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The Climate Emergency in the Spanish Media and the *Decalogue of Recommendations for Reporting on Climate Change*

M.ª Gemma Teso Alonso
http://orcid.org/0000-0001-9852-0255
gtesoalonso@gmail.com
Universidad Complutense de Madrid

Enrique Morales Corral
http://orcid.org/0000-0001-5886-2672
emorales@uva.es
Universidad de Valladolid

Juan Antonio Gaitán Moya
https://orcid.org/0000-0002-4496-7315
jagamo@ucm
Universidad Complutense de Madrid

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Abstract

In the last two years, since the publication of the latest IPCC reports (IPCC, 2018 & 2020), greater alarm in the scientific, media and social areas has elevated the climate crisis to an emergency level. The social perception of the risk for people and the communication of this emergency has become a complex social phenomenon being constantly updated. This article sets out the results of the content analysis for communications on climate change (CC) in the main Spanish press, radio and television media and their respective Twitter accounts. A structural sampling has been used to identify the different media and supports to be analyzed. The time segment of the Climate Week NYC 2019 was chosen because key dates for the objectives of the study converge there. The *Decalogue of Recommendations for Reporting on Climate Change* (ECODES, 2018)", endorsed by over 80 media sources in Spain in the years 2018 and 2019, brings together a series of variables for climate change communication analysis including outstanding concepts and values. The results confirm that the media discourse on CC is worded in accordance with the different social, scientific, and political agendas which interact with the media agenda. Particularities have been found in terms of how the information has been treated and the representations of CC, depending on the type of media analyzed. The evaluation also permits the identification of common elements that characterize the media discourse and shows how the acceleration of the six social tipping interventions (STI) identified by Otto *et al.* (2020) requires the strategic cooperation of the media for social transformation.

Keywords

Social action, communication media, climate change, climate week, social mediation.

1. Introduction

1.1. *Current state of research*

The climate emergency has reached the media and the public. In the last decade, the phenomenon which was traditionally referred to as "global warming" or "climate change" has now become known as the "climate crisis" (Moser, 2009; Archer & Rahmstorf, 2010; van

Zomeren, Spears, Leach, 2010; Giddens, 2010; Howell, 2012). In the last two years and, in particular, with the publication the UN Intergovernmental Panel on Climate Change Reports (IPCC, 2018 and 2020), the level of scientific, media and social alarm has marked the phenomenon as a "climate emergency." The IPCC is the organization of reference internationally and its acronym contains the term "climate change;" for that reason, in this text we will use the expression "Climate Change" (hereafter, "CC").

Since 2004, the *Media and Climate Change Observatory* (MeCCO) of the University of Colorado has been following up the use of the terms "global warming" and "climate change" in nine languages, 113 media, 55 countries and seven different regions worldwide. To date, the results of the climate change communication research carried out by the MeCCO show peaks of higher coverage alternating with stages of lower media attention (Boykoff *et al*., 2020a). The main peaks in coverage are caused by the political agenda in the months when the United Nations Framework Convention on Climate Change Summits are held. Other elements of great repercussion are the presentation of scientific reports by the IPCC or the famous Stern Report; the signing of the Kyoto Protocol and the subsequent Paris Agreement; the documentary *An Inconvenient Truth* featuring Al Gore; the extreme agreements and positions of politicians such as those of Trump or Bolsonaro; Pope Francis' encyclical *Laudato Si* and extreme climate events. According to the 2019 summary published by MeCCO, media coverage of climate change and/or global warming increased by 73% compared to 2018. It was part of a general increase: in Europe the increase was 91% (with Germany registering the highest rise, 109%, and the UK, 105%); in the USA, there was a 46% increase in print media and 138% on television; in Latin-America, 84%; 83% in Australia and 61% in India (Boykoff *et al*., 2019). In Spain, also, there was a significant increase in coverage –88.32% in 2019 in the four main daily newspapers studied: *El País, El Mundo, La Vanguardia* and *Expansión* (Fernández-Reyes, 2019).

The search for a social audience has forced institutions and the conventional media to change their communication formats to adapt to social networks. In this sense, social networks, particularly Twitter, have become the best catalyst for this evolution with the appearance of hashtags and conversations that appear simultaneously with the live broadcasts (Arrojo, 2013, p. 6). Twitter is one of the most relevant networks for the daily information it distributes in real time, due to its volume of users and the free expression of opinions and contents; it has become one of the main tools for social participation in the debate on climate change (Cody *et al*., 2015).

