



Deliverable 2.5

Qualitative analysis of selected science communication pieces in four languages

Version 1.5

Due date: 30/04/2022

Actual submission date: 30/04/2022

Resubmission date: 25/10/2022

Project start date: January 1st, 2021 - Duration: 36 months

Work Package concerned: WP2

Concerned work package leader: ACCC

Task leader: FCiências.ID (FC.ID)

Authors: Esther Marín-González (FC.ID), Inês Navalhas (FC.ID), Cristina Luís (FC.ID)

Contributors: StickyDot, formicablu, UT, external stakeholders (L.M., C.R., A.L.-M.)

Dissemination level: PU



ENJOI - ENgagement and JOurnalism Innovation for Outstanding Open Science Communication

This project received funding from the European Union's Horizon 2020 Research and Innovation program under Grant Agreement n°101006407
www.enjoiscomm.eu



REVISION HISTORY

Revision	Date	Contributor	Description
v1.0	01.02.2022	Esther Marín González	First draft
v1.2	01.03.2022	Esther Marín González, Inês Navalhas Cristina Luís	Second version
v1.3	01.04.2022	ENJOI consortium	Shared revision
v1.4	30.04.2022	Esther Marín González Elisabetta Tola	Final version and upload
V1.5	25.10.2022	Esther Marín González, Cristina Luís, Elisabetta Tola	Reviewed and updated version

QUALITY ASSURANCE

To ensure the quality and correctness of this deliverable, we arranged an internal review and validation process. The deliverable was drafted by the task leader (FC.ID). All partners contributed and reviewed the overall draft. Finally, the final version was submitted to the project coordinator for a final review and validation.

STATEMENT OF ORIGINALITY AND DISCLAIMER

This deliverable contains original, unpublished work except where clearly indicated otherwise. It builds upon the experience of the team and related work published on this topic. Acknowledgement of previously published material and others' work has been made through appropriate citation, quotation, or both.

The views and opinions expressed in this publication are the authors' sole responsibility and do not necessarily reflect the views of the European Commission and the Research Executive Agency (REA), that are not responsible for any use that may be made of the information here contained.



ENJOI - ENgagement and JOurnalism Innovation for Outstanding Open Science Communication

This project received funding from the European Union's Horizon 2020 Research and Innovation program under Grant Agreement n°101006407
www.enjoiscicomm.eu



Table of Contents

SUMMARY	4
PROJECT OVERVIEW	5
1. INTRODUCTION	6
2. METHODOLOGY	8
3. BUILDING STORIES	20
4. CONTRIBUTION TO THE ENJOI SPIs	29
5. CONCLUSIONS	36
6. ACKNOWLEDGEMENTS	36
REFERENCES	37
ANNEXE 1. Results per country	41
ANNEXE 2. Samples selected per country	100
ANNEXE 3. Template for data description	107
ANNEXE 4. Template for data analysis (country analysis)	108



ENJOI - ENgagement and JOurnalism Innovation for Outstanding Open Science Communication

This project received funding from the European Union's Horizon 2020 Research and Innovation program under Grant Agreement n°101006407

www.enjoiscicomm.eu

SUMMARY

This deliverable reports on the work carried out in WP2. Specifically, it presents the results of task 2.4 “*Development of a methodology for qualitative analysis of science communication pieces*” and task 2.5 “*Qualitative analysis of a selection of science communication pieces*” both led by F*Ci*ências.ID (FC.ID).

The main objective of these two tasks was to develop and implement an analytical framework for the **qualitative analysis of pieces of science journalism and communication** produced and disseminated in traditional and social media (TV, digital media and/or newspapers, Instagram and YouTube). The scope of analysis was on Southern European countries (Italy, Portugal, and Spain), adding another EU perspective (French-speaking Belgium) to cover the **four Mediterranean languages** present in ENJOI (French, Italian, Portuguese, and Spanish). Framed as a small-scale exploratory study, it examines storytelling, narratives, and engagement in science journalism and communication. Additionally, this work contributes to the preliminary *Standards, Principles, and Indicators (SPIs)* defined by the ENJOI Consortium, through practical examples in use.

To develop a methodology for the analysis of textual and audio-visual pieces, we combined desk research with first-hand expert knowledge from project partners (University of Twente) and external stakeholders. Specifically, it draws on a comprehensive literature review of methods for qualitative data analysis and inputs provided by three stakeholders (L.M., a professor and researcher in science journalism and communication; C.R., an expert in digital communication and journalism; and A.L.-M., a freelance journalist), who, very kindly, reviewed and commented on the methodology at its early stage, and whose contributions were incorporated into its final version. The resulting analytical framework consists of a two-level analysis: i) an initial analysis of 32 pieces of science journalism and communication, conducted by the Consortium partners that were involved in data collection, and was performed in the four languages of the project (FC.ID in Spanish and Portuguese, StickyDot in French, and Formicablu in Italian), and ii) a meta-analysis of the entire set of pieces, implemented by the FC.ID team. To facilitate access to data and broader dissemination, all findings are presented in English.

The document is structured as follows: Section 1 introduces the study; Section 2 describes the methodology developed; Section 3 shows the results of the pieces meta-analysis taking particular attention to their narratives and narrative features, audience engagement aspects, and innovation in storytelling and engagement; Section 4 contributes to the ENJOI *SPIs* by providing practical examples in use identified in the pieces analysed; Finally, Section 5 concludes this work. The Annexes include the individual analysis of the 32 selected pieces and the templates used for data collection and data analysis.



PROJECT OVERVIEW

ENJOI (ENgagement and JOurnalism Innovation for Outstanding Open Science Communication) will explore and test **engagement** as a key asset of innovation in science communication distributed via media platforms, with a strong focus on journalism.

Through a combination of methodologies and in collaboration with producers, target users and stakeholders of science communication, ENJOI will co-create and select a set of **standards, principles and indicators (SPIs)** condensed into a **Manifesto for an Outstanding Open Science Communication**. ENJOI will deploy a series of actions via Engagement Workshops, Labs, field and participatory research, evaluation and testing phases.

It will also build an **Observatory** as its landmark product to make all results and outputs available to foster capacity building and collaboration of all actors in the field. ENJOI will work in four countries: Belgium, Italy, Portugal and Spain, taking into account different cultural contexts.

ENJOI's ultimate goal is that of improving science communication by making it more consistently reliable, truthful, open and engaging. Contextually, ENJOI will contribute to the active development of critical thinking, digital awareness and media literacy of all actors involved in the process.



ENJOI - ENgagement and JOurnalism Innovation for Outstanding Open Science Communication

This project received funding from the European Union's Horizon 2020 Research and Innovation program under Grant Agreement n°101006407

www.enjoiscomm.eu

1. INTRODUCTION

The appearance of social media democratized the media ecosystem by opening the production and dissemination of information to new actors. Traditional information producers (i.e., journalists, media editors, or institutional communications officers) are currently co-existing with users who also produce and disseminate their content. New actors such as *YouTubers* or *Instagrammers*, as well as new ways of collaboration between producers and their audiences (e.g., the so-called *engagement journalism*) have appeared. Thus, such distinction between producers and users is, these days, much blurred than ever. Despite accessibility to publishing and sharing information is increasing the spreading of misinformation and fake news, this more inclusive and diverse media ecosystem (with independent media and novel formats, platforms, or narrative voices) also offers opportunities for the creation and sharing of new narratives, increased audience engagement, or innovative forms of journalism and science communication.

The ENJOI project is exploring and testing engagement as a key innovation asset in science journalism and communication in the European landscape in general, and Southern Europe in particular. One of the objectives of the project is to define a common framework to support producers and users to produce, consume, and share scientific content that meets audiences' needs for information while ensuring open, trustworthy, and accountable science communication. To achieve this goal, the ENJOI Standards, Principles, and Indicators (*SPIs*), or 'Best practices', are built as the cornerstone for Outstanding Open Science Communication.

This small-scale exploratory study aims at contributing to the work conducted in previous tasks of WP2 and WP7 through the qualitative analysis of 32 pieces of science journalism and communication produced in the languages of the four participant countries of the project, namely Belgium¹, Italy, Portugal, and Spain. By characterising how content producers use language (specifically, storytelling and narratives both in written and visual stories), and engagement with their audiences in traditional and social media (TV, digital media/newspapers, Instagram, and YouTube), we also intend to support the development of the set of *SPIs* defined by the ENJOI Consortium by providing practical examples in use.

Storytelling and narratives in science journalism and communication

In the academic literature, there exist various definitions of what a narrative is. Here, we consider narratives as the central components of an argumentative approach, describing a set of symbolic references that suggest a common understanding (Hajer, 1995) and representation of meaningful related events (Herman & Vervaeck, 2005). Narratives do not

¹ French-speaking Belgium



mirror reality but are socially constructed, thus, open to interpretation. Narratives are also powerful tools to transmit ideas, providing insights into cultural aspects such as meanings and values associated with events (Riessman, 1993). Hence, being used to shape public opinion by elites, interested groups and the media.

In science communication, narratives have been described as persuasive formats of communication that can increase interest and engagement with science (Dahlstrom, 2014). Through the use of stories, science-related information can be put into familiar contexts, making science meaningful for non-expert audiences and helping them to comprehend, recall and care about the content presented (ElShafie, 2018). Research on the use of narratives and storytelling in science education, environmental communication, or journalism have shown the potential of these tools in knowledge acquisition (Glaser et al., 2009), public understanding and engagement with climate change (Bloomfield & Manktelow, 2021), as well as their capacity to elicit fear, inspire hope, motivate, or guide action in environmental issues (Lidskog et al., 2020) to cite just a few of their outcomes.

Engagement in science journalism and communication

Previous works developed in WP7 have examined the existing landscape of science journalism and communication through the lenses of engagement (Bonelli et al., 2021). As stated by Bonelli and coworkers (2021), engagement with audiences is crucial to address the challenge of improving science journalism in a way that responds to audiences' needs for information in the current landscape of misinformation, disinformation, fake news, and lack of trust in traditional media.

Drawing on the definition of engaged journalism by Green-Barber (2018), which frames it as "inclusive practice that prioritises the information needs and wants of the community members it serves, creates collaborative space for the audience in all aspects of the journalistic process, and is dedicated to building and preserving trusting relationships between journalists and the public", Bonelli and coworkers (2021) suggest applying this approach also to science journalism, in the so-called *engaged science journalism*. Thus, the ENJOI project is adopting this approach to science journalism and communication and has explored it in six macro-areas where it could be applied, some of which have also been considered in this study, namely cross-border journalism, investigative and slow journalism, fact-checking, local journalism, social media, and newsletters (see Bonelli et al., 2021 for further details). In short, engaged science journalism would follow the same principles and goals that engaged journalism (Green-Barber & Garcia McKinley, 2019) in the sense of aiming at building audience trust, increasing willingness to financially support journalism, and promoting civic engagement through dialogue and public participation in the news reporting process.



In this study, we have approached *engagement* in a broader sense, not only considering the principles of engaged (science) journalism but also other ways of audience engagement, such as emotional engagement and visual communication as tools (both also used in storytelling) for capturing audiences' attention and encouraging action.

2. METHODOLOGY

2.1 Literature review of methods for qualitative analysis

To develop a methodology for the qualitative analysis of a set of pieces of science journalism and communication, we firstly performed a literature review of existing analytical frameworks applied to qualitative data. Eight methodologies commonly used in media and journalism studies, as well as in literary studies and other fields within the humanities and social sciences, were examined: narratology and narrative analysis, discourse analysis, frame analysis, multi-dimensional discourse approach, (social media) sentiment analysis, thematic analysis, and qualitative content analysis. Table 1 synthesises some of their main characteristics and provides examples of their use in media studies.

Besides this literature review, our approach also incorporated the expertise of three external stakeholders (journalists, academics, and professionals in the field of journalism, science communication, and digital media), who reviewed and discussed a preliminary version of the proposed methodology. Their feedback was integrated into the final version of the analytical framework developed.

On account of the diverse set of pieces collected from traditional and social media, the analytical approach proposed here places stories at the core of the study. It examines written and visual narratives, storytelling and engagement to understand how stories are built, and which elements they draw on to connect with and persuade audiences.



Table 1 Synopsis of the literature review. This table shows the main characteristics and examples of methods reviewed to build the methodological approach developed

Method	Goal	Main elements/characteristics and use	References	Applied examples, media studies, journalism studies, and other fields
Narratology	Analysis of narratives and their structure	It examines the form and function of narratives and tries to account for narrative competence. It examines what narratives have in common, and how narratives are produced and/or processed. It provides instruments for a systematic description of narratives involving a diversity of methods (and ways to approach) to study narratives and narrative structure. Main narratological categories (classical approach): <ul style="list-style-type: none"> • Voice – different types of narrators – who talks? • Focalization (mode or point of view) – perspectives of the narrator and/or characters – who sees? (point of view from which a story is told) • Temporal order - temporal analysis – order of events in the story (order, duration, frequency) 	(Culler, 2000; Genette, 1983; Hühn, 2009; Prince, 1982; Thon, 2016)	(Berning, 2011)
Narrative analysis	It aims at understanding stories, how a story is put together, the resources it draws on, and how it persuades a reader	Narrative analysis takes the story as the object of study. It focuses on what language and speech does. Applied to media studies, news articles can be seen as plot-driven narratives, i.e., the representation of meaningfully related events; the narrator in these cases is the journalist who decides how to organize the story, the setting and the characters.	(ElShafie, 2018; Herman & Vervaeck, 2005; Riessman, 1993)	(Avraamidou & Osborne, 2009; Dahlstrom, 2014; Jones & Anderson Crow, 2017; Kruvad & Hwang, 2007; Negrete & Lartigue, 2010; Secko et al., 2011)



Discourse analysis	Identification of storylines and discourse-coalition (i.e., ensemble of a set of storylines; the actors who utter these storylines, and the practices in which this discursive activity is based)	Discourse analysis focuses on what language “means or presupposes”. Discourse is defined as <i>“an ensemble of ideas, concepts, and categories through which meaning is given to social and physical phenomena, and which is produced and reproduced through and identifiable set of practices”</i> . Discourses shape how issues are understood and the values that attach to them. Storylines are the central component of the argumentative approach and are defined as <i>“narratives on social reality through which elements from many different domains are combined and that provide actors with a set of symbolic references that suggest a common understanding”</i> . Storylines provide narrative and argumentative context to the analysis of metaphors, which can be used in presenting specific arguments or they can become part of a general storyline.	(Hajer, 1995, 2006; M. Hajer & Versteeg, 2005)	(Luokkanen, Huttunen & Hildén, 2014; Morehouse & Sonnett, 2010)
Frame analysis	Identification of frames and counter-frames (or alternative interpretations)	Frames (in media studies) are defined as a “schemata of interpretation” (i.e., routine and patterned presentations mainstream journalists have regularly used in style narratives). Usually used in the analysis of news coverage of protests. Frames incorporate “principles of selection, emphasis, and presentation composed of little tacit theories about what exists, what happens, and what matters”, they also emphasize certain aspects of an issue (while omitting others), influencing audiences’ perceptions, engagement	(Gitlin, 1980; Goffman, 1974)	(Chuan, Tsai, Cho, 2019; Esu & Maddanu, 2018; Mourão, Kilgo, Sylvie, 2021)



		and intentions. Media frames are seen as established frames that frequently appear in news coverage and that can serve as a conduit for advocacy frames.		
Multi-dimensional discourse approach	Identification of actors (claim-makers), content (claims), context, and storylines (statements that summarizes and encompasses specific narratives), as well as framing struggles and competing storylines	It might combine framing and discourse analysis (the concept of framing and storylines are comparable), and/or combine automatic thematic analysis and semantic network analysis.	(Gitlin, 1980; Morehouse & Sonnet, 2010; Veltri & Atanasova, 2017)	(Rosenbloom, 2018; Rosenbloom et al., 2016; Veltri & Atanasova, 2017)
(Social media) Sentiment analysis	Identification of negative, positive, or neutral emotions	It aims at interpreting and determining whether the social media collected text data is positive, negative, or neutral. It goes beyond just collecting and counting the number of mentions, comments, or hashtags. It can use machine learning, statistics, and natural language processing to find out how people think and feel on a macro scale.	-	(Amarasekara & Grant, 2019; Chew & Eysenbach, 2010; Dubovi & Tabak, 2021; Veltri, 2013; Veltri & Atanasova, 2017)
Thematic analysis	Identification of themes (patterns in data)	Flexible method to analyzing qualitative data for systematically identifying and offering insight into patterns (themes) within a dataset. Useful for identifying common issues observed in data.	(Braun & Clarke, 2006, 2012)	(Smith & Joffe, 2009)



Qualitative content analysis	Identification of patterns and generation of categories that describe the meaning of qualitative material in a systematic way	It is defined as a flexible method that facilitates <i>“the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns”</i> .	(Hsieh & Shannon, 2005)	(Chew & Eysenbach, 2010)
------------------------------	---	---	-------------------------	--------------------------



2.2 Selection criteria for data collection

Our corpus of analysis consisted of a total of 32 pieces of science journalism and communication published or accessible online in the four analysed countries: Belgium, Italy, Portugal, and Spain. Sampling, data collection, and country-level analysis was executed by the ENJOI Consortium partners in the original language of publication of the pieces (FC.ID, Portuguese and Spanish; StickyDot, French² and Formicablu, Italian).

The pieces were selected based on five specific criteria (further described in subsections 2.2.1 to 2.2.5):

- pieces were published/broadcasted in one of these media: TV, YouTube, Instagram or digital media (online/or printed media with online access),
- pieces were published/broadcasted between January 2018 and January 2022,
- pieces reported on climate change issues,
- pieces included innovative and/or engagement elements (as defined in D7.1),
- pieces had qualitative and/or quantitative impact.

Table S33 to S36 provide a technical description of the samples, including title, author/s, media type, media channel, access link to the piece, type of piece target audience, expected level of audience knowledge, goal, and audience engagement data (if available).

2.2.1 Media

According to the latest Eurobarometer “European citizens’ knowledge and attitudes towards science and technology” (European Commission, 2021), EU citizens prefer TV as the main source to be informed about developments in science and technology (63%), followed by social media networks and blogs (29%) and online and printed newspapers (24%). Following this trend, the proposed analysis was restricted to examples of science journalism and communication produced and disseminated through the following media:

- TV
- Social media platforms for photo and video sharing (Instagram and YouTube)
- Online and printed newspapers (with online access) and other digital media

Two to three examples for each media were collected for the three Southern European countries (Italy, Portugal, and Spain), and one piece per media in the case of Belgium, giving a total of 32 pieces. In all cases, to ensure a diverse representation, different formats and content producers were selected. A short characterisation and additional criteria for data collection and analysis for each media are described as follow:

² For Belgium, the language selected was French (instead of Flemish/Dutch or German) due to the language skills of the Consortium partners involved in this analysis.



i. TV

TV remains one of the leading sources to be informed and entertained worldwide (Stoll, 2021). Some of the samples selected included educational programmes, entire TV shows or clips, investigative reports, or interviews produced and broadcasted in national TV channels, which were accessible online through their institutional websites.

ii. Social media networks

◦ *Instagram*

Instagram is a photo and video-sharing social networking service that has become very popular among young adults and teenagers (Schaeffer, 2021). Globally, this platform is especially popular among women between the ages of 25 and 34 years, while in some EU countries and the UK, the age group between 15 and 24 is the most predominant (Statista Research Department, 2021a). Like other social media, Instagram allows users to create and share their own content, acting both as consumers and producers of information, thus blurring the limits between who produce and consume the information, as well as between professional and non-professional content creators. For the selection of the pieces, content shared in the form of stories, posts, “lives”, or reels (excluding the selection of entire profiles) were identified and collected.

◦ *YouTube*

YouTube, an online video sharing and social media platform, is the biggest online video platform worldwide. According to the Statista Research Department (2021b), in 2020, YouTube had more than 2,1 billion users worldwide, resulting in more than one billion hours of video being watched every day. Like Instagram, this service is also especially popular among young users (15 to 25-year-old), although not limited to them. Since it allows users to create and share their own content, this medium includes professional and non-professional content producers. For the selection of the pieces, it was considered the originality of the content, i.e., material created for this platform, and not content produced in other media and broadcasted through YouTube, and the specificity of the examples, excluding the selection of entire channels.

iii. Newspapers and digital media

For these media, we selected news articles, newsletters, multimedia reports, data journalism pieces, or photojournalism works, among other formats, published digitally or accessible online, and produced by some of the top media publishers in each country or recognised by their quality and/or their innovative format or content.

2.2.2 Publication period

The sample included recent examples of science journalism and communication



published between January 2018 and January 2022.

2.2.3 Topic

To ensure comparability and coherence among the set of pieces collected, our sample covers one unique topic rather than multiple scientific and technological areas.

Drawing on the results of the previously cited Eurobarometer (European Commission, 2021), which frame environmental problems, including climate change, as one of the main societal concerns of EU citizens, we decided to focus this analysis on pieces that address climate change issues. As also shown by the Eurobarometer results, the fight against climate change is expected to be one of the areas where science and technology will make a difference in the near future, attracting higher interest than other scientific and technological areas. Even though citizens express high levels of interest in the topic, the perception of their level of information is lower (only 21% of respondents feel very informed and 61% say they are moderately informed). All together, and in addition to the fact that Southern Europe is considered a climate change hotspot, justified our choice of climate change as the driving topic of analysis.

For the selection of our sample, climate change was considered in a broad sense, thus including environmental, socio-cultural, economic, political, or technological aspects. To name a few examples, pieces that cover energy-related issues (e.g., use of renewables for climate change mitigation), health (e.g., climate change adaptation measures having a positive or protective effect on our health), environmental problems (e.g., droughts), political discussions (e.g., COP), or societal impacts of climate change (e.g., sustainable futures for young generations, etc.) were identified and selected.

2.2.4 Engagement and innovation in science journalism and communication

Inspired by the work conducted in D7.1 (“Digital Engagement Focus Report”) (Bonelli et al., 2021), which explores how digital media have exploited engagement in covering science, the pieces selected were aimed at providing examples of fact-checking, local journalism and local science communication, data journalism, engaged journalism (including engaging formats in social media), solutions journalism, investigative and slow journalism, or any other innovative aspects in science journalism and communication.

2.2.5 Impact and audience engagement

Quantitative and qualitative indicators, for both impact and audience engagement, were considered when selecting the pieces. Although quantity is not directly related to quality, these indicators can give insights into the impact and level of engagement with the audience of the selected pieces. Moreover, when possible, contextualisation of quantitative impacts was taken into account. For instance, novel media with innovative



and high-quality content might have fewer readers than mainstream channels or media, thus, qualitative indicators rather than purely quantitative were also implemented. Therefore, three ways for assessing impact were taken into account when selecting the pieces:

- Awarded stories and/or granted journalistic projects
- Audience engagement:
 - Number of subscribers (YouTube and paid media)
 - Audience (TV shows)
 - Number of readers (newspapers/digital media)
 - Audience reactions/interactions: number of comments, likes, favourites, content sharing, number of visualizations (all media)
- Structural or institutional change: stories that have impacted daily life, modifying ways of doing (e.g., political change)

2.3 Procedure for selection

To build our corpus of analysis of 32 pieces of science journalism and communication, we started by filtering pieces that included the keywords “climate change” (*cambio climático*, *alterações climáticas*, *cambiamento climático/cambiamenti climatici*, and *changement climatique*, in Spanish, Portuguese, Italian, or French) in each of the four media studied (TV, YouTube, Instagram, and digital media). Specifically, for the two social media channels included in this work (Instagram and YouTube), we identified potential pieces by searching the abovementioned keyword – in their respective languages – in combination with the name of the country on their browsers. For traditional media channels (TV and digital media), a similar approach was followed, i.e., TV programmes were accessed through the online platforms of national media channels, and content was browsed by using the previously mentioned keywords. For digital media, general searches performed online (using the previous keywords combined with the terms “media”, “news” or “report” - in their respective languages - and the name of the country) were combined with the exploration of journalism platforms such as Journalismfund, Journalism Grants, and the European Journalism Centre. The latter allowed us to identify pieces that were recognised by, e.g., grants, prizes, mentions of their content, innovative format, or novel ways to engage audiences (to meet the criteria of “impact” and “innovative and engagement elements”).

Next, we applied the other criteria to filter the pieces identified, i.e., the pieces should have been published during the period studied, should report on climate change, should include innovative or audience engagement elements (which in social media is present, at least, through comments, likes, etc.) and should have a qualitative or quantitative impact (e.g., a high number of shares, likes, comments, visualizations, followers, etc.). In some cases,



innovative and engagement elements were only assessed once the pieces were analysed (thus, this criterion could not be applied a priori), except in the cases where it was made explicit by the media, e.g., in the available description of the pieces.

2.4 Analytical approach

The analytical approach developed for the qualitative analysis of the selected pieces consisted of a two-level analysis: i) an initial analysis conducted by the partners involved in data collection (FC.ID, SD, and FB), which was performed in the original language of publication of the pieces, and ii) a meta-analysis of the entire set of pieces, performed by the FC.ID team. Tables S1 to S32 in Annex 1 show the results of the initial analysis conducted on the selected 32 pieces, organised per country and media, while Figures 2 to 6 represent the main findings obtained from the comparison of the four countries. To facilitate access to data and broader dissemination of findings, all results are presented in English.

2.4.1 First level of analysis

Drawing on the seminal works of Genette (1983) and Riessman (1993) on narratology and narrative analysis (described in Table 1) and inspired by the theoretical framework employed by Secko and coworkers (2011), this first level of analysis aimed at characterising how journalists and science communicators build their stories and engage with their audiences through the identification of the stories' core components in each of the countries participating.

Thus, following the well-known 5Ws and 1H approach used in journalism, which configures the central elements of any journalistic story, this analysis focused on the following aspects:

- What happened? → What the story is about (storyline)
 - Identification of the key event or action in the story
- Why did it happen? → Why the story matters, why it is relevant at the time it is published (relevance)
 - Identification of the purpose or the reason for telling the story at that time
- Who is it about? → Who narrates it and what voices and sources are included in the story (narrator and sources)
 - Identification of the narrator (narrative voice)
 - Identification of other perspectives or points of view
 - identification of the sources and institutions cited
- Where did it take place? → Where the story takes place (geographies)
 - Identification of geographies, scenes, places where the story takes place
- When did it take place → When the story takes place (temporal contextualisation)



- Identification of temporal elements/chronological order in the story
- How did it happen? → How the story is narrated (narratives and storytelling)
 - Identification of strategic narrative/s (following Bushell et al., 2017)
 - Identification of narrative features (drawing on Glaser et al., 2009)
 - Identification of rhetorical elements to tell the story (if any)
 - Identification of (audio) visual elements to tell the story (if any)
- How the story (or the media) promotes audience engagement (engagement)
 - Identification of solutions to the problem addressed (if any)
 - Identification of inspiring examples (if any)
 - Identification of interactive elements (if any)
 - Identification of opportunities for audience engagement in the story's production
 - Identification of opportunities for audience engagement in reacting to the story

Figure 1 shows a scheme of the analytical approach followed.

The 'How' question was divided into two subcategories 'narratives' and 'going beyond the story', with the former focusing on "how the story is narrated" (considering both written and visual elements), and the latter on "audience engagement aspects to connect with the audience". In both categories, innovative elements related to storytelling and engagement were also explored.

Independently of the media used, written and visual communication aim at transmitting information, ideas, thoughts, or emotions. Specifically, visual resources (videos, photographs, sound, data visualization, etc.) are understood in this study as "active rhetorical elements" (Dunaway, 2015), acting as effective narrative elements, and thus, included in the analysis conducted as part of the 'how' stories are built.





Figure 1: Analytical approach followed based on the 5W and 1H

2.4.2 Second level of analysis

A second level of analysis combining deductive and inductive approaches was applied to the qualitative data resulting from the initial analysis. The objective of this meta-analysis was to obtain an overview of the characteristics identified through the 'how' questions. The topics pre-defined correspond to the main objectives of this report: i) narratives and storytelling, ii) going beyond the story (including solutions, inspiring examples and audience engagement), and iii) innovative elements in storytelling and engagement.

With the exception of narratives and narrative features, for which we use a deductive approach for data coding based on the strategic narratives of climate change identified by Bushell et al. (2017), and the four features of storytelling described by (Glaser et al., 2009), respectively, all remaining topics were approached inductively. Inductive coding and analysis were driven by what is in the data and based on the creation of descriptive and interpretive codes which were grouped into categories. After initial data coding and analysis, conducted by the first author, the second and third authors reviewed the identified categories and codes and added their interpretations. After discussion, the categories and codes were agreed and considered valid. This cross-examination of the findings was used to ensure reliability.

This method allowed us to identify the major features of each media in relation to the three previously mentioned topics. Thus, it was possible to gain some insight into some of the elements that content creators use to build stories around climate change issues and the ways they engage with their audiences.



2.5 Limitations

Framed as a small-scale exploratory study, this work does not intend to present an in-depth analysis of the media landscape in the countries examined, but to provide hints on how specific elements for the construction of stories about climate change are used in various media. This first approach to describe how stories about climate change are built, in terms of storytelling, narratives, and audience engagement, is more empirical than theoretical since it also aims at supporting the definition of the *SPIs* based on practical examples in use.

Some limitations of this work are the narrow sampling *per* media (one to three examples *per* media and country), the diversity of media included (traditional and social media), and the heterogeneity of the analysts who collected and examined the pieces. All together it allows to extract preliminary conclusions that need to be confirmed in further research.

Notwithstanding these limitations, the collective work developed by the Consortium partners also brings relevant findings that forward the understanding of novel actors and practices in science journalism and communication in Europe.

3. BUILDING STORIES

From the first-level analysis, the results of the 32 pieces of science journalism and communication selected in Belgium, Italy, Portugal, and Spain are reported from Table S1 to Table S32 (Annex 1). In the following subsections, we describe the findings obtained from the meta-analysis (second-level analysis) conducted using the initial data analysis of the entire set of pieces (first-level analysis).

