spain in recent years, according to Meira (2017).

Research on the presence of environmental information in the media tends to reveal mostly simplistic coverage, which consists of reporting "environmental events without any context to explain the ecological problem from a political, economic or social perspective" (Carabaza, 2006:2). Thus, although protecting the environment is seen as something positive and necessary (Howard-Williams, 2011: 38), the media generally fail to explain the causes, culpability, conflicts of interest, pressures, possible solutions, or ways of applying those solutions (Jönsson, 2011: 29).

According to Howard-Williams (2011), the media tend to focus on specific, recent and eye-catching events rather than processes that unfold over time, in search of a dramatic effect rather than focusing on constructive solutions. This encourages messages with sensationalist overtones, leaving aside the much-needed scientific rigour (León, 2007; Francescutti, Tucho and Iñigo, 2013). For these reasons, it is often said that environmental news is mostly event-centred (Allan, 2002: 107).

Piñuel and Lozano (2009) have analysed how the coverage of catastrophes and the apocalyptic vision of environmental problems dominate in journalism. Among other shortcomings, Ruiz, Martín and Cabrera (2011) found that environmental content on television is scarce and usually biased. León (2016: 17) indicates that news programmes tend to select unusual issues that have a strong impact on the audience, yet contain a paltry amount of scientific rigour and are overly sensational. Moreover, according to this author, "Many times reporters select only political or economic points of view, leaving aside the scientific perspective, which is the only objective reference for evaluating certain environmental phenomena in many cases".

The findings of a content analysis conducted by Mercado and Monedero (2022) confirm that climate change is the environmental issue that receives the most coverage, yet as indicated by Zaragoza, the media focus on the consequences of climate change, as in the following examples:

[...] the rise in temperatures and its consequences for natural cycles and health; surges of adverse weather conditions; the lack of rainfall with its aftereffects. The problem is, these reports always show a pessimistic point of view, because only negative and devastating consequences are reported (2018: 42).

Faced with the lack of environmental issues in the media, there is a need for journalism focused on ecology and sustainability that is capable of providing truthful coverage of the issue (Fernández-Reyes,

Piñuel and Vicente, 2015). Regarding this point, the media must take a leading role in interpreting events and producing content (Rodrigo, Picó and Dimuro, 2019).

Given the context, this article focuses on analysing information related to the environment that was broadcast and published on radio and television news between 2018 and 2021. The specific objectives of the research are as follows:

O1. To identify the amount of information related to the environment in the main audio-visual media in Spain during 2018, 2019, 2020 and 2021.

O2. To verify the evolution of the information on the environment published in these audio-visual media in those four years.

O3. To identify differences in the coverage before and after the signing of the "Decalogue of recommendations for reporting on climate change" by some of these media.

## 2. Method

To achieve the objectives, the method used was a combination of quantitative and qualitative content analysis (Wimmer and Dominik, 2011; Bardin, 2002; Krippendorff, 2002).

Regarding the sample, we chose random probability sampling of composite weeks (Stempel, 1952; Aznar, Rodríguez and Morales, 2017; Mellado, Cabello and Torres, 2017; Martínez and Herranz, 2019). This type of sampling consists of constructing a week randomly by selecting one day of the week (Monday, Tuesday, Wednesday, etc.) from among all the possible days in the time span of the study, which in this case includes the two six-month periods of 2018, 2019, 2020 and 2021. In this way, all days of the week are analysed, but located in different weeks. The advantage of this type of sampling is that no dates are repeated, and it allows the entire extent of the study to be analysed. Riffe, Aust and Lacy (2009) provide evidence that estimation using constructed weeks is better than complete random sampling, and Hester and Dougall (2007) have shown that random sampling of composite weeks is more accurate than simple random and consecutive day sampling. Moreover, such sampling is unaffected by major news events, which cause the information to focus on those occurrences and change the focal point away from the topic under study.

A sample was designed to cover the period from 1 January 2018 to 31 December 2021 by collecting reports from Spanish media (N=4) on the set of days that comprised four random composite weeks (N=56), obtaining a total of 332 items related to the environment (N=332). The sampling units consist of two media from each of the chosen formats (radio and television). The term of the study was chosen in order to cover a period of time starting from the publication of the "Decalogue of recommendations for reporting on climate change", and to offer a sufficiently long transitional period (four years) for the analysis to be relevant.