The social and media scenario is in a constant state of rapid change (Ockwell *et al.*, 2009; Morton *et al.*, 2011). The message of emergency regarding climate change, as published in the media, together with the social perception of risk (Bell, 1994), appear to be two complex social phenomena with constant feedback. Until the latter half of 2018, CC had received little coverage in the Spanish media (Parratt, 2009; Francescutti *et. al*, 2013; Lopera, 2013; Mancinas, 2013; León & Erviti, 2015; Heras, Meira & Benayas, 2016; Teso, 2016). Newspaper editorials had, traditionally, shown little interest in this circumstance in Spain (Blanco, Quesada & Teruel, 2015). The analysis of media coverage of CC shows that it peaked in 2018, and social movements were the triggers for the message of "climate emergency" (Fernández-Reyes, 2019; Boykoff *et al*., 2019). The student movement *Fridays For Future* led by the activist Greta Thunberg, *Extinction Rebellion,* environmentalist organizations, and a great variety of very different groups (teachers, mothers, climate researchers), have joined together to raise the voice of science in view of climate change, and to strengthen the message of emergency on the streets.

The media and social networks have also been essential contributors in giving information about social and climate alarm (Chapman *et al.*, 2017). Changes come about very quickly and reveal the volatility of the presence of CC in the media. The health emergency caused by Covid-19 absorbed full media attention all over the world in March 2020 (Boykoff

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et al., 2020b). In Spain, where CC coverage fell by 45.6% in March 2020 compared to the previous month, and by 39.2% compared to March 2019 (Fernández-Reyes, 2020), this meant a rupture with the growing tendency occurring since 2018.

The study published by Otto *et al.* (2020) in the journal *Proceedings of the National Academy of Sciences* (PNAS) examines the number of potential social elements of transformation, called "social tipping elements" (STE), which represent specific domains of the planetary social and economic system. These STE are linked to a series of key social interventions or "social tipping interventions" (STI) "that could contribute to rapid transition of the world system into a state of net zero anthropogenic greenhouse emissions" (Otto *et al.*, 2020, p. 2355). The STI are those specific human interventions which bring about a small change in the parameters of control which lead to large and crucial changes in the social system.

> The STIs that could trigger the tipping of STE subsystems include: 1) removing fossil-fuel subsidies and incentivizing decentralized energy generation (STE1, energy production and storage systems), 2) building carbon-neutral cities (STE2, human settlements), 3) divesting from assets linked to fossil fuels (STE3, financial markets), 4) revealing the moral implications of fossil fuels (STE4, norms and value systems), 5) strengthening climate education and engagement (STE5, education system), and 6) disclosing information on greenhouse gas emissions (STE6, information feedbacks (Otto *et al.*, 2020, p. 2359).

How can this be tackled without communication? Communication is the key instrument of human social mediation which will allow us to reach the *social tipping points* referred to by Otto *et al*. (2020) in the study. Effective CC communication makes the general public aware of the social interventions (Dulic *et al*, 2016), engagement, support and commitment to policies which are essential if we are to tackle the climate crisis (Levine & Kline, 2017).

1.2. *Decalogue of recommendations for reporting on climate change*

This article gives the results of the research carried out in Spain regarding CC communications in the main print, radio and television media and their respective Twitter accounts. The *Decalogue of recommendations for reporting on climate change* (ECODES, 2018)[1], endorsed by over 80 media in Spain between 2018 and 2019, brings together a series of CC communication principles which are found in the communication of concepts, values and activities and could promote many of the social interventions referred to above.

The innovative contribution proposed by this research is the evaluation of the communication of the climate emergency in 2019 in accordance with the variables extracted from this *Decalogue*. Additionally, a transversal analysis of the communication of climate change in the main radio, television and press media is carried out, including the communication that the media carry out on Twitter, in a time period strategically chosen due to the convergence of events in the political, scientific and social agenda that have most influenced the media coverage of climate change in recent decades.

2. Research aims and methods

2.1. *Research aims*

This study has the following objectives:

- O.1. To describe the relationship occurring at the macro (Boykoff & Roberts, 2007) level between the social, political, and scientific agendas that have brought about the climate emergency. These interactions occur during Climate Week NYC held between Monday, September 23, and Sunday, September 29, 2019.
- O.2. To identify the characteristics of the CC communications published by the media during Climate Week in 2019 in accordance with:

1 The *Decalogue* can be consulted at the following address: https://archivo.ecodes.org/web/noticias/decalogo-recomendaciones-cambio-climatico.

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- the main actors involved in climate action,
- the main common focuses of the media discourse,
- the differences found depending on the nature of the media (press, radio, television) and the nature of Twitter.

O.3. To evaluate the degree of compliance with the principles of the *Decalogue* in the different media.

2.2. *Hypothesis*

The following assumptions are made in relation to the objectives described:

Hypothesis 1 (O1). The media generate a discourse on CC that is articulated, energized and fed back according to the type of event and the interaction between the social, political, and scientific agendas.

Hypothesis 2 (O2). The treatment of information on CC in the media analyzed presents peculiarities depending on the characteristics of each type of media (press, television, radio) and of Twitter.

Hypothesis 3 (O2). The discourse of the media on CC presents common elements in the different types of media and social media analyzed.

Hypothesis 4 (O3). There are differences between the different media in terms of following the recommendations of the *Decalogue*, depending on the type of media (print press, radio and television) and their characteristics.