This meta-analysis of the findings allowed us to extract some general conclusions without aiming at establishing comparisons *among* countries (see section 2.3 for the limitations of this study). Rather than comparing countries, and because the number of samples analysed is different from one country to another, we are presenting the results *per* media (TV, YouTube, Instagram, and Digital media/newspapers), in relation to the three main topics: i) narratives and storytelling, ii) going beyond the story (including solutions, inspiring examples and audience engagement), and iii) innovative elements in storytelling and engagement.

3.1 Narratives and storytelling

3.1.1 Narratives

Narratives are effective tools to disseminate knowledge, generate new ideas, and cause change (Glaser et al., 2009). As persuasive means of presenting and communicating



information and knowledge, narratives can increase interest and engagement of audiences with science (Dahlstrom, 2014), as well as elicit fear, inspire hope, motivate, or guide action on environmental issues (Lidskog et al., 2020).

Narratives on climate change have been identified in previous studies. Of interest for our analysis, the study by Bushell and colleagues (2017) on the use of strategic narratives in climate change offers a good starting point to analyse how content creators construct their discourses on climate issues. In the cited study, Bushell and colleagues listed seven existing strategic narratives on climate change, five of them that seek audiences to act on climate change, and two to deter it. As a first result of our analysis, we can mention that, in our sample, there were not found any examples of narratives that deter action on climate change. By contrast, all other narratives supporting action were identified, namely, the so-called 'Gore' narrative (incontrovertible evidence - scientific facts - that climate change is caused by human action); the 'End of the world' narrative (risks of catastrophic future events unless people change their behaviour); the 'Every little help' narrative (individuals are protagonists of stories that propose solutions to climate change); the 'Polar bear' narrative (habitat destruction and loss of species in remote places); and the 'Green living' narrative (drastic changes in lifestyles that conduct to green ways of living).

In our sample, two narratives were identified across all media analysed: 'the Every little help' and the 'End of the world'. Both narratives have in common the idea of individual and/or collective action to tackle climate change. While the 'Every little help' is described as a narrative that focuses on individual stories of personal responsibility and solidarity, encouraging citizens to act through individual solutions, the 'End of the world' exposes the dangers of climate change impacts on humans and natural systems and the urgent need to take action to prevent it, thus, requiring behavioural change to mitigate climate change.

While the 'Every little help' narrative emphasises individual solutions, some of the samples analysed call attention to the need of acting collectively, involving multiple actors. Therefore, solutions to climate change are not only framed within personal responsibility, but as a collective effort. It is also relevant to bring attention to the fact that it is still necessary to remind audiences about human responsibility behind the increasing levels of greenhouse gases, in particular CO₂, into the atmosphere as the main cause for climate change. Thus, the 'Al Gore' narrative is still used by journalists and science communicators (e.g., on TV and YouTube videos) to convince and call for action through the presentation of scientific data, and assuming a certain knowledge deficit of the audiences. The 'Green living' narrative is presented as the way to look forward. Without mentioning drastic lifestyle changes or sacrifices for the greater good, as described by Bushell and colleagues (2017), this narrative was found to present low-carbon and sustainable renewable energy futures as solutions to tackle climate change. Interestingly, the 'Polar bear' narrative is



rarely present in our sample. This narrative has been recurrently used in the past and is highly criticised because it represents only one aspect of the problem, i.e, climate change affecting specific areas and species of the planet, isolating a global problem and creating a distancing mechanism that discourages individuals to take action. By contrast, the rest of narratives identified show proximity to the problem, framing the need for action at all levels, from local to international action.

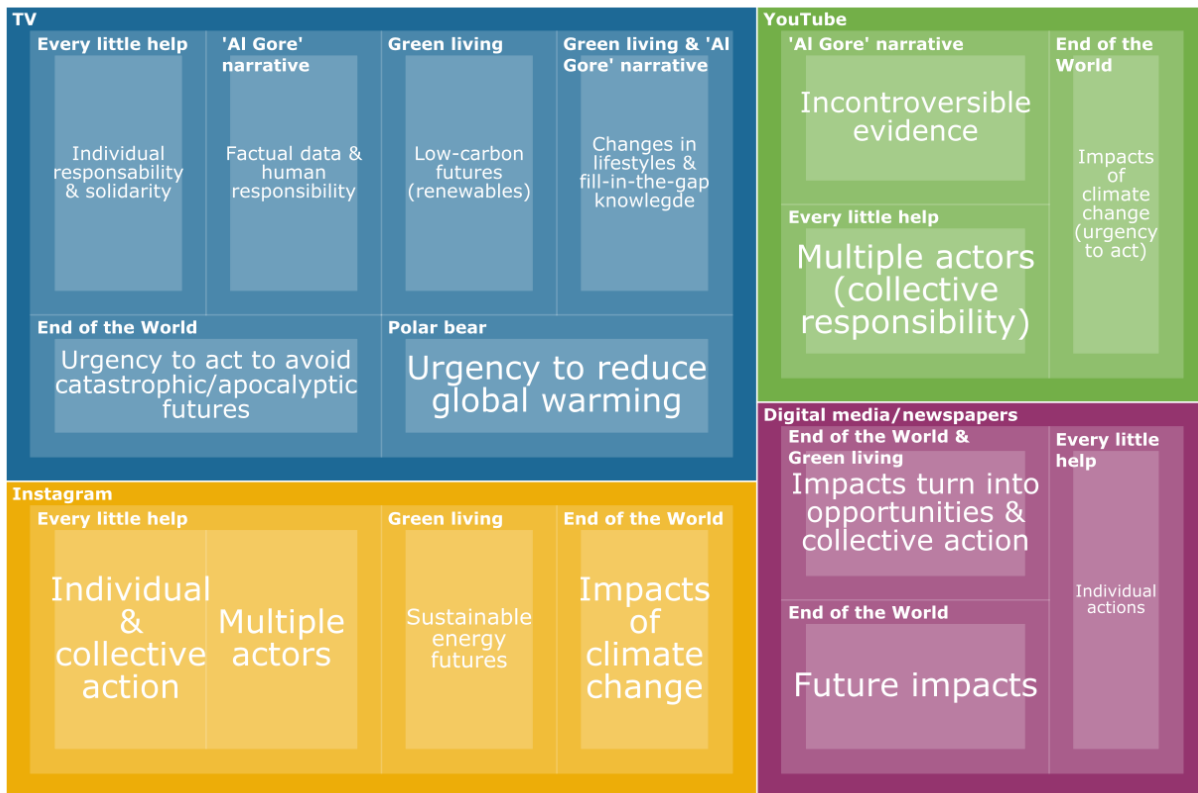


Figure 2: Narratives identified per media

3.1.2 Narrative features

In their study on the use of narratives and storytelling in science education, Glaser and coworkers (2009) analysed the way narratives influence how knowledge is communicated and acquired. Dramatization, emotionalization, personalization, and fictionalization were found to have positive and negative effects on knowledge acquisition. By inducing curiosity or surprise, emotional engagement, empathy, or recreating fictional events, it is possible to enhance recipients' interest in educational content.

Drawing on these findings, we have explored the use of these four narrative features (dramatization, emotionalization, personalization, and fictionalization) in science journalism and communication in our sample to understand how journalists and science communicators apply them when building their stories.



In the four media analysed, we found examples of all of them, used individually or combined (e.g., personalization linked to emotions, and dramatization combined with fictionalization or emotionalization), in addition to neutral and objective narrative approaches (Figure 3).

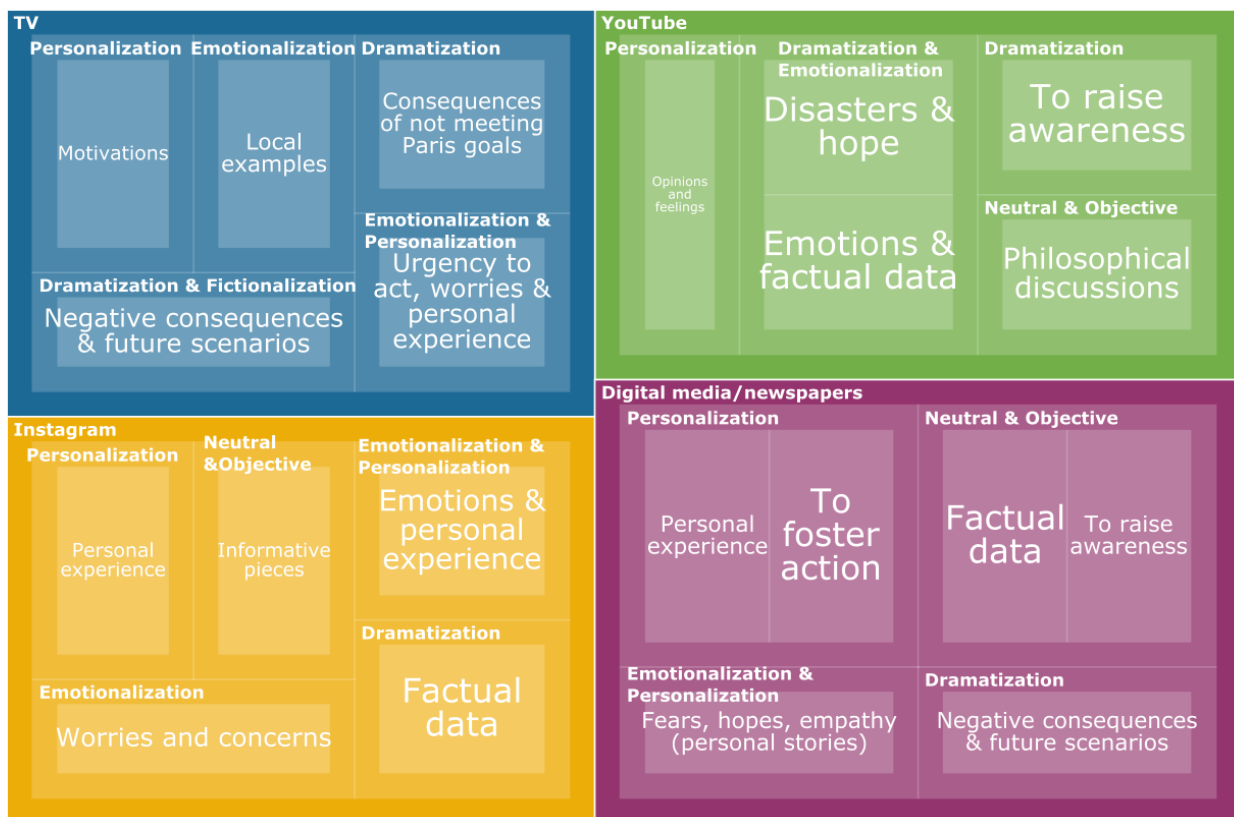


Figure 3: Narrative features identified per media

Specifically, examples of personalization (present in all media) were identified in relation to personal motivations, opinions, feelings, or to reflect personal experiences of content producers (commonly seen in YouTube and Instagram), but more frequently, of the public included as sources of information. The use of personal stories can help audiences to take the subjective perspective of a particular person and understand his/her goals, motives, or feel empathy for him/her. When combined with emotionalization, content producers use positive and negative emotions (e.g., hope of tackling climate change through collective action or worries and concerns related to future climate scenarios) to foster emotional arousal of the audience. Thus, story protagonists (the content producers themselves or others) express their feelings and emotions to create empathy and connect with the audience.

Dramatization is another characteristic of the narratives employed. Presentation of



complications, crises, setbacks, success or failure might also stimulate audiences' emotions (in positive or negative ways) (Glaser et al., 2009). In our sample, the use of dramatization was observed in pieces that describe the possible negative consequences of not meeting the goals of the Paris Agreement, or those exposing future extreme events and its social and environmental impacts with the aim of raising awareness. Data-driven stories (i.e., relying on factual data) and those using more emotional approaches were both identified within this group. In combination with fictionalization, dramatization can help audiences to place themselves in fictional but feasible futures through the presentation of those futures as real scenarios resulting from expected ("*apocalyptic*") consequences of climate change.

Neutral and objective narratives were also found in the selected pieces, in particular, in informative pieces relying on factual data or in those promoting academic discussions, whose goals were to inform, raise awareness and/or promote critical thinking.

3.2 Going beyond the story

3.2.1 Solutions and inspiring examples

Without neglecting to report on the current and future negative impacts of climate change, journalists are increasingly reporting about solutions to the climate crisis. The so-called solutions journalism investigates responses to social problems, such as climate change, and advocates for increasing civic engagement, depolarising public discourse, advancing equity and building trust. Thus, through the analysis of identified responses, their relevance, limitations and shortcomings, solutions journalism aims at helping audiences to envision and build a more equitable and sustainable world³.

Although none of the selected pieces can be identified as solutions journalism in an strict sense, some suggest solutions and examples of how individuals and collectives can tackle climate change, mitigate its effects or adapt to its consequences. Inspiring examples to foster action at multiple social levels, from collectives to individuals, at governmental and non-governmental spheres have been also identified in some of the pieces analysed.

Overall, our findings suggest that journalists, science communicators and, in general, content producers addressing topics related to climate change give prominence to actions carried out at individual and collective levels (both at global and local scales), such as mitigation and adaptation measures, cultural (behavioural) changes, and political action (e.g., activism, participation of citizens in political decisions, or stronger demands for action to policymakers) to tackle climate change (Figure 4).

³ As defined by the Solutions Journalism Network on their website: <https://www.solutionsjournalism.org/>



In the analysed pieces, globally known social movements and activists, such as Fridays For Future and Greta Thunberg (together with national examples), are repeatedly used to represent the voice of young generations, not only to inform about their actions and demonstrations, but also as an inspiration for other collectives and actors. Stories that include any kind of collective action were found present in all four analysed media. They are framed not only at the global level but, in particular, at the local, regional, and national scale, with initiatives acting at local levels in urban and rural areas (e.g. eco-schools).

Mitigation actions related to a larger use of renewable energy technologies, improvement of energy efficiency, and reduction of fossil fuels, are also solutions mentioned in all four channels analysed. By contrast, adaptation to climate change impacts is less frequently presented than mitigation actions. Cultural changes that include changes in habits (e.g., use of public transport, recycling, reduction and reuse) are also presented as necessary actions to contribute to tackling climate change. Political action is also considered a necessary step to fight climate change. In particular, at two different levels, one involving citizens in political decisions, and another with governments taking strong and more ambitious commitments to reduce CO2 levels.

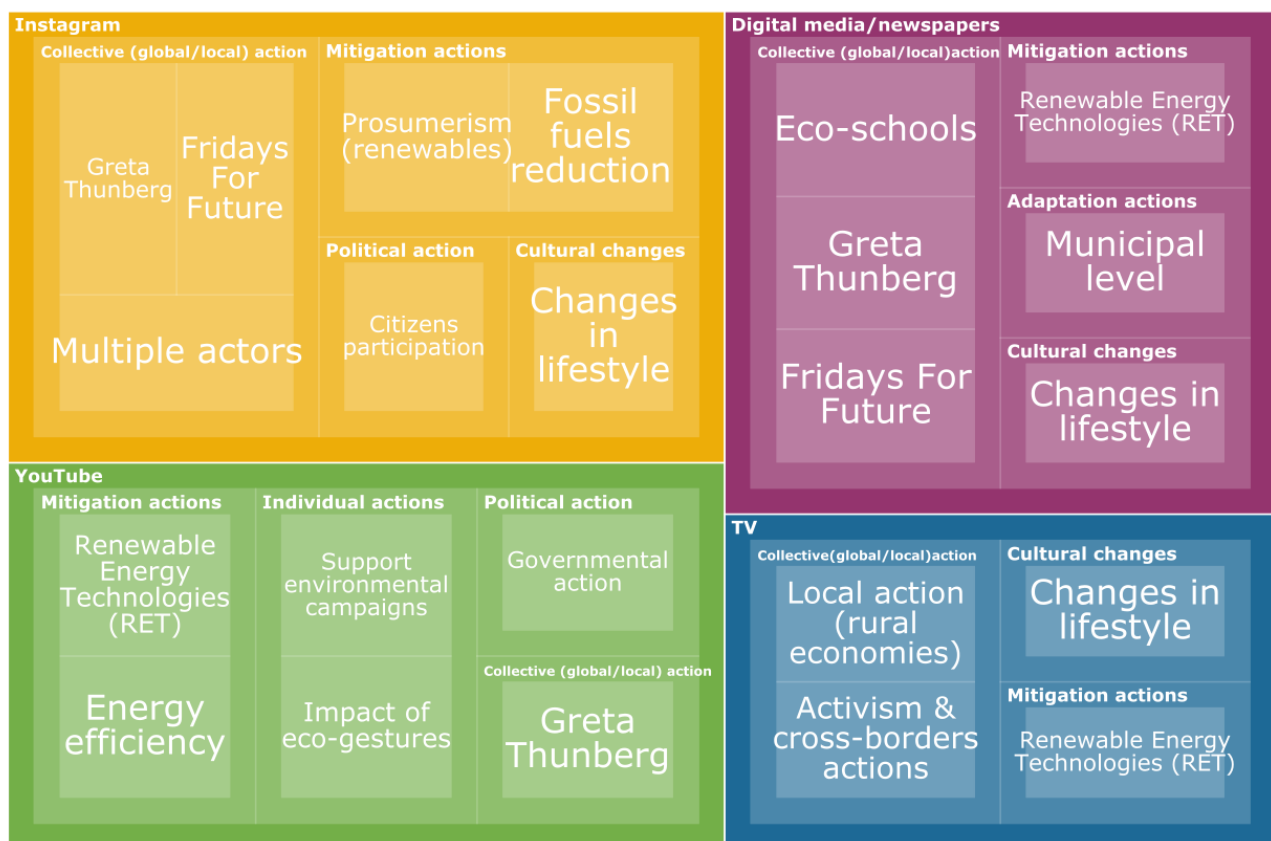


Figure 4: Solutions and inspiring examples identified per media

3.2.2 Audience engagement

The four media included in the analysis allow content sharing through social media platforms, instant messaging applications and/or email (for TV, all analysed content was accessible online through the TV channels' websites). Audiences are able to like, comment, and share content acting as multipliers. Taking advantage of the widespread use of mobile devices, TV shows also actively promote the use of 'second screens' allowing audiences to comment on their programmes while watching them lively. The creation of specific hashtags, in particular on Twitter, to follow TV campaigns and programmes, facilitate direct interaction between producers and users. Besides this connection with social media channels, the particular characteristics of some of the channels analysed, e.g., Instagram, also facilitate the direct interaction with audiences through live broadcasting (IGTV).

Other direct forms of interaction between audiences and content producers identified, especially on YouTube and Instagram, were the Q&A sessions. On those platforms, content producers directly question their followers about future topics to be addressed (e.g., energy) or reply to controversial issues to fight the spreading of fake news related to climate change. Proximity with the audience (through verbal and non-verbal language, such as the use of familiar settings and informal language to engage with young audiences) and the creation of a sense of community (e.g., some YouTubers refer to their followers in a specific way) can promote long-term engagement.

Additionally, direct calls for action were also identified, not only in relation to fighting climate change but also to support the work of journalists. This latter topic connects with media sustainability (which is a central topic of discussion in traditional and digital media) for which audience engagement is key.

In relation to the content, some of the pieces analysed included collaborations with other actors (e.g., NGOs, expert and non-expert publics), thus fostering civic engagement of the public in content production. Without following all aspects of engaged journalism as defined by Green-Barber (2018), some of the pieces and media analysed do indeed share some characteristics of this form of journalism (and by analogy, science communication approach), as they prioritise the information needs and wants of the community members they serve and create collaborative spaces for the audience. Audiovisual storytelling and interactive elements, namely pictures, videos, sounds, maps, graphs, and other forms of data visualization, were identified as potential tools to promote audience engagement as part of the storytelling (e.g., useful to illustrate and contextualise data).

Figure 5 illustrates the diverse ways in which journalists, science communicators, and content creators in general, engage with their audiences in the four media analysed (TV,



Instagram, YouTube, and digital media/newspapers).

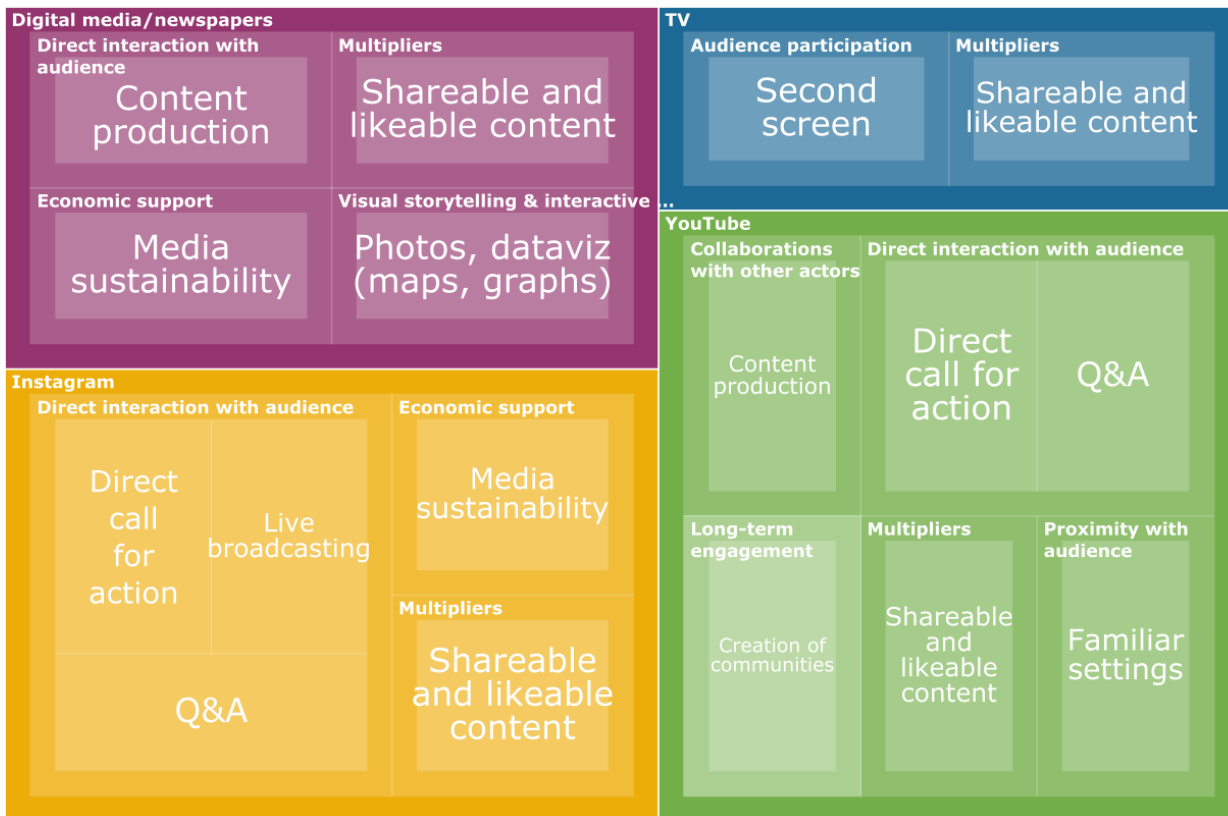


Figure 5: Audience engagement identified per media

3.3 Innovative elements in storytelling and audience engagement

Innovation in journalism can take many forms. From telling stories in a nonconventional way (e.g., creating two-way flow stories through the use of gamification or interactive and immersive elements) to involve audiences in content creation. Within the set of pieces selected, there are some examples of how innovation can be incorporated into journalism and science communication (Figure 6).

New digital narratives that use technologies such as augmented reality to recreate future landscapes or innovative storytelling techniques, for instance, immersive soundscapes to embed audiences in the stories or envisioning future climate scenarios, were identified in some of the pieces selected as examples of innovative elements that can support storytelling and foster audience engagement with stories about climate change.

Live broadcasting (streaming) of content through social media platforms (e.g., YouTube and Instagram) or the coverage and broadcast of events through multiple media and social media platforms were found present in some of the pieces selected; for example, for the



COP25 coverage (with multiple live streamings on Instagram combined with a multi-platform approach). These new practices in science journalism and communication facilitate the direct interaction between producers and users who can establish two-way communication in real-time, and thus foster a stronger engagement by enriching audiences' experiences and covering audiences' needs for information.

Fact-checking in science journalism and communication is crucial to fight the spreading of fake news and mis/disinformation in relation to science and technology issues. Climate change is one of the topics affected by disinformation campaigns based on myths, hoaxes, or conspiracy theories that are presented as plausible to the public. Some of the pieces analysed, in particular in social media channels (YouTube), deal with these problems by providing audiences with scientific evidence and directly replying to the questions, worries or mis/dis/uninformed opinions shared. Thus, this practice contributes to meeting audiences' needs for verified information and so can foster a stronger engagement with content producers and media, while increasing audiences' critical thinking and climate literacy. Related to data verification, openness and transparency of the use of data by journalists (e.g., in data journalism pieces) were also observed in some of the pieces analysed.

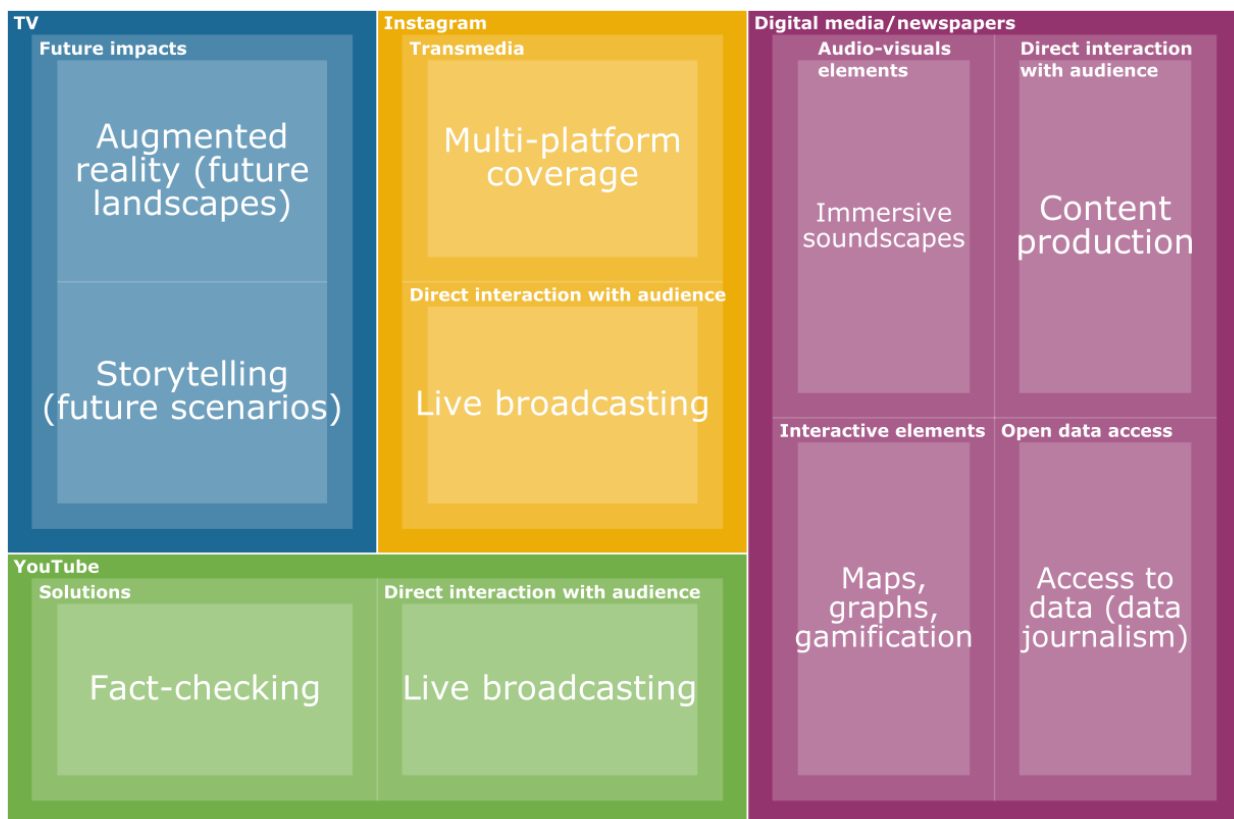


Figure 6: Innovative elements in storytelling and audience engagement identified per media



4. CONTRIBUTION TO THE ENJOI SPIs

The preliminary checklist “Best practices for Outstanding Open Science Communication”, collectively co-defined by the ENJOI Consortium partners⁴, aims at defining a set of *Standards, Principles, and Indicators (SPIs)* to support journalists, science communicators and other content producers in their communication activities.

By examining the ENJOI “Best practices” definitions through the lenses of the analytical approach followed and the results obtained (Tables S1 to S32, annex 1), it is possible to identify specific examples in use that can complement some of the defined criteria. Specifically, newsworthiness (why), ethical rules and sources (who), perspective (when), language and storytelling (how), engagement and format/medium (how). Other elements such as the aim of the story (what) or geographical contextualisation (where) are not covered by the current criteria.

Since our analysis focused on pieces that address climate change, the results presented below provide specific examples related to that topic.

The following tables show the correspondence between the analytical framework used, the ENJOI criteria, and some examples in use identified in the examined pieces.

Why did it happen? (Why it matters now) – contextualisation of impacts

ENJOI criteria and definition: *Newsworthiness*: *Introduce new and impactful knowledge, appropriately contextualised and relevant for the public and the society.*

<i>Media</i>	<i>Use</i>
TV	Political events (e.g., Conference Of the Parties, COP; United Nations meetings, EU Council summits) and/or social protests (e.g., climate marches) are used to contextualise socio-political, cultural, economic, and/or environmental impacts of climate change at national, regional or local levels (from global to local stories), i.e., showing the multiple levels of the current climate crisis.
Instagram	In general, the content analysed is less connected with the news, i.e., more directed to raising awareness than to inform. Use of Instagram Live (real-time broadcasting) to cover events allows combining latest news, contextual factors, and personal stories (e.g., daily coverage of the COP25 and COP26 through short

⁴Based on desk research (D2.1) and co-creation activities developed under WP4.



	videos).
YouTube	In general, content is less connected with the latest news, although the information and knowledge presented can relate to current events, political discussions, ethical debates, or (novel and not novel) scientific evidence around, for instance, CO2 emissions, climate justice, regulatory changes, climate crisis, among others. The samples analysed show examples of fact-checking, in-depth interviews, and videos to raise awareness, expose controversies around climate change (from its impacts to our collective/individual responsibility), and draw attention to the urgency of action to address the current climate crisis.
Digital media/newspapers	Publication of novel scientific, political reports, celebration of international events (e.g., Intergovernmental Panel on Climate Change, IPCC, COP, new EU legislation, scientific conferences), or the dissemination of citizen-led initiatives (e.g., challenges to reduce ecological footprint, zero-waste lifestyle) and collaborations between multiple social agents (local communities and researchers) are used to approach current discussions around climate change and its impacts. Contextualisation and relevance of impacts on humans, non-humans, and ecosystems provided through facts, data and personal stories, aim at improving audiences' better judgement, reflection (i.e., promotion of critical thinking) and empowerment to take action.