The units chosen for the sample are the following: TVE, Telecinco, RNE and Cadena SER. For each media outlet, one news item was collected on each day of the randomly constructed week for each six-month period of the years studied. In other words, there are eight constructed weeks for each of the four media. Regarding the news programmes analysed, the 9pm segment was chosen in the case of television and the 2pm slot for radio, due to the fact that when this research began both the Barlovento Comunicación report (2017) and the 3rd wave of the *Estudio General de Medios (EGM)* [general media studies] (AIMC, 2017) indicated that these were the slots with the largest audiences in the selected media.

This study has excluded opinion pieces and focused only on information and interpretation using journalistic genres such as news, interviews, reports and features.

Once defined, the data was coded using a category design (Bardin, 2002). The result was an analysis template composed of twelve different categories (year, six-month period, day of the week, medium, media communication company, national/ international, location, time, topic, origin of the information, number of sources, and source type). These variables were processed using a Microsoft Office Excel table. Frequency and contingency tables were created with the data obtained and compared using SPSS 15.0 statistical software.

**Table 1: Variables analysed in the study**

<b>Year</b>	2018 / 2019 / 2020 / 2021
<b>Six-month period</b>	First / Second

<b>Day of the week</b>	Monday / Tuesday / Wednesday / Thursday / Friday / Saturday / Sunday
<b>Medium</b>	Television / Radio
<b>Media company</b>	TVE / Telecinco / RNE / Cadena Ser
<b>National/ international</b>	National or International
<b>Location</b>	Between news reports 1-5 / Between news reports 5-10 / After news report 10
<b>Duration</b>	XX minutes XX seconds
<b>Topic</b>	<ul style="list-style-type: none"> <li>-Water and biodiversity (Nature, conservation and natural spaces, water, etc.)</li> <li>-Climate (Climate change, as well as meteorological and natural phenomena)</li> <li>-Sustainable development (Development, economy, green employment, waste, etc.)</li> <li>-Environmental policy (Legislation and political initiatives related to the environment)</li> </ul>
<b>Information source</b>	<ul style="list-style-type: none"> <li>-Disaster or incident related or linked to the environment.</li> <li>-International organisations (UN, UNESCO, etc.)</li> <li>-Political leaders</li> <li>-Academics or researchers</li> <li>-Civil society</li> <li>-Companies</li> <li>-NGOs</li> <li>- Other</li> </ul>
<b>No. of sources</b>	XX Sources
<b>Source type</b>	<ul style="list-style-type: none"> <li>-People linked to academia</li> <li>-Politicians</li> <li>-People affiliated with a company</li> <li>-Members of NGOs</li> <li>-Witnesses or participants of the event</li> <li>-Civil society</li> <li>-Military or judicial authorities, rescuers, firefighters, or relief services</li> </ul>

Source: created by the authors

According to the *IX Encuesta de Percepción Social de la Ciencia de la Fundación para la Ciencia y la Tecnología* [the 9th survey on the social perception of science from the foundation of science and technology] (FECYT, 2018), television is the most frequently used medium for obtaining information about science and technology (75.7%). According to data obtained from the Reuters Report (Newman et al., 2019), television is the medium that people continue to use most often for staying informed (42%), and is still the number one channel used by citizens to access information, an example of which is news related to climate change (AIMC, 2020). Overall, television remains one of the primary sources

of information on climate change for citizens (15%), along with news media websites (15%), specialised media (15%), as well as social networks and blogs (9%) (Newman et al., 2020).

According to a study by Barlovento Comunicación (2017), Telecinco was the most viewed channel in Spain for the sixth consecutive year at 13.3%. At the time of the March 2020 study (Barlovento, 2020), it had been the leading channel for the previous 19 months, increasing its audience share to 14.3%. The channel known as La 1 from TVE was the third most viewed channel in 2017 at 10.4%, according to the report, which was two tenths more than in 2016. In March of 2020 it was still in the same position, but with a slight decrease in audience share to 10.1%.

The decision to include radio news programmes in the analysis was due to the scarcity of studies regarding this medium (Vicente, 2017). Cadena SER was chosen due to its status as the radio station with the highest audience share at 4,336,000 daily listeners, according to the 3rd wave of the EGM (AIMC, 2017). Moreover, in the 1st wave from 2020 (AIMC, 2020), it was still in first place. On the other hand, Radio Nacional de España was chosen in order to include a public medium in the study.