To formulate the hypotheses in this study, we have kept in mind both the limited capacity of public opinion to cope with any more than a few topics (McCombs, 2006) and the limited information load capacity of the different media and institutional spheres (Hilgartner & Bosk, 1988). Conversely, we must consider the fact that different authors –with diverse analytical perspectives– hold that the construction of social thinking on CC is indebted to media communication (Downs, 1972; Trumbo, 1996; Weingart, Engels & Pansegray, 2000; Boykoff & Roberts, 2007; Carvalho, 2009; Carvalho, 2011; Heras, 2013; Meira *et. al* 2013; Smith & Joffe, 2012).

2.3. *Method: Structural sampling & data sources*

The technique of structural sampling has been used to identify the analysis units of the different media and platforms being analyzed. Firstly, September 23, 25 and 27 were chosen as the following structural boundary criteria. On Monday 23, the Climate Action Summit took place in New York (political agenda), and, on Wednesday 25, the IPCC Report (2019) entitled *Special Report on the Ocean and Cryosphere in a Changing Climate* (scientific agenda) was presented. On Friday 27, mobilizations were organized in almost all the cities of the world by the student movement "Fridays for Future" calling for a global climate strike supported by more than 150 countries (social agenda).

Climate Week 2019 had unprecedented media coverage in Spain. The response of all the media to the convergence of different CC-related events that took place during the same week offered an exceptional occasion for contrasting analysis of the coverage made by varied media. Consequently, this article employs a methodological strategy not yet explored for the transversal analysis of CC communications in different media (radio, television, press) and on Twitter, focusing the analysis on the interactions between the different agendas (political, social and scientific).

Secondly, another boundary was applied which consisted of the choice of media: radio, television, press, to which were added their respective Twitter accounts. The four media for each platform (radio, television, and press) met the following criteria:

- Nationwide channels.
- General programming.
- Largest in terms of audience/readership.

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- Editorial pluralism.
- Different media groups.

Regarding the press, the results from the following media sources (followed by MeCCO in Spain) was analyzed. In line with those criteria, the media chosen were the following:

- Television: TVE-1, Antena 3, Tele 5, La Sexta
- Radio: Radio 1 (RNE), La Ser, Onda Cero and La Cope.
- Press: *El País, El Mundo, La Vanguardia, Expansión*.

As analysis material, the Twitter messages from the accounts of each of the media with the following keywords or hashtags have been added: "climate change", "global warming", "climate emergency" or "climate crisis." Twitter is considered the most relevant network for social interaction on the topic of CC in Spain. To follow the interaction of Twitter with the news broadcast on September 23, 25 and 27, the tweets from the following days were also registered. The Twitter accounts of the media followed were: (@La1_tve, @telediario_tvey @rtve), (@antena3com y @a3noticias), (@telecincoes, @informativost5), (@lasextaTV, @sextanoticias), (@rne), (@cope), (@La_SER), (@ondacero_es), (@el_pais), (@elmundoes), (@lavanguardia) and (@expansioncom).The sources of data used in this pilot study were Kantar Media for radio and television, My News in the case of the print press, and the application App Program Interface (API) –REST version– in the case of Twitter.

The team of coders (analysts) was composed of 7 researchers who received joint training in sessions before carrying out the analysis. This prior training was carried out according to a detailed code book containing the interpretation criteria for the different variables. This unified interjudge criterion provides the required reliability, with values above 0.75 of concordance established by Krippendorff (Krippendorff's alpha). A third boundary standard was applied to differentiate when CC is considered the main topic of the communication or a secondary one. Those cases where it appears as a secondary topic are ruled out. The purpose of this criterion is to select only those pieces that allow a complete textual analysis, both in form and content.

2.4. *Analysis Protocol*

The analysis protocol applied includes specific variables for the content analysis of the press, radio, television, and Twitter. It also includes common variables of analysis for the different platforms and media which have been applied transversally, thus permitting inter-media analysis. First of all, each result was identified, and CC was registered as either a main topic or a secondary one in the news story. If CC is a main topic, the following analysis variables are applied:

- For radio and television: channel, program, time slot and duration.
- For radio, television and printed press: journalistic genre and format, sources and frames of references.
- For Twitter: text, keyword, people and institutions quoted, tweet interaction: number of likes, retweets, number of comments and proposed solution.

The *Decalogue of recommendations for reporting on climate change* (ECODES, 2018) includes a series of measures that are particularly relevant when it comes to communicating the phenomenon. Based on these recommendations, nine analysis variables were extracted and have been applied transversally to radio, television, press and their respective Twitter accounts. These variables are detailed in Table 2.

