Radboud University Nijmegen

Framing climate change in Belgian and British newspapers: A comparative framing analysis

Resit Bachelor's Thesis

Anne Heijenrath

S1043141

International Business Communication

Supervisor: Afrooz Rafiee

January 21, 2023

Abstract

In this study, a cross-cultural framing analysis was conducted based on 24 news articles about extreme weather events in two different newspapers; 12 articles from Belgian newspaper *De Morgen* and 12 articles from British newspaper *The Guardian*. All articles were analyzed by means of a three-step plan. Framing devices were identified followed by the determination of reasoning devices, which eventually led to the identification of core frames. It was found that the denial frame was dominating in *De Morgen*, whereas the human interest frame was prevailing in *The Guardian*. Some contextual factors were useful to explain the different framings in the newspapers, such as the position of the two countries in the ranking of the Climate Change Performance Index. For example, a lot of articles in *De Morgen* did not include any sort of solutions to combat climate change. This can be in line with the low position of Belgium in the ranking, because that could mean that Belgium is taking less action against climate change.

     Keywords: climate change, extreme weather, framing analysis, discourse analysis, Belgian newspaper, British newspaper

Introduction

In recent years, climate change has been extremely relevant and important. A very prominent and apparent aspect of climate change is the more frequent occurrence of extreme weather, including heat waves, floods, tropical storms, and cyclones. Effects of climate change are noticeable on an economic level, such as high-scale biodiversity loss and low probability and high-impact scenarios (Tol, 2009). Furthermore, climate change has effects on individuals as well. For instance, it can lead to higher chances of aggression, violent suicides, depression, and stress disorders (Padhy et al., 2015). Since extreme weather events always have big impacts on society, it makes it a valuable news story item. For the last 30 years, large scale weather disasters have been unavoidably constructed as media events and not only in newspapers, but also on television and social media such as Twitter, Facebook, and YouTube (Leyda & Negra, 2015). The way the media presents news about these certain topics, and thus possibly frames it, is important because it can not only show perspectives on certain events but also the effects it might have on attitudes and actions taken towards it. Media have shown not to act similar in presenting news events. One aspect which can lead to such differences is the cultural context in which news is narrated. Belgium and the United Kingdom are two countries that perform differently when it comes to climate change mitigation. For example, the United Kingdom takes many actions against greenhouse gas emissions and energy use, while Belgium is hardly committed to this. Articles from two newspapers, one for each country, will be analyzed and compared to examine whether there are differences in how they inform their readers about extreme weather due to climate change. I aim at answering the following two research questions:

>*Research question 1.* How is extreme weather as a result of climate change framed in
>The Guardian and De Morgen?

Research question 2. If differences exist, how can framings be explained in terms of the cultural context of the United Kingdom and Belgium?

Theoretical framework

Representation of climate change in the media

As climate change can be related to a lot of different happenings, developments, and events, many definitions can be assigned to it. Generally speaking, "climate change refers to long-term shifts in temperatures and weather patterns" (United Nations, n.d.). Even though there are also natural reasons for this shift, human activities have also been increasingly to blame for this since the 1800s, with the main cause of burning fossil fuels (United Nations, n.d.). A very prominent aspect of climate change is the more frequent occurrence of extreme weather with examples of heat waves and floods. Unfortunately, climate change is projected to continue and exacerbate these trends in the following ways: the frequency and intensity of extreme rainfall and droughts, and the frequency, intensity, and duration of extreme heat periods (Ebi et al., 2021). Realizing that the effects and impacts of climate change have become more important to humans over the years, the news coverage of climate change has increased all over the world (Schmidt et al., 2013). This increasing media attention coincides with increased events in different societal realms, such as the release of a film dealing with global warming or a new publication of the Assessment Report from the Intergovernmental Panel on Climate Change (Schmidt et al., 2013). However, it is important to mention that media attention does not develop in a linear way – it fluctuates and peaks around specific events related to climate change in all countries, for example with cases of extreme weather such as heatwaves (Schmidt et al., 2013). The study by Schmidt et al. (2013) also showed that there exist noteworthy differences between countries to the extent in which they present news about climate change. It showed that media attention is for example especially high in carbon

dependent countries with commitments under the Kyoto Protocol. A study by Barkemeyer et al. (2017) concluded that, to a certain extent, a country's direct exposure to climate change and the actions that are taken against it and especially global warming influence the representation of climate change in the media. It was also found that multiple contextual factors had a significant impact. A positive relationship was found between the degree of media coverage and a country's regulatory regime, whereas a negative relationship was found between country-specific unemployment rates and media attention to climate change (Barkemeyer et al., 2017). However, it is not yet clear whether there also exists a positive relationship between the way and form of media coverage and a country's regulatory regime.