### 3. Results and discussion

#### 3.1. Steady growth restrained only by the pandemic

Firstly, despite the fact that by March of 2019 a total of 53 Spanish media outlets (later more than 80) had pledged to follow the “Decalogue of recommendations for reporting on climate change”, through which they committed themselves to increased rigour in covering climate change and global warming, in that same year only 20 more environmental reports were counted compared to 2018, a figure that is not exactly impressive after making such a commitment. The total number of items collected in 2018 was 68, while 88 pieces were gathered in 2019.

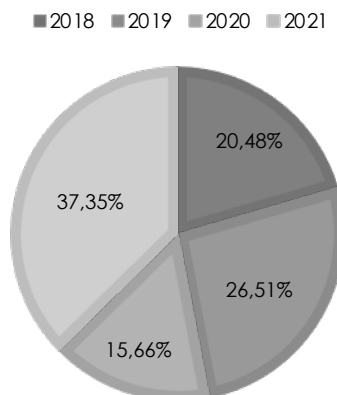
In 2020, there was a virtual standstill in environmental reporting in the media under study. The onset of Covid-19 meant that the information published was almost entirely related to the pandemic. Consequently, other topics, including the environment, were scattered among the rest of the pages. As a stark example, the front page of the main Spanish newspapers were completely taken over by information about the virus as the months went by (Cantero, Sidorenko and Herranz, 2020).

Nevertheless, when the effects of the pandemic began to subside, there was a significant increase in the amount of environmental information in the media analysed, with a total of 124 pieces in 2021.

In terms of percentages, which is the focus of this research, one can see in Graph 1 that of the total sample, the percentage of items published in 2018 was 20.48%, and in 2019 it was 26.51%. Although the aforementioned Decalogue recommends that media and information professionals should encourage frequency and continuity in producing quality information on climate change, we find that despite an increase, it was not especially large. However, setting aside the Covid-19 year, when environmental content only accounted for 15.66%, there was a notable increase in 2021, when the number of pieces on the environment rose to 37.35%

This confirms that the pandemic brought environmental coverage to a standstill, yet the commitment to provide more information on the subject was not abandoned, and in fact was fully restored once the most adverse effects of the pandemic subsided.

Graph 1. Volume of information by year



Source: created by the authors



In considering both media, as shown in Table 2, it is striking that television did not experience an abrupt stop in 2020. In fact, of the total number of reports found on television (N=235), 18.72% (44) were published in that same year, while in 2018 there were only four more (48) for a total of 20.43%.

**Table 2. Volume of information by medium**

	Communication Media	
	Television	Radio
<b>2018</b>	20.43%	20.62%
<b>2019</b>	24.26%	31.96%
<b>2020</b>	18.72%	8.25%
<b>2021</b>	36.60%	39.18%
<b>TOTAL</b>	70.78%	29.22%

Source: created by the authors

Also significant is the large difference between the volume of environmental information broadcast on radio compared to television, as there is a higher proportion of this type of content on television than on radio, as can be observed in Table 3. The number of items on television accounted for more than 60% of the total for each year, while the year with the largest amount of information on radio was in 2019, when it only exceeded 30% by five points.

**Table 3. Volume of information by year**

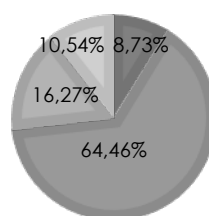
	Communication Media		
	Television	Radio	TOTAL
<b>2018</b>	70.59%	29.41%	<b>20.48%</b>
<b>2019</b>	64.77%	35.23%	<b>26.51%</b>
<b>2020</b>	84.62%	15.38%	<b>15.66%</b>
<b>2021</b>	69.35%	30.65%	<b>37.35%</b>

Source: created by the authors

As far as environmental issues are concerned, the most recurring topic in the Spanish media is climate. Of the total number of reports collected (N=332), 64.46% were about climate change and meteorological phenomena, as shown in Graph 2. In second place, yet far behind, was information on sustainable development at 16.27%, mainly in relation to energy (renewable, nuclear, etc.), waste, and the link between the economy and the environment. Environmental policy was the topic in 10.54% of the content, and biodiversity stood at 8.73%.