3. Results of content analysis

During Climate Week NYC 2019, the radio and television channels for analysis presented a total of 214 radio and 202 television records. From Monday, September 23, to Sunday October 6, 23,387 tweets were recorded, which when filtered by keywords resulted in 111. Monday, September 23, stands out as the day with the highest number of tweets (28). Applying the

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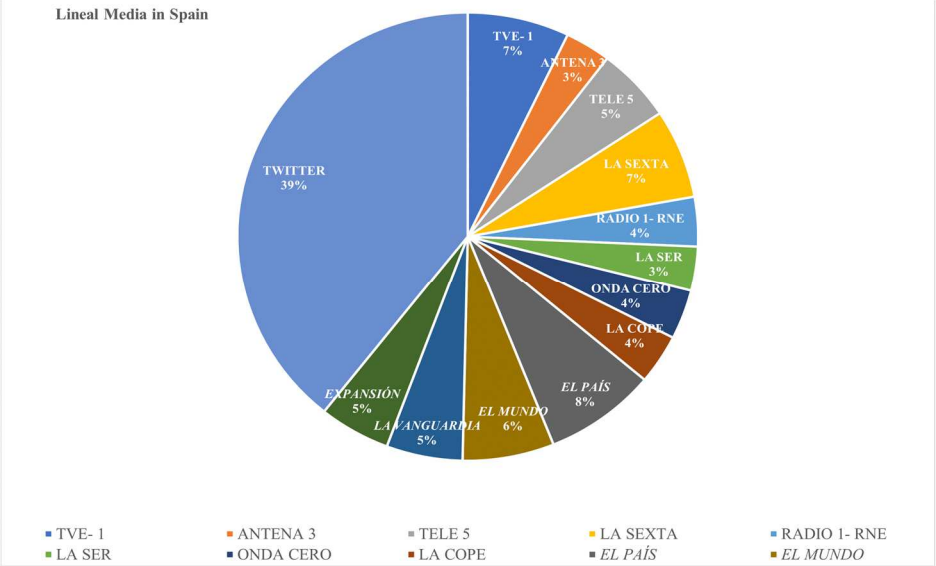
above-mentioned rating criteria, 284 units were finally analyzed: 63 television, 71 press, 39 radio and 111 tweets. Monday 23 and Friday 27 are the days that receive most attention from all media, with a significant decrease in coverage on Wednesday 25.

Figure 1: Percentages of information analyzed for each average type.



Source: Own elaboration.

3.1. *Interactions between the media agenda and the political, social, and scientific agendas*

The content analysis of media reporting of climate change carried out in Spain during the time segment of the Climate Week, has allowed us to check how the media and the social network have generated a discourse with different characteristics depending on the type of event. The frame of the information and the people involved each day is limited by the type of event determined by the media agenda, as indicated by the political sphere on Monday, September 23 (New York summit), the scientific sphere on Wednesday 25 (IPCC report), and social organizations, on Friday 27 (worldwide strike for climate).

The results show that, on the day of the climate summit in New York (Monday 23), the political framework of the information was the predominant one. The people in the news stories on the summit featuring in the media were politicians, special envoys covering the event and the social organizations present. On Wednesday 25, the presentation of the IPCC Report *Special Report on the Ocean and Cryosphere in a Changing Climate* had less media coverage than the events of Monday 23 and Friday 27. This scientific event was framed as scientific subject but also as a political and social one. The message regarding the science was received by society and the politicians as a new call to climate action. On Friday 27, the worldwide strike for climate had unprecedented media coverage in Spain, with the volume of information in all media soaring and converting the social organizations and the general public, especially young people, into the main players.

3.2. *Treatment of CC information in accordance with the type of media (radio, television, press and Twitter)*

3.2.1. Journalistic genre in the press

The journalistic genres for information about CC which were published regularly in the Spanish press during Climate Week NYC 2019 are: opinion (41.18%), followed by: news (32.35%) and reports (14.71%). Editorials (8.82%) and chronicles (2.98%), when added to articles expressing opinion, make "opinion" the predominant genre. Most texts have no images, but

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when one is used, photographs tend to be the most popular resource, followed by drawings and illustrations.

3.2.2. Radio & television program genres

Radio and television coincide in dealing with CC as the main topic of their news programs (65.30% on television and 59% on the radio). In both cases, there was a significant presence of CC in magazine-style chat shows and panel discussions of current affairs programs (41% on the radio and 35% on television).

3.2.3. Climate Change information duration and broadcasting timetable

Short information bulletins are predominant on radio and television. 48% of radio communiqués are between one and two minutes long and almost 30% last less than one minute. On television, 57% of the communiqués last less than a minute and a half. Regarding the timetable in which CC information was broadcast, we found differences from the norm. 30% of TV information about CC was broadcast during prime time with another 30% on morning TV programs. Midday or mid-afternoon news programs accounted for 23.08% with the frequency falling in the evening. By contrast, on the radio, CC is a more popular subject after midday and only 5% of references were made between 8:30 pm and midnight.

3.2.4. Genesis of media discourse (Resources)

Below, we discuss the findings of Table 1 as regards the treatment of information on CC by each type of media studied, during the full 3 days chosen, and, in terms of the analysis variables, regarding: the genesis of the discourse (external or internal production); the references to communication about the event; the people involved in the news; the predominant framing.