Who is it about? (Who narrates it and what voices and sources are included in the story)

ENJOI criteria and definition: 1) Ethical rules: Avoid becoming an advocate for any side. Present the information fairly. Be sceptical about the sources of information. Sources, authors and research collaborators should be correctly attributed; 2) Sources: Include people with different expertise and backgrounds considering gender, cultural, geographical and socioeconomic diversity.

<i>Media</i>	<i>Use</i>
TV	The inclusion of multiple sources show the diversity of actors and voices who are taking an active role in climate issues (at different geographical, political, and social levels), namely research and governmental agencies (national and international, e.g., NASA, IPCC), researchers (multiple fields), environmental or social NGOs representatives and activists, EU Commissioners and other representatives at national and supranational



	governmental bodies (EU Commission, UN). This variety ensures different perspectives. Journalists and science communicators, and in some cases the protagonists of the stories (e.g., activists), act as narrators.
Instagram	Personal stories, images that aim at raising awareness, informative pieces, or posts presenting solutions to tackle climate change, are produced by a diversity of profiles; content producers, with any background and expertise, are then turned into narrators. With some exceptions, identifiable sources or inclusion of other voices in the narrations are less present.
YouTube	As for Instagram, this channel allows content producers, with any background and expertise, to act as narrators. The diversity of producers' profiles also ensures a variety of perspectives. With some exceptions (interviews) inclusion of other voices are less present. Video extracts (by the same producers or others) and references to scientific studies help to support and complement some of the stories.
Digital media/newspapers	Vulnerable communities affected by climate change impacts, the youth, activists and participants in environmental campaigns, researchers (any field, national and international institutions), or governmental agencies and institutions (from regional to international), are commonly included (cited, quoted) and identified in the analysed pieces; in some cases, they act as narrators. This variety ensures multiple perspectives, backgrounds, and expertise.

When did it take place? (When it takes place) - temporal context

ENJOI criteria and definition: *Perspective: The topic communicated should be set into a temporal, scientific and social context. It is important to clarify what is new or conflicting in the light of previous evidence.*

<i>Media</i>	<i>Use</i>
TV	Discourses (stories, in general) on the world's current climate situation (and associated data) can be contextualised through references to historical data (e.g., pre-industrial period for CO2 levels) or past events, and contrasted with projected future climate change scenarios (e.g., potential future events and envisioned futures supported by data projections). Thus, references to the past and projections and visions of the future



	help to contextualise the current climate crisis.
Instagram	Temporal (also social or scientific) contextualisation is rare in our sample. When included, stories are framed in the present with some references to the past (e.g., Paris Agreement in 2015). Live reporting (e.g., direct broadcasting from the COP25) is used to provide more contextual elements and inform about the latest news.
YouTube	Novel and past (but still relevant) scientific data and knowledge are presented through visual formats (e.g., infographics, graphs) and used to fight misinformation, for instance, when dealing with scientific controversies regarding some historical data points (e.g., use in fact-checking). Moreover, images and sounds to recall the past (use of black and white or memories from the elderly) together with narratives of potential futures (e.g., mentioning extreme events, tipping points, etc.) are resources used to call attention to the limited time for action in the present.
Digital media/newspapers	Stories including events that happened in the past (from thousand years ago to the most recent decades) are combined with visions of the future (2030, 2050, 2100), thus covering large temporal scopes to contextualise climate evolution. Projections of future climate scenarios are represented through images, graphs, maps or tables. More recent past events exemplifying (recent and more severe) extreme events are also used to contextualise the discourse of the present climate crisis. The Paris Agreement (signed in 2015) is still commonly mentioned as a crucial political and social moment in the fight against climate change, as it set the target limit of 1.5°C for global temperature rise.

How did it happen? (How it is narrated) – narratives, narrative features & storytelling

ENJOI criteria and definitions: 1) Language: Language should be clear, inclusive, correct, and comprehensible. Technical jargon should be used only if necessary and always be accompanied with an explanation; 2) Storytelling: Narrative structures can help the audience to follow the message and remember it better, increase engagement with scientific information compared to a list of data, numbers or an expository text.

<i>Media</i>	<i>Use</i>
TV	Plain language with no jargon; in some cases, rhetorical elements such as similes are used to help audiences to understand 'big



	<p>numbers', as well as metaphors, and analogies. Audiovisual language (visual storytelling, sounds and music) can play an important role in the narration (need to be considered).</p> <p>Narrative features to build stories about (current or future) climate change impacts can include personal stories that show protagonists' experiences and daily life; emotional approaches to foster audiences' emotional attachment (e.g., through theatre); dramatization to emphasise the climate crisis (e.g., showing social and environmental catastrophes), or fictionalization of future impacts. These elements are combined with the 'End-of-the-world', the 'Polar bear', and the so-called 'Al Gore' narrative to present the negative consequences of human activities (supported by scientific data), but also with the 'Green living' and 'Every little help' narratives, which aim at tackling climate change through action, thus encouraging audiences to pitch in through individual and collective responsibility and changes in lifestyle.</p>
Instagram	<p>Plain language (formal and informal registers and direct approaches), with no jargon. Audiovisual language (visual storytelling) can play an important role in the narration (need to be considered).</p> <p>Narratives of climate change (and their narrative features) can appeal to fight dramatic futures (by using dramatization or fictionalization) to call for collective action to fight climate change impacts ('Green living' and 'Every little help'). Even stories that are presented in a neutral, objective, and informative way can also look for audiences' reactions through raising awareness, reflection, concern, or action.</p>
YouTube	<p>Plain language (formal and informal registers, and direct approaches), in some cases including jargon; rhetorical elements such as rhetorical questions can introduce personal analysis and reflections. Audiovisual language (visual storytelling) can play an important role in the narration (need to be considered).</p> <p>Personalization, emotionalization, dramatization, as well as narratives that use scientific facts, data, or philosophical approaches to climate science are used to build stories about (current or future) climate change impacts.</p>



Digital media/newspapers	<p>Plain language, direct and neutral; in general, with no jargon, when used, concepts are described and/or illustrated with examples. Visual language (visual storytelling) can play an important role in the narration (need to be considered).</p> <p>Use of emotionalization and personalization, e.g., by including voices that express their fears and hopes in relation to future climate impacts, thus allowing the audience to approach other perspectives and realities. The narratives identified, built on scientific data or personal stories, aimed at informing, raising awareness and fostering action, or, by contrast, describing a nothing-to-do scenario.</p>
--------------------------	---

How did it happen? (How it engages the audience) - engagement and innovation

ENJOI criteria and definitions: 1) Engagement: Establish contact with the audience, maintain its involvement with the content as it develops, and get responses, opinions and ideas from the audience; 2) Format/medium: Use innovative and creative formats to engage new audiences. The formats can be used to direct attention, motivate the reader, stir an emotion, reiterate a concept, develop a concept, and correlate different elements.

Media	Use
TV	Audience engagement is possible through associated social media channels (Twitter, Facebook), not only to share content but also to contribute to the discussion, for instance, using specific hashtags to comment. Other ways of engagement are the direct participation of audiences in the content, or an emotional engagement (connected with storytelling elements). Audiovisual elements and innovative formats can also play an important role in audience engagement, e.g., representations of future scenarios through augmented reality.
Instagram	Audience engagement is possible at multiple levels, both once published (e.g., content sharing, likes, favs, comments), and during lively broadcasting through direct interaction with producers (comments, reactions, etc.). The media itself facilitates producers-users interaction, direct participation of the audience and engagement.
YouTube	Audience engagement through comments is very popular. Some content producers address audiences' questions and doubts, also fighting misinformation, through the creation of content based on audiences' comments, or replying to the comments



	(also providing additional information, references or data). This direct contact with the audience might help to create communities. Other classical ways of engagement are likes and content sharing.
Digital media/newspapers	Audience engagement is possible through social media channels (Twitter, Facebook) email, and instant messages platforms (WhatsApp), mainly for content sharing; comments are also possible. Emotional engagement through personal stories or the creation of immersive atmospheres (e.g., use of sounds) are also possible. Innovative formats including interactive elements and infographics (e.g., data visualization through interactive maps, graphs, or tables, as well as gamification) help understanding complex concepts or large amounts of data.



5. CONCLUSIONS

Using climate change coverage in three southern European countries (Portugal, Spain and Italy) and French-speaking Belgium as a central example, we have developed a qualitative analysis to characterise how content producers build their stories in four media channels (TV, digital media/newspapers, Instagram, and YouTube).

The exploratory methodology presented in this deliverable may be useful for future studies aimed at investigating how scientific topics are being told in science journalism and communication channels. This approach may help researchers and practitioners identify which features can contribute to a more innovative and engaging journalism, thus, contributing to an open and remarkable scientific communication.

Despite being a small-scale study, this media analysis shows the wide variety of ways in which discourses can be presented to their audiences by different media and content producers. It also allows identifying how narratives and storytelling are used to tell stories and how innovative elements in storytelling and engagement are introduced in science journalism and communication channels.

The analytical approach followed, and the results obtained also demonstrate its suitability to complement some of the criteria established within the *Standards, Principles, and Indicators (SPIs)* co-defined by the ENJOI Consortium partners to support journalists, science communicators and other content producers in their communication activities.

6. ACKNOWLEDGEMENTS

We would like to thank Luisa Massarani, Cristina Ribas, and Agustín López-Martínez for their review and feedback provided to an early version of the methodology developed and applied in this study.



REFERENCES

- Amarasekara, I., & Grant, W. J. (2019). Exploring the YouTube science communication gender gap: A sentiment analysis. *Public Understanding of Science*, 28(1), 68–84. <https://doi.org/10.1177/0963662518786654>
- Avraamidou, L., & Osborne, J. (2009). The Role of Narrative in Communicating Science. *International Journal of Science Education*, 31(12), 1683–1707. <https://doi.org/10.1080/09500690802380695>
- Berning N. (2011). Narrative means to journalistic ends: a narratological analysis of selected journalistic reportages. VS Verlag für Sozialwissenschaften, Wiesbaden. <https://doi.org/10.1007/978-3-531-92699-5>
- Bloomfield, E. F., & Manktelow, C. (2021). Climate communication and storytelling. *Climatic Change*, 167(3–4), 34. <https://doi.org/10.1007/s10584-021-03199-6>
- Bonelli, G., Boscolo, M., & Tola, E. (2021). Digital Engagement Focus Report. *ENJOI D7.1*. <https://doi.org/10.5281/ZENODO.5972155>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Braun, V., & Clarke, V. (2012). Thematic analysis. In H. Cooper, P. M. Camic, D. L. Long, A. T. Panter, D. Rindskopf, & K. J. Sher (Eds.), *APA Handbook of Research Methods in Psychology*, Vol 2: Research designs: Quantitative, qualitative, neuropsychological, and biological (pp. 57–71). American Psychological Association. <https://doi.org/10.1037/13620-004>
- Bushell, S., Buisson, G. S., Workman, M., & Colley, T. (2017). Strategic narratives in climate change: Towards a unifying narrative to address the action gap on climate change. *Energy Research & Social Science*, 28, 39–49. <https://doi.org/10.1016/j.erss.2017.04.001>
- Chuan CH, Tsai WHS, Cho SY (2019) Framing Artificial Intelligence in American Newspapers. In: Proceedings of the 2019 AAAI/ACM Conference on AI, Ethics, and Society. Association of Computing Machinery, pp. 339–344.
- Chew C, Eysenbach G (2010) Pandemics in the Age of Twitter: Content Analysis of Tweets during the 2009 H1N1 Outbreak. *PLoS ONE* 5(11): e14118. <https://doi.org/10.1371/journal.pone.0014118>
- Culler, J. D. (2000). *Literary theory: A very short introduction* (Reissued). Oxford University Press.
- Dahlstrom, M. F. (2014). Using narratives and storytelling to communicate science with nonexpert audiences. *Proceedings of the National Academy of Sciences*, 111(Supplement_4), 13614–13620. <https://doi.org/10.1073/pnas.1320645111>
- Dubovi, I., & Tabak, I. (2021). Interactions between emotional and cognitive engagement with science on YouTube. *Public Understanding of Science*, 30(6), 759–776.



<https://doi.org/10.1177/0963662521990848>

- Dunaway, F. (2015). *Seeing green. The use and abuse of American Environmental images*. The University of Chicago Press.
- ElShafie, S. J. (2018). Making Science Meaningful for Broad Audiences through Stories. *Integrative and Comparative Biology*, 58(6), 1213–1223.
<https://doi.org/10.1093/icb/icy103>
- European Commission. (2021). *European citizens' knowledge and attitudes towards science and technology* (No. 516; Special Eurobarometer).
- Esu, A., & Maddanu, S. (2018). Military pollution in no war zone: The military representation in the local media. *Journalism*, 19(3), 420–438.
<https://doi.org/10.1177/1464884917700914>
- Genette, G. (1983). *Narrative discourse: An essay in method* (1. publ., 4. print). Cornell University Press.
- Gitlin, T. (1980). *The Whole World Is Watching: Mass Media in the Making & Unmaking of the New Left*. Berkeley: University of California Press
- Glaser, M., Garsoffky, B., & Schwan, S. (2009). Narrative-based learning: Possible benefits and problems. *Communications*, 34(4). <https://doi.org/10.1515/COMM.2009.026>
- Goffman, E. (1974). *Frame Analysis: An Essay on the Organization of Experience*. Cambridge, MA: Harvard University Press
- Green-Barber, L. (2018). Towards a useful typology of engaged journalism. *The Impact Architects*. Retrieved from:
<https://medium.com/the-impact-architects/towards-a-useful-typology-of-engaged-journalism-790c96c4577e>
- Green-Barber, L., & Garcia McKinley, E. (2019). *Engaged journalism: Practices for building trust, generating revenue, and fostering civic engagement*. Impact Architects.
<https://s3-us-west-2.amazonaws.com/lindsaygreenbarber.com/assets/IA+Engaged+Journalism+Report+1.31.19.pdf>
- Hajer, M.A. (1995). *The Politics of Environmental Discourse. Ecological Modernization and the Policy Process*. Oxford, UK: Oxford University Press Inc.
- Hajer, M. A. (2006). Doing discourse analysis: Coalitions, practices, meaning. In M. van den Brink & T. Metzger (Eds.), *Words matter in policy and planning. Discourse theory and method in the social sciences* (pp. 65–74). Netherlands Geographical Studies.
- Hajer, M., & Versteeg, W. (2005). A decade of discourse analysis of environmental politics: Achievements, challenges, perspectives. *Journal of Environmental Policy & Planning*, 7(3), 175–184. <https://doi.org/10.1080/15239080500339646>
- Herman, L. & Vervaeck, B. (2005). *Handbook of Narrative Analysis*. Lincoln, US: University of Nebraska Press
- Hühn, P. (Ed.). (2009). *Handbook of narratology*. Walter de Gruyter Berlin.
- Jones, M. D., & Anderson Crow, D. (2017). How can we use the 'science of stories' to



- produce persuasive scientific stories? *Palgrave Communications*, 3(1), 53.
<https://doi.org/10.1057/s41599-017-0047-7>
- Kruvand, M., & Hwang, S. (2007). From Revered to Reviled: A Cross-Cultural Narrative Analysis of the South Korean Cloning Scandal. *Science Communication*, 29(2), 177–197. <https://doi.org/10.1177/1075547007307963>
- Lidskog, R., Berg, M., Gustafsson, K. M., & Löfmarck, E. (2020). Cold Science Meets Hot Weather: Environmental Threats, Emotional Messages and Scientific Storytelling. *Media and Communication*, 8(1), 118–128. <https://doi.org/10.17645/mac.v8i1.2432>
- Luokkanen, M., Huttunen, S., & Hildén, M. (2014). Geoengineering, news media and metaphors: Framing the controversial. *Public understanding of science (Bristol, England)*, 23(8), 966–981. <https://doi.org/10.1177/0963662513475966>
- Morehouse, B. J., & Sonnett, J. (2010). Narratives of Wildfire: Coverage in Four U.S. Newspapers, 1999-2003. *Organization & Environment*, 23(4), 379–397.
<https://doi.org/10.1177/1086026610385901>
- Mourão, R. R., Brown, D. K., & Sylvie, G. (2021). Framing Ferguson: The interplay of advocacy and journalistic frames in local and national newspaper coverage of Michael Brown. *Journalism*, 22(2), 320–340.
<https://doi.org/10.1177/1464884918778722>
- Negrete, A., & Lartigue, C. (2010). The science of telling stories: Evaluating science communication via narratives (RIRC method). 2(4), 98–110.
- Pan, Y., Opgenhaffen, M., & Van Gorp, B. (2019). Negotiating climate change: A frame analysis of COP21 in British, American, and Chinese news media. *Public Understanding of Science*, 28(5), 519–533.
<https://doi.org/10.1177/0963662518823969>
- Prince, G. (1982). Narrative Analysis and Narratology. *New Literary History*, 13(2), 179.
<https://doi.org/10.2307/468908>
- Riessman, C. K. (1993). *Narrative analysis*. Sage Publications.
- Rosenbloom, D. (2018). Framing low-carbon pathways: A discursive analysis of contending storylines surrounding the phase-out of coal-fired power in Ontario. *Environmental Innovation and Societal Transitions*, 27, 129–145.
<https://doi.org/10.1016/j.eist.2017.11.003>
- Rosenbloom, D., Berton, H., & Meadowcroft, J. (2016). Framing the sun: A discursive approach to understanding multi-dimensional interactions within socio-technical transitions through the case of solar electricity in Ontario, Canada. *Research Policy*, 45(6), 1275–1290. <https://doi.org/10.1016/j.respol.2016.03.012>
- Schaeffer, K. (2021). 7 facts about Americans and Instagram. *Pew Research Centre*.
<https://www.pewresearch.org/fact-tank/2021/10/07/7-facts-about-americans-and-instagram/>
- Secko, D. M., Tlalka, S., Dunlop, M., Kingdon, A., & Amend, E. (2011). The unfinished science



- story: Journalist–audience interactions from the Globe and Mail’s online health and science sections. *Journalism*, 12(7), 814–831
<https://doi.org/10.1177/1464884911412704>
- Smith, N.W. & Joffe, H. (2009) Climate change in the British press: the role of the visual, *Journal of Risk Research*, 12:5, 647-663, DOI: 10.1080/13669870802586512
- Statista Research Department. (2021a). Instagram in Europe—Statistics & Facts. *Statista*.
<https://www.statista.com/topics/3438/instagram-in-europe/>
- Statista Research Department. (2021b). YouTube—Statistics & Facts. *Statista*.
<https://www.statista.com/topics/2019/youtube/>
- Stoll, J. (2021). Television industry in Europe—Statistic & facts. *Statista*.
<https://www.statista.com/topics/8626/television-industry-in-europe/#dossierKeyfigures>
- Thon, J.-N. (2016). *Transmedial Narratology and Contemporary Media Culture*. University of Nebraska Press.
- Veltri, G. A. (2013). Microblogging and nanotweets: Nanotechnology on Twitter. *Public Understanding of Science*, 22(7), 832–849.
<https://doi.org/10.1177/0963662512463510>
- Veltri, G. A., & Atanasova, D. (2017). Climate change on Twitter: Content, media ecology and information sharing behaviour. *Public Understanding of Science*, 26(6), 721–737. <https://doi.org/10.1177/0963662515613702>



ANNEXE 1. Results per country

Table S1: Analysis Piece 1 (Spain). Television

Country: Spain	
La gran consulta: Jacob Petrus y Aquí la Tierra	Analysis (FCièncias.ID)
What? "the story"	In this interview, the director and presenter of the daily TV show, explains some of the elements of success of the programme and its <i>leitmotiv</i> : "It is something that has always motivated me, that is, to understand what is happening around us. Politics and economics are interesting, but sometimes the smallest things, those that happen around us, are more relevant, thus, by understanding them, we can feel a little more in connection with our planet". In this clip, he also highlights how local and short-term conservation and support actions (e.g., rural economy or local traditions) needs to be combined with mid/long-term actions to protect the environment. All of them, elements that characterise the programme.
Why? "the relevance"	This piece was produced within an ambitious transmedia participatory campaign launched to find out the public opinion and expectations of the audiences on the Spanish public broadcasting channel.
Who? "the actors"	This piece is an interview, thus, two voices are present and share equal weight in the conversation. The presenter and director of the TV show, a geographer specialised in climatology, is interviewed by a journalist. No other specific actors or sources are cited.
Where? "geographies, places, scene"	The interview is conducted on a TV mobile set that is travelling around Spain to collect citizens' opinions. This episode was recorded in Madrid, at the IFEMA show ground, which is apparent in the background. Some of the places mentioned in the interview are rural areas (in general) and cities and villages (for local action).
When? "time of the narration"	The narration takes place at the same time than the story. There are no temporal elements to highlight.
How? "narrative & storytelling"	<p>The <u>main narrative</u> behind this story relates to the so-called 'every little help', which focuses on individual stories of personal responsibility and solidarity, with local and daily actions that can take place "on your street, on the ground in front of your house, with animals around you, even in cities, all of that must also be protected". His narration also frames climate science (and climate change) as transversal to other areas, not only scientifically speaking, but also in practice. Effects of climate change are presented as observable phenomena in multiple natural and cultural environments. This holistic and close representation of climate change might facilitate audience interest in the topic.</p> <p><u>Narrative features</u>: personalization. In the interview, the TV presenter and director shares his motivations and fears when the programme started: "I thought that we did not get past the first month (...), I thought it many days, not even the people who most believed in this project thought at any time that we were going to get where we have arrived (...) this is a program about geography and we are very lucky to talk about all elements that integrates it, to understand everything that happens in a territory, considering climate, meteorology, agriculture, fauna, traditions, this is something that has always motivated me". Personalization elements (own experience, feelings, goals, motives) are inherent to the format (interview), allowing the audience to empathise with the interviewee.</p> <p><u>Language and rhetorical elements used</u>: language used is quite informal, with no jargon used. There are no rhetorical elements to highlight.</p> <p><u>Audiovisual elements (relevant for the story)</u>: There are no audiovisual elements to</p>



	highlight.
How? "going beyond the story"	<p><u>Inspiring examples or solutions mentioned</u>: international movements that fight climate change (without mentioning any in particular), local action and support of rural economies, short-term/daily actions for environmental protection.</p> <p><u>Audience engagement and participation</u>: there are two elements to be analysed: the first one is the frame in which this interview is conducted, and another one is the programme presented "Aquí la Tierra". In both cases, the engagement and participation of the audience are central for their development. Considering the former, this interview is part of the initiative "La gran consulta", for which a TV mobile set is travelling around Spain to collect citizens' opinions. For the latter, Aquí la Tierra talks about climate and meteorology through the participation of individuals and/or collectives (companies, associations, neighbours, etc.) who present e.g., local traditions, food production, singular ecosystems of their regions, and how all of them can be conditioned by the weather and/or climate. Reporters travel around Spain to bring the audience curious images of the country. Thus, public participation is fundamental to providing the programme content. As its directors' mention, the programme aims at providing a content that is useful and enjoyable, responding to audiences' needs <i>"we feel that we occupy a space that people want on public television, that we deal with topics that people want to see and listen to while having fun and have a good time"</i>.</p>

Add below any additional (contextual/cultural) information you consider relevant for the reader

This is a daily TV programme that connects audience with geography through short (local and regional) stories in which climate science and/or meteorology have an important role. In particular, the programme talks about science in the broadest sense (integrating several fields of knowledge, such as sociology, anthropology, agronomy, biology, etc.) and addresses cultural issues and traditions at local and regional levels in Spain. Drawing on the premise that *'everything is influenced by climate and meteorology'*, the programme focuses on topics such as food production, folklore, traditions, ecosystems, and human and non-human animals, and their interconnections with nature. It has the highest TV share at the time of emission. This could be considered (in some aspects) an example of engaged journalism.



Table S2: Analysis Piece 2 (Spain). Television

Country: Spain	
El cambio climático en nuestras costas	Analysis (FCiências.ID)
What? "the story"	The weather forecast programme from the Spanish national TV recreated the effect of climate change on the Spanish coast in 2100, using the example of a beach in Northern Spain (Zurriola, San Sebastián, Basque country) through augmented reality (AR) technologies.
Why? "the relevance"	This clip was produced and broadcast coinciding with the International Conference on Climate Change "Change the Change" held in the Basque Country (March 2019). The production of this piece was well justified at the time and provided a familiar example of climate change impacts to the audience. Moreover, during the Conference, the Spanish national TV (together with other media) joined the 'Media Statement on Climate Change', a decalogue with key recommendations when reporting on this topic.
Who? "the actors"	The meteorologist, TV director and presenter is the main (and only) narrator of the story. She takes a diegetic mood to explain global and local effects of three climate scenarios in a specific city in Spain. The only source cited is the NASA.
Where? "geographies, places, scene"	The clip starts by recreating (AR) the effects of global warming on ice melting and sea-level rise in Greenland (including polar bears and seals) to move to a more local example, the Cantabrian sea (Spain). For the Spanish case, images virtually created and projected in AR show how the coastal area of San Sebastián will be highly affected by sea-level rise, for instance, images of maritime storms with large waves and flooded neighbourhoods in San Sebastián are shown. The story also mentions how these impacts will not only affect northern regions in Spain but, as the global problem it is, all coastal regions in Spain will be affected. Thus, this piece goes from the global to the local, zooming into areas familiar to the audience, to zoom out again and highlight that climate change impacts (in particular, sea level rise) are going to be present in multiple regions in Spain (as well as globally).
When? "time of the narration"	The narration refers to historical data (pre-industrial period, 1880s) but more importantly, it presents three projections into the future (climate scenarios). Thus, the use of flash-forwards is relevant for the construction of the story. Starting from the current situation (with actual levels of CO ₂), the story describes hypothetical futures (2100) under the different climate scenarios (higher CO ₂ levels, higher temperatures and sea levels rising).
How? "narrative & storytelling"	The <u>narrative</u> presented relates to the so-called 'Al Gore' narrative. It is mainly constructed around climate data, and clearly states that the release of greenhouse gases into the atmosphere by humans is causing unequivocal changes to the Earth's climate (" <i>global warming depends on the concentration of greenhouse gases, and that concentration depends on our behaviour, on our emissions</i> "). It does not try to convince but to translate the scientific data on something more visual that people can easily understand, i.e., how our cities will be affected by sea-level rise, even if it is only an increase of a few centimetres it may cause devastating effects on coastal areas. <u>Narrative features</u> : dramatization and fictionalization. Drawing on available climate data, it recreates (through the use of AR) the negative consequences of three climate scenarios on the Arctic and a specific region in Spain by 2100. The use of a local example might have a stronger effect (emotional impact) on the audience than the 'polar bear' effect, since they can be more aware of the potential



	<p>destruction of familiar places in the next decades (“<i>We have carried out this visual experiment in the Bay of Biscay, but this is a global phenomenon, all the Spanish coasts will suffer a setback and many of them would see their adaptation to these new conditions seriously threatened</i>”). Thus, the combination of plausible future scenarios (fictionalization) and their negative consequences (dramatization) are the two main narrative features identified. On the positive side, she closes the clip by claiming that it is still possible to act “<i>the future is in our hands... The climate of the future depends on how we behave in the present</i>”.</p> <p><u>Language and rhetorical elements used to tell the story:</u> language used is formal, without jargon. Infographics complementing AR images help to contextualise and visualize the data mentioned, some of them are used to visually represent similes, e.g., ice melting-water volume and number of olympic swimming poles equivalent.</p> <p><u>Audiovisual elements that contribute to tell the story:</u> audiovisual elements (augmented reality and infographics) are central elements of the story. They allow the audience to understand the effects of sea-level rise under different climate scenarios. Complex data and information are visualize in a comprehensible way.</p>
<p>How? “going beyond the story”</p>	<p><u>Engagement with the audience:</u> audience engagement is possible through social media. This TV clip is part of the social media campaign #ElFuturoEnTusManos, being also largely viewed, shared and commented on Twitter. It is also available on the RTVE website, and allows sharing on Facebook, Twitter, and email.</p> <p><u>Innovative elements:</u> use of augmented reality (as described above) to recreate the impacts of climate change under three climate scenario (Arctic region, and San Sebastián, Cantabrian sea). Visual storytelling is a powerful tool in this piece.</p>
<p>Add below any additional (contextual/cultural) information you consider relevant for the reader</p>	
<p>This is an example of innovative journalism (use of augmented reality as a tool for visual storytelling).</p>	