**Graph 2. Volume of the information by topic**

- Biodiversity
- Climate
- Sustainable development
- Environmental policy



Source: created by the authors



This indicates that environmental reporting is mainly focused on extreme weather events, climate change, and the economic aspect of sustainability.

Another finding is that its importance compared to the rest of the topics is fairly consistent, as shown in Table 4, with more than 60% on average, including a spike in 2019 up to 75.72%, and a somewhat lower figure at the beginning of the analysis in 2018 at 52.94%.

These figures could be the result of the media's commitment to offer more reports on climate change with the signing of the Decalogue in 2019. The rest of the topics are more evenly matched, even though all of them were slightly higher in the second year.

**Table 4. Volume of topics by year**

	Topics				
	Water and biodiversity	Climate	Sustainable development	Environmental policy	
<b>2018</b>	20.59%	52.94%	17.65%	8.82%	
<b>2019</b>	3.41%	72.72%	6.82%	17.05%	
<b>Year</b>	<b>2020</b>	11.54%	65.38%	19.23%	3.85%
	<b>2021</b>	4.84%	64.52%	20.97%	9.68%
	<b>TOTAL</b>	<b>8.73%</b>	<b>64.46%</b>	<b>16.27%</b>	<b>10.54%</b>

Source: created by the authors

However, as climate is the most important topic overall, it received more television coverage with a notable difference in terms of the amount of items published. A total of 74.30% of the environmental content broadcast on TVE or Telecinco was related to climate, even though the main focus of the items was disasters such as floods and fires.

The same situation occurred on radio, where climate information was the main topic in 56.70% of the cases, yet one can see that the focus on this issue is less prevalent on radio.

These figures are very different from those of previous years. Research by Francescutti, Tucho and Iñigo (2013) regarding environmental information on Spanish television in 2007 and 2008 showed that climate change ranked third among environmental topics, behind biodiversity and ecosystem damage.

Moreover, this is in line with the approaches of Igartua (2002), Piñuel and Lozano (2009), and León (2016), who had previously pointed out that environmental content on television was dominated by coverage of catastrophes and unusual issues presented with an apocalyptic view of environmental problems.

### 3.2. "Event-centred" environmental reporting

As far as information sources are concerned, the journalistic criterion of proximity takes precedent, although one can see that international information is also strongly considered for environmental issues. A total of 74.07% of the information gathered originated in Spain, compared to 25.93% that took place outside Spain's borders. This difference is due to several factors.

Firstly, as environmental information focuses on ecological disasters and catastrophes, there is a strong focus on fires, floods and other natural catastrophes. For this reason, following the eruption of the Cumbre Vieja volcano on La Palma Island in 2021, as well as the increase in DANAs (Cold drops) and storms such as Filomena in January of 2021, this type of information has been largely national in scope.

Regarding the second factor, although environmental information often has a strong international focus due to major summits and conferences that take place at the global level with the participation of highly diverse nations, in 2019 the Conference of the Parties (COP25) took place in Madrid due to several unforeseen circumstances. The first was the withdrawal of Brazil's commitment after the election of Jair Bolsonaro. Afterward, social protests broke out in Chile, which was second in line to host the summit. Due to these situations, the news that would normally have been international became national due to the source of the information in question.

Although previous research has pointed to the considerable importance of the international agenda in the media's coverage of climate change and global warming (Fernández Reyes, Piñuel and Vicente, 2015; Domínguez, Lafita and Mateu, 2016), even to the point of displaying strong similarities between international and national coverage on occasion (Fernández-Reyes, Piñuel and Águila, 2017), in recent years there has been an increase in national coverage, although it has been dominated by natural disasters within the country.

The fact is, information related to the environment on Spanish television and radio shows a strong focus on natural disasters. A total of 68.98% of the information collected stemmed from a catastrophe or incident related to the environment, such as floods, fires, earthquakes, DANAs, etc.

In comparing the two media, one can see that television focuses the most on information related to disasters and environmental catastrophes, as shown in Table 4. Regarding the amount of information that resulted from one of these events, 52.11% of the content analysed appeared on television and 16.87% on radio. A total of 73.62% of the items on television resulted from an environmental disaster, and 57.73% on radio. This indicates that on television, nearly three quarters of the information on the environment was related to an ecological disaster, and more than half on radio.