Most of the information is produced using each media's own resources (internal production), news agencies (external production), the combination of the media's own resources in addition to the agencies' resources (mixed production) and "other sources" (information prepared with images and data sent by other institutions, associations or by the public in general). The production of the news discourse using their own resources was more common on the radio where it made up 89.7% of cases studied, followed by television (66%). The latter, in 30% of the cases studied, used a combination of its own production (internal production) and external resources (external production), essentially due to the acquisition of images from international news agencies. The press, by contrast, used resources from "other sources" in 37.5% of the results analyzed.

Table 1: How different Media treat information.

		MEDIA		
VARIABLES ANALYSED		**PRESS %**	**RADIO %**	**TV %**
Genesis of the CC discourse	Media	62.5	89.7	66
	Agencies	0	2,5	2
	Media + agencies	0	0	30
	Other sources	37.5	7,6	2
Persons or institutions who spoke or were alluded to	Politicians/political leaders	46,9	32,4	23,5
	Activists	21,9	29,7	17,6
	Citizens	0	8,1	5,9
	Scientists	9,4	13,5	7,4
	Other professionals	12,5	10,8	42,6
	Entrepreneurs	9,4	5,4	2,9

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Frame of reference	Political	48,7	38,8	31,6
	Socio- Cultural	30,8	31,3	45,6
	Economic	12,8	7,5	3,8
	Scientific- Technological	7,7	14,9	15,2
	Health/Disease	0	6	0
	Extreme Meteorological Phenomenon (EMP)	0	1,5	3,8

Source: Own elaboration.

3.2.5. Protagonists of the information on CC in the media

Figure 2 shows the social roles of the protagonists in CC. Particularly noteworthy are the roles attributed to politicians, activists and scientists depending on the function of the media agenda each day. Table 1 displays the results of each role, depending on the media, calculating the results of the three days studied.

The following sequence of images deals with the protagonists of Monday, September 23, 2019 –the day on which the Climate Action Summit was held at the UN headquarters in New York. In the first picture, Harrison Ford is shown representing civil society in the midst of a group of high-ranking leaders. The second image is of the "chance" meeting of Trump and Thunberg –the US President had decided not to attend the Summit and had organized a parallel one about religious freedom. Meanwhile, in the streets, the young activists of Fridays For Future called for immediate action by leaders.

Figure 2: Serie of images of the protagonists of TV information on the day of the Climate Action Summit (09/23/2019).

Antena 3 La Sexta La Sexta

Source: Antena 3 and La Sexta.

In press, people or institutions who speak or are alluded to are "politicians and leaders", the protagonists in 46.9% of the cases, followed –at a distance– by "activists" accounting for 21.9%. Television, by contrast, very often consulted "another intervening professional" –42% of the results analyzed. "Politicians and leaders", with 23.5% of interventions or allusions on television were considerably more popular than "scientists." In contrast, the radio showed greater equilibrium between two of its most favored players –32.4% for politicians/leaders and 29.7% for activists, with scientists in third position at 13.5%. Twitter, with a more controlled and biased ecosystem than the previous media, reveals a clear protagonism shared between the categories of "politicians and leaders" (24%), "activists" (19.8%) and "general public" (24%), with similar results. The appearance of the general public on Twitter is particularly significant as it is the only channel on which they have an obvious prominence, reflecting a more horizontal diffusion of information among stakeholders. Worth underlining is the lead role of activists in all media, the main references being Greta Thunberg, Fridays For Future and other social movements in favor of the climate.

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3.2.6. Framing the information on CC

Analyzing the different frameworks of reference which each media uses to report CC information, we find that the press clearly sets it out as a "political" matter first and foremost (48.7%), as a "socio-cultural" matter in second place (30.8%), and, thirdly, as an economic matter. The radio shares this framework with the press, with these two categories scoring 42.8% and 31.7% respectively, adding a "scientific-technological" focus (26%). The approach of television to CC focuses on the sociocultural area (46.1%) and the scientific-technological area (14%) of the news stories analyzed. Bearing in mind that the media agenda was based on the Climate Week, it would appear logical that the frame of CC focusing on Extreme Weather Phenomena would have scarce media attention, whereas one of the main frameworks of reference of CC is political, as tends to be the case when Climate Summits are held. (Gaitán & Piñuel, 2013; Sánchez, Morales & Cáceres, 2012; Águila, 2016).

3.3. *Reporting of CC during Climate Week and the Decalogue of recommendations for reporting on CC in the media*

Data in Table 2 below show that the reporting of CC in the Spanish media during Climate Week has peculiarities and differences based on the nature of the media (press, radio and television). Table 2 contains the results of the most relevant analysis variables for the purpose of this study as taken from the *Decalogue* of recommendations for reporting on CC in the media (ECODES, 2018).

Table 2: Results of the variable analysis taken from *Decalogue of recommendations for reporting on CC in the Media* (ECODES, 2018).