Framing in media

Every news story is told from a certain perspective and is therefore not a mirror of reality. This indicates that news is framed in a certain way meaning that while presenting news, more salience is assigned to some aspects than to others. In turn, this could cause that the public does not receive a complete and objective image of the full truth. According to Goffman, "frames refer to the definitions of a situation that are built up in accordance with principles of organization, which govern social events and our subjective involvement in them" (Goffman, 1974, as quoted in Carter, 2013, p. 3). Entman (1993) gives a slightly different definition of framing: according to him, "framing is selecting some aspects of a perceived reality and making them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation for the item described" (p. 52).

As proposed by Van Gorp (2005), a frame is represented as a package and within this package indicators or framing devices exist by which a frame can be identified. A frame package comprises 3 parts, namely reasoning devices, framing devices, and an implicit

cultural phenomenon that displays the package as a whole (Van Gorp, 2007). Reasoning devices are referred to as "explicit and implicit statements that deal with justification, causes, and consequences in a temporal order, and which complete the frame package" (Van Gorp, 2007, p. 64). These reasoning devices are then "connected to the four functions of framing as defined by Entman (1993): defining a problem, assigning responsibility, reaching possible solutions, and passing a moral judgement". Entman (1993, p. 52) proposed that frames can be identified by "the presence or absence of certain keywords, stock phrases, stereotypes images, sources of information, and sentences that provide thematically reinforcing clusters of facts or judgments". These tools and indicators are known as framing devices and can thus be used to identify a frame.

As of now, a lot of research has been done on core frames and framing, which has led to the result that several core frames have already been identified. A study done by Neuman et al. (1992) identified five prevalent core frames used by the media. These are as follows:

1. The human impact frame where "descriptions of individuals and groups are affected by an issue".
2. The economics frame that refers to "the preoccupation with profit and loss".
3. The moral values frame referring to "morality and social prescriptions".
4. The conflict frame that deals with the media's "game interpretation of the political world as an on-going series of contests, each with a new set of winners and losers".
5. The powerlessness frame which refers to "the dominance of forces over weak individuals or groups".

A study done by Semetko and Valkenburg (2000) also determined five frames with only little differences to the ones identified by Neuman et al. (1992). Instead of the powerlessness

frame, the attribution to responsibility frame was identified as "presenting an issue or problem in such a way as to attribute responsibility for causing or solving either the government or to an individual or group" (Semetko & Valkenburg, 2000, p. 96).

Relevance of news articles

News reports are people's main source to withdraw information and when reading news, people are expecting to get information that is as objective as possible. News reports inform readers about things that are happening in the world around them in a factual and objective way compared to other genres such as opinion pieces and editorials. According to Kussendrager and Van der Lugt (2007), there are six news values that determine whether something can be labeled as news, namely conflict, actuality, importance to the reader, distance, familiarity, and deviation. Even though news reports can be framed as well, it is plausible that opinion pieces, feature articles, background articles, and editorials will be framed to a larger extent because they are written in a more subjective manner.

Climate Change Performance Index: The case of United Kingdom and Belgium

The Climate Change Performance Index (CCPI) is a tool for increasing transparency in international climate change policy. It is designed to facilitate transparency in international climate politics and comparability of individual countries' climate protection efforts and progress (Germanwatch e.V., 2022). All countries that are included in the index received a score which was based on four categories, namely GHG emissions, renewable energy, energy use, and climate policy. Based on these four categories, a ranking was made to compare climate performances of 60 countries. The ranking provides more insights and understandings about a country's individual responsibilities and fulfilled and broken promises, and it encourages initial steps in international climate change (Germanwatch e.V., 2022). The 2022

ranking presents some interesting insights. When only focusing on Western Europe, which is considered as a highly developed part of the world, large differences in taking action on climate change can be observed. The United Kingdom is the best scoring Western European country ranked at number 7 whereas Belgium is the worst scoring Western European country being ranked at number 49. The United Kingdom received for example high ratings for greenhouse gas emissions, energy use, and climate policy, while Belgium received low or even very low ratings for these categories. Although the countries are very close to each other and also have some geographical similarities, there are major differences in how the two countries deal with climate change. These two countries will form the basis for the comparison that will be made in this study.