Table S3: Analysis Piece 3 (Spain). Television

Country: Spain	
Viaje a la España de 2090: así será el desolador paisaje si no actuamos ya contra el cambio climático	Analysis (FCiências.ID)
What? "the story"	In this clip, two journalists take a fictional journey to the future (2090) and describe how several areas of Spain (Andalucía, Extremadura, Murcia, Castilla La Mancha) have changed since 2019. The goal of this video is to show potential future effects of climate change at different levels (e.g., desertification, droughts, water scarcity, sea-level rise), and their societal impacts (e.g., food production, destruction of coastal areas) in Spain.
Why? "the relevance"	It is not clear why the story is relevant at the time of publishing.
Who? "the actors"	One of the journalists is the main narrator of the story, while the other acts as an observer who joins the journalist in a travel to the Spain of 2090. He takes a diegetic mood to coordinate the information provided (data and potential facts), she puts questions to the journalist to guide the narration, which takes the form of an informal conversation between them. No specific data sources are cited, although the journalist refers to "some scientific studies [that warned about these potential consequences in 2019]".
Where? "geographies, places, scene"	The clip is recorded in natural environments. Several places are mentioned and/or shown throughout the video, namely Andalucía, Extremadura, Murcia, and Castilla La Mancha. Some specific examples are also cited, e.g., National Park of Monfragüe (Extremadura), recognised by UNESCO as a Biosphere reserve. Scenes and places visited and shown by the journalists in their journey to the future are the following: i) landscapes largely affected by desertification (with biodiversity loss, water scarcity and/or heavy rainfalls causing soil erosion) under higher CO ₂ atmospheric levels ("apocalyptic scene") compared to the recovery of green areas with a reduction of CO ₂ levels ("this ecosystem can be saved"); ii) changes in land use and crops (food production vs. energy production, with large solar farms in arid lands formerly used for food production); iii) coastal areas and potential impacts of sea-level rise (flooding, tsunamis, seawalls and buildings destruction/damage, negative effects on tourism/economy). For all of them, specific examples of Spanish cities/regions in risk are mentioned.
When? "time of the narration"	The story uses a literary device (flash-forward) to situate the narration in a hypothetical future scenario in 2090. The entire narration is built on potential future events narrated in present tense (placing the journalists in the future), which are compared to past events (actually, the current present, when the video was produced in 2019).
How? "narrative & storytelling"	The <u>main narrative</u> presented in this video relates to the 'end of the world' narrative to alert against the potential (although feasible) consequences of climate change on natural systems and humans. This narrative refers to the urgent need to act to avoid catastrophic futures, thus, still possible action is feasible (" <i>humans have shown an enormous capacity for adaptation, there are two options, to sit back or do something</i> "). In this particular piece, the story is presented as a lost opportunity, since the Spain of the future (2090) has been highly affected by today's inaction. The use of alarmist vocabulary, such as 'catastrophic', 'apocalyptic', or 'destruction' is present throughout the piece. <u>Narrative features</u> : dramatization and fictionalization. The combination of plausible



	<p>futures presented as real in 2090 (fictionalization) as a result of the expected (“apocalyptic”) consequences of climate change for Spain (dramatization) are the two main narrative features identified. These aim at stimulating emotions by presenting complications, setbacks, disasters or crises (dramatization), as well as to help audiences to place themselves in feasible futures (fictionalization), in particular using images that recreates or relates to the future impacts mentioned.</p> <p><u>Language and rhetorical elements used:</u> language is informal, with no jargon; the story is presented as a conversation between the journalists, one of them taking an active role as ‘narrator’ and the other as ‘observer’, thus, the use of Q&A (such as an informal interview) is used by the journalists, as well as rhetorical questions.</p>
<p>How? “going beyond the story”</p>	<p><u>Solutions/inspiring examples mentioned:</u> interestingly, technological innovation is not seen as part of the solution, the piece ends with the following statement (and rhetorical questions) “<i>with technologies, we do have a problem because who has access to these technologies? who decides who has access to these technologies? who is saved and who is not?</i>”.</p> <p><u>Audience engagement:</u> audience engagement was possible through social media by the use of a specific hashtag. The programme was a trending topic, being largely viewed, shared and commented on Twitter. It is also available on the channel website, and it allows sharing on Facebook, Twitter, WhatsApp, Telegram and email.</p> <p><u>Innovative elements:</u> the presentation of the story as a journey to the future (Spain in 2090) to exemplify some of the potential future consequences of the current inaction to fight climate change in the present.</p>
<p>Add below any additional (contextual/cultural) information you consider relevant for the reader</p>	
<p>This piece was awarded with the Boehringer Ingelheim prize.</p>	



Table S4: Analysis Piece 4 (Spain). Instagram

Country: Spain	
Cambio climático: 5 cosas que puedes hacer para frenarlo	Analysis (FCiências.ID)
What? "the story"	In this video, the journalist and coordinator of a fact-checking initiative, presents five actions that can contribute to fighting the consequences of climate change. The aim of the video is to present a series of measures that citizens can do to fight climate changes at the individual level, thus, counteracting the notion of 'eco-anxiety' associated with the belief of irrevocable impacts of climate change in one's future and that of next generations.
Why? "the relevance"	It is not clear why the story is relevant at the time of publishing. This video belongs to a series of videos that the initiative produced in collaboration with the NGO Ayuda en Acción (a Spanish apolitical and non-religious NGO that fights poverty and inequality in multiple countries) within the campaign "1Planet4All".
Who? "the actors"	The journalist acts as an omniscient narrator. She takes a diegetic mood to coordinate the information and present the five central points (recommendations or actions) that conforms the narration. The sources are not cited or quoted. There are no other voices considered in the story.
Where? "geographies, places, scene"	The setting is neutral, a blue background that accentuates the figure of the journalist, who is standing up alone in front of the camera in a medium/medium-close-up shot (focusing audience attention to her gestures). The neutral background also allows placing images and text on top to illustrate her narration.
When? "time of the narration"	The story is atemporal, and the narration framed in the present.
How? "narrative & storytelling"	Dominant narrative: The journalist starts this piece by claiming that the narrative of 'the end of the world' is false: " <i>it is not true that it is impossible to avoid the catastrophic effects of climate change, you can do something</i> ". She highlights that individual actions are important (although it is " <i>naive to think we can solve everything by taking individual actions</i> "), but that collective action (political and economic decisions) can be more effective in tackling the problem. This narrative then relates to the 'every little help' as it encourages citizens to take action. Narrative features: there are no significant elements in this piece. Language and rhetorical elements used to tell the story: the language is informal, direct, and with no jargon. There are no significant rhetorical elements in this piece. Audiovisual elements: The video uses audiovisual resources and images (drawings, numbers, and letters) to highlight the solutions mentioned (e.g., solar panels, bicycles, etc.), thus calling attention to the five central points of the story.
How? "going beyond the story"	Inspiring examples/solutions provided: This post provides examples of five simple actions that citizens can do to fight climate change at the individual level: i) get informed, look for facts and data produced by reliable sources (researchers); ii) reduce fossil fuels (energy efficiency, renewables, and public transport); iii) eat less meat (to reduce methane); iv) 3R (reduce, reuse, recycle); v) direct (collective) action through political involvement (your vote counts), and market decisions (considering what/where we purchase our goods). Engagement with the audience: It is possible to publish comments, share the content, and 'like it' through 'favs'. She directly appeals to the audience to encourage them to take individual and collective action, also by sharing this message with friends, to act 'together'.



Add below any additional (contextual/cultural) information you consider relevant for the reader

At the end of the video, it is clearly shown that the content of these series of videos were produced for the project "1Planet4All" (Ayuda de Acción) co-funded by the EC within the DEAR programme. Maldita Ciencia is a journalism organisation devoted to fact-checking and the fight of fake news.

Table S5: Analysis Piece 5 (Spain). Instagram

Country: Spain	
Directo COP25	Analysis (FCiências.ID)
What? "the story"	Two journalists from La Climática (a magazine dedicated to the climate crisis, by the independent media La Marea) narrate their 2-weeks news coverage of the COP25 in Madrid. In a series of short videos (stories) recorded at the end of several days at the COP, they narrate not only how the negotiations were evolving, what actors were present in the event, or what conflicts arose, but also their personal experience covering the conference (long days of work, tiredness, but also optimism).
Why? "the relevance"	The story was highly relevant at the time of publishing. The stories were produced and shared online at La Climática channel, almost daily for the 2 weeks that the COP25 lasted, allowing the audience to follow the latest news.
Who? "the actors"	Throughout the series of videos, the journalists use the mimetic mood to refer to what was said by the multiple societal agents and policymakers involved in the conference or to report about what they observed and experienced also as actors participating in the event; as well as the diegetic mood to coordinate the information and give the central points of the story (e.g., to sum up the most relevant discussions that took place, for instance, the debate around some of the most critical articles). Several actors are mentioned and/or appear represented in the story as sources or topics that have been covered during the event in La Marea and/or Carne Cruda (a radio programme from the same group): Most affected communities (Indigenous communities, developing countries, islands): to include voices from Indigenous groups, non-western voices (their opinions about the fact that the COP was moved from Chile to Madrid) Researchers working in adaptation and mitigation; Social movements and activists: Friday for Future, Greenpeace, Extinction Rebellion, Greta Thunberg; Companies: Iberia (sponsor of the event and one of the most polluting companies); Religious organizations (different beliefs): they want to be allies in the climate crisis as they can mobilize communities; Two moments that deserved special attention are: i) the intervention of the collective 'Fridays for Future' claiming for climate justice (" <i>What do we want? Climate justice, When do we want it? Now</i> ") and ii) how a group of observers (companies, civil society organizations, and researchers) were kick out of the conference. These moments were highlighted by the journalists and included in the coverage.
Where? "geographies, places, scene"	The stories were recorded during the COP25 at IFEMA, most likely at the press room and using a cell phone. The first video shows the venue to the audience (by using a point-of-view shot), which creates proximity, while in the rest (in which the journalists are placed at the centre of the scene) is more difficult to perceive the location; in the last one, the journalists place themselves outside the conference



ENJOI - ENgagement and JOurnalism Innovation for Outstanding Open Science Communication

This project received funding from the European Union's Horizon 2020 Research and Innovation program under Grant Agreement n°101006407
www.enjoiscicomm.eu

	venue (wearing their jackets and scarf) to close the coverage. In all the videos, the journalists self-recorded themselves, appearing together in the shot, giving them equal weight to their narration.
When? "time of the narration"	For two weeks, the two journalists were following the COP25 conference. All the videos (stories) were recorded at the end of the day during several days. Thus, their narration evokes some of the most relevant events occurred during the day, using flashbacks to recall and tell what happened. The series of videos follow a logical chronological order, from the first days to the last one of the conference.
How? "narrative & storytelling"	<p>In general, the way the story is presented to the audience is neutral and informative, presenting the facts occurred during the event. The <u>dominant narrative</u> of the piece presents the need of representing multi-voices (Indigenous people, activists/social movements, scientists, or religious leaders) and topics (climate justice or gender equality), highlighting the conflicts, difficulties and lack of agreement in the negotiations but also the perspectives and actions of collectives that are directly affected by climate change impacts (islands, less developed countries).</p> <p><u>Narrative features identified:</u> personalization. Apart from reporting about the development of the event, the journalists share with the audience their feelings (e.g., long days of work following the negotiations, or feeling exhausted some days but optimistic about the outcomes, as they mention in the videos) and experiences while covering the event (e.g., to be involved in a spontaneous demonstration). By making this story more personal, they are able to connect with their audience, who can take their perspective and feel empathy (e.g., on the hard work of journalists covering these kind of events).</p> <p><u>Language and rhetorical elements used:</u> the language used is informal, without jargon, there are no specific rhetorical elements to be highlighted.</p> <p><u>Audiovisual elements that contribute to tell the story:</u> this piece is purely audiovisual, thus, all elements are relevant (camera shots and movements, sound, etc.) Almost all shooting angles are 'selfies' (i.e., the journalists self-recorded themselves) at an eye-level angle, which makes the videos appear natural, similar to what the audience would see by themselves.</p>
How? "going beyond the story"	<p><u>Inspiring examples/solutions provided:</u> the initiative 'Fridays for future' and Greta Thunberg are highlighted as inspiring examples, as well as other collectives who are actively working for solutions (e.g., representatives of religious organizations and NGOs as societal actors that are close to society, or scientists through research on adaptation and mitigation).</p> <p><u>Engagement with the audience:</u> This series of videos was broadcasted live on Instagram, allowing audience participation. The piece was then highly interactive and engaging as it allowed a direct (an immediate) reply to the authors. It is still possible to send comments (once the piece was published). It was also possible to follow the updates of this coverage through a dedicated Telegram channel. At the end of the piece, the journalists call attention to the fact that the production of this piece and all associated resources (2 weeks of work, more than 50 articles, interviews, multiplatform, etc.) was possible thanks to the subscribers. In particular, they explain how to be able to produce this independent content and to provide other angles of the stories and avoid greenwashing, it is necessary to the audience support independent journalism. Thus, they do a direct call for audience engagement in terms of economic support.</p> <p><u>Other innovative aspects:</u> Multiplatform coverage of the event (magazine, Instagram, Telegram, radio, Twitter).</p>

Add below any additional (contextual/cultural) information you consider relevant for the reader

La Climática is an independent online magazine specialised in climate change, its causes and consequences. Born from the association of an independent journal and a cooperative of journalists, La Climática is supported by



ENJOI - ENgagement and JOurnalism Innovation for Outstanding Open Science Communication

This project received funding from the European Union's Horizon 2020 Research and Innovation program under Grant Agreement n°101006407
www.enjoiscicomm.eu

crowdfunding campaigns, subscriptions/memberships, and public and private funding that aligns with their ethical code. This media is an example of engaged journalism, by prioritising the information needs of their audience and promoting the organization of workshops, meetings, cultural events, and the Climática University, open to their audience.



ENJOI - ENgagement and JOurnalism Innovation for Outstanding Open Science Communication

This project received funding from the European Union's Horizon 2020 Research and Innovation program under Grant Agreement n°101006407
www.enjoiscomm.eu



Table S6: Analysis Piece 6 (Spain). Instagram

Country: Spain	
Huertos solares en la transición energética	Analysis (FCiências.ID)
What? "the story"	In this piece, the journalists from El Salto call attention to the fact that the energy transition can take different paths ([in the EU] <i>"not all energy transitions are the same"</i>) depending on its leading actors, i.e., large energy corporations or citizen-led initiatives. The piece questions the current and future energy model and the governance of the energy transition with a special focus on Spain but also providing an EU perspective.
Why? "the relevance"	It is not clear why the story is relevant at the time of publishing.
Who? "the actors"	The journalist presenting the story, acts as an omniscient narrator. She takes a diegetic mood to coordinate the information and tell the central points that conforms the narration (EU climate objectives for 2030, role of large energy companies in the energy transition in Spain, and governance of the energy transition globally). Sources of some of the figures presented (e.g., number of solar panels in rooftops) are not cited. There are several actors mentioned in the story (although none of them provide a direct input to the story): <ul style="list-style-type: none"> political actors (the European Commission, some EU countries); three Spanish energy companies (Acciona, Hiberdrola, Endesa), which are pointed out as some of the most pollutant companies of the country and now investing in renewables; all three sponsored the COP25 in Madrid (example of greenwashing); prosumers (energy producers and self-consumers)
Where? "geographies, places, scene"	The story goes from a European perspective (presenting the EU climate objectives to mitigate climate change by 2030 (*) and mentioning some countries as negative examples, namely Eslovenia, Malta, Latvia, Lithuania, Estonia, with no specific climate or environmental legislation or not updated since 2015), to a more national one in which Spain and Germany are compared in terms of energy prosumerism in households (giving some figures on solar panels on rooftops in both countries: 50.000 in Germany vs. 9.000 in Spain). Spain is thus presented as a country with a large potential for energy production (solar energy) but with a smaller development of individual/collective prosumerism in households. By contrast, as the piece states, energy companies are investing in large solar farms, with the largest one located in Badajoz (Spain). The geographies of energy production in Spain are moving from rooftops in cities and villages to the countryside with large infrastructures of solar farms, having an effect on the governance (and leadership) of the energy transition (self-consumption vs. dependence on large corporations). Other places and scenes shown in the video: pollutant industries, wildfires, cars, ice melting, deforestation, highly polluted cities, solar panels, wind turbines, public transport, bicycles, COP25 (Madrid), cities and villages in Spain and Germany. (*) namely, 40% cuts in greenhouse gas emissions from 1990 levels, 32% share for renewable energy, and 32,5% improvement in energy efficiency.
When? "time of the narration"	The piece mentions the EU climate objectives for 2030, as well as events originated in the past (and still occurring in the present, such as the lack of changes in some national legislations since 2015) or the role of some Spanish energy companies in the COP25 in Madrid. There are not other references to past or future events and, in general, the story is narrated in present tense, with no



	temporal elements to be highlighted.
How? "narrative & storytelling"	<p>The <u>dominant narrative</u> presented in the story relates to the so-called 'green living' narrative, which envisions sustainable energy futures, although this one is lacking the notion of 'sacrifices for the greater good'. By contrast, it appeals for collective action involving EU national governments to manage the energy transition with a certain degree of independence of large energy companies. The piece states that energy corporations should take action and reduce their impacts, thus being also involved in the decarbonization of the energy system, but not leading and/or governing the transition. The greenwashing narrative of these companies is also exemplified in the piece when the journalist mentions that the three largest Spanish energy companies, also pointed out as the most pollutant, sponsored the COP25 in Madrid. The same ones that are investing in 'green energy' through the creation of large solar farms in Spain.</p> <p><u>Narrative features identified</u>: The story is presented in a neutral and objective way, without any specific Narrative features to be highlighted.</p> <p><u>Language and rhetorical elements used to tell the story</u>: language and body language are informal, jargon is not present in the narration; there are no rhetorical elements identified.</p> <p><u>Audiovisual elements that contribute to tell the story</u>: The story is supported by audiovisual resources such as memes ('thug life'), camera movements and speed of the recording, music (urban style), and other resources used by the journalist (sunglasses, small toys, and one cocktail umbrella).</p>
How? "going beyond the story"	<p>The journalists advocate for a sustainable energy transition led by prosumers (citizen-led), and not by large corporations. Thus, one of the <u>solutions</u> proposed is the promotion (at the EU national level) of energy sovereignty through energy production and self-consumption to avoid dependency on large corporations that are more interested in their economic benefits than in the climate crisis. In line with this solution, one <u>inspiring example</u> given is the German case, with high numbers of prosumers in cities.</p> <p><u>Engagement with the audience</u>: It is possible to publish comments, share the content, and 'like it' through 'favs'. The audiovisual elements used (described above), together with an informal language and body language of the journalist can promote the engagement of the youth, which, in general, are target users of this social media.</p>

Add below any additional (contextual/cultural) information you consider relevant for the reader

According to its website, El Salto is a journalistic multiplatform project (magazine, radio, video) committed to "a radically different journalism: without financing from Ibex35 companies, democratic, decentralized and collectively owned". It has a transparent ethical code. It is currently supported by more than 8000 subscribers.



Table S7: Analysis Piece 7 (Spain). YouTube

Country: Spain	
Respondo comentarios de negacionistas del cambio climático	Analysis (FCiências.ID)
What? "the story"	The YouTuber (specialised in scientific content in general, and physics in particular) replied in this video to a series of climate change denial comments generated in a previous video where he talked about climate change. His aim was to fight misinformation by providing scientific facts that prove wrong some of the comments published, which framed climate change as i) an unreal problem or ii) not caused by human action.
Why? "the relevance"	Both videos were published during the COP24, held in December 2018 in Katowice, Poland. Although this video doesn't address that event in particular, climate change was one of the key news topics of that time.
Who? "the actors"	The YouTuber mainly uses the diegetic mood to express the central points of the story he builds, acting as an omniscient narrator. Throughout the video, he shows some of the comments received to his last video, and replies to some of them, thus, giving 'voice' to the audience and engaging with them. Although he directly addresses some of the points expressed by the audience, he doesn't quote them (although the comments are shown as screenshots, which can be considered as a use of the mimetic mood).
Where? "geographies, places, scene"	The camera is fixed, showing a full body shot of the YouTuber. The setting, a house or apartment, allows seeing he seat on a sofa, wearing casual clothes and no shoes, a small decorated x-mas tree, a blanket, and some cushions. The scene looks very familiar and informal, facilitating certain proximity with the audience.
When? "time of the narration"	The video constantly refers to the comments received in the YouTuber's last video, i.e., one week before. So, the use of flashbacks to present some of the selected comments and refer to the previous video is widespread throughout the recording. Some of the points he explains also look back to the past, to contextualise some of the present circumstances as a result of past activities. Thus, the story presents past and current data, mainly in the form of graphics that are not cited (no apparent sources) but which seem to come from scientific publications. All these data are presented as current facts and knowledge.
How? "narrative & storytelling"	The <u>dominant narrative</u> in this piece relates to the 'Al Gore' narrative, which central point is to show that there is incontrovertible evidence (scientific facts) that supports the responsibility of human activities to the increment of CO2 and thus to climate change. A certain degree of 'deficit knowledge' of the audience is also present in this narrative, for instance, when he states that <i>"the fact that the climate is changing, and this change will affect us, is something that only scientists with large amounts of data, statistics, and knowledge about climatology, geology, biology, can see. They have the responsibility to alert us because they are the people who can deeply understand this topic"</i> . Some of the questions, arguments, and critiques addressed in the video are around the following issues: i) link CO2 levels and temperature, ii) raise of 1°C caused (or not) by human activities, iii) climate change as a (un)natural phenomena, iv) uncertainty of CO2 levels in past records; v) volcanoes and oceans as sources of CO2, vi) H2O-CO2 as un/connected cycles, vii) modelling caused by human activities, viii) scientists not involved in other social problems, ix) individual vs collective responsibility. The story is then constructed to explain and justify all these points through the available scientific evidence. He also asks the audience to



prove their reasoning by including (and citing) scientific articles in their comments. At the very end of the video, he also appeals to political action and society involved in politics to tackle climate change, as a more effective solution than individual changes (reduction in personal carbon footprint). This connects with the 'Every little help' narrative, which encourages citizens to pitch in and take action.

Narrative features identified: emotionalization. Although the information is presented in a neutral and objective way, the YouTuber also shows some emotions (e.g., surprise, enthusiasm, a bit of condescension, and pleasure) when presenting some of the comments received. He also expresses his willingness to reply to some of the questions, comments and critiques left by the audience (comments)

Language and rhetorical elements used: Although he uses an informal register to address to his audience, the YouTuber also uses technical explanations, jargon, and graphics (in English) to expose all points developed in the video. One of the rhetorical elements used is a simile to illustrate how a single data point (an anomaly) cannot refute the entire temperature and CO2 registers by comparing this anomaly with the case of an old lady that has smoked all her life and does not have lung cancer; it cannot be stated that one single point explains the entire situation. In this way, he compares the complexity of the human body (and the conditions that explain suffering or not cancer) and the Earth system (and the elements that modify the temperature-CO2 relation).

Audiovisual elements that contribute to tell the story: music is present throughout the video; graphics and schemes to simplify reactions, cycles, and to illustrate the cited data are also used.

How?
"going beyond the story"

At the end of the video, the YouTuber mentions one action (solution) that can contribute to tackle climate change: political action, *"it is fine that in our personal life we reduce as much as possible our carbon footprint, but where we need to be is in the frontline, in our governments, this problem can be solved by doing politics, that is, in our votes is where we have the power to solve this problem"*.

Engagement with the audience: the YouTuber builds this video on the comments received by the audience in a previous video. Thus, the audience directly participates in the content of this piece (in an indirect way). He gives two reasons to explain his motivation to produce this video: i) to complement previous information published in his channel, and ii) to be polite with the comments left by his audience and to directly reply to some of them. For him, as stated in the video, is polite to reply to the audience. Thus, apart from using some of the comments as possible content for other videos, he considers important to reply to them. The YouTuber selects some of the most controversial, and reacts to the scepticism, misinformation, disinformation, and inaccurate information shared by the audience. As any other video (and channel) on YouTube, this piece is open to audience engagement through comments, likes, and sharing. In this particular case, this previous engagement is the motivation to produce this video.

Other innovative/engaging elements: the setting. He seats in front of the camera, in a casual and familiar scene that facilitates the proximity with the audience.

Add below any additional (contextual/cultural) information you consider relevant for the reader

He is one of the most important scientific YouTubers in Spain, with 2,84M of subscribers to his channel. This piece could be framed as an example of 'fact-checking'.



Table S8: Analysis Piece 8 (Spain). YouTube

Country: Spain	
Cambio climático: ¿Estamos a tiempo?	Analysis (FCiências.ID)
What? "the story"	The YouTuber (a journalist and science communicator), accepted the offer of Acciona (a renewables company) to comment on a video that the company produced in response to debates around the Spanish Draft Bill on Climate Change (2018-2019). The story presented in this video is then the Acciona's narrative. The YouTuber uses the Acciona's video to clarify, expand, and highlight some points that she considers important to understand the urgency to act against climate change and what solutions exist.
Why? "the relevance"	This video displays and comments on another video that was produced by Acciona (in May 2018) in response to the social and political debate around the Spanish Draft Bill on Climate Change (presented by the Spanish government in February 2019). The relevance of both videos is clear: the former claimed for political consensus to develop and put into force the Law without further delay, while highlighting the importance of investing in renewables (Acciona is a renewables company); whereas the latter (published in May 2019) analyses the original video and reinforces the need to fight climate change and to adopt the Law (May 2021).
Who? "the actors"	In this video there are several narrators since the YouTuber is commenting on a video that is narrated by others. There are then multiple narrative voices: one that represents the company (which also includes multiple sources, see below) and the narration of the YouTuber, commenting and enlarging the narration of the original story. In both cases, the narrative voices take both the mimetic and diegetic moods to document what the sources tell us (e.g., citing reports, articles, and public speeches) and to coordinate the information that is presented in the story. There are multiple sources cited in the original video produced by Acciona (which appeared in the captions or are easily identifiable), therefore, being also present in the narration produced by the YouTuber. These sources are the following: Governmental sources (national and international): Agencia Estatal de Meteorología (AEMET); Instituto para la Diversificación y Ahorro de la Energía (IDAE); Ministerio de Asuntos Económicos y Transición Digital (MINECO); European Commission; Media: RTVE (Spanish national television); El País (Spanish newspaper); ABC (Spanish newspaper); The Diplomat; Renewable Energy Magazine; Nonprofit organizations: Observatorio de la Sostenibilidad; Climate Central; Inside Climate News, Research organizations/institutions: Joint Research Centre (JRC); LSE Business Review; Ciencia en el Parlamento; Intergovernmental Panel on Climate Change (IPCC); Companies: Asociación de Empresas de Energías Renovables (APPA); Protermo Solar; Bloomberg; Lazard Estimates; Activists: Greta Thunberg at the COP24 (only included in the video produced by the YouTuber, not in the original by Acciona).
Where? "geographies, places, scene"	The video shows the YouTuber in a room, surrounded by a small library with books anime dolls, and Rubik's cubes. There is also a screen behind her displaying the image of a polar bear with the caption: "Help us!". At the beginning of the video, she appears petting a dog seated on her lap. The YouTuber is recorded medium shot, with some close-up shots for facial expressions, in particular, when she is petting the dog (a scene that is displayed in black and white). The scene is pretty informal, allowing a certain degree of familiarity with the audience. There is a combination of three types of images: the large majority of them displaying the



	original video produced by Acciona, a few of her watching and commenting on the video, and some shots of her introducing and closing the video.
When? “time of the narration”	Since the YouTuber is analysing a video produced the previous year, her narration reviews a series of events narrated in the recent past. However, the original video also presents a series of projections into the future. The scope of the original video produced by Acciona establishes a timeframe of 10 years (from the 2020s to 2030s) in which the most important events related to climate change will take place. There is then a combination of flashbacks and flash-forwards in both videos (from the Industrial revolution to future scenarios in 2100), with a scope of 10 years for acting, starting now.
How? “narrative & storytelling”	<p>The <u>dominant narrative</u> in her video (not in the original by Acciona) is around the idea of promoting collective responsibility and actions to tackle climate change. Although she mentions individuals actions such as the reduction of meat consumption, use of public transport, or reduction of plastic as complementary solutions, she refers to the role of companies as main contributors to carbon footprint, and legislation (political action) as the only way to tackle the problem: <i>“only through laws [legislation] we can force companies to change because we are running out of time, thus, I believe the Spanish Draft Bill on Climate Change is very necessary, and politicians have to work on it now”</i>. This narrative relates to both the ‘Green Living narrative’ and the ‘Every little help’, with the former stating the need for drastic changes in lifestyles (e.g., zero-carbon futures through an extensive use of renewables) and the latter envisioning individual and collective responsibility and solidarity by encouraging citizens to take action. She also highlights the economic benefits of investing in renewables (e.g., job production), in particular in Spain (with solar and wind energy as main sources), thus positioning the economy in a relevant position, as a driver for change, <i>“a win-win”</i>.</p> <p><u>Narrative features identified:</u> personalization. The YouTuber is expressing her opinions and feelings regarding the video produced by Acciona. For the audience, it is possible to empathize with her opinion because she clearly expresses her views about the topic.</p> <p><u>Language and rhetorical elements used:</u> throughout the video, she uses an informal register, without jargon. She also uses several rhetorical questions to stress or assert specific points, presenting her line of thinking and involving the audience along the narration.</p> <p><u>Audiovisual elements that contribute to tell the story:</u> in her video, she is watching, and commenting the Acciona’s video at the same time as her audience, using the original video resources (audiovisual material) to build her narration.</p>
How? “going beyond the story”	<p>The YouTuber refers to some of the actions (<u>solutions</u>) and <u>inspiring examples</u> proposed by Acciona. Specifically, climate change mitigation actions, such as the use of renewable energy technologies (Acciona is a company dedicated to infrastructures and renewable energy*), or the example of Greta Thunberg as an inspiration for the youth. The YouTuber includes a short clip of the activist giving a speech at the COP24.</p> <p><u>Engagement with the audience:</u> the YouTuber builds her narration on the video produced by Acciona. She examines the Acciona’s video and comments on the different aspects addressed by the company. She stresses some of the points she considers more relevant, clarifying others, thus, helping her audience to understand some of the aspects or concepts mentioned in the Acciona’s video. As any other video (or channel) on YouTube, this piece is open to audience engagement through comments, likes, and sharing. At the end of the piece, she asks her audience to join the campaign <i>“#LeydeCambioClimáticoYA”</i> by using the #, for instance, on Twitter, and request her audience to leave a message on the comments section explaining which topics they would like her to address in her next videos (in relation to climate change, the energy transition, etc.).</p>



Add below any additional (contextual/cultural) information you consider relevant for the reader

The YouTuber was contacted by Acciona (*global company that develops and manages infrastructure solutions and renewable energy, according to their website, which has been also blamed for greenwashing by activists, media, and academic studies) to comment on a video about the Spanish Draft Bill on Climate Change (announced in February 2019) produced by the company, and to join the campaign “#LeydeCambioClimáticoYA”. She makes very clear that Acciona is behind the original video and that she was reached by them to comment on it. If there was any agreement between the parties to promote the video, it is not explicit in her video. By contrast, what is clearer is the fact that she wanted to keep her freedom to comment, criticize, and in a way, validate the information shared in the Acciona video, as she stated at the beginning of her video. This piece could have been framed as an example of ‘fact-checking’ if the YouTuber would have analysed in-depth the interests of the company behind the original video.