ANALYSED VARIABLES TAKEN FROM THE *DECALOGUE*		**RADIO**	**PRESS**	**TV**
		%	**%**	**%**
1. Reporting the benefits of the measures which favor ecological transition	Benefits for society	11.53	33.3	59
	Benefits for the economy	11.5	26.6	9.1
	Benefits for politics	11.5	20	0
	Benefits for the environment	57.7	16.6	31.8
2. Reporting with an ethical perspective	There is an ethical perspective	47.3	85,2	36.5
	There is an no ethical perspective	52.6	14,7	63.4
3. Reporting initiatives and voices	Social organizations	94.87	86,2	50
	Anonymous citizens	5.13	13,9	50
4. Connecting CC to proximity of events (location)	Locally	23	14,7	3.9
	Nationwide	28.2	14,7	25.4
	In Europe	2.5	0	3.9
	Globally	46.1	70,5	66.7
5. Connecting CC to proximity of events (time)	Present/immediate future	59	49,2	68
	Short-term (following decades)	36	26,9	25
	Long-term (> 25 years)	5.0	23,8	7
6. The use of specialist terminology to facilitate the understanding of CC	Used but not explained	74.30	61,7	16.9
	Used and explained comprehensibly	17.90	35,2	7.5
	Not used/ occurrence not explained comprehensibly	7.60	2,9	75.4
	No link in the news coverage	0	8,8	38.4
	No reference to solutions	35.9	5,8	19.2

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7. Reporting not only the impact but also the causes of, and solutions for CC:	Said to exist	0	0	3.8
	Solution: Mitigating measures	17.2	0	26.9
	Solution: Adaptation measures	10.2	2,9	1.9
	Solution: Joint mitigating and adaptation measures	35.9	82,3	9.6
8. Contextualizing the information and reporting the scientific research into CC:	Focused on the cause-consequence relationship (impacts)	56.4	0	47
	Cause-consequence relationship and, scientific sources cited	2.5	20	41.1
	Cause-consequence relationships alluding to those responsible	17.9	33,4	11.7
	Causes related to impacts, citing scientific sources, alluding to those responsible and pointing to the interests of skeptical groups	23	55,6	0

Note. Variables 1, 3, 5 and 9 in the Table 2 include, as an additional category, "Not applicable/No answer (NP/NC). In order to simplify the table, the percentage of NP/NC cases is not included.

Source: Own elaboration.

3.3.1. Communication of the benefits of measures that favor ecological transition

One feature constituting positive reporting of CC is when the topic is the benefits obtained from implementing measures which lead to an ecological transition to a low-carbon economy. These benefits are for both the economy itself, health, the environment and society in general –even political activity. Of all the media analyzed, 50% made no mention whatsoever of these benefits. Depending on the type of media, we find differences. With radio, the environment is the area for which most benefits are reported. Only the radio anticipates potential benefits for health. The printed press states that the benefits are essential for society, and television concurs by saying that society will be the main beneficiary, followed by the environment and the economy.

3.3.2. The perspective of ethics in CC communications

The perspective of ethics and social justice in CC communication is present in most of the texts published by the press (85% of cases), in stark contrast with television, which only considers this perspective in 36% of news stories. Radio broadcasts typically offer an ethical perspective in half of their CC news stories, with the other half omits any reference to ethics. Differences can be observed between the various types of media when it comes to their communication and broadcasting of the different initiatives and the demands of tertiary sector organizations and the public in general. Press and radio reflect the initiatives and voices of social organizations better than television. Television, however, stands out as offering a higher number of testimonies by anonymous members of the public.

3.3.3. Representation of the spatial and temporal context

During the Climate Week NYC 2019, in all the media studied, the percentage of cases in which there was no time reference to the phenomenon of CC (no answer) is low –around 9%. The present and the immediate future are the two most common time contexts, particularly with the press and television. The message of alarm is linked to the immediacy of the impacts and appears in both the summit held on September 23, the IPCC Report published on Wednesday 25 and the demonstrations on Friday 27. This alarm relegated the references to the mid- and longer-term (25 or more years) to a secondary position.

The reference to the phenomenon of CC in terms of a concept of space covers everything from a global to a local context. The different media coincide in making greater reference to the global context in their reports. The summit organized by the UN in New York and the

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worldwide strike for the climate are two events on the international agenda which confirm this fact. Despite that, the radio is the media which contextualizes the information in the local and national spheres best. On the other hand, a quarter of TV news refers to the Spanish context and the press places one third of its information in the local and national spheres. The European area is barely referred to, as if it were included in the global context.

3.3.4. Use of specific terminology to promote understanding of CC

The specific terminology for accurately describing the nature of climate change is referred to both by the press and the radio in Spain. In addition to this reference, the press has explained these terms comprehensively in 35.2% of cases, more than the radio and considerably above television on this point. In the case of television, most communications regarding CC (75%) avoid references to specific terminology.