Importance of cross-cultural comparisons

Cross-cultural studies help us understand other people, situations, and phenomena, or more succinctly, aspects that deviate from our own culture. In addition, cross-cultural studies allow us to make more reliable comparisons and to draw more reasoned and trustworthy conclusions. Therefore, the main relevance of cross-cultural studies is "to advance and expand our knowledge beyond the confinements of our particular surrounding context, encompassing a universal perspective in understanding human behavior" (Papayiannis & Anastassiou-Hadjicharalambous, 2011). By making cross-cultural comparisons in media studies, it will become clear how different cultures use media. For instance, it might become clear how a certain country presents news.

In addition to a country's position in the CCPI ranking, another factor that can contribute to making cross-cultural comparisons are the cultural dimensions as defined by Hofstede. All countries can obtain a specific score on each dimension which will lead to the appearance of differences between countries on the particular dimensions. Since the definition

of all cultural dimensions, the dimensions have demonstrated their strong practical values in cross-cultural studies in multiple domains.

Literature review

Climate change is not a new phenomenon, and it has already been researched in several contexts whether news about climate change is framed. A few examples of such studies will be discussed below.

Two Chilean newspapers, one conservative (*El Mercurio*) and one liberal (*La Nación*), were analyzed about how they were covering news about climate change (Dotson et al., 2012). As for the categories of analysis, word count, story type, number and type of source, focus of story, nature of frame, frame valence, frame type and frame content were included. It was found that *La Nación* published almost twice as much articles as *El Mercurio*, and this also counts for the number of words. Both newspapers published more stories with an overall negative valence than a positive or neutral valence, which means they referred most to problems, fear, or lack of actions. The frames used for the stories differed slightly in the articles. For example, the liberal newspaper published more stories using a conflict frame than the conservative one. A conflict frame was here defined as "articles focused on conflict between two or more subjects such as government and business or people versus nature" (Dotson et al., 2012). Even though much of the framing was similar, differences existed as well, which led to the result that the newspapers frame climate change differently. It can be concluded that even if core frames are different, similarities can still be found in the use of framing devices between two different newspapers.

A study by Han et al. (2017) investigated the Chinese media coverage on climate change over the period 2005 to 2015. A content analysis was done with five Chinese daily newspapers where 135 articles were randomly selected. A deductive approach was used to

select and assess six popular generic news frames. It was found that the human impact frame (22,43%), which relates to "a personal narrative to describe the impact of climate change on individuals" (Han et al., 2017, p. 2899) appeared the most, followed by the frame of attribution of responsibility (21,92%), "meaning that certain organizations or individuals should be held accountable for causing or worsening the problem" (Han et al., 2017, p. 2899), collaboration (20,22%), "indicating that the story highlights agreements, willingness to collaborate, or joint efforts among individuals, groups, parties, or countries (Han et al., 2017, p. 2899) and the conflict frame (19,02%), "emphasizing disagreements or arguments among individuals, groups, parties, or countries" (Han et al., 2017, p. 2899). Next to this, a positive correlation was found between the use of domestic officials and international officials and the conflict, collaboration, responsibility, and leadership frame. This meant that when more domestic and international officials were quoted or paraphrased, these four frames also occurred more. However, a negative correlation was found between the use of domestic and international officials and the human-interest frame. Thus, in Chinese newspapers, the human-impact frame is the most occurring core frame and the conflict frame the least common core frame. With this study, it will become clear whether this pattern can also be applied to other countries such as the United Kingdom or Belgium.

Lastly, a study by Schmid-Petri and Arlt (2016) examined the salience and construction of scientific uncertainty about climate change in German (number 13 in CCPI) and British (number 7 in CCPI) press coverage. One of the research questions was whether there are differences in the prevalence of scientific uncertainty about climate change in British and German newspapers. For each country, 35 articles per month were analyzed, ranging from June 2012 to May 2013, which resulted in a total dataset of 420 news articles. It was found that there were no statistically significant differences between the two countries and that both countries showed a similar level of uncertainty about climate change in their news

reports. When it comes to the frames that were used to create different images of uncertainty, no statistically significant differences were found either (Schmid-Petri & Arlt, 2016). This study showed that there were no differences in the use of core frames between the United Kingdom and Germany. However, these countries are close to each other in the CCPI ranking. When comparing the United Kingdom to a country further away in the ranking, such as Belgium, it may be interesting to see whether differences in the use of core frames then do appear.