This concurs with previous studies, especially those that have researched the press. Such studies had already indicated that the Spanish media focus too often on the consequences of a problem rather than causes and solutions (Meira et al., 2013; De Rueda, 2014).

In addition, with regard to the media's commitment to the "Decalogue of recommendations for reporting on climate change", this document strongly urges the media to focus on the causes and solutions to climate change rather than merely report the consequences. The Decalogue also advocates the avoidance of climate alarmism and sensationalism in the coverage of extreme weather events.

Beyond event-centred information, the environmental content that the media focus on the most is provided by companies, associations, and politicians, either through meetings, statements, or decisions. A total of 29.22% of the items collected are from political statements and initiatives, which also reflects the fact that the environment is strongly linked to the political realm as far as the media are concerned.

With regard to topics, 94.86% of the reports on climate focused on natural disasters, and 62.07% of the items related to water and biodiversity targeted environmental incidents.

**Table 5. Source of the information by medium**

		Communication Media		
		Television	Radio	TOTAL
<b>Type of source</b>	<b>Environmental disasters or incidents</b>	73.62%	57.73%	<b>68.98%</b>
	<b>International organisations</b>	3.4%	5.15%	<b>3.92%</b>
	<b>Politicians</b>	8.09%	18.56%	<b>11.14%</b>
	<b>Researchers or scholars</b>	2.55%	2.06%	<b>2.41%</b>
	<b>Citizens</b>	6.38%	2.06%	<b>5.12%</b>
	<b>Companies</b>	4.68%	11.34%	<b>6.63%</b>
	<b>NGOs</b>	0.85%	3.1%	<b>1.51%</b>
	<b>Other</b>	0.43%	---	0.3%

Source: created by the authors

Content related to politics and its main decision-makers, together with items linked to business, is the only information that was fairly well analysed by the media.

With regard to television and radio, if we add the content related to business and politics to that of environmental disasters, we find that the offerings are based on event-centred politics or business at the rate of 86.39% for television and 87.63% for radio. Here we find that on many occasions, environmental

journalism is excessively based on political statements, and the message focuses more on what is said rather than what is discussed. In 30.36% of the cases, the source of the content related to sustainable development that appeared in the media was an event or statement that came from a company, and of those statements or events from companies, 77.27% were related to sustainable development. This is largely due to the outrageous amount of information regarding both renewable and nuclear energy, and their economic impact on the environment, whether positive or negative.

Very few of the items collected originated from an event or statement by academics or researchers in the field. Only 2.41% of the content comes from the voices of scientists and researchers, which greatly hinders the scientific dissemination of environmental problems.

### 3.3. Few sources and many political voices

The environmental content collected shows that the use of sources is quite poor and infrequent. Of the total number of reports gathered (N=332), 89.16% either had no sources or only one source. Slightly more than three fifths of the items collected (64.76%) did not have any source at all, while 24.4% had only one source. This situation is related to the large amount of information published on environmental catastrophes and disasters, which in most cases appears without any source, or with only a statement of less than five seconds.

In the television reports analysed in research by Teso et al. (2018), nearly half (43.3%) did not include any source whatsoever. This does not necessarily discredit the quality or rigour of the information, yet one would expect to see more statements from sources in order to offer coverage that is more balanced and complete. Two sources generally provide a certain level of credibility to information, as one might offer a hypothesis and another might refute it. Yet in the sample collected, only 10.84% included two or more sources, distributed as follows: two sources (7.23%), three sources (3.01%), four sources (1.2%), and five sources (1.2%), as shown in Table 6.

**Table 6. Number of sources by media**

		Number of sources within each medium			
		None	1	2	3 or more
TV	<b>TVE</b>	69.23%	18.8%	5.98%	5.98%
	<b>Telecinco</b>	84.75%	11.02%	4.24%	---
RADIO	<b>RNE</b>	37.5%	40%	12.5%	10%
	<b>Cadena Ser</b>	33.33%	52.63%	11.28%	1.75
TOTAL		64.76%	24.4%	7.23%	3.61%

Source: created by the authors

In comparing the two media, we find that television stations were much more likely not to include any sources in their content. In 69.23% of its reports, TVE did not include even one reliable source, nor did Telecinco in 84.75% of its items. Public television had either no source whatsoever, or only one in 88.03% of its items, while for private television stations the figure was 95.77%. Environmental information broadcast on television has very few sources, and most of them are witness statements with no informative value.