3.3.5 Solutions to CC

From the perspective of narratological analysis applied to information, various researchers have studied the effects that certain narrative structures can have on both understanding and remembering information (Benaissa, 2014). López (2011) concludes that the dramatic narrative structure contributes to improving the understanding of the news. This fact leads us to question whether, following the paradigm of the classic story, the final outcome of the news is the privileged place to express the solution to the conflict, in this case the problem of climate change. We ask ourselves, first of all, if there is a final outcome. We discovered that there is no final outcome in 8.8% of the stories covered by the press and 38.4% of television coverage. Secondly, we wondered if there was any reference to a solution anywhere else in the body of information and discovered there were no references to solutions in 35.9% of the results on the radio, 5.8% of the press and 19.2% on television. In fact, in 3.8% of cases on television, they said there was no solution.

With reference to the cases in which the solution was considered, the printed press is the media which most readily communicates the solution to the CC challenge - in over 85% of cases. Worth highlighting are the joint measures of mitigation and adaptation (82.3%). Radio broadcasts which touched on the solution made up two-thirds of analyzed results, mentioning mitigation measures (17.2%), adaptation (10.2%) and joint measures of mitigation and adaptation (35.9%). Television communicates solutions in over one third of its reporting. The breakdown is: mitigation measures (26%), joint mitigation and adaptation measures (9.6%) and scarce measures which prioritize adaptation (1.9%).

Regarding the treatment of solutions in the media, the following series of images in Figure 3 are an example from the TV channel Tele 5.

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Figure 3: Series of images from the same news item on the impacts of CC on the coastline.

Source: Tele 5.

The news reference for this example from the Spanish Tele 5 television channel is the presentation of the IPCC's *Special Report on the Ocean and Cryosphere in a Changing Climate* on September 25. The information begins by giving expert views on the serious problem of sea levels rising and the threat this poses to coastal towns. Images of melting polar ice and flooding in various parts of the world and along the Spanish coast are provided. Following the recommendation of the IPCC experts not to build or buy houses along the coast (adaptation measure), the journalists go to a beach area in the Levant and ask local estate agents and owners about their perspectives on the information released by the IPCC. The interviewees respond calmly and clearly, claiming to be unconcerned about rising sea levels. No solution is proposed in the conclusion of the news item, but it responds to the scientists' warning to the owners of coastal properties. Finally, it is the journalist who concludes that the problem lies in the short-term view of the estate agents and the owners.

3.3.6. Contextualization of causes and sources of information in CC communications

During the news coverage on the chosen days, the print press stands out as being the only media in which there are no recorded references to the causes in 70% of results. As we have stated previously, the references in the press focused on potential solutions. If we consider 100% of the few mentions of the causes of CC in press, 55% of those cases quote scientific sources, refer to the responsible parties and offer details of the interests of negationist groups.

It is worth underlining that with both radio and television, we *do* find a mention of the causes and their contextualization in all results analyzed. The contextualization of the information, which relates the causes to the consequences and quotes scientific sources, occurs more often on television than on the radio. The radio, however, scores higher than television in terms of informing, not only about the former, but also re the parties responsible and the interests of negationist groups in 23% of cases.

4. Conclusions

Hypothesis 1

The content analysis of media communication on climate change in Spain during the time segment of Climate Week NYC 2019 has allowed us to ascertain how the media and their accounts on the social network, *Twitter*, have generated a discourse with features which vary according to the type of event which they are covering, thus confirming the first hypothesis. The United Nations Secretary-General's Climate Action Summit held on the September 23 was

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framed as an event of a political and social nature, with politicians and the activists of *Fridays For Future* represented by Greta Thunberg being the main players. The media helped build an account based on the duel between the activists, represented by the teenager, and the negationists' political power, personified by Donald Trump.

The presentation of the report on the oceans (IPCC, 2019) was framed as a scientific-social topic, but even more as a political one. The choice of the date for the publication of the report was no coincidence –rather, it followed a strategy of scientific communication which sought to highlight the message of emergency after the summit held on Monday 23 in addition to being a reference in the argument for the demonstrations the following Friday 27.

Hypothesis 2

The results confirm that the media show distinctiveness in the treatment of the information on CC depending on the nature of each media (print press, TV, radio and Twitter). The radio is the media which most uses its own resources to produce information on CC, whereas the press and television, in a third of cases, use material from news agencies, mainly because they need images for their news. Whilst television has "what happened" and "what was done" as regards CC as its main references in communication, Twitter moved its communication in the opposite direction, i.e., it refers more to what was said or commented about the event.

CC is, essentially, framed as a political affair rather than a social one for radio and the press, whereas with television the main frame is social before political. Having said that, both frames are the most dominant in all media. The press and television give the role of players of the information to the politicians and activists, transforming what for this author is a "situation conflict" caused by global warming into a "relationship conflict" (Seger, 1991). Twitter, however, is the channel which affords greatest protagonism and more opportunity for expression to the general public and activists.

Hypothesis 3

Similarities have been found in the treatment of CC information in media such as radio and television. For example, considerable relevance is given to Climate Action in the broadcasting media (radio & TV), with 30% of the information being given during prime time on television and in the evening slot in the case of radio. These media have the greatest affinities as they are broadcasting media, subject to programming, in which the time factor is crucial in terms of the duration and structuring of content. In both media, short reports about CC are predominant and that, undoubtedly, makes it difficult to study the topic in any depth in many cases, particularly on television. The press is not subject to the same urgency. Consequently, it is the media which allows for a more contextualized and in-depth analysis. "Opinion" is the predominant journalistic genre in press.