Table S9: Analysis Piece 9 (Spain). YouTube

Country: Spain	
Clima no es tiempo: la verdad del cambio climático	Analysis (FCiências.ID)
What? “the story”	In this video, the YouTuber (doctor in particle physics and well-known science communicator) clarifies concepts and ideas related to climate change (namely, the difference between weather and climate, the carbon cycle, or the role of greenhouse gases warming the planet). One of its main goals is then to promote literacy on climate science. However, as stated at the beginning of the video, this video is also a collaboration with the NGO WWF. Thus, it also calls for individual and collective action through participation in the Earth Hour (an initiative of the WWF) and appealing to political action to commit to the Paris Agreement, respectively.
Why? “the relevance”	The video was published one week before the Earth Hour, an initiative promoted by the NGO World Wildlife Fund (WWF) every March to raise awareness of climate change and nature loss. The video is a collaboration between the YouTuber and the NGO, which team also contributed to the script (as stated in the video), to promote the initiative.
Who? “the actors”	The main narrative voice is the one of the YouTuber. He acts as an omniscient narrator, adopting a diegetic voice to explain multiple scientific concepts related to climate change (namely, weather vs climate, the cycle of carbon, or greenhouse effect and global warming, among others). To illustrate how mis/disinformation works, the YouTuber uses two videos that represent the perspectives of two politicians: the first video shows the former Spanish President, Mariano Rajoy, giving a public speech in which he denies the importance of climate change as a global problem also calling attention to the (supposed) unpredictability of future climate scenarios (mixing up the concepts of ‘climate’ and ‘weather’); the second video displays a public event in which President Trump claims that climate change is a hoax, a “ <i>money-making industry</i> ”.
Where? “geographies, places, scene”	The setting shows a room with bookshelves full of books, some drawings, and Albert Einstein’s most iconic picture (sticking tongue out). It looks like the bedroom of a student, tidy up but very personal and informal. The YouTuber is recorded medium shot, which allows perceiving his body language and gestures. He wears informal clothes (a black t-shirt). Taken together, this scene can help to establish a close connection with younger audiences, who can find the setting familiar to themselves.



ENJOI - ENgagement and JOurnalism Innovation for Outstanding Open Science Communication

This project received funding from the European Union’s Horizon 2020 Research and Innovation program under Grant Agreement n°101006407

www.enjoiscicomm.eu

<p>When? "time of the narration"</p>	<p>A large part of the narration could be considered atemporal. A series of scientific facts and theories are narrated throughout the video without a clear temporal order, although some historical events mentioned (such as the industrial revolution) provide temporal references. The YouTuber refers to the past to talk about the analysis of CO2 levels in ice core records, millions of years ago ("<i>it allows us to travel to the past</i>"), while also projects his narrative into the future to warn of possible disasters (e.g., tipping points in the Earth climate system) if governments do not commit with the Paris Agreement.</p>
<p>How? "narrative & storytelling"</p>	<p>The <u>dominant narrative</u> in this piece relates to the so-called 'End of the World' narrative, which shows the danger of climate change impacts on humans and natural systems, and the urgent need to act. This narrative incorporates some of the Narrative features above described, namely, an alarmist language. <u>Narrative features identified:</u> dramatization. The YouTuber presents complications, crises, and a possible successful outcome (which can turn into a situation of chaos, apocalypses, disaster, or risk for all forms and life and future generations). In this way, he tries to stimulate (both negative and positive) emotions by arousing affective states into the audience. The video ends with a positive message if people (policymakers and individuals) take action. <u>Language and rhetorical elements used:</u> Although he uses an informal register to address to his audience, the YouTuber also uses technical explanations, jargon (e.g., megatonnes, feedback loops), and graphics (in English) to expose several points developed in the video. One poetic license used by the YouTuber is the expression "<i>ancestral dance</i>" to refer to the role of CO2 within the carbon cycle, as part of a process that has occurred since thousands of years in the planet, and which complexity and equilibrium is being broken by human activities. <u>Audiovisual elements that contribute to tell the story:</u> The YouTuber uses schemes, infographics, graphs, pictures and videos displaying images such as pollution caused by cars and industry, ocean trash, crowded cities, diverse animals, plants, ecosystems, and agricultural lands, or problems caused by floods and droughts. Not in all cases the sources are cited. All these resources illustrate the different points mentioned the video, which ends showing the actions and activities carried out by WWF (for instance, the Earth Hour and protection of wildlife), the organization that collaborated in the video.</p>
<p>How? "going beyond the story"</p>	<p>The YouTuber provides some actions (<u>solutions</u>) and <u>inspiring examples</u> to maintain the global temperature below 1,5°C (to meet the Paris Agreement), for instance, to set more ambitious climate goals (governmental action), to promote renewables and energy efficiency, to take (individual) action by participating in initiatives such as the Earth Hour (WWF), which is also provided as an inspiring example of an organization that works for nature conservation. <u>Engagement of the audience:</u> As any other video (or channel) on YouTube, this piece is open to audience engagement through comments, likes, and sharing. <u>Audience participation in the production of the piece:</u> at the beginning of the video, he explains that with this video he is recovering an old series of videos around energy topics and '<i>the future of energy</i>', for which he is collaborating with "<i>experts from the audience who has contacted me and who will help me to be informed about these topics</i>". In particular, in this video, he established a collaboration with the NGO WWF to produce part of its content. It shows his willingness to collaborate with other agents to produce specific content, specially, when it tackles some topics that might be out of his knowledge.</p>

Add below any additional (contextual/cultural) information you consider relevant for the reader

He is a well-know science communicator in Spain,. He currently has more than 2M of subscribers on YouTube. This piece could be framed as an example of 'collaborative science communication'.



Table S10: Analysis Piece 10 (Spain). Digital media/newspapers

Country: Spain	
El termostato del planeta	Analysis (FCiências.ID)
What? "the story"	In 2015, the author of this reportage, a photographer, started a project called ' <i>Melting landscapes</i> ' to document the climate emergency. This piece, the first one of a series of chapters, gathers a collection of photographs and sounds of the Arctic region that shows the consequences for humans and non-humans of the glaciers melting. Its goal is to show the present and future of the habitats and inhabitants (human and non-humans) of the Arctic region, one of the ecosystems most vulnerable to climate change impacts.
Why? "the relevance"	It is not clear why the story is relevant at the time of publishing.
Who? "the actors"	The piece begins with an introduction from an omniscient narrator (unknown) who introduces the photographer's work and contextualises the topic (i.e., how temperature rise is melting the permafrost, and its consequences), with a clear use of the diegetic mood to contextualise the central points of the story. Once introduced the topic and the author, it is the photographer who narrates his experience in Greenland through his pictures. From there, the author of the pictures, recordings, and text that are part of the piece is the main narrator of the story. Through his own experience, he reports and tells the story. The mimetic mood is present through his observations, as well in other voices considered in the story, namely the inhabitants of the region. To document the piece, the photographer talked to fishermen and Inuit communities from NorthAmerica/Alaska (although there are no quotes or citations). It is interesting how the landscape is also present as a non-human actor (through the pictures and sounds). The soundscape of the region, with the ocean, ice, animals, and winds of the region are crucial actors that also document the story. Another of the sources cited is the Norwegian Polar Institute (data).
Where? "geographies, places, scene"	The pictures and sounds were taken and recorded in the Arctic regions (Greenland, Iceland, Alaska) in 2015. Glaciers, fiords, icebergs and caves, as well as human and non-human animals are the protagonists of the piece, not only to document the story but playing a crucial role in approaching the region to the audience, especially through the use of sounds.
When? "time of the narration"	The piece is narrated in the present tense, although the project ' <i>Melting landscapes</i> ' started in 2015, and this article was published in 2020. Some events reported happened thousands or millions of years ago (e.g., last glacial period) while others are projections of possible futures (e.g., an alteration of the oceanic circulation caused by melted iced into the ocean). There is no atemporal order to follow, it tells a series of ongoing changes that affect the entire region since years ago and speculates with possible life changes that will confront the inhabitants of the region. Each photograph, sound, and text is a small piece of the narrative.
How? "narrative & storytelling"	<u>Narrative</u> : Interestingly, although the story aims at showing the impact of climate change in the Arctic region, there are no polar bears in the story. So, the narrative might be successful in avoiding the 'distancing narrative' related to the 'Polar bear narrative' by including other inhabitants of the region, human and non-human species, as well as the sounds of nature (ocean, wind, etc.). Thus, the <u>dominant narrative</u> in this piece approaches climate change impacts from the point of view of the inhabitants of the region, and how their habitats and style are changing (e.g., the conservation of whales' meat, disappearance of nomadism, life in cities). It does not try to convince or to take action, but it is more neutral in presenting the



effects for people, other animals, and habitats.

Narrative features identified: personalization. He provides first-hand knowledge of the consequences of climate change in the Arctic by telling his experience visiting the region and through the interviews with some of its inhabitants. Although the focus of the story is not his visit to the region, he shares some personal experiences, keeping, throughout the piece, the focus on the people and landscapes. The way he narrates the story (textual and audio-visually) allows the reader to approach the Arctic and its inhabitants (human and non-humans), by understanding, for instance, some of the challenges of living in a changing environment.

Language and rhetorical elements used: the photographer uses some jargon, such as albedo, and feedback loop. There are no significant rhetorical elements to be highlighted.

Audiovisual elements that contribute to tell the story: Since this piece is a photo report, the pictures are a central element in the story. The photographer also captures the attention of the audience and approaches the reader to the Arctic region through images and sounds. In particular, with the soundscape of the Arctic. Although the text is also an important part of the piece, to contextualise the images, the audiovisual elements are a pivotal point of the story.

How?
"going beyond the story"

Innovative/engaging or interactive elements: the sounds of the Arctic region as an element to connect with the landscape. They create an immersive atmosphere for the reader. Thus, the soundscape of the region, with the ocean, ice, and winds of the region is also part of the story.

Add below any additional (contextual/cultural) information you consider relevant for the reader

Revista 5W is an independent digital and printed magazine (also produces podcasts and books) founded after a crowdfunding campaign and supported by their readers. This media represents an example of engaged journalism that focuses on issues usually neglected by other news organisations.



Table S11: Analysis Piece 11 (Spain). Digital media/newspapers

Country: Spain	
El mundo cuando cumple 18. La Tierra, desde 2031	Analysis (FCiências.ID)
What? "the story"	This piece examines some of the agreements (and disagreements) reached in the COP26 in Glasgow, and how current decisions and actions (or inactions) taken in the present will have an impact in the future. Thus, future and current young generations will experience a future in which 'adaption' will be a must: <i>"it will be decisive that they act to adapt to what is coming, to what they will live"</i> . Thus, the central point of the story is to project how the planet (and, in particular, Spain) will look like in 10 years' time (the 2030s), when carbon emissions must be halved if the temperature is to stay within 1.5°C of global heating, and how the youth are already acting now to decide their future.
Why? "the relevance"	The story is very relevant at the time of publishing (a couple of weeks after the COP26 in Glasgow).
Who? "the actors"	<p>The story is narrated by two different voices: the journalist and author of the piece (who takes both mimetic and diegetic moods), and two children (Petra and Mérida, aged 8 and 5), interviewed by the journalist but who also (Petra) interviews other children and teachers of their primary school in Madrid (an eco-school). Other voices and sources included (or cited) in the story are the following:</p> <ul style="list-style-type: none"> Children and teachers from an eco-school (interviewed by Petra) Activists: Miriam Campos Leirós, representative of the initiative "Teachers for Future Spain", who is interviewed by the journalist; Leonidas Iza, Confederación de la Nacionalidades Indígenas de Ecuador; Verónica Gago, plataforma argentina Ni Una Menos; Greta Thunberg and Friday for Futures; Climate Action Network (CAN), other social movements and activists involved in demonstrations during the COP26 Researchers (national and international level): Ian Burton and Karen O'Brien, members of the working group of the IPCC focused on social adaptation to climate change; Jorge Olcina, Prof. of Geography at the Universidad de Alicante; Aurelio Tobías, IDAEA-CSIC; Marcos Quijal, ISGlobal; Teresa Cuervo, IETCC-CSIC; Governmental institutions: Observatorio de la Sostenibilidad (independent organization) Miriam Garcia (architect at LandLab); Several countries' representatives and other organisations at the COP26 <p>The interactive map shows the source used for their construction: Climate Tracker Action; other sources and institutions are acknowledged at the end (credits)</p>
Where? "geographies, places, scene"	Multiple geographies and places are present in the story, from global perspectives (COP26 in Glasgow) to local realities (a primary school in Madrid). Special attention is given to the challenges and impacts in Spain, e.g., extreme meteorological phenomena that will affect cities and infrastructures, public health, or food production.
When? "time of the narration"	The report starts with a letter from an 8-year-old girl, Petra. She wonders in what kind of world she will live in 10 years from now (2031), when she will be 18 and have the right to vote, what opportunities for fighting global warming will remain by then and what political interests will prevail (collective vs. personal interests). The author places also himself into the future, thus using a flash-forward to imagine how that world will look like, e.g., already close or above the 1,5°C and with less margin of action, a decade (2030s) with no turning back. The other voices included in the piece (researchers, activists, teachers and children) detail some of the



	<p>already projected impacts, their worries, fears, or hopes for the future. Specifically, this look into future scenarios is incorporated into the story through the visions and future expectations of young generations (6-8 year-old children).</p>
<p>How? "narrative & storytelling"</p>	<p>This story combines different <u>narratives</u>, it is possible to identify some bits of the 'end of the world' narrative (e.g., showing some impacts of climate change on cities, such as the effects of sea level rise on coastal areas, the destruction of infrastructures or health issues caused by heat and cold), however, it presents these events as an opportunity to build more resilient environments through adaptation measures inspired by nature (i.e., nature-based solutions). It also shows how collective action for climate justice (from global social movements but also local initiatives, such as eco-schools) is growing worldwide, and how young generations are highly engaged in climate issues, more in line with the 'Green living' and 'every little help' narratives.</p> <p><u>Narrative features identified</u>: emotionalization and personalization. By including interviews (in video) and other audiovisual resources in which several actors (children, teachers, researchers, activists, architects, etc.) explain their points of views, fears, and hopes (i.e., positive and negative emotions) for the next decade, the piece contributes to present climate change and its impacts as a topic close to the audience (emotionalization); at the same time, it also allows the audience to take the subjective perspective of the actors involved in the piece, in particular, the children (personalization).</p> <p><u>Language and rhetorical elements used to tell the story</u>: the language used by the journalist is direct and neutral, with no jargon. Other voices (children) use their own vocabulary (highly informal) to express themselves. Throughout the piece, several rhetorical elements can be identified, e.g., the metaphor used to refer to the adaption of cities and buildings considering climate and health issues: "<i>healthy houses, in healthy cities. Healthy cities, with healthy and civically active citizens</i>".</p> <p><u>Audiovisual elements that contribute to tell the story</u>: the story is supported and enlarged by four videos and one interactive graph. <u>Videos</u>: 1) two children, Petra and Mérida, share their thoughts about the international political action on climate change (COP26 discussions and Paris Agreement), what they understand by climate change and its impacts. This video gives voice to the youth, those who will be adults by 2030 when the consequences of today's decisions will be more apparent; 2) the journalist, author of the piece, explains the effects of climate change on the Mediterranean sea, and how it is necessary to implement adaptation actions (which are presented both as a necessary but also as an opportunity to build more resilient ecosystems through nature-based solutions); it also shows the problem of energy poverty (heat and cold), also linked to gender issues; air pollution (carbon and nitrogen); new urbanism in cities and villages and the benefits of green areas; in general, this video provides an entire overview of the article; 3) activists demonstrations in response to the COP26. This video summarises some protests of activists and social movements; it also includes pieces of the political speeches; 4) eco-school in Madrid, and how teachers and students are involved in sustainability activities (e.g., school garden, waste reduction, recycling); Petra interviews other students and teachers, while a teacher explains their involvement in the initiative "Teachers for Future Spain". All these videos show inspiring examples and local solutions to adapt to climate change.</p>
<p>How? "going beyond the story"</p>	<p><u>Some of the inspiring examples</u> given are the eco-school and the initiative 'Teachers for Future', together with other social movements, initiatives, and activists cited (e.g., Greta Thunberg, Fridays for Future) that actively participate in demonstrations and actions against climate change.</p> <p><u>Engagement with the audience</u>: the piece is open to audience engagement, it can be shared through Twitter and Facebook. However, the most interesting feature of this story is the incorporation of first-hand experiences, thoughts, and expectations of young generations, who will be adults by 2030. Their engagement and participation in the piece is highly relevant. They take an active role in the piece,</p>



not only by relating their own visions but also interviewing their friends and teachers at their school.

Use of interactive elements: An interactive map showing the levels of CO2 under different climatic scenarios and the estimated temperatures that will be reached under each scenario (applying more or less restrictive cuts in emissions) by 2100. The reader can interact with the graph and obtain very precise information.

Innovative elements: also linked with emotional engagement, children acting as reporters, interviewing their friends and teachers at school; it is also effective starting the piece with a fragment of a letter written by one of the children, followed by a video with their thoughts about the future they expect to encounter.

Add below any additional (contextual/cultural) information you consider relevant for the reader

Newtral is a Spanish media start-up of journalism, technology and data verification. Newtral has three business areas, namely production of programmes for TV and other platforms; new media and social media narratives, innovation in journalism through fact-checking (data verification); and, a novel research area based on Artificial Intelligence protocols. This piece is an example of innovative journalism (multimedia narratives).



ENJOI - ENgagement and JOurnalism Innovation for Outstanding Open Science Communication

This project received funding from the European Union's Horizon 2020 Research and Innovation program under Grant Agreement n°101006407
www.enjoiscomm.eu

Table S12: Analysis Piece 12 (Spain). Digital media/newspapers

Country: Spain	
¿Cuántos días de calor sufren tus hijos en el colegio comparado con los que tú pasaste?	Analysis (FCiências.ID)
What? "the story"	In the article's title, the authors of this piece address a direct question to the audience that is the pivotal point of the entire article: how many warm days are experiencing children nowadays in comparison to the past decades. This starting point is used to evidence that, in some cities in Spain and other EU countries, temperatures have already raised the 1.5°C set as the preferable target for global warming established in the Paris Agreement. Thus, this piece of investigative journalism examines adaptation (and mitigation) measures in some of the warmest cities in Spain (especially in those with an average temperature being 1°C warmer compared to last century) and some of its impacts on children (e.g., lower academic performance).
Why? "the relevance"	By the end of 2018, when this article was published, the European Commission was developing the EU strategic long-term vision for climate neutral economy, and the Spanish government was drafting the country's Law on Climate Change and Energy Transition, published shortly after this article. Thus, this article was highly relevant at the time of publishing.
Who? "the actors"	The authors of this piece, the journalists Antonio Villarreal and Daniele Grasso, were partners in the journalism project "Europe One Degree Warmer" that developed this investigation in several EU countries. In Spain, they developed this piece mainly constructing the story based on data. They use both the diegetic and mimetic moods to coordinate the information and data, and to document some of the points included through the incorporation of other voices, respectively. Thus, actors and sources included/mentioned are: <ul style="list-style-type: none"> Europe One Degree Warmer project European Centre for Medium-Range Weather Forecasts (ECNWF) (data) One research study from Chicago University (accessible, link provided) CSIT-UP union (public school workers) Valvanera Ulargui, director of the Spanish Office for Climate Change (governmental body) Adaptares project Junta de Anadalucía, a regional public administration
Where? "geographies, places, scene"	The project examined more than 500 cities across Europe, and this piece focuses on the Spanish case. Some Spanish cities are closely analysed, for instance, Córdoba, Málaga, Linares, or Sevilla (Southern Spain); Madrid; Telde, Arrecife, Las Palmas or Santa Cruz de Tenerife (Canary Islands); among others.
When? "time of the narration"	The piece starts by recalling an event occurred in the past (2015), the signature of the Paris Agreement, a binding international document that aimed at limiting global warming to well below 2°C, preferably 1.5°C, compared to pre-industrial levels. This event is important for the story since the target of 1.5°C is already exceeded in several of the cities examined in the article. Although the narration is developed in present tense, multiple references to past events (average and peaks of temperature) are present throughout the story, in particular, in the graphs and tables that support the story.
How? "narrative & storytelling"	At the beginning of the article, the journalists state that " <i>climate change is not about polar bears</i> ", opposing the so-called 'polar bear' <u>narrative</u> that frames



ENJOI - ENgagement and JOurnalism Innovation for Outstanding Open Science Communication

This project received funding from the European Union's Horizon 2020 Research and Innovation program under Grant Agreement n°101006407

www.enjoiscomm.eu

global warming as a distant problem that only affects specific areas and species of the planet. The article, built on scientific data, presents several societal impacts but also inspiring examples. Thus, it addresses the topic of temperature raise from different angles (historical changes; effects on children' academic performance, and adaptation and mitigation actions developed by the national and/or regional governments), and brings the problem closer to readers by showing how cities in Spain are already experiencing its effects.

Narrative features identified: the story, based on data, is presented in a neutral and objective way, there are no specific Narrative features to be highlighted.

Language and rhetorical elements used to tell the story: language is neutral, no jargon is used, concepts such as 'adaptation' and 'mitigation' are described and illustrated with examples; there are no specific examples of rhetorical elements.

Audiovisual elements that contribute to tell the story: there are no audiovisual to highlight.

How?
"going beyond the story"

Inspiring examples/solutions: adaptation and mitigation actions in several municipalities are mentioned as inspiring examples to adapt and mitigate climate change. For instance, El Hierro (Canary Islands) is presented as a world-known example for the use of renewables, being the first fully sustainable island in the world. Another example cited is the EU project Adaptares, which focuses on water efficiency and reusability.

Engagement with the audience: the piece is open to audience engagement through the comments section, and it can be shared through Twitter and Facebook.

Use of interactive elements: it incorporates two interactive elements, one graph and one table (in addition to other graphs that are static). It allows readers to browse by city (Spain) and year of birth, obtaining the registered number of warm days at the beginning of the schooling period (histogram); and, browsing again by city, to get the historical average temperature variation (last century) in 62 cities in Spain, and its comparison with 558 European cities (table). Both informations allow readers to contextualise her/himself in the story.

Innovative elements: transparency and access to data. At the end of the article, the authors have included a "Methodology and data" section that explains that this article is part of the project "Europe One Degree Warmer" led by the European Data Journalism Network (all partners are listed), the origin of the data used and period analysed, how data was originally collected, and some limitations of the data. Data sets were made available, although the link provided does not work anymore.

Add below any additional (contextual/cultural) information you consider relevant for the reader

This article is part of the project "Europe One Degree Warmer", an investigation led by the European Data Journalism Network (EDJNET) in which El Confidencial participated, that analysed over 100 million meteorological data points, from 118 years of weather data, for 558 European cities. This piece is an example of investigative and data journalism.



Table S13: Analysis Piece 1 (Portugal). Television

Country: Portugal	
Ao longo dos anos, a TVI percorreu o mundo para retratar as alterações climáticas	Analysis (FCiências.ID)
What? "the story"	In this piece, the TV channel in question wanted to portray what it had reported over the years about climate change. Then, over the course of 15 minutes, it presents different parts of reports about climate change. This video is particularly interesting because it gives an overview of the last ten years and what has been happening in the world, in relation to climate change, and we can see what has changed. The action in this report is, therefore, to show the audience the various impacts that climate change has had in different parts of the globe.
Why? "the relevance"	This video came out at the time at COP-26, so climate change was at the top of the priorities to the media. In the description of the video, the channel even says, "Climate change is at the top of the agenda, but it has been a concern of TVI's information for almost three decades." explaining their motivation for releasing this report.
Who? "the actors"	As this TVI video is like a set of reports, the narrators are the journalists of those same reports (at least 3 different). Unfortunately, only one of the journalists is identified in the video: Catarina Canelas (Plástico, O Novo Continente - 2020). The most used type of narrator is omniscient. Although, there are some distinctions: in some cases, there may be a combination of the mimetic and diegetic mode. The first time this happens, in the report "Fora de Tempo" in 2018, the journalist interviews a researcher from NOAA, which she refers to as "the North American agency responsible for the study of hurricanes". The name of this specialist is not presented. Still related to the same topic, Professor Filipe Duarte Santos, who is also not identified. Moving on to another report, this time related to plastics, they interviewed an inhabitant of Vindenes, Norway (Jan Vindenes), who is identified as a local inhabitant. For the 2021 "Destination: Europe" report, they interviewed the activist Joanna Flisowska from Greenpeace. The European Commissioner and Responsible for the European Green Deal, Frans Timmermans, also appears in this piece.
Where? "geographies, places, scene"	This story takes place in different spaces, geographies, and scenes. It starts by showing images of forest fires in Portugal, quickly moving to severely burned animals in Australia. The report itself begins, with a "trip" to Tromso in Norway, in the arctic circle (with landscapes of snow and glaciers) in the same journalistic piece, the same journalist appears on a Portuguese beach (unknown). Then Svalbard, Norway, shows the glacier. It changes the report and this time it is in Cidade Velha, in Cape Verde and later on the West Coast of Florida, in the United States of America, referring to the warm waters of the Gulf of Mexico. Regarding Hurricane Leslie, a beach in Portugal appears (unknown), then the image goes to a beach in Sines, in another report. Still, to Bergen, in Norway, then Vindenes, also in Norway. Then Santa Luzia, in Cape Verde. Almost finishing, it passes through Belchatów, in Poland, by Chamonix, in France, Aletschm, in Switzerland and ends in Aigues Mortes in France.
When? "time of the narration"	Regarding the temporal elements, as this piece was divided into small individual pieces, over a decade, it is easy to identify when these pieces were performed. The first piece "Global Earth" is from 2009 and refers to Tromso, Norway. In this report, the journalist makes a reference to a forecast 100 years from now, saying that if she were in the same place and climate change remained unchanged, the



	<p>sea would rise one meter and it would be possible to dive where she was. The second play "Corrida contra o tempo" is from 2015, so here is 6-year gap and it takes place in Svalbard, Norway. It follows "Out of time" in 2018, so 3 years later, in Cape Verde and then on the West Coast of Florida. Here there is a temporal reference in relation to a forecast made by the specialist they invited to the interview, to talk about hurricanes, which suggested that it would reach the European coast in 50 or 100 years. And the journalist retorts and says, "3 years later, Hurricane Leslie came to challenge the models", countering the scientist. Then, "Plastic, the new continent" in 2020, which takes us to Norway again and to 2017, where they found a sick whale that ended up dying from his stomach full of plastics. Also, "Destination: Europa" took place in 2021 and shows the time-lapse evolution of the Belchatów mine. Then, when talking about Chamonix, in France and a cave in the French Alps, it is explained that in the last 150 years it is estimated that it has retreated about two kilometers by the thaw.</p>
<p>How? "narrative & storytelling"</p>	<p>Regarding the use of <u>narrative and storytelling</u>: Dramatization: At the beginning, before the specific reports began to be presented, a moment of suspense was created, with music and images of fires and polluting industries (a lot of smoke), with animals mostly alive and some dead (in this case of the otters/sea lions), accompanied by impactful music, interrupted by the sound of some birds. Time-lapse of images with moving cars and cities that ends with the sound of a deep breath and the image of the Planet Earth seen from space, that starts the series of reports. In general, it is important to mention that, although this is a very relevant problem, it seems to be treated as a dramatization: it induces the audience's curiosity and suspense, all problems and crises are presented and, in the end, all the flaws. Basically, the common narrative is related to the "end of the world" narrative, with the use of alarmist language, but it does not provide solutions. The exception is when the Responsible for the European Green Deal, Frans Timmermans, speaks and expresses a narrative of "every little help", appealing to everyone to help in the way they can: adapting their behavior and their way of life. It is also important to mention that during the reports there are frequent phrases such as "places like this will disappear" or "a man-made aberration", or even "many of us will only see him like this, dead on a beach", referring to a whale, which denotes an apocalyptic narrative of the situation that is faced, not presenting, at any time, solutions. As for <u>metaphors</u>, they are found in this piece: the mirror is the first metaphor used in the 2015 play "Corrida contra o tempo", where the journalist shows a mirror and explains that when the glacier melts, the ice ceases to function as a reflector of the sun's rays and, at the same time, when it turns into water, it starts to absorb the heat of the sun. She then uses the analogy with an iceberg "this is just the tip of the iceberg of a much bigger problem". The <u>analogy</u> of the size of the Belchatów mine is also used, to compare it with football fields and say that in terms of depth, it would be possible to hide the Eiffel Tower. Regarding the <u>narrative through the way the camera is operated</u>, it is important to mention a few moments: To illustrate the storms on the west coast of Florida, the journalist appears walking along the beach, full body image, with her hair flying, clearly with a storm coming, to illustrate that that place is conducive to storms. This image is followed by an image of the very rough and choppy sea. Another important image refers to the report "Plástico: O Novo Continente" from 2020, in which the journalist appears to walk on the sand of the island, at first with nothing near her, and the closer she gets to the camera, the more objects are seen: plastics. A close-up image of the littered sand follows water bottles, bags, and other objects, accompanied by particularly sad music.</p>



	<p>The sound is also very relevant in this piece: generally, the music is sad and crestfallen, the only different sound is the waves of the sea, when they are filming the beach. It is also important to mention the chirping of the birds that is heard at the beginning of the report and that closes the report as well.</p>
<p>How? "going beyond the story"</p>	<p>As far as solutions are concerned, the journalists <u>do not present any solutions</u> in their pieces. Only in the intervention of Frans Timmermans, responsible for the European Ecological Pact, in which he mentions that each citizen can adapt their lifestyle and we can, together, try to ensure that the temperature does not exceed 1.5 degrees, although even so, there are problems.</p> <p>Inspiring examples are not presented throughout the reports, on the contrary: examples are presented of all the changes that are happening on our planet and to which the human being will have contributed.</p> <p>The <u>audience does not contribute to the production</u> of this piece, since it always depends on editorial decisions, although it is possible to share (directly on Facebook, Twitter and WhatsApp), comment and like this piece.</p> <p>Despite that, this recap of the various reports on climate change and the fact that one can have a summary in one place is very useful and important. I would say that the narrative itself on this topic would have to be improved at a global level.</p> <p>In this piece, two types of narrative can be distinguished: a factual one and one that tries to be engaging and appeal to the spectator's emotion. However, this second one does so at the expense of the integrity of the facts. We do not know, for example, if "we will never see whales again without being killed on the beach".</p>

Add below any additional (contextual/cultural) information you consider relevant for the reader

It is important for the public to know the problems we face as a society in relation to climate change and, as one of the four most watched channels on Portuguese television, this piece that summarizes the station's journey in "explaining" this to viewers is understandable. The narrative they use is that they've been warning about this for a few years, as if to cast blame on someone else. But if, as they say, we all share the same planet, who can we blame? Those narratives can be improved to better understand the problem at hand, in its general framework. The fact that it is a route that allows us to see how the planet "has been deteriorating" is ok, since it confirms what the studies point out.