Radio stations usually include at least one source in their content due to the fact that the reports are a compilation of edited clips. RNE included one or more reliable sources 62.5% of the time, and Cadena Ser did so at the rate of 65.66%. However, public radio included information without sources 37.5% of the time, and Cadena Ser at the rate of 33.3%.

In line with previous studies, we can see a strong political focus in the content (Fernández-Reyes, 2010; De Rueda, 2014; Arcila et al., 2015), which is the result of a larger number of political sources, as previously pointed out by Rodríguez Cruz (2016) and Erviti and León (2017).

The lack of sources is even more striking with regard to climate information, as 50.3% of the content in which climate was the main topic either did not have any source, or contained an unsubstantiated source that was later discarded from the study.

#### 4. Conclusions

After analysing the findings, a series of conclusions can be drawn about the Spanish media's coverage of environmental issues between 2018 and 2021.

Firstly, despite the fact that in March of 2019 a total of 53 Spanish media outlets (which later numbered more than 80), pledged to follow the "Decalogue of recommendations for reporting on climate change", in which they made a commitment to reporting climate change and global warming more extensively and with more rigour, there was only a slightly larger amount of information published in 2019 compared to 2018. The Decalogue recommends that media and other professionals report more frequently and continuously on climate change, yet the change has not been especially significant.

Furthermore, one should also bear in mind that 2020 was a highly unusual year in which the emergence, spread and devastation of the Covid-19 pandemic dominated media reporting. However, of all the information published on the environment over the four years studied, 37.35% was published in 2021, which shows that generally speaking, there has been a commitment by the media to report more extensively on the environment and climate change, at least in quantitative terms.

Nevertheless, it can be affirmed that environmental issues are not a priority for the media and appear only fortuitously and sporadically in their channels.

Issues related to the environment do not have a preferential status in the news. The environmental topic that appeared most often among the top 10 news items on television was climate, while the only other topic to appear in the top 10 was environmental policy, although this was mainly due to the December 2019 Climate Summit (COP 25) in Madrid, and the eruption of the Cumbre Vieja volcano on La Palma Island in the last quarter of 2021.

This is consistent with previous research. Despite the fact that such studies focused on the reporting of climate change, they concluded that the situation in Spain mentioned above was a minor issue in the Spanish media, both quantitatively (León and Erviti, 2015) and qualitatively (Teso, 2016).

It should be kept in mind that traditional media such as television and radio are not limited only by time. They are also restricted spatially, as the medium has limits, and structurally, due to the fact that within those limits there are choices to be made and a hierarchy as well.

In the television and radio offering, climate information had a very strong influence, which shows that environmental information in the audio-visual media is mainly related to climate at the present time.

Even today, environmental information is still highly focused on specific, one-time natural disasters and catastrophes such as floods, fires, earthquakes, DANAs, and others. Most of the published items refer to specific and dramatic events that are not placed in context, nor do they highlight causes or previous factors, but instead focus on the generally catastrophic results.

Journalists tend to assume that the public is not especially interested in environmental issues. Consequently, such matters generally become newsworthy only when there is a sensational or catastrophic event involved. Most of the research on environmental coverage in the media addresses simplistic reporting and the excessive focus on environmental events and catastrophes (Miller and Riechert, 2000; Carabaza, 2006; Howard-Williams, 2011; Jönsson, 2011; Cantero, 2022), without putting the information into context, either political, economic, social, or scientific.

The scarce coverage given to issues related to research, science and academia is disturbing. Moreover, this does not reflect the signing of the Decalogue, which implies a commitment by the media to report on projects, findings, results, the validity of the IPCC reports, as well as the scientific studies being conducted in Spanish universities and research centres.

Nor does the work of NGOs contribute to media content to a great extent. Activism and science are given limited attention in media coverage of the environment.

The use of sources is poor and minimal in terms of numbers. Among the main sources of the information are the same profiles who generated the information. The most recurring voices of those who were the main contributors to the environmental content were related to politics and business. This clearly shows that the statements of political decision-makers are highly regarded, despite the fact that on occasion their contributions do not add value or depth to the information.