Hypothesis 4

The results confirm the fourth hypothesis: Media coverage of CC as regards the *Decalogue* (ECODES, 2018), reveals differences depending on the nature of the media (press, radio and television). The recommendations are adhered to unevenly. The perspective of ethics and social justice is much more widely present in the texts of the press than in the television discourse. Another key element is the usage of specific terminology which helps to understand the complexity of CC. The radio and the press would appear to have reached this communication objective whereas television, by and large, falls short in terms of references and comprehensible explanations of this phenomenon.

Regarding the communication of solutions for the climate emergency, we should highlight the work of the press when it comes to reporting –to a large extent– both the mitigating and adaption measures. The radio also communicates the solution in two thirds of its programs whereas television does so in only one third of its news programs. In general, despite the notable communication of potential solutions, there is little information about the different benefits which the measures may bring. Essentially, the benefits for the environment

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are highlighted on the radio, and society ones in the press and on TV. What is surprising is that on the days analyzed, the health benefits are practically ignored.

Final Conclusions

Notwithstanding the differences pointed out in the treatment of CC in accordance with the nature of each type of media, thus confirming hypotheses 2 and 3, a series of general conclusions about the treatment of Climate Action in the Spanish media have been found.

1. The confirmation of the influence of the international agenda in the coverage of CC in all media in Spain, according to Fernández- Reyes (2017).
2. In all media, CC is dealt with as a pressing topic with references predominantly to the present and the immediate future. With some differences, the media also coincide when it comes to situating the phenomenon in a global context, following the logic of the coverage of events on the international agenda.
3. The analysis of the time segment showed that CC had received ample coverage when compared to the silence which was so characteristic of the media in their CC communications in Spain up to 2018. It is worth pointing out the relevance afforded to this subject in the opinion articles of the main daily newspapers and the incorporation of CC to debate programs on primetime television.
4. Similarities in the treatment of information on CC have been identified and they are related to the affinity which media such as radio and television present. The time factor which conditions the content of radio and, especially television, is a factor which plays against the contextualization and adaptation of the phenomenon.
5. Recent studies indicate that the dominant frames in the communication of CC appear to be similar in many countries (Painter & Schäfer, 2017). The most common frames of reference are the ones which frame CC as an economic, political and moral subject, and the least frequent treat this phenomenon as related to health (Schäfer & O'Neill, 2017). The results of this study confirm that the political frame is still the predominant one for CC in all media, although the framing of the topic as a social problem became more important on the days studied. The frame of health, by contrast, has proved to be irrelevant in all the media analyzed, following the tendency stated by Schäfer & O'Neill (2017).
6. The voices of activists and citizens have become more powerful in all media, principally in the press and on the radio, and obtain a significant percentage in the case of television.

5. Discussion

A holistic perspective of human communication would undoubtedly favor the social mediation of the six STI identified by Otto *et al.* (2020) referred to in the introduction, which aim to achieve zero emissions by 2050.

Two of these STI are directly related to communication: providing information about greenhouse gas emissions and promoting education and social commitment. The dissemination of information about greenhouse gas emissions by the media is crucial to enable the general public to monitor how well or badly we are following the goals set out for 2050. Communication is essential, not only for the dissemination of information, but also to give relevance and importance to the issues on the public agenda, in addition to transmitting the values that promote the necessary social commitment expressed by Otto *et al*. (2020).

The STI, which aim to address the production and consumption of fossil fuels from an ethical point of view, are based on one of the key aspects set out in the *Decalogue*: communicating CC from an ethical point of view. As we have seen, the media have paid special attention to this perspective during Climate Week. To tackle the communication of our relationship with fossil fuels from an ethical point of view means that, at the same time, the media must report on two other STs: the need to eliminate fossil fuel subsidies and to

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stimulate decentralized energy generation. This fact demands improving the contextualization of information by using references to scientific sources and alluding to the decision makers and the interests of the denialist groups behind the fossil fuel lobby. The decentralization of energy production means a commitment to self-sufficiency, which goes against the interest of the large energy companies. Thus, media communication requires specialized and independent environmental journalism, with a strict and well-structured editorial system.

It is essential that all media improve their communication of the benefits of STI measures that help with the ecological transition to a lower carbon economy. The creation of carbon-neutral cities is another STI that relies on communication to show this reality as conceivable in the near future and as a step that will bring better air quality, health and life to our cities.

Humanity is facing an unprecedented global challenge. Beyond the improvement in social communication of CC, a structured communication design is essential to prevent the volatility of CC in the media and to accelerate the social transformations needed (Otto *et al.*, 2020) to avoid global warming above 1.5ºC as set out in the Paris Agreement for the end of the century.

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