Table S14: Analysis Piece 2 (Portugal). Television

Country: Portugal	
Fronteiras XXI: Mudanças climáticas	Analysis (FCiências.ID)
What? "the story"	<p>In this report, the journalist wanted to show that our planet is increasingly witnessing extreme weather phenomena that are the result of human action, and that despite all the measures announced and the multinational commitments established in recent years, the situation continues to deteriorate. The changes affect even countries with more moderate climates like Portugal.</p> <p>Storms are increasingly violent, cold or heat waves reach temperatures never seen before, ice melting in the Arctic and Antarctic or the sea rising, putting islands in the Pacific at immediate risk: these are just some of the problems that the planet faces at this time and addressed here.</p> <p>This situation has led some countries and organizations to look for ways to avoid the total degradation of the environment, as was the case with the Paris Agreement (2015), which aimed to keep the temperature rise below two degrees in the coming decades.</p> <p>The Oceano Azul Foundation, in Lisbon, received several world experts to discuss these issues, related to climate change, in March 2018. Among the topics addressed were, for example, a greater generalization of the use of solar energy and the need to eliminate the use of plastic.</p>
Why? "the relevance"	<p>This piece took place in 2018, due to the conference that happened in Lisbon, at the Oceano Azul Foundation, where several politicians and UN officials related to climate change came together. In that sense, the context given in the report, like the signing of the Paris agreement in 2015 and COP23 in Fiji makes sense, as it was still happening on that date.</p>
Who? "the actors"	<p>In this case, the journalist João Ricardo de Vasconcelos is the narrator of the report and acts as a narrator in a diegetic and mimetic mode, since he documents what is being said by the people he is interviewing, as well as pointing out the events and central information. For the report, in addition to its voice-over narration throughout the report, which is the thread running through the entire report, other voices are included in this report:</p> <p>Firstly, Tomas Anker Christensen, UN ambassador for climate issues. NASA ("the US agency") is referred to.</p> <p>Greenpeace appears in an image, despite not being mentioned by the journalist, doing an act of activism against Merkel and the use of coal.</p> <p>The Oceano Azul Foundation, in Lisbon, despite not having a voice in this report, served as a meeting place, and was mentioned several times both by the journalist and in the images in the background of the interviews.</p> <p>Finally, Taholo Kami, COP23 UN representative for the Oceans.</p>
Where? "geographies, places, scene"	<p>In terms of geographies and scenes, we can mention that this report has some references. Most of the report is filmed at the Oceano Azul Foundation, in Lisbon, where the convention with UN representatives on climate change was taking place. However, when the report begins, the Earth is seen from space (and this is the same image as the report ends), they also show the room where the Paris Agreement was signed in 2015 and the celebrations resulting from that signing; Then, a boat with two people from Greenpeace, who pass by a larger boat with what looks like coal, and it is not clear whether they are in a river or in the sea. In between, images of polluting cities and factory chimneys (with a lot of smoke) are shown. When talking about ecosystems, one goes through a series of images of dolphins with plastic bags and oceans with plastic, in general. They also show several hurricanes in the Pacific, for example, one that hit Tonga, in a reporting</p>



	piece from a TV channel. They also show the fires in Portugal and helicopters trying to put them out.
When? "time of the narration"	Although the report refers to a convention that was taking place at that time, several moments were recalled: the signing of the Paris Agreement (with images of the room where it was signed), images of the storms in the Pacific, when Taholo Kami refers to the unpredictability of the weather and the fact that there are more and more hurricanes in that area. For the rest, Taholo makes another reference to "time", mentioning that he would like in 2019 (therefore, a year after that piece) to have effective resolutions for the oceans and Tomas Anker Christensen says that, according to forecasts, the warming curve is not slowing down enough and it is estimated that at the end of the century, instead of 1.5°, the increase will be 3.5° to 4°. The journalist ends the report saying "Meanwhile, humanity continues to look for ways to survive".
How? "narrative & storytelling"	The <u>narrative</u> used in this report is mixed: it can be said that it is mostly based on facts. It does not use the narrative of the "end of the world", as it shows a meeting of some UN representatives for a problem that has been trying to be solved by them. Despite this, the images used, the music used at times, and the way in which the facts are presented, such as at the end in which representative Tomas Anker states that it is likely that we will exceed the value stipulated in the Paris Agreement and that at the end of the century we will reach 3.5 or 4° more than what was supposed in this agreement, this statement is alarmist and is then used by the journalist to end the story in a tragic way. Despite this and this being the scenario and the fact that the forecasts are actually getting worse, the journalist took advantage of the report to present <u>some solutions</u> such as green energy and solar energy, and one of the guests interviewed spoke about it, although the other mentioned that this is one of the changes but cannot be enough. The question remains and the journalist himself expresses it at the end, which is, what can we do? Regarding filming and camera, the interviews all took place (2) with the interviewee from the chest up, so a close-up shot, with a background referring to the Oceano Azul Foundation. No metaphors or analogies were used in this report.
How? "going beyond the story"	Regarding <u>solutions</u> , the journalist presents solutions: he says that changes are inevitable and talks about a greener economy, electric mobility and in one of the interviews he discusses carbon neutrality with Taholo Kami, who mentions the commitment to solar energy and the fact that people are willing to invest in that energy. The commitment can be seen through these choices and in the campaigns to do more with plastics and to reduce their use. He does not present inspiring examples, in fact, he ends the report in a somewhat negative tone. During the report, he uses an <u>interactive element</u> : a NASA map (not identified), which allows to see the evolution of carbon dioxide in the Earth's atmosphere in recent years. In this report it is <u>not possible for the audience to participate</u> in the production of the piece, since it is a piece of journalistic production, especially for Portuguese public television channel. This report can be shared on all social networks, although there are no other elements.

Add below any additional (contextual/cultural) information you consider relevant for the reader

This report belongs to the Portuguese public television station, RTP, and is on the internet, in a segment called "RTP teaches", which is aimed at school-age children. However, it should be noted that although these topics are clearly relevant to students in the 1st, 2nd, and 3rd cycles, they are of general interest, so it would perhaps be more engaging if this report were integrated into a repository on climate change. Still, it should be mentioned the difficulty in finding on public television, any piece on this topic: should it be a documentary or a report.



ENJOI - ENgagement and JOurnalism Innovation for Outstanding Open Science Communication

This project received funding from the European Union's Horizon 2020 Research and Innovation program under Grant Agreement n°101006407
www.enjoiscomm.eu



ENJOI - ENgagement and JOurnalism Innovation for Outstanding Open Science Communication

This project received funding from the European Union's Horizon 2020 Research and Innovation program under Grant Agreement n°101006407
www.enjoiscomm.eu



Table S15: Analysis Piece 3 (Portugal). Instagram

Country: Portugal	
10 impactos das alterações climáticas em Portugal	Analysis (FCiências.ID)
What? "the story"	In this short reel, 1Planet4all_pt present ten impacts from climate change in Portugal, separated by the various regions of the country. The aim of this video is to raise awareness of the climate change impacts and, in that sense, maybe grow conscious in the audience of the dangerous of these changes. It starts in the North of the country and goes down the map.
Why? "the relevance"	Although it is not clear why the time of the publishing was 7/1/2022, one could say that in Portugal (maybe the Mediterranean countries) are facing a period of drought, where there are no rains for months, what could be very dangerous in a near future. However, this page is raising awareness about this topic for about some time.
Who? "the actors"	In this reel there are no speakers, only music on the background, and the image that is zoomed in and out considering the region of the country for which climate change impact is chosen by the page to show, for example the more frequently droughts, the rising of the sea, etc.
Where? "geographies, places, scene"	As this reel is an animation, it starts with a blue background and the title in white letters and red background to give some prominence. As it starts, one can see the Portugal map shape. When presenting the various impacts, and starting by Bragança (in the North of Portugal), the use of the colours is similar, but there is a close up to that specific area in the map and a picture illustrating the climate change impact (e.g., in Bragança, the impact presented is the reduction of agricultural productivity, and the picture is of a hand in a harvest). When the pictures appears and the close ups are done, the impacts are written in the same way as the title (white letters in red background).
When? "time of the narration"	The video has no time elements nor references.
How? "narrative & storytelling"	In terms of narrative, it can be said that fictionalization is used in this case, once this is an audiovisual material (although is not relatable to historical events, the narrative takes the audience to a voyage through the country where they can find 10 impacts of the climate changes). By Bushell et al, 2007, this reel may be inserted in the "end of the world" narrative. The impacts are just stated, but the audience cannot feel indifferent once have seen it. Music and colour must be again mentioned to the importance of this narrative, once they help to involve the audience: the colours blue and red are flashy and that serves the purpose of drawing attention, however, the music can have the opposite sense of the narrative described so far, in the sense that it is instrumental but almost jazzy, with "good flow".
How? "going beyond the story"	<u>Solutions to the question:</u> There are no solutions given, nor inspiring examples provided to the audience to help mitigate the climate change impacts presented in the reels. The <u>audience does not participate</u> on the production of the piece, as 1Planet4all_pt is a platform for an NGO. In the post of the reel, 1Planet4all_pt asks for the audience to join them in this "round for change" so they can take the sustainability and the fighting against the climatic crisis to all corners of the country. As this piece is in Instagram, likes, sharing and comments are allowed and encouraged and the authors answer to the comments, as they answer to the comment on this reel.



Add below any additional (contextual/cultural) information you consider relevant for the reader

1Planet4all_pt is a platform born from VIDA, a Portuguese NGO, existing since 1992. VIDA means International Volunteering for African Development (Voluntariado Internacional para o Desenvolvimento Africano - VIDA). This NGO exists to help people understand their lands' potential, where they can build a sustainable and fair human development, while empowering the poorest communities. 1Planet4all_pt is, then, an Instagram page born from 14 European NGOs with the mission to fight climate change. They have 143 publications, always trying to have rubrics like "5 tips to..." or "Green fun fact", where they can help involve people in this cause.

Table S16: Analysis Piece 4 (Portugal). Instagram

Country: Portugal	
Highlights from Kenya - Raquel Vareda	Analysis (FCiências.ID)
What? "the story"	In these stories, the medical doctor reveals some of the changes that climate change are bringing to the desert of African Savannah. In the first "story", she photographs a tornado being formed saying that they are more and more frequent and provoke damage to some tribal villages. In the second "story", that is consecutive, she shows the burnt land saying that in the past, tourism was blamed for the fires in these lands. With the pandemic, and with more frequent fires, it was noticed that the fires are spontaneous because the savanna is increasingly drier and hotter. It rains less and less, in this case in the Masai Mara, where Raquel is, and this soil has no chance of flowering, which then causes other problems for the local populations. The third "stories" is not consecutive and concerns the water level in the lakes that has risen by about one and a half meters since last March (Raquel travelled in August). It shows that the water level rose and left small towns and hotels under water and has not dropped since then, continuing to rise because the precipitation, in other areas, is too intense. The fourth and last "story" shows a hotel gate that was in operation two years ago. Now it is almost completely submerged, almost like the entire hotel garden.
Why? "the relevance"	Although it is not clear why this series of stories was published, it is clear that the cause of climate change is something that Raquel cannot ignore during her trip to Kenya. Whether it's seeing the formation of tornadoes live and it's a different experience than what you're used to or seeing with your own eyes the difference between a savanna plain and a place where precipitation is too much and not low. These stories are published with some concern for the public's understanding of these issues and to create awareness.
Who? "the actors"	These stories have no narrative voice concerning sources of any kind: the owner of the page is stating what she is seeing. Despite that, it lies the idea that she must have spoken to a local, to have knowledge of local events in some depth. That source is not mentioned. She speaks about some local villages and the hotel that are under water, not mentioning names.
Where? "geographies, places, scene"	The first two stories are photographed and published in the African savannah. In the first, where you can see the tornado forming, and in the second, where you can see the tornado in the background and Raquel points to the ground, geographically referring to the savannah, where she was on safari. By this time, she was also noticing that climate change is influencing the animals in the reserves, which are experiencing periods of drought. In the last two stories, Raquel is in the Masai Mara, another place in Kenya, further away from the savannah, where the impacts of climate change are also visible but in the opposite way. In this place, the landscape is mainly of river and water, in contrast to the drought seen in the



ENJOI - ENgagement and JOurnalism Innovation for Outstanding Open Science Communication

This project received funding from the European Union's Horizon 2020 Research and Innovation program under Grant Agreement n°101006407
www.enjoiscicomm.eu

	savannah in the first stories. Here, the precipitation is so intense that it has flooded villages and the water level has not dropped again. In the fourth story, the image refers to the hotel's gate, where two years ago visitors could take the boat to go for a walk. Today it is completely submerged.
When? "time of the narration"	This highlight was made in August of 2021, and the stories reporting almost real time what the medical doctor was visiting. The use of temporal elements can be seen when she reports e.g., that in the past, before the pandemic, tourists were blamed for the burned savannah lands, and that during the pandemic, when there were no tourists, they realized that the soil was burning spontaneously. In the third "story", again, she reports "march from last year", when saying that the level of water increased a lot. At the last "story", there is a retrospection regarding the gate, when Raquel says that two years ago that gate was totally usable.
How? "narrative & storytelling"	The series of stories are made in a neutral and objective way, despite the use, sometimes, of exclamation points or emoticons to express feelings of surprise or sadness. As the narrative is very neutral, according to Bushell et al, 2017, Raquel's stories can be "Gore' narrative" as she often speaks about the human effects on the planet, but also the "end of the world" approach, because she shows the impacts of climate change using, sometimes, alarmist language to make her audience engaged. In this case, the visual elements play a key role to the narrative as the pictures tell a whole story, and the camera shots are extreme wide or very wide shots, that give scene location and contextualisation of the surroundings but nothing else. None of these stories had music, which can be, itself, a statement too (although, it may be said that almost none of Raquel's current stories does have music).
How? "going beyond the story"	The author does not describe solutions for this problem, because there is no simple or unique solution, as is often said by her. Does not use interactive elements, and the audience does not participate in the production of content. As it is an Instagram content, it is a shareable content, but as it is a highlight, which is a set of stories, it is not possible to have access to the number of likes or sharing or comments. Normally, Raquel is very responsive and interacts a lot with her audience and frequently at the end of a series of stories on a divisive topic, the doctor opens a question box where she receives questions from the audience, answers and shows some of the questions that are addressed to her. This is very important when it comes to engagement, as the audience likes to feel that "instagrammers" and content producers are available to clear up doubts and answer questions. That was not the specific case for these stories.

Add below any additional (contextual/cultural) information you consider relevant for the reader

Raquel Varela is a Portuguese medical doctor who has an Instagram account where she shares scientific content, with scientific reviews, regarding all kinds of problems related to science, but more health related. She also shares a part of her daily life, her daily routine as a medical doctor (what has awakened in her followers some curiosity). In that sense, Raquel is very open about sharing pieces of her life to her audience, and these series of stories (that belong to a highlight from her honeymoon in Kenya) were not made having in mind to talk about climate change, but happened along the voyage to Kenya, as that is something common in Raquel's profile. She is concerned about climate change and sustainability frequently, and in these stories, she provides a "real time" point of view from climate change.



ENJOI - ENgagement and JOurnalism Innovation for Outstanding Open Science Communication

This project received funding from the European Union's Horizon 2020 Research and Innovation program under Grant Agreement n°101006407

www.enjoiscicomm.eu

Table S17: Analysis Piece 5 (Portugal). YouTube

Country: Portugal	
Alterações Climáticas	Analysis (FCiências.ID)
What? "the story"	This video reports the various effects of climate change, especially in the Alentejo region, Portugal, where the students are from. They list a series of consequences for that region that climate change can bring (and have already brought) to the region, and, at a more macro level, explain how this can affect the country, since it will affect our biodiversity, our economy and, in essence, our survival.
Why? "the relevance"	There is reportedly no specific reason for making this video, other than that it was made for a faculty chair. It must have been the subject chosen when the students had to choose a topic to deal with when they had to make a movie. The curricular unit is called "Multimedia Content Laboratory".
Who? "the actors"	The narrator of this video is one of the students who produced the video for Youtube, and he acts only in diegetic mode, that is, he is only a narrator. In fact, there is only one other "voice" to be identified in this video, right at the beginning, Mr. Manel Zé, a gentleman who lives in Cuba, Alentejo and is 58 years old and whose interview is in the first part of the video. The only other reference that exists in the video is the online platform Sealevels.info, which cannot be considered a voice, since it is only referred to as a source where these students went to get information to put in this video.
Where? "geographies, places, scene"	The geography of this video is difficult to define, as are the scenes, since at the beginning everything is in black, but then the images that can be seen are loose (landscapes, dry flowers, dry streams, plastics, Alentejo landscapes). That is, illustrating what the narrator explains, the students found some images that fit, despite not giving any specific geography to the video. Only at the end of the video, it is possible to see a horse eating, and an Alentejo hill in the background, without any further details.
When? "time of the narration"	Regarding the narration time, it is important to explain that the video is built in just a few minutes but has some time travel: the first images of the video are old black and white photographs, and the word "old time" is read, taking the viewer to another time than the present. After that, the interview with Manel Zé begins, who says that "before", the summers were like what we have today, but the winters were different: "there were three or four months, always raining". He remembers when he was a kid coming home from school, having to cross a stream, and that stream was almost always full... and now it's dry. He flashes back to the present time, saying that it currently rains for a week or two and that's not enough. The narrator goes on talking, throughout his narration, of what is predicted to happen and speaks of 2100 as the year in which the planet is expected to reach 2 degrees centigrade more.
How? "narrative & storytelling"	In this case, the interview with Mr. Manel Zé is a narrative that uses emotionalization as a way of giving the spectator an emotion, expressing the emotions of others. In Manel's case, his emotion can be seen when talking about those times. When the narrator narrates the rest of the story, the narrative he chooses is between facts and dramatization. He presents facts but does not contextualise despite this. He ends his narration with the sentence "In Alentejo, in Portugal and around the world, the climate will no longer be as we know it, unless we do something to prevent it. It's up to us." In this case, his "end of the world" narrative, since he expresses throughout his narration that climate change is a problem and all its consequences, all the catastrophic



	<p>events that could bring us, saying, despite this, that individual changes can save us.</p> <p>There are not, despite being a video, camera shots that can change the narrative, nor camera movements since the images are still images or moving images but always of landscapes or objects.</p> <p>The music played should be referred, because even during the interview, since the beginning, and it lasts the entire time of the video, was always the same, and always has the same melancholy and sad tone.</p>
How? "going beyond the story"	<p>The narrator does not present solutions to the problems he presents, although he mentions that for climate change it is important to "prevent". It doesn't mention any inspiring examples, so this video is only about pointing out the problems of climate change.</p> <p>There are no interactive solutions, in the sense that it is a video made by students. However, this video was uploaded to YouTube which allows engagement with a community, if that was the objective (which clearly was not, despite having had many views, for a work of a discipline).</p>
Add below any additional (contextual/cultural) information you consider relevant for the reader	
<p>It should be noted that this video was made by students from a Faculty in Beja. However, they are identifying certain climate change problems for the Alentejo and it is not clear whether these problems are specific to certain areas (e.g. Cuba, where the interviewee is from), or if for the entire Alentejo region. Some contextual elements are missing.</p>	



Table S18: Analysis Piece 6 (Portugal). YouTube

Country: Portugal	
Ricardo Trigo: "As ondas de calor são as mais afectadas pelas alterações climáticas"	Analysis (FCiências.ID)
What? "the story"	This piece is an interview with geophysicist Ricardo Trigo, from the Faculty of Sciences of the University of Lisbon. The interview follows the motto "the scientists warned us", and this geophysicist came to talk about heat waves, which are an increasingly frequent phenomenon in Europe and, particularly in Portugal. He brings some data on the increase in the global average temperature and what is its relationship that, now, seems to be proven to be related to climate change, something that scientists for a long time were reluctant to admit.
Why? "the relevance"	In addition to climate change being a topic of extreme interest today, the interview is quite relevant in the sense that it scientifically demonstrates, with the presence of a scientist who explains very well and in a very accessible language, the relationship between the heat waves that were felt in recent years around the world, and climate change caused by man. This is important, in the sense that it can make the audience more attentive to the world around them, more interested in this topic. In addition to all this, the motto "the scientists warned us" is a motto that Público newspaper used for these interviews with scientists within the scope of the Climate Change Conference that took place in Glasgow (COP 26) and in that context, this interview is part of a series of other relevant interviews to understand what Portuguese scientists think about climate change and their perspectives on what could happen at COP 26 (the interviews are prior to the COP26).
Who? "the actors"	As this is an interview, there is no narrator. There is a journalist and a scientist, and it is in the interview format that this video takes place. Teresa Firmino is a journalist and the science section editor of Público's newspaper, and she is the journalist in charge of interviewing Ricardo Trigo, a climatology professor at the Faculty of Sciences of the University of Lisbon.
Where? "geographies, places, scene"	This interview starts in a somewhat noisy place and throughout the interview it seems to be toned down. The scenario seems improvised, with only a cloth with the symbol of the newspaper behind the interviewee and the journalist, and they seem to be in a building atrium. Despite this, several places were mentioned during this conversation, usually referring to the extreme events that Ricardo Trigo was referring to (e.g., a mega heat wave in Russia in 2010 where there was a series of excessive deaths).
When? "time of the narration"	Although this interview took place in 2021, there are many temporal elements during the interview, especially as Ricardo Trigo is being asked about phenomena that have taken place in the past and why they happened. Therefore, when justifying these events, he dates them. Ricardo Trigo explains that the first major heat wave dates from 2003, and the second from 2010. He also mentions that in the last 6 or 7 years a closer relationship has been established between these heat waves and climate change, which it had been difficult for the scientific community until then to establish. He mentions that in 2019 there was another heat wave that changed the panoramas of European temperature records. He explains that they can see, based on the tree rings and the thaw, with great precision what the temperature has been like in the last 500 years, and the heat waves of 2003 and 2010 exceed the records that have existed for 500 years. There have never been, according to the professor, such high temperatures.



	He also called 2018 the hottest year on record, and the hottest since 1500.
How? "narrative & storytelling"	<p>The interview followed a narrative interview, where the questions asked to the teacher were neither alarmist nor "end of the worldly". Teresa Firmino does not dramatize and Ricardo Trigo, as a scientist, responds with the facts he has.</p> <p>At the end of the interview, Teresa asks the scientist's opinion about the future and about COP26. In this sense, Ricardo Trigo explained that despite wanting to be hopeful, we must know how to live with what is in front of him. Heat waves are a reality, as is sea level rise, and we must adapt to them. According to Trigo, COP26 could serve to raise awareness of large companies and divest from fossil fuels and invest in renewable energies.</p> <p>Although he would like to remain positive, Trigo mentions, near the end of the interview, that he believes that no matter how much is done, the objective of reaching 1.5 degrees in 2050 will no longer be possible to achieve and that actions must be taken at the political and individual so that something can change effectively.</p> <p>Regarding the camera shots, the filming starts wide shot, where both the interviewer and the scientist can be seen, full body, seated, with some plants in the background and an image from the Público newspaper. When questions are asked, the shot switches to this wide shot, when the teacher is answering, it switches to medium close-up or close-up. There is no camera movement, the images are still.</p> <p>There is no music, neither at the beginning nor at the end.</p> <p>At the end of the video, the credits appear where there is an image of a green globe, with the names of the producers and directors.</p>
How? "going beyond the story"	<p>In terms of solutions, Teresa Firmino directly asks the teacher for solutions, in a scenario that was perceived as so catastrophic. Despite not giving any inspiring example, Ricardo Trigo says that although we have little time, we still have time to change the state of things and change the paradigm of society that is largely and exaggeratedly dependent on the consumption of fossil fuels. He explains that one should bet on a change as soon as possible. In this sense, and as the theme of this interview was COP26, Ricardo Trigo also mentioned that he considered that the large economic groups were beginning to understand that it was smart to start disinvesting these fuels and investing in renewable energies and that he understands that the perception that this is a passing problem is changing between politicians and businessmen and that, despite everything, is important.</p> <p>Despite being broadcast on YouTube, and mentioning in the video that it is Live, there are no indications that the audience can interfere and ask questions during the interview, even because this did not happen in this case.</p> <p>What is innovative, at least in the Portuguese panorama, is to have scientists talking to a YouTube channel, with journalists, about science. It's not common, it's hard to get that to happen, so that's the most engaging and innovative point of these interviews.</p>

Add below any additional (contextual/cultural) information you consider relevant for the reader

The interviews with the theme "scientists warned" come from the science editor of Público newspaper and are an initiative specially recorded and broadcast to Público's YouTube channel, where they invited scientists to talk about various topics related to climate change, that would be under discussion at COP26.



ENJOI - ENgagement and JOurnalism Innovation for Outstanding Open Science Communication

This project received funding from the European Union's Horizon 2020 Research and Innovation program under Grant Agreement n°101006407
www.enjoiscomm.eu

Table S19: Analysis Piece 7 (Portugal). Digital media/newspapers

Country: Portugal	
Alterações climáticas: o que já mudou e o que está para chegar	Analysis (FCiências.ID)
What? "the story"	<p>This infographic/data visualization explains what has already changed in Portugal's climate and what is changing and will change, according to the Special Report of the Intergovernmental Panel on Climate Change. It presents the five hottest years ever (this infographic was made in 2019) and the first six months of that year were already, according to the report, the hottest ever.</p> <p>This infographic mixes some data from the report with useful information about climate change, such as what permafrost is, what greenhouse gases are and what can cause them.</p>
Why? "the relevance"	<p>The infographic is published when this Intergovernmental Panel on Climate Change (IPCC) Special Report comes out.</p> <p>This piece is particularly important in this regard, as it makes it possible to simplify the results from the report and its data for a wider audience.</p>
Who? "the actors"	<p>This infographic is not properly defined, suffice it to say that the diegetic mode is the most correct for this case.</p> <p>The first entity to be mentioned is the UN, when it says that climate change represents an unprecedented emergency, right in the first sentence of the infographic.</p> <p>Then the Intergovernmental Panel on Climate Change, which produced the Special Report on which this infographic focuses.</p> <p>The first clip is from NASA and refers to global warming since 1883.</p> <p>In the end of the report, there is a reference to the Covering Climate Now project, which is a global collaboration of over 250 media organizations to give depth to the coverage of the climate crisis.</p> <p>The sources used were APA (Portuguese Environmental Agency), Portal do Clima, NOAA, IPMA, Diário da República.</p>
Where? "geographies, places, scene"	<p>Although it is focused a lot on the role of climate change in Portugal, this infographic and the visualization of the data relies a lot on more general data, from the Report, on the Earth's global warming. Maps of the planet are common, the visualization of the data is usually common to the entire planet, without division by countries or continents.</p> <p>Then, the narrative begins to funnel to "what we can expect for Europe", where one can see the map of European countries, arriving later in Portugal, and the changes for our country in particular, like average annual temperature, evolution of these anomalies, mean annual rainfall and susceptibility to desertification</p>
When? "time of the narration"	<p>At the beginning of the report, reference is made to the five warmest years (which are the last five - considering that the report was written in 2019).</p> <p>It should be noted, however, that 2016 was the year in which there was the greatest variation in temperature. Next, a graph is shown, with colors, regarding the anomaly of the average annual temperature compared to the period of 1951 and 1981 in 6 images of the planet, in which it is seen to "warm up". There is then a reference to the average temperature of the 20th century when compared to the last 30 years, and that these were much higher.</p> <p>A short clip from NASA shows the evolution of the Earth's warming from 1883 to 2018. It also refers to the industrial age, to explain that the concentration of greenhouse gases is currently 40% higher than at the beginning of that era.</p> <p>Next, scenarios for 2030, 2050, 2070 and 2100 are presented, in which they reveal some estimates of what could happen. Still a reference to the minimum of arctic</p>



	<p>sea ice since 1979, it was recorded in 2018. Heat waves in Europe, especially those of 2019. Finally, the scenarios for Portugal, in which the forecasts are up to 2100.</p>
<p>How? "narrative & storytelling"</p>	<p>This narrative is based on the dynamic graphics and infographics presented. It doesn't display much text. When a term such as "temperature anomalies" is introduced, then it is explained the use of the term, in a simplified way, in a short text. Visualizing the data is simple and easy to follow and understand.</p> <p>The NASA clip is impressive and really shows the impact of climate change, especially in recent decades. This infographic has an interesting educational part, because after the graphics, it presents some explanations, such as the explanation of the main gases in the atmosphere or the main factors that contribute to greenhouse gas emissions.</p> <p>Despite being based on the Report, one part of the infographic refers to the "dramatic consequences in the worst-case scenario". This scenario is apocalyptic and presents no solution. After that, there is a narrative a bit "end-of-the-world": "what can we expect", where they define, for people under 60, under 40, under 20 and for babies, what can expect from the planet. Basically, in 2070, for people who are 20 years old now, they will experience longer periods of droughts, heat waves and fires.</p> <p>The narrative referring to Europe, with the map underneath and the explanation of the heat waves is interesting and one can understand its objective, moving on to the case of Portugal, which has almost no narrative, it is almost only a set of graphs and maps.</p> <p>At the end of the infographic, there is an interesting interactive map, where you can click on an available photo and move the cursor back and forth, as this place has already changed. This narrative is a factual narrative, albeit "end of the world".</p>
<p>How? "going beyond the story"</p>	<p>There are no solutions described in this infographic, which is an infographic describing a report on climate change, so there are also no inspiring examples.</p> <p>The audience does not participate in this infographic, since it is editorial and newspaper, but it is open to engagement with the public, in fact, it is shared (or was, at the time of its launch).</p> <p>What can be considered innovative in this report/infographic is the use of data in interactive elements. The NASA clip is an important element, but the visualization of the data that the journalists managed to extract from the report to put in the graphs made it possible to form very interactive graphs, with a lot of content, very informative and clear.</p> <p>At the end of the report, when identifying that this infographic is part of a project, this project is linked, which suggests that the reader can follow this link and, who knows, get informed or even participate. It can be a form of engagement between this medium and its audience.</p>

Add below any additional (contextual/cultural) information you consider relevant for the reader

Although the infographic is due to the release of that report, it is not clear in the infographic why it is important for Portugal to talk about climate change. It would be important to understand, for example, the data from the last report on Portugal and make a comparison.