Primary sources, including eyewitnesses, are under-represented in this research due to the criterion of considering sources to be only those with a statement of 10 seconds or more in the case of radio and television. Witnesses appear many times, but their statements only last a few seconds and hardly

contribute anything of value to the information. Therefore, contrary to popular belief, eyewitnesses are far from being among the most reliable sources, and they can only offer their specific testimony as witnesses. Their comments are so brief and limited that they add no validity to the information. Thus, they do not contribute to the quality of the environmental content.

The absence of expert and specialised sources is striking. Based on previous research by Teso et al. (2018), this continues to be the trend despite the expectation to see an improvement in terms of the number of statements by qualified experts. This would provide greater depth and enhance the understanding of environmental information.

Another of the commitments made by signing the Decalogue is to communicate by taking an anthropogenic approach, in which the impact of humans on the environment is reported and, in turn, its consequences for the economy and society. The media generally report the environmental situation in its current state, yet they fail to provide many of the alternatives that already exist for reversing the damage that now exists. There is hardly any talk of reducing emissions or exploring renewable energies. In fact, most of the alternatives offered are related to the correct way to recycle or the use of electric cars, as two examples.

The "Decalogue of recommendations for reporting on climate change" also includes guidelines for reporting with regard to alternatives and options, so that environmental information is thorough and capable of raising awareness, which clashes with the media's catastrophic view of the environment.

Another finding is that the average time dedicated to environmental reporting on television has changed very little with regard to past research. Although studies by Teso et al. (2018) have focused only on news regarding climate change, they have concluded that the average amount of time this issue is covered on television is 1 minute and 37 seconds.

Between 2018 and 2021, the average amount of time that environmental information was broadcast on television was 1 minute and 28 seconds, so it has actually decreased rather than increased. This makes it difficult for this content to provide a context for the news and to delve deeper into causes, consequences, alternatives and solutions. According to studies conducted between 2019 and 2022 from the Climate Change Media Communication Observatory (Teso et al. 2019; 2022), there has been a clear increase in the volume of information published and in the quality of media communication with regard to the points in the Decalogue.

It further adds that the priority is on communicating the impact rather than the causes of climate change. Furthermore, the impact reported is mostly related to biodiversity and ecosystems, climate change, and the economic cost of all of these factors. The press is the media that most frequently includes measures that need to be taken for mitigation and adaptation, as opposed to radio and television, where such proposals are scarce, as indicated in the report cited above.

The main impact mentioned is related to climate, such as higher temperatures, alterations in rainfall, droughts and heat waves, followed by the impact of adverse weather conditions with regard to increased risks due to natural disasters. In 2020, politicians were still the key players in making statements, both in the press and on radio and television as well, and they were also referred to as the ones who need to take charge of the issue and provide solutions. The present research not only complements these findings, but it also expands and endorses the conclusions they provide.

The results herein are also in line with previous studies, which have focused more on the issue of climate change, yet are applicable to the environment (Parratt, 2009; Quesada, Blanco and Teruel, 2015; León and Erviti, 2015; Fernández-Reyes, Piñuel and Águila, 2017). Moreover, such studies have indicated that information generally approaches the problem as something that is beyond the reach of citizens, which discourages their involvement and participation in resolving the conflict.

In the coming years, the challenge will be to involve not only the media, but also governments, businesses and citizens in communicating and sharing the obligation of achieving sustainability in order to make a green transition and a blue economy. It will also be necessary to conduct an analysis of the information published on the major social networks, as they have become one of the main channels for staying informed, especially among young people.

As such, future lines of research should involve carrying out analyses according to age, due to the fact that young people belonging to generations Z and Alpha (under 25), who no longer use traditional media (press, radio, or television). Furthermore, although their consumption takes place mainly on social networks, there are differences with regard to Instagram, Tik Tok, Twitch, and YouTube, depending on age and subject matter, which should also be taken into account in future studies.

## 5. Specific contributions

Contributions	Signatories
Conception and work design	Signatories 1 & 2
Documentary research	Signatories 1 & 2
Data collection	Signatory 1
Critical analysis and data interpretation	Signatory 1
Review and approval of the versions	Signatories 1 & 2

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