Table S20: Analysis Piece 8 (Portugal). Digital media/newspapers

Country: Portugal	
Alterações climáticas. Cidades costeiras em risco com a subida do nível do mar	Analysis (FCiências.ID)
What? "the story"	This report is about rising sea levels and the danger to coastal cities due to climate change. A study carried out by a researcher, which simulates the rise of waters in dozens of coastal cities, provides interactive, visual maps that show how the coastline changes completely and the sea invades the land if the planet's temperature reaches a value greater than what is predicted.
Why? "the relevance"	This report comes out at the same time as the investigation came out, reporting the importance of climate change, especially for coastal populations. It is relevant at a time when people started talking about climate refugees and this study reveals that, if the global temperature does not increase by 1.5 but 3 degrees, climate refugees could be 800 million people, which means 15% of the world's population.
Who? "the actors"	The narrator is the journalist who uses the diegetic mode to coordinate information and express central points of the story. Carla Quirino, journalist for RTP, begins by identifying the researcher from the Climate Central organization (an independent organization of scientists and journalists that research and report about climate change), Benjamin Strauss. She subsequently quotes The Guardian, where Strauss gave the main interview. CNN was also cited in relation to the study conclusions.
Where? "geographies, places, scene"	Since this news reports a study that addresses several coastal areas that will be, if the temperature rises more than expected, submerged, these areas are not only identified, but also have an interactive space made by the researcher, where can see some of the cities if they were underwater. Cities like Lisbon and regions in Asia and the Pacific, with countries like China, Vietnam, Indonesia, or India.
When? "time of the narration"	The time of narration of this news is the present when the investigation was carried out and published. However, in this investigation several scenarios are provided. For example, if we start reducing greenhouse gases today, we may not be able to exceed 1.5 degrees in 2050. However, Strauss estimates that by 2060 the planet's temperature will reach three degrees higher. He also estimates that by 2100, referring to climate refugees, that about 43 million people in China will live on land below the high tide level. It also focuses on the 2017 UN conference on ocean conservation, which stated that rising sea levels are one of the most important impacts of climate change.
How? "narrative & storytelling"	This narrative, through its interactive maps, is based on dramatization, since it intends to create some suspense in the readers, then showing the consequences "of their actions". The objective is clearly to entertain, while stimulating the emotions. It is, at the same time, a "gore narrative" storyline, where it is shown that, basically, there is nothing to do. And this can be seen from the maps, in which there is no option of not having flooding in the cities. The only option available is between being flooded at 1.5 or with 3° of temperature rising.
How? "going beyond the story"	Basically, this piece does not involve any modifying actions, nor any solution. It only mentions, in the end, that COP26 has the chance to help or worsen the future of humanity with its actions in relation to climate change. Interactive maps, in Strauss' words, "are worth a thousand words" and can awaken in the reader some sense of change. They are also an engine of interactivity and engagement with readers. The piece can be shared on all networks, although it is not possible to



specify the numbers. As it is news about a study, there is no chance that the audience will speak out or participate.

Table S21: Analysis Piece 1 (Italy)

Country: Italy	
La fabbrica del mondo - Il peso delle cose	Analysis (formicablu)
What? "the story"	The story is about who pays for the damage we have caused to the planet and for human-induced climate change. Everything starts from the result of a research that measured that for the first time in history in 2020 the weight of the things built by men surpassed the weight of total biomass.
Why? "the relevance"	The story is relevant because it addresses one of the most pressing issues of our time: the human footprint (i.e. climate change that led to climate crisis) on the planet and the risks for human future.
Who? "the actors"	The main characters are the famous theatre actor Marco Paolini and the science philosopher and scientific communicator Telmo Pievani. Both are well known public figures. During the show, the two interact with some guests, visiting them in different places.
Where? "geographies, places, scene"	The show is set in a real factory ("La fabbrica del mondo" means "the factory of the world") dressed up as a TV studio/theatre stage, with in-person spectators. The guests are visited in their personal environment (a research lab, the city where they live, ecc.). Another group of characters comprises imaginary theatrical characters that intervene during the show.
When? "time of the narration"	-
How? "narrative & storytelling"	Mixing the structure of a primetime TV show with conference, theatre and journalism (especially reportage and interviews) the show uses a vast range of narrative features that work on dramatic, emotional, informative and rhetoric levels. The scenes with the actors are fictional, but in relation with the main narration. The show criticizes the consumerism that contributed to the climate crisis we live in, taking advantage of the "green living" rhetoric and a general "filling-the-gap-in-knowledge" type of story.
How? "going beyond the story"	The guests are both witnesses of the main narration, contributing to the general case made by the two hosts. They also provide ideas on how to solve some problems that are addressed in the show. It's more a general cultural push than an actual recipe for a solution. The public/spectators present on the set are passively used as a tool to help the viewers identify/feeling of being there. There is a degree of paternalism and of academia explaining to the masses.
Add below any additional (contextual/cultural) information you consider relevant for the reader	



Table S22: Analysis Piece 2 (Italy)

Country: Italy	
Clima non c'è più tempo	Analysis (formicablu)
What? "the story"	The presenter, a researcher himself, dedicates the first episode of the season 2020 (there are up to 3 seasons, starting November 2019 for about 8-9 episodes per year, weekly). This episode is a clear explainer of how to study climate change and how to understand why it is due to human activity. There is a lot of science and top-down information.
Why? "the relevance"	It is a very classic piece but useful since it summarizes all the knowledge and pieces of evidence needed to understand the extent of climate change and the reasons behind it.
Who? "the actors"	The presenter is a researcher, a geologist, Mario Tozzi who has turned into a science explainer for many years now. A very popular TV protagonist. He interviews lots of other experts in the fields, travelling to different places, so they also share their experience, data, views. In studio, during the live sessions, there is an audience composed by young people, high school students. However, the register, format, language of the entire program doesn't seem fit for teenagers, it is very classical and shaped following a very traditional format.
Where? "geographies, places, scene"	There are many locations: the studio where the program goes live, with the audience and the presenter; then a series of video reportage where the presenter goes to places that are iconic to show the extent of the effects of climate change, such as glaciers in Italy and Norway.
When? "time of the narration"	The reportage are contemporary, recorded during the year. But there are images and videos from past times, to show the environmental change for instance on the coverage of ice. However, the reportage done by the presenter is also interspersed with bits of other sources, videos recorded by other journalists (likely to be bought from other TVs and video companies).
How? "narrative & storytelling"	<p>This is a very classic explainer format. Tozzi explains the scientific data, he frames them in a historical framework, while showing the environments around him (he sails, walks, travels in boats and so on, often moving but the actual 'talk' is always recorded in a very classic way, with him on a specific spot and talking on camera. His main narrative contains other smaller/shorter video stories that seem to be post-produced with video and images that are bought and collated to fit the story. After 30 min of video, he goes back live in-studio and at that point, he seems to give a lecture to the audience, mainly composed of young people, students of high schools. Sometimes he uses graphics and data.</p> <p>Then there is another video reportage, again a very long one.</p> <p>At 5 minutes from the end of the episode, there is a final short window with the audience which again is very top-down in the approach.</p> <p>Then comes the final closure, when a much younger science explainer (Lorenzo Baglioni) stands up from the audience, where he was sitting, and is asked to use a more entertaining approach to talk about the topic (although the presenter feels the need to further highlight that the guy, although an artist, is also competent in science). There are few minutes where Lorenzo brings in a splash of poetry, music and humour (although the choice of songs, for instance, is really not intended for teenagers, citing singers and songwriters from decades ago). The whole gag seems really just a little trick to make sure that there is something thought for kids. And, in fact, it ends with a meme, put up on the screen, and with a call to go live on Facebook altogether to produce more memes. This final part seems really preposterous.</p>



How?
"going beyond the story"

It's a super classic piece. Reportage on the field, after having identified location, experts and fixers, for the main story that is the one the presenter will be doing travelling directly and recording on the field. The language is very explanatory. No emotions, no personal stories. Very 'scientific' and yet in plain language, perfectly understandable. The other videos are quite likely to have been produced with images and videos bought from repositories, agencies and so on, and organized by the Italian team, with an Italian over voice. The graphics and bits of data visualizations that are sometimes shown are not very interactive nor particularly high quality or creative. They are basic science graphics inserted during postproduction on top of a frame. The effect is very '90s. However, the program in its entirety is functional and flowing in a good way, alas not particularly contemporary in taste, register, choice of language, music, style. But it fits the National TV.

Add below any additional (contextual/cultural) information you consider relevant for the reader



ENJOI - ENgagement and JOurnalism Innovation for Outstanding Open Science Communication

This project received funding from the European Union's Horizon 2020 Research and Innovation program under Grant Agreement n°101006407
www.enjoiscomm.eu

Table S23: Analysis Piece 3 (Italy)

Country: Italy	
Eco-ansia	Analysis (formicablu)
What? "the story"	Eco-anxiety is potential consequence on mental health caused by the effects of environmental degradation and is especially linked to the effects of climate change
Why? "the relevance"	As we live more and more in a world where the effects of climate change are concrete, it is important to raise awareness on this particular aspect.
Who? "the actors"	The post is a classical informative post on Instagram, where the instagrammer explains something to his/hers followers. She is an expert in the ecological/naturalistic field and works mainly on raising awareness of less known aspects of the climate crisis.
Where? "geographies, places, scene"	-
When? "time of the narration"	-
How? "narrative & storytelling"	The post takes advantage of both the written text and a series of cards/images with a distillation of the main message. The piece is informative, but also in the last part wants to trigger a reaction in the reader: how to react to mitigate the eco-anxiety.
How? "going beyond the story"	There are two solutions/indications proposed. One is implicit (we need to recognize this psychological issue as a secondary effect of climate change and we can no longer ignore it); the second is explicit: if you want to mitigate the impact of eco-anxiety you need to change something in your lifestyle, starting from the media-diet (information can trigger anxiety).
Add below any additional (contextual/cultural) information you consider relevant for the reader	
In the case of Instagrammers (and possibly any social media influencer/personality) it is of paramount importance that they have a community, where they tend to share a certain language and, to a certain degree, common values.	



Table S24: Analysis Piece 4 (Italy)

Country: Italy	
L'anno più caldo di sempre fino al prossimo anno	Analysis (formicablu)
What? "the story"	Lifegate is a magazine focusing on environmental issues. This is its Ig channel, strongly interactive with their audience. The story uses the data from Copernicus to show how year after year in the last 20 years temperatures have gone up.
Why? "the relevance"	The data that came out in January was, for once, a big news on Italian media, it was shared everywhere. This post has the added value of using bits of past news from TV news and other sources to show, along the past 20 years, how every year we have been surprised to find out of the increase of temperatures. It also seems a paradox and yet it is all true.
Who? "the actors"	The magazine Lifegate is part of a complex set of actions and players promoting sustainability as their key asset. The magazine, which is highly integrated with a number of innovative outputs, such as podcast, social media, a radio, is the information channel of a benefit company that works to promote sustainability, circular economy, ecological transition and supports companies and NGOs and many other players who have become part of the Lifegate network. The actors in this post are us, the society, since it is built by collating pieces of news from the main tv channels and other sources of information.
Where? "geographies, places, scene"	The story shows different environments in time, as they evidently go through phases of drought, heat waves and so on.
When? "time of the narration"	The story was produced in January 2022, but it brings the data and images and small bits of TV news from 2003 on.
How? "narrative & storytelling"	The narrative is very basic and yet, probably because of this, it is highly effective in causing concern: year after year we hear the journalists from the news say the same: record temperatures, draught, growing heat... it is almost disconcerting
How? "going beyond the story"	It is basically a timeline built as a collage of TV bits and other images and videos to show the continuous growth of the temperatures in the years.
Add below any additional (contextual/cultural) information you consider relevant for the reader	



Table S25: Analysis Piece 5 (Italy)

Country: Italy	
Falliti tutti gli obiettivi climatici dell'ultimo decennio	Analysis (formicablu)
What? "the story"	The story is a commentary of the climate change crisis considered in the perspective of the 20 UN sustainable development goals. The title of the video means "All climate targets of the last decade failed": it explains why the 10 UN goals failed, and how dangerous this is.
Why? "the relevance"	The story is relevant because it raises awareness about the urgency to address the climate change crisis. The video puts climate in a wide perspective (talking about decades rather than years) to give a better idea of the delays we are facing to save our planet.
Who? "the actors"	The "main character" is Adrian Fartade, the author of the video. He is a Romanian-born science communicator, youtuber and writer, living and working in Italy (in Italian). Passionate about astronomy, astronautics, astrophysics and environmental sciences, in 2009 he created the web platform Link2universe as well as the social media channels Link4Universe, where he deals with the latest discoveries in the astronomical field and the development of the astronautical sector, but also Earth observation and environment. In this specific case, he is giving his personal perspective on climate change, giving at the same time a passionate message to his audience about the urgency of taking action.
Where? "geographies, places, scene"	The location is global. Some specific areas are mentioned (e.g. forests in California), but just to give some example of climate-related environmental crises.
When? "time of the narration"	The time of the narration is October 2020, so one year before Cop26. But the video starts with a flashback in 2010, to give the idea of how many things can (or cannot) change in a decade.
How? "narrative & storytelling"	Adrian Fartade's science communication is characterized by a very direct and informal approach. He has a vast knowledge of the topics he covers, which makes him a reliable source. Most importantly, he is very engaging: during his live sessions on YouTube and Twitter, he tries to address as many comments/question he can, while he is very active in answering the comments to the pre-recorded videos he posts (like the one analysed). In this video, some dramatization techniques are used to raise awareness about the climate change crisis. From a technical point of view, the video (as all the other contents of his channel) is very well realized. The audio is perfect, and also the setting is carefully designed. Most of the video portraits Adrian directly talking to the public, but in some cases real images are shown (e.g. flooding, hurricanes, fires, etc.) Some graphic elements (logo, jingle) are included.
How? "going beyond the story"	Climate change is a crucial topic to be covered, but in this case the "beyond the story" part is crucial: people choose to follow Adrian Fartade because he managed to create an active community around Link4Universe. He is a very engaging "scientific influencer". Everyone can comment and ask questions, and the author constantly replies to his audience. His passionate attitude is what people most like in this video, and this aspect clearly emerges from the comments.

Add below any additional (contextual/cultural) information you consider relevant for the reader

Besides being one of the most successful Italian science youtuber, Adrian Fartade is also a theatre actor. Over the years, he was the guest star in several science shows. As a public character, he is also very active in the defence of



ENJOI - ENgagement and JOurnalism Innovation for Outstanding Open Science Communication

This project received funding from the European Union's Horizon 2020 Research and Innovation program under Grant Agreement n°101006407
www.enjoiscicomm.eu

the LGBTQ+ rights.

Table S26: Analysis Piece 6 (Italy)

Country: Italy	
Cos'è l'effetto serra?	Analysis (formicablu)
What? "the story"	The story is an explanation of the greenhouse effect: what it is, which gases contribute to it and why the phenomenon is relevant within the climate debate.
Why? "the relevance"	It is a classic piece of science communication. It covers an "evergreen" topic, not particularly related with any recent scientific events. However, as the climate crisis is becoming a more and more pressing issue, understanding the greenhouse effect is of paramount importance.
Who? "the actors"	The main actor is the author of the video, Ruggero Rollini. He is a science communicator with a Chemistry degree. On YouTube he created the video format "Sorsi d'ambiente" (which means "Sips of environment"), where he explains some key environmental issues in an accessible way.
Where? "geographies, places, scene"	-
When? "time of the narration"	-
How? "narrative & storytelling"	The narrative is based on communicating science with a very simple, open and direct style (but without oversimplifications). Both audio and video are professionals. Many visual elements are used: while telling the story, the author draws on a tablet, and the image is then shown on the whole screen. Added value: The YouTube description contains some reading reference, and the names of 2 experts who revised the video contents are mentioned.
How? "going beyond the story"	The author describes the issue addressed in a clear way. The whole video comprehensively answers the question: "What is the greenhouse effect?" Almost all the YouTube comments are positive. The audience often thank the author for his contribution, and some users mention possible educational applications for this video.
Add below any additional (contextual/cultural) information you consider relevant for the reader	



Table S27: Analysis Piece 7 (Italy)

Country: Italy	
Come i nomadi della Mongolia si adattano al cambiamento climatico	Analysis (formicablu)
What? "the story"	In recent years, the winters in Mongolia have become more harsh and that has consequences on the main pillar of Mongolian economy: the traditional nomadic breeding. The reportage tells how the local population is adapting, changing their habits to assure survival.
Why? "the relevance"	The story is relevant because it shows the actual impact on real people of the climate crisis humans have caused and depicts how the collaboration between local population and researcher can help to find a way of adaptation, guaranteeing the survival of a people.
Who? "the actors"	The main actors of the story are some Mongolian breeders and some researchers that studied the impact of climate change in Mongolia.
Where? "geographies, places, scene"	The story takes place in the Mongolian prairies.
When? "time of the narration"	-
How? "narrative & storytelling"	The story is composed of two different parts. One is a classical written journalistic piece, where Pasotti explains the situation and interviews a local ecologist to describe the effects of climate change in Mongolia, especially on winter temperatures. The second part is a video-reportage where nomad breeders are interviewed in their environment and we can see the places and their way of living. Here the story is more on what we can learn from the nomad Mongolian people that already put in place a strategy to survive, adapting their way of living. So it is both an unheard alarm from a very distant place from Italy and a lesson-learnt from another country type of story
How? "going beyond the story"	Lesson learnt.
Add below any additional (contextual/cultural) information you consider relevant for the reader	



Table S28: Analysis Piece 8 (Italy)

Country: Italy	
I figli che (non) vogliamo	Analysis (formicablu)
What? "the story"	This episode of the newsletter focuses on the news that are circulating about young people deciding, in different countries, not to have kids for two different reasons highly connected. The first one is that in face of the current ecological crisis they think that having kids would enhance the human overpopulation burden on the planet. The second is that they are affected by one or other form of eco-anxiety and do not see fit bring a child into a world that has little perspective of a future. The piece cites different examples and news coming from other media around the world. The author goes beyond the news by showing how there is no direct correlation between lowering the number of human beings on the planet, since it's not a simplistic relationship. There are issues such as inequalities, differential use of resources and so on that render the overall matter much more complex to look at.
Why? "the relevance"	The author writes a weekly newsletter focusing on the climate crisis and other sustainability issues, always trying to provide more context and info, data and links to better understand the news he is focusing on, to empower his readers to better judge but also to make them more active in responding to the ecological crisis with concrete steps and behaviours.
Who? "the actors"	The newsletter is written by the author and there are not other characters, no interviewees or other voices. However, it's very rich in links, suggestions for reading and listening, and with many resources carefully picked and selected. He has received some recognition and a special mention from the CMCC Foundation, the Euromediterranean Center for Climate Change, for its accuracy and freshness.
Where? "geographies, places, scene"	Italy. The author is from Northeast, but he works for a national daily, used to live in Rome and recently moved to Milan. However, the NL is his independent project, and therefore he is the only creator.
When? "time of the narration"	The story is related to the news circulating in the previous week. There is always a relation to current news, affairs, what is discussed in the media. This particular post is one of the most recent ones, from January 2022. There are already 93 issues of the newsletter.
How? "narrative & storytelling"	This is a NL, so it reflects strongly the voice and choices of the author, who uses a very immediate tone and language to address each issue. It's extremely easy to read, it's composed by one 'long' piece, not so long though, a short "link link link" section and "one beautiful thing" which is usually a picture. Each 'episode' is readable in about 5 minutes ("It's out on Saturday. You read it in 5 minutes. You think about it for the entire week"), it's very lively although it touches upon topics of a certain gravity, and it is always meant to make people feel they can do something about it. It's very clear that both the author and the community he is talking to are young, in their late 20s - early 30s and in a phase of their life when they are due to make a number of very significant choices.
How? "going beyond the story"	He does a lot of research, creates a great narrative linking different resources, uses data and produces also original visual dataviz and other small visual products that help understanding without the need to go in depth with a long explainer. It has a very personal register and could easily be read by people of the GenZ and not only by Millennials. Of course, it's super readable also by adults.
Add below any additional (contextual/cultural) information you consider relevant for the reader	



Table S29: Analysis Piece 1 (Belgium). Television

Country: Belgium	
Adélaïde Charlier, la meuf du climat	Analysis (StickyDot)
What? "the story"	<p>The piece is an <u>11:29 min extract</u> of the TV report "<u>Adélaïde Charlier, la meuf de l'environnement</u>".</p> <p>This video coverage talks about the meaning of being a young climate activist today in Belgium: their constant struggle between needing to do something to "save the planet from ineffective policies", and questioning one's own legitimacy to fight.</p> <p>The TV report presents Adélaïde Charlier, 18 years old, an engaged young resident from the city of Namur, in Belgium, who became a charismatic figure in the international "youth for climate" movement. Between revolt and questioning, this report immerses the viewer in the daily life of the young activist.</p> <p>The extract of the TV report selected includes few moments of her meeting with the Vice-President of the European Commission to "bring him face to face with his contradictions" about the Common Agriculture Pact, moments filmed in her daily life with her family, a climate action organised at the time of the anniversary of the Paris agreement, interviews with experts on global warming and the actions that are carried out by the Youth activists.</p>
Why? "the relevance"	<p>The TV report was broadcasted on 27 May 2021, three days after (24 May 2021), the movement 'Rise for Climate Belgium' organised the action '32 Hours for Climate', with the support of international activists from 'Fridays for the Future' and recent climate marches in France. The action was organised in parallel with a European Council summit (24-25 May 2021) that had climate change on its agenda.</p>
Who? "the actors"	<p>The main narrator is the youth activist Adélaïde Charlier. Other voices present in the story:</p> <p>Greta Thunberg, Youth Activist from Denmark and Luisa Neubauer, Youth Activist from Germany that are shortly seen when the TV report shows the meeting between the youth activities and the Vice-President of the European Commission Anuna de Wever Youth Activist from Belgium, Flanders that is first shortly seen when the TV report shows the meeting between the youth activities and the Vice-President of the European Commission. She is then shown in longer interviews explaining the urgency to change policies now, what climate change will mean in the future and its impact and the importance of listening to scientists. She is also seen when the two girls are recording a video clip on negative impacts of climate changes, destroyed ecosystems, and extinction of animal species</p> <p>Frans Timmermans, Executive Vice-President, leading the European Commission's in charge of the Green Deal and the EU agriculture policy (short appearance when the TV report shows the meeting between the youth activities and himself). https://ec.europa.eu/commission/commissioners/2019-2024/timmermans_en</p> <p>Family members of the youth activist Adélaïde Charlier</p> <p>Olivier De Schutter, Special Rapporteur on human rights and extreme poverty for the United Nations (OHCHR) explaining the emergency to reduce global warming and the impact on life on earth. He also underlines the fact that if policy decisions are not taken now, the catastrophic future will be inevitable. https://www.ohchr.org/FR/Issues/Poverty/Pages/OlivierDeSchutter.aspx</p> <p>Jean-Pascal Van Ypersele, Climatologist, member of the Intergovernmental Panel on Climate Change (IPCC), the UN body for assessing the science related to</p>



	<p>climate change. In the TV report he details the expected global warming and the forms it will take.</p> <p>https://www.investigate-europe.eu/en/2020/jean-pascal-van-ypersele/?ie_s=ga&pk_campaign=en_dsa&pk_source=google&pk_medium=cpc&gclid=CjwKCAiA3L6PBhBvEiwAINIJ9Jzm0sKTmb_KqlaDZoKtY2fkj-A68TOAH_WcKmYIMyRkYtzleln4_xoC2J8QAvD_BwE</p> <p>François Gemenne, politologue, member of the IPCC, explaining the impact of global warming on demography, population distribution on territories and the fact that the world is not ready for this at all.</p> <p>https://www.magyc.uliege.be/francois-gemenne/</p>
Where? “geographies, places, scene”	The TV report takes place in Belgium, in different cities (Brussels, Namur) with images from around the world when the global warming effects are explained.
When? “time of the narration”	The TV report takes place in 2020 and 2021, it revolves around Adélaïde Charlier’s daily life for 6 months.
How? “narrative & storytelling”	<p>The film director, Quentin Ceuppens uses some elements of storytelling: <u>emotionalization</u> when the three experts and the youth activist Anuna De Wever are talking about the urgency to reduce global warming and the impact on life on earth. Their interventions are illustrated with images of climate catastrophes (hurricane, fire), and animals suffering climate change (polar bear, etc.). These images are used to support the speech and emphasize the urgency of the situation. The TV report does not use scientific graphs or figures.</p> <p><u>personalization</u> when the main character of the TV report, Adélaïde Charlier is presented in her daily life, with conversation with her father filmed and interviews of her sister to describe the personality of the youth activist.</p> <p>Although it is not the central point of the TV report, the ‘<i>Polar bears or distancing narrative</i>’ appear at some point, when the youth activists and the experts are talking about the urgency to reduce global warming supporting the emotionalization, with an image of a polar bear on a piece of melting ice.</p> <p>There are no specific rhetorical elements used to tell the story.</p>
How? “going beyond the story”	<p>The video describes <u>solutions</u> to the problem of global warming from a youth activist perspective. The solutions to this major challenge the main character of the TV report has found is activism in the form of campaigns both online on social media with videos and onsite in conjunction with key policy momentum like the anniversary of the Paris agreement. The TV report shows, as an <u>inspiring example</u>, that individuals caring for the question of climate justice can collaborate across borders and attempt to have impact in the higher sphere of policy-making (EC vice-president).</p> <p>In the extract analysed, there are <u>no interactive elements</u> (e.g., interactive maps or graphics, gamification, etc.) used.</p> <p>The <u>audience did not participate</u> in the production of the piece.</p> <p>The piece is hosted on the online platform of the TV channel (Auvio) with the following <u>audience engagement</u>: 3039 views, 273 shares (full story). In addition, the TV report was also promoted through the Facebook page of the TV channel (https://www.facebook.com/watch/?v=518070362719979) where the trailer got 139 reactions (likes, etc.), 107 comments and 36 K views.</p>
Add below any additional (contextual/cultural) information you consider relevant for the reader	



Table S30: Analysis Piece 2 (Belgium). Instagram

Country: Belgium	
One day, one fact	Analysis (StickyDot)
What? "the story"	<p>The story is extracted from the 'on the spotlight' stories called 'ONE DAY ONE FACT' on the personal Instagram account of Adélaïde Charlier, the Belgian youth climate activist. The piece is related to the climate impact of jeans production on water resources.</p> <ul style="list-style-type: none"> • The first slide mentions 'When we know that 2.6 million people die of thirst each year and that to make a single pair of jeans, we use 10,000 L of water, this raises questions...' • The second slide: 'Ok, jeans trousers are bad then what is the solution?' • The third slide provides the first solution: 'asking ourselves if we really need new jeans' • The fourth slide includes the second solution, 'to repair the jeans' and the third solution to 'buy second hand jeans or a sustainable clothing brand'. • The fifth slide mentions: 'according to NASA, water covers 71% of the planet earth, 96.5% is salty and 3.5% remaining is fresh water that can be drunk.' • The sixth slide mentions: 'in these 3.5%, 68% of this water is frozen, 2% in rivers and lakes and the rest is underground. Water is precious and limited'.
Why? "the relevance"	<p>According to the French ecological transition agency (ADEME), 100 billion items of clothing are sold every year worldwide. Their production doubled between 2000 and 2014. In addition, fashion is one of the most polluting industries on the planet. The story on Adélaïde Charlier's Instagram account seems quite relevant keeping these facts in mind.</p>
Who? "the actors"	<p>The narrator is the author: Adélaïde Charlier. She includes an additional voice, appearing as Agathe la Sista on the Instagram story. This second voice is giving some solutions to the problem stated above in the forms of a video call/interview. The story refers to NASA as a source for the information related to the composition of water on earth. For the figures "2.6 million people die of thirst each year" and "to make a single pair of jeans, we use 10,000 L of water", the author does not provide any source.</p>
Where? "geographies, places, scene"	<p>No specific place, but some global considerations.</p>
When? "time of the narration"	<p>No specific time is included. The story was posted at the beginning of May 2020, which corresponds to the beginning of the COVID crisis.</p>
How? "narrative & storytelling"	<p>On the first slide, the author makes a parallel between two figures, "2.6 million people die of thirst each year" and "to make a single pair of jeans, we use 10,000 L of water" which induces some curiosity, a sort of dramatisation. A criticism here would be that the correlation between the two facts is not explained or specified. The narrative presented in the story is that the consumption of clothing like Jeans trousers have a big impact on the environment, here more precisely water, a scarce resource. Visual elements used to tell the story: 1) Drop of water; 2) An icon 'shop sustainable'; 3) Jeans trousers drawings; 4) A pie chart to explain the proportion of water on earth, and the distribution between salty and fresh water; 5) Some drawings to illustrate frozen water and underground water.</p>
How? "going beyond the story"	<p>The author describes 3 solutions to the problem addressed: 1) 'asking ourselves if we really need new jeans' 2) 'to repair the jeans' and 3) 'buy a second hand jean or a sustainable clothing brand'. The author does not provide inspiring examples or interactive elements. Instagram stories are open to message, comments and reactions, but it is not possible to access this information if not the owner of the account.</p>



Add below any additional (contextual/cultural) information you consider relevant for the reader

Table S31: Analysis Piece 3 (Belgium). YouTube

Country: Belgium	
Les éco-gestes sont-ils futiles?	Analysis (StickyDot)
What? "the story"	<p>The story "Les éco-gestes sont-ils futiles?" narrated by Maxime Lambrecht, in the video he created for his YouTube channel 'Philoxime' provides answers to a series of questions included in the description: <i>Are the "eco-gestures", these individual efforts for the climate, futile as we often hear? Would they even be counterproductive, as they would delay the adoption of global political solutions against global warming? What can scientific research in the social sciences say about these questions? Do we still have a moral obligation to make such individual efforts?</i></p> <p>The video is divided in chapters as follow:</p> <p>00:00 - Introduction: in this section, the author introduces the element of the debate on the debate 'individual eco-gesture vs. global political solutions' and explains it can be analysed according to the distinction between deontological ethics 'do your duty no matter the consequences' vs. consequentialist ethics, e.g. utilitarianism 'the consequences of actions are the important point'. From the point of view of this last, the small individual gestures are even contre-productive as they are a waste of time that could be used to engage in collective actions with more impact. Consequentialist ethics is the approach that is the focus of the next parts of the video.</p> <p>05:35 - Orders of magnitude: In this section, the author starts by explaining what it means concretely to rely on individual effort to reach the goal of remaining below 2° C of global warming. For an average Belgian citizen, it means dividing by 7 the carbon footprint. The author refers to the report from <i>Carbone 4</i>, concluding that very significant individual efforts would enable to reduce by 45% the gas emission and moderate effort by 20%. The remaining part of the necessary effort falls under investment and collective rules (in industry, agriculture, ect..) which are the responsibility of the State and enterprises.</p> <p>09:17 - Impact on social norms: This chapter introduces the point of view from social psychology and the fact that individual decisions are influenced by the actions of other people and social groups. Social norms are key drivers for individual decisions. There are two types of social norms: injunctive norms are what people say and descriptive norms are what people do. According to the author and the report he quotes, descriptive norms have more impact (see source below: Farrow, Grolleau, & Ibanez 2017). Social group behaviours have a particular impact. From this perspective, individual behaviours are not so individual but linked to social norms and appartenance to social groups.</p> <p>14:05 - Impact on political engagement: In this chapter, the author talks about the impact of individual engagement on political commitment for climate issues. He introduces several hypotheses: the attraction hypothesis (crowding-in) assuming that individual action will attract political commitment; the eviction hypothesis (crowding-out) that assumes the opposite or the null hypothesis that says that there is no statistical significance between the two variables. Some research has been carried out on these different hypotheses like Rössel & Schenk 2017 (see source below) observing no link between fair consumption and political commitment (verifying the null hypothesis). Two other studies from Willis & Schor 2012 and Vandermoere et al 2020 (see sources below) present some findings on the fact that individuals' eco-friendly habits or sustainable consumption practises is positively correlated with unconventional policy participation from citizens</p>



	<p>(participation to demonstration, etc..). Finally a longitudinal study (following individuals over a certain period of time) from de Moor & Verhaegen 2020 confirmed the findings from the 2 studies aforementioned.</p> <p>These empirical findings tend to contradict the eviction hypothesis stating individual eco-gestures are counterproductive, and would delay the adoption of global political solutions against global warming. In conclusion, individual and political efforts are not in competition, and can even participate in the same dynamic.</p> <p><u>18:05 - Impact on climate policies</u>: this chapter deals with the legitimacy of climate policies. The author explains he did not find empirical studies on the topic and the information he provides here are personal reflection. The author provides some solutions to the debate, analysed from the ethics and moral philosophy angle, stating that individual eco-gesture are not sufficient by themselves and ambitious global political solutions are necessary. On the other hand, individual effort contributes to the legitimacy of climate policies. It seems quite clear that to be legitimate, and avoid confrontations, climate policies need a change in mentalities and behaviours. Individual eco-gestures can contribute to that even if it is at a modest scale.</p>
<p>Why? "the relevance"</p>	<p>The idea that individuals can have an impact on the climate crisis, reducing their emissions by changing their consumption habits and some aspects of their lifestyle is widely spread. On the other hand, a debate exists around this idea, with a counter-argument stating that the actions to reduce gas emissions are mainly the responsibility of states, decision-makers and the industry. This ethical question around climate justice creates unsolvable controversy that the author tries to analyse. In that context, the video provides useful information about the debates and ethical and philosophical concepts behind.</p> <p>In terms of timing, there was no specific event around the date of publication of the video but the year 2021 was particularly relevant for climate justice debate and climate issues in general since the COP26 took place at the end of October, beginning of November 2021.</p>
<p>Who? "the actors"</p>	<p>The story about eco-gesture is narrated by Maxime Lambrecht, Doctor of Law, researcher in ethics and Internet law at the Hoover Chair in Economic and Social Ethics. He is also Visiting Professor at UCL and Post-doc Researcher at Sciences Po Paris. See: https://uclouvain.be/fr/chercher/hoover/maxime-lambrecht.html</p> <p>Finally, he is the creator of the YouTube channel 'Philoxime'. The YouTube channel intends to show the relevance of the main theories of contemporary justice to think about contemporary issues such as climate ethics, the ethics of pandemics, and the ethics of intellectual property in the digital age. The objective of the channel is to help improve the quality of public debate on ethical, political and social issues, via a philosophical approach driven by the principle of interpretative charity and the search for clarity, and nourished by the contribution of other scientific disciplines. See: https://www.youtube.com/c/Philoxime</p> <p>The <u>voices</u> considered in the story:</p> <ul style="list-style-type: none"> • French Minister for Ecological Transition, Barbara Pompili, seen in an extract of the video showing a public speech where she encourages the audience to empty their mailbox, analysed by the author as an injunction to individual efforts coming from political leaders who try to justify their insufficient actions • Gilles Raveaud, Economist, from which several Tweets are used by the author to illustrate a form of nihilistic despair regarding the impact of individual eco-gesture e.g.: <i>"if you manage to believe that your 'little gestures' are going to make a difference, then you are suffering from an abyssal ignorance of the situation, coupled with a very Western pretension. China is building an airport every week..."</i>. https://gillesraveaud.com/ <p>The <u>sources</u> considered in the story: Emmanuel Kant, philosopher, to explain deontological ethics</p>



	<p>J.Bentham to explain consequentialist ethics, e.g. utilitarianism ‘the consequences of actions are the important point’</p> <p>Derrick Jensen, Forget Shorter Showers : https://vimeo.com/137294079 (VF: https://www.youtube.com/watch?v=QqnC2avyNAk&t=0s)</p> <p>Carbone 4, Faire as part, 2019 see here and here.</p> <p>Nolan et al. 2008, Normative Social Influence Is Underdetected, Personality and Social Psychology Bulletin 34(7)</p> <p>Melnyk et al. 2011, To think or not to think: The effect of cognitive deliberation on the influence of injunctive versus descriptive social norms, Psychology & Marketing 28(7)</p> <p>Goldstein, Cialdini et al 2008, A Room with a Viewpoint, see here and here.</p> <p>Farrow, Grolleau, & Ibanez 2017, Social Norms and Pro-environmental Behaviour: A Review of the Evidence. See here and here.</p> <p>Brough et al. 2016, Is Eco-Friendly Unmanly The Green-Feminine Stereotype and Its Effect JCR</p> <p>Xie et al 2011, Social consensus through the influence of committed minorities, See here and here.</p> <p>Grey, 2006, Numbers and Beyond: The Relevance of Critical Mass in Gender Research</p> <p>Centola et al 2018, Experimental evidence for tipping points in social convention, See here and here.</p> <p>Rössel & Schenk 2017, How Political is Political Consumption? The Case of Activism for the Global South and Fair Trade January 2017, [Social Problems] See here. 65(2)</p> <p>Willis & Schor 2012 - Does Changing a Light Bulb Lead to Changing the World, See here.</p> <p>Vandermoere et al 2020, Can Sustainable Consumption Trigger Political Activism? An Empirical Investigation of the Crowding-in Hypothesis, Sustainability 12(21), See here.</p> <p>de Moor & Verhaegen 2020, Gateway or getaway? Testing the link between lifestyle politics and other modes of political participation, see here.</p> <p>Le Réveilleur "Des gestes individuels à l'action politique: militer pour une taxe carbone ?" See here.</p> <p>https://nosgestesclimat.fr/</p> <p>https://www.myco2.fr/</p>
<p>Where? “geographies, places, scene”</p>	<p>The video does not place itself in a specific place and addresses global issues. The statistics related to individual behaviours are mostly related to France and Belgium.</p>
<p>When? “time of the narration”</p>	<p>The debate ‘individual eco-gesture vs. global political solutions’ is not placed in specific time.</p>
<p>How? “narrative & storytelling”</p>	<p>The story follows the construction of a discourse and an argument based on moral philosophy. He follows a philosophical demonstration, dissecting the various elements at stake around this debate related to climate change and taking the time to provide detailed information about a complex matter.</p> <p><u>Rhetorical elements:</u> In the concluding part of the video, the author uses a rhetorical question to introduce his personal analysis: ‘is it reasonable to think individual efforts indirectly contribute to the legitimacy of climate policies?’ used to make his point. He illustrates his point with an example: policies taxing kerosene to dissuade people from travelling by car and planes will be easier to implement if a majority of citizens favour train travel. The empirical findings available nowadays tend to contradict the eviction hypothesis stating the individual eco-gestures are counterproductive, and would delay the adoption of global political solutions against global warming.</p> <p>The video includes various visual elements to illustrate the explanations and make the whole piece more engaging and light for the viewer.</p>



How?
"going beyond the story"

The author provides some solutions related to the debate between individual efforts and collective action. To the questions:

- Are the "eco-gestures", these individual efforts for the climate, futile as we often hear?
- Would they even be counterproductive, as they would delay the adoption of global political solutions against global warming?
- What can scientific research in the social sciences say about these questions? Do we still have a moral obligation to make such individual efforts?

The binary opposition between individual efforts and collective action is a fake dilemma. The criticism of eco-gestures does bring some perspective to the question of the impact of these individual actions on the global problem but it is important not to fall into the opposite excess, concluding to their triviality. Eco-gestures can have an impact on our social sphere, on our own capacity for political engagement and on acceptability of climate policies.

The author uses interactive elements e.g. the interactive map on 'reduction of CO2 induced by individual gestures - modest level of effort' - Source Carbone 4 'Faire sa part' report (minute 07:39 of the video)

There is no clear indication that the audience participated in the production of the piece. On the other hand, the description of the video includes some 'Thanks' to a series of individual including some YouTubers that provided some feedback to the piece: "Merci à Le Réveilleur, Tanguy, Bon Pote, Eric Garet, Emeline De Bouver, Florent Verfaillie et Olivier Milis pour leurs retours sur cette vidéo".

In terms of audience engagement, the video had 30 167 views, 2,6k likes and 310 comments. The author of the video replies to many of the comments, sometimes providing additional information, e.g to the comment: "20% reduction via ecogeste is already huge! It is absolutely not negligible!" The author replied, referring to the Carbone 4 report on the topic: "Yes, that's already good, but from a collective point of view you also have to count on the fact that not everyone is going to participate. However, as the Carbone 4 report notes: "in France, we can consider that only 20% of individuals are "drivers" on climate issues, 60% rather "variable" on the issue, and 20% downright resistant to any injunction to change on environmental and climate issues"

Another innovative element that is engaging is the resources the author provides at the end to assess individual carbon footprint (France: ADEME, www.nosgestesclimat.fr or www.myco2.fr)

Add below any additional (contextual/cultural) information you consider relevant for the reader



Table S32: Analysis Piece 4 (Belgium). Digital media/newspapers

Country: Belgium	
«Less is more»: des défis quotidiens pour améliorer son impact sur l'environnement	Analysis (StickyDot)
What? "the story"	<p>The article presents a tool to encourage individuals to reduce their impact on the environment, created by an association based in Brussels, called Ecoconso.</p> <p>The piece draws some conclusions on the 2 weeks challenge associated with a card game called 'Less is More'. The game proposes a series of challenges around six themes: <i>more health, more savings, more conviviality, more power of action, more meaning and more freedom</i>. The idea behind this tool is to present individual action for the environment from a positive perspective.</p>
Why? "the relevance"	<p>The idea that individuals can have an impact on the climate crisis, reducing their emissions by changing their consumption habits and some aspects of their lifestyle is widely spread. On the other hand, a lot of people are not sure how to implement these changes, a situation that can be discouraging and generate guilt. In that context, the article proposes a practical tool that highlights positive effects of taking steps toward a zero waste lifestyle on many aspects of a household.</p> <p>The piece also presents the NGO behind and explains it proposes personalised support for those who are taking the challenge to reduce their emissions. The article has been published after the end of the challenge.</p>
Who? "the actors"	<p>The narrator included quotes from individuals that took part in the campaign all along the article. The article begins with a quote from one of the challenge participants that believes that most people need a small impulse to reduce emissions but, when challenged to try a new gesture for the planet, and things are in place, the benefits obtained are quickly seen. Other testimonies presented in the pieces are about some concrete actions families have implemented. This can help the reader understand specifically, what it means to reduce emissions. The fact that individuals talking from their household perspective are quoted also makes the topic more accessible to a large public and enables the reader to identify with the story.</p> <p>The journalist also interviewed the communication manager of the association that explained the philosophy of the game.</p> <p>The story is narrated by the journalist giving <u>voices</u> to:</p> <ul style="list-style-type: none"> - Lévy, challenge participant, provides some feedback on the way he sees the effort toward a zero emission lifestyle: « <i>Getting started often takes a little push. At first, it is difficult to change your habits. But when you challenge yourself to try a new gesture for the planet, once things are in place, you quickly see the benefits obtained.</i> » - Ann Wulf, communication manager of Ecoconso ASBL, in favour of the philosophical concept of positive realism^(*)- « <i>In total, we have proposed six main themes: more health, more savings, more conviviality, more power of action, more meaning, more freedom, which refer to aspects of daily life - health, mobility, food... Only "plus" because before launching the challenge, we surveyed our members, who generally already act for the environment. The feedback was extremely positive: these actions had all brought benefits, sometimes unexpected, improving the quality of life. Benefits that are extremely driving and that make you want to do more: less is more !</i> » - Arabelle, challenge participant regarding her experience with the game: <i>"the game made the process more user-friendly, especially when we challenged ourselves to do this as a family. I have three teenagers, and with my partner, the idea was to change our habits together. We chose to work on hyperconnection"</i>



	<p>- Fabien, challenge participant: “(...) with the covid, we fell back into certain bad habits. Stress, working from home, children at home... Sometimes it wasn't easy to avoid hyperconnection or overconsumption. These cards and the follow-up from the non-profit organisation have re-motivated my partner and I, reminding us that it was very often a question of small things to be put in place, one after the other... rather than all at once.»</p>
Where? “geographies, places, scene”	The story focuses on Belgium where the Ecoconso organisation is based.
When? “time of the narration”	<p>The article has been published on 27 december at the end of the period that has been chosen for the two weeks challenge (10-23 december) and presents some conclusions and testimonies from participants that put some actions in place to reduce their impact on the environment.</p> <p>The campaign and the tool are placed in their context at the beginning, providing some information on the moment it was launched, in 2020 and the impact of the COVID crisis on the action. The article also concludes with some information on the future of the action announcing some new themes that will be launched in 2022.</p>
How? “narrative & storytelling”	<p>The journalist, in a <u>storytelling</u>, uses personalization with individualised messages as detailed above.</p> <p>The <u>narrative</u> presented in the story is that individual actions to reduce gas emission and preserve the environment are possible when an impulse and support is provided and when it relies on positive messages and a step by step approach.</p> <p>The article includes a picture of someone's hands holding the card games making the main focus of the article visible from the beginning.</p> <p>There are <u>no specific rhetorical elements</u> used to tell the story.</p>
How? “going beyond the story”	<p>The entire article is about a <u>solution</u> proposed to guide and support individuals and households willing to make some change in their lifestyle to reduce their carbon footprint.</p> <p>The author provides some <u>inspiring examples</u> from individuals having used the tool proposed.</p> <p>There are <u>no interactive elements</u> provided although the main focus of the piece is gamification.</p> <p>There is one comment in the section dedicated on the newspaper website.</p>
Add below any additional (contextual/cultural) information you consider relevant for the reader	
(*) Maurizio Ferraris, <i>Realismo positivo</i> - https://ortegaygasset.edu/descargas/contenidos/Maurizio_Ferraris.pdf	



ANNEXE 2. Samples selected per country

Table S33: Description of the Spanish pieces

Country: Spain										
Title	Author/s	Media type	Media channel	Publication date	Link	Type of piece	Target audience	Expected level of audience knowledge	Goal	Audience engagement (*)
La gran consulta: Jacob Petrus y Aquí la Tierra	María Eizaguirre, Jacob Petrus	TV	RTVE	25/11/21	Go to programme	Clip	Adults & young adults	None	Inform	No data available on the site
El cambio climático en nuestras costas	Mónica López	TV	RTVE	06/03/19	Go to programme	Clip	Adults & young adults	None	Inform & raise awareness	Indirect data (TW): 99,3K views, 856 RTs, 163 quoted tweets, 1,168 like
Viaje a la España de 2090: así será el desolador paisaje si no actuamos ya contra el cambio climático	Ana Pastor, Mario Viciosa	TV	Objetivo La Sexta	29/09/19	Go to programme	Clip	Adults & young adults	None	Inform & raise awareness	No data available on the site
Cambio climático: 5 cosas que puedes hacer para frenarlo	Rocío Benavente	Instagram	Maldita (#Maldito Cambio Climático)	02/03/21	Go to post	Post	Adults & young adults	None	Inform & Fact-checking	Views: 578 Followers: 39,6K
Directo COP25	Climática (La Marea)	Instagram	Climática (La Marea)	December 2019	Go to story	Stories	Adults & young adults	Some specific knowledge	Inform	Followers: 3,953



ENJOI - ENgagement and JOurnalism Innovation for Outstanding Open Science Communication

This project received funding from the European Union's Horizon 2020 Research and Innovation program under Grant Agreement n°101006407
www.enjoiscicomm.eu

Huertos solares en la transición energética	Genoveva López, Javi Ruiz	Instagram	El Salto	09/08/21	Go to story	IGTV	Adults & young adults	None	Inform & raise awareness	Views: 2,076 Followers: 68,5K
Respondo comentarios de negacionistas del cambio climático	José Luis Crespo	YouTube	Quantum Fracture	10/12/18	Go to video	Vlog/ Educational content	Young adults	High-level knowledge	Fact-checking & convince	Likes: 82K Comments: 8,938 Subscribers: 2,83M Views: 1,2M
Cambio climático: ¿Estamos a tiempo?	Rocio Vidal	YouTube	La gata de Schrödinger	16/05/19	Go to video	Vlog/ Educational content	Young adults & teenagers	None	Fact-checking & raise awareness	Likes: 10K Comments: 1,278 Subscribers: 550K Views: 126,908
Clima no es tiempo: la verdad del cambio climático	Javier Santaolalla	YouTube	Date un Vlog	20/03/19	Go to video	Vlog/ Educational content	Young adults & teenagers	Some specific knowledge	Literacy & raise awareness	Likes: 16K Comments: 2,235 Subscribers: 2,05M Views: 301,176
El termostato del planeta	Fernando Moleres	Newspapers /Digital media	Revista 5W	13/02/20	Go to article	Report (audiovisual)	Adults & young adults	None	Inform & raise awareness	No data available on the site
El mundo cuando cumpla 18. La Tierra, desde 2031	Mario Viciosa	Newspapers /Digital media	Newtral	15/11/21	Go to article	Article (multimedia)	Adults & young adults	None	Inform & inspire	Views videos embedded (YT): 252 and 82
¿Cuántos días de calor sufren tus hijos en el colegio comparado con los que tú pasaste?	Antonio Vilarreal, Daniele Grasso	Newspapers /Digital media	El Confidencial	24/09/18	Go to article	Article (data journalism)	Adults & young adults	None	Inform	Comments: 5

(*) number of followers, likes, comments, shares, saves and/or views; data as at the time of the analysis (December 2021/January 2022)



ENJOI - ENgagement and JOurnalism Innovation for Outstanding Open Science Communication

This project received funding from the European Union's Horizon 2020 Research and Innovation program under Grant Agreement n°101006407

www.enjoiscicomm.eu



Table S34: Description of the Portuguese pieces

Country: Portugal										
Title	Author/s	Media type	Media channel	Publication date	Link	Type of piece	Target audience	Expected level of audience knowledge	Goal	Audience engagement (*)
Ao longo dos anos, a TVI percorreu o mundo para retratar as alterações climáticas	Jornal das 8	TV	TVI	06/11/21	Go to programme	TV programme	Multi-age	None	Inform, inspire, raise awareness	No data available on the site
Fronteiras XXI: Mudanças climáticas	Jôao Ricardo de Vasconcelos	TV	RTP	2018	Go to programme	TV programme (report)	Children, Teenagers, Young adults	None	Inform, literacy, raise awareness	No data available on the site
10 impactos das alterações climáticas em Portugal	1planet4all_pt	Instagram	1planet4all_pt	07/01/22	Go to post	Reels	Multi-age	Some specific knowledge	Inform & raise awareness	Reels: 160 likes, 2 comments, 11,5k visualizations Page: 143 publications, 1737 followers
Highlights Kenya	Raquel Vareda	Instagram	Raquel Vareda	09-13/08/21	Go to post	Stories (highlights)	Adults & Young adults	None	Inform & raise awareness	As highlight, no numbers are available
Alterações Climáticas	Pedro Marques Tiago Viegas Bruno Baltazar	YouTube	Som Imagem	07/03/19	Go to video	Video	Multi-age	None	Inform, inspire	168 subscribers, 2889 visualizations, 50 likes, no comments



ENJOI - ENgagement and JOurnalism Innovation for Outstanding Open Science Communication

This project received funding from the European Union's Horizon 2020 Research and Innovation program under Grant Agreement n°101006407
www.enjoiscicomm.eu



Ricardo Trigo: "As ondas de calor são as mais afectadas pelas alterações climáticas"	Público	YouTube	Público	02/11/21	Go to video	Video interview	Young adults, adults	High level knowledge	Fact checking, raise awareness	19,5k subscribers, 432 visualizations, 7 likes, 0 comments
Alterações climáticas: o que já mudou e o que está para chegar	Célia Rodrigues (infografista), Francisco Lopes (infografista), Gabriela Gómez	Newspapers/Digital media	Público	16/09/19	Go to article	Article (data journalism)	Young adults, adults	High level knowledge	Inform	2916 shares, mails of journalists at the end of the news
Alterações climáticas. Cidades costeiras em risco com a subida do nível do mar	Carla Quirino	Newspapers/Digital media	RTP	14/10/21	Go to article	Article (multimedia)	Young adults, adults	Some specific knowledge	Inform, literacy, raise awareness	No data available on the site

(*) number of followers, likes, comments, shares, saves and/or views; data as at the time of the analysis (December 2021/January 2022)



ENJOI - ENgagement and JOurnalism Innovation for Outstanding Open Science Communication

This project received funding from the European Union's Horizon 2020 Research and Innovation program under Grant Agreement n°101006407
www.enjoiscicomm.eu



Table S35: Description of the Italian pieces

Country: Italy										
Title	Author/s	Media type	Media channel	Publication date	Link	Type of piece	Target audience	Expected level of audience knowledge	Goal	Audience engagement (*)
La fabbrica del mondo - Il peso delle cose	Marco Paolini, Telmo Pievani	TV	RAI 1	15/01/22	Go to programme	TV Show - General National Public TV	Adults	None	Inform, Inspire	General TV program - no special engagement strategies - 5% share during live program, which is higher than expected (threshold for 'success' was 3%)
Clima non c'è più tempo	Mario Tozzi	TV	RAI 3	15/02/20	Go to programme	TV Show - General National Public TV	Adults & Young adults	None	Inform, inspire, trigger interest and action	General TV programme, people in studio during the live session. Very low interactivity and no engagement online.
Eco-ansia	Valeria Barbi	Instagram	@barbi_naturalista	12/11/21	Go to post	Post	Adults & Young adults		Inform, trigger action	Profile: 1100 followers, the post got >60 likes and 3 comments
L'anno più caldo di sempre fino al prossimo anno	Lifegate magazine	Instagram	@lifegate	16/01/22	Go to post	Post	Young adults		Inform, engage	The profile has 223.000 followers - this post has over 6100 likes and many comments
Falliti tutti gli obiettivi climatici dell'ultimo decennio	Adrian Fartade	YouTube	Link4Universe (channel)	19/10/20	Go to video	Video	Adults, Young adults & teenagers	None	Inform, inspire, discuss	More than 70.500 views, 9.586 likes, 1.258 comments



ENJOI - ENgagement and JOurnalism Innovation for Outstanding Open Science Communication

This project received funding from the European Union's Horizon 2020 Research and Innovation program under Grant Agreement n°101006407
www.enjoiscicomm.eu

Cos'è l'effetto serra?	Ruggero Rollini	YouTube	Ruggero Rollini (channel)	17/09/20	Go to video	Video	Adults & Young adults	None	Inform	More than 34.400 views, 1.888 likes, 192 comments
Come i nomadi della Mongolia si adattano al cambiamento climatico	Jacopo Pasotti, Ross Ziegelmeier	Newspapers /Digital media	Radar Magazine (online magazine)	30/10/20	Go to article	Reportage	Adults	None	Inform, inspire	Radar is a free online magazine devoted to environmental journalism. It's rather new
I figli che (non) vogliamo	Nicolas Lozito	Newspapers /Digital media	Il colore verde (newsletter)	January 2022	Go to newsletter	Newsletter	Young adults	None	Inform, inspire and reflect	This is a newsletter meant to be read in 5 minutes with some quick links and facts but with one topic being dealt in a more in-depth way every week - the author is a millennial, and is a journalist in a daily, but writes the newsletter as his own personal project - he has won a special mention for it

(*) number of followers, likes, comments, shares, saves and/or views; data as at the time of the analysis (December 2021/January 2022)



ENJOI - ENgagement and JOurnalism Innovation for Outstanding Open Science Communication

This project received funding from the European Union's Horizon 2020 Research and Innovation program under Grant Agreement n°101006407

www.enjoiscicomm.eu



Table S36: Description of the Belgian (French-speaking Belgium) pieces

Country: Belgium										
Title	Author/s	Media type	Media channel	Publication date	Link	Type of piece	Target audience	Expected level of audience knowledge	Goal	Audience engagement (*)
Adélaïde Charlier, la meuf du climat	RTBF Society, Lifestyle and knowledge. Director: Quentin Ceuppens	TV	La Une	27/05/21	Go to full programme	Story/ coverage	Adults and young adults	None	Inform and inspire	3039 views, 273 shares (full story)
One day, one fact	Adélaïde Charlier	Instagram	Adélaïde Charlier	4-7/05/20	Go to story	Stories in the spotlight	Young adults	None	Inform and act	No data available
Les éco-gestes sont-ils futiles?	Maxime Lambrecht, researcher and teacher on ethics at Université Catholique de Louvain (Chaire Hoover)	YouTube	Channel of 'Philoxime'	13/02/21	Go to video	Video	Adults and young adults	None	Inform and reflect	30 K likes; 2,6 K likes, 310 comments
«Less is more»: des défis quotidiens pour améliorer son impact sur l'environnement	Marie Thieffry	Newspapers/Digital media	Le Soir	27/12/21	Go to article	Article report	Adults and young adults	None	Inform and advise	1 comment

(*) number of followers, likes, comments, shares, saves and/or views; data as at the time of the analysis (December 2021/January 2022)



ENJOI - ENgagement and JOurnalism Innovation for Outstanding Open Science Communication

This project received funding from the European Union's Horizon 2020 Research and Innovation program under Grant Agreement n°101006407
www.enjoiscicomm.eu



ANNEXE 4. Template for data analysis (country analysis)

Table S38: Template for data analysis of pieces per country

Country	
Title	Analysis
What? "the story"	What is the story about?
Why? "the relevance"	Why does this story matter/is relevant (at the time of publishing)?
Who? "the actors"	Who narrates it? What voices are considered in the story? (points of view & sources)
Where? "geographies, places, scene"	Where does it take place?
When? "time of the narration"	When does it take place? What is the chronological order of the story? (temporal order)
How? "narrative & storytelling"	Use of the following elements (storytelling): dramatization emotionalization personalization fictionalization What narrative is presented in the story? What rhetorical elements are used to tell the story? (if any) What (audio) visual elements are used to tell the story? (when relevant)
How? "going beyond the story"	Does the author describe solutions to the problem addressed? Does the author provide inspiring examples? Does the author use interactive elements (e.g., interactive maps or graphics, gamification, etc.) Does the audience participate (or participated) in the production of the piece? (e.g., direct interaction during an Instagram live, participation in content creation by citizen journalists, etc.) Is the piece open to audience engagement (e.g, comments, likes, sharing, etc.). If so, does the author reply to the audience? Are there other innovative elements that you consider engaging? (which and why)
Add below any additional (contextual/cultural) information you consider relevant for the reader	