As it is clear from the literature review provided above, researching the framing of climate change news is not something new. Analyses were made both between two different countries as well as between different newspapers within one single country. Some studies showed that differences in framing did exist (Han et al., 2017) while others found that the way of presenting news was comparable (Schmid-Petri & Arlt, 2016). It could be interesting to conduct a comparative analysis between the United Kingdom and Belgium, which corresponds to the best and worst performing country within western Europe respectively, when it comes to taking action against climate change. This study will thus investigate whether a high and low scoring country in the CCPI also show differences regarding news framing.

Present study

Significant differences exist in Western Europe when it comes to acting against climate change. This difference might also be observed in media coverage of extreme weather as a result of climate change in Belgium and the United Kingdom. For instance, it might be expected that a country that takes many measures against climate change, like the United Kingdom, may provide more solutions in its news articles. On the other hand, it might be expected that articles in Belgian newspapers could focus much less on solutions, because

Belgium also takes very little action on climate change. By understanding how news about climate change is covered in the media, a possible link can be determined between the framing of news and the actions taken against climate change. The present study will focus on Belgium and the United Kingdom and for each country, news articles from a particular newspaper will be analyzed. In this way, possible differences in discourse between the two newspapers from the two countries can be identified, which may lead to the identification of different core frames. With this study, I hope to contribute to scientific knowledge about the framing of climate change news in relation to different levels of willingness to engage in climate change endeavors.

Several contextual factors might help to explain the possible differences in framing. An example are the scores for the cultural dimensions. According to the cultural dimensions as defined by Hofstede, some differences can be seen between Belgium and the United Kingdom. Regarding the dimension of uncertainty avoidance, Belgium has a high score of 94 and the United Kingdom a fairly low score of 35. This dimension explains "the extent to which the members of a culture feel threatened by ambiguous or unknown situations and have created beliefs and institutions that try to avoid these" (Hofstede Insights, 2022). This indicates that whereas Belgium is a country where uncertainty might not be appreciated and where schedules might be essential and indispensable, the United Kingdom is a country where not much value might be placed on planning and schedules and where people may feel comfortable in ambiguous situations. In turn, this might connect to a greater offer of solutions in Belgian articles than in British articles, because offering solutions could eliminate or reduce uncertainties. The offer of solutions might help to make dangerous situations due to extreme weather better or it might even address climate change in general. Another dimension where a reasonable difference can be noticed is the long term/short term orientation dimension that described "how every society has to maintain some links with its own past

while dealing with the challenges of the present and future" (Hofstede Insights, 2022). With a score of 51 for the United Kingdom, a dominant preference cannot be determined. However, for Belgium, with a score of 82, there might be a clear preference for a long-term orientation, indicating that they are very much focused on the future. According to Hofstede Insights (2022), Belgium "shows the ability to adapt traditions easily to changed conditions, a strong propensity to save and invest, thriftiness, and perseverance in achieving results". From this, it can be concluded that, in Belgium, the current situation is properly analyzed after which plans are made for the future. This might be connected to the suggestion of possible solutions, because they are designed to achieve certain outcomes and goals which indicates that they are focused on the future. For that reason, it might be expected that articles in *De Morgen* provide more solutions than articles in *The Guardian*, because Belgium is more long-term oriented while the United Kingdom is more short-term oriented.

In sum, it is useful to know how Belgium, as the worst scoring western European country in the CCPI, and the United Kingdom, as the best scoring western European country in the CCPI, cover news about extreme weather as a result of climate change. By comparing these two countries, insight will be gained on the relationship between framing news about extreme weather due to climate change and actions taken against it. This leads us to the following research questions.

Research question 1. How is extreme weather as a result of climate change framed in *The Guardian* and *De Morgen*?

Research question 2. If differences exist, how can framings be explained in terms of the cultural context of the United Kingdom and Belgium?

Method

Corpus

For this study, 12 articles were chosen from *The* Guardian and 12 articles were chosen from *De Morgen. The Guardian* and *De Morgen* are national high-quality newspapers, and they are politically left-oriented. *De Morgen* is a Belgian daily newspaper that is distributed across the whole country. Even though the newspaper is written in Dutch, access to the newspaper is also available from the French-speaking areas. As of 2020, more than 56.000 paying readers read the (printed) newspaper daily (Redactie De Morgen, 2021). *The Guardian* is a British newspaper and as of July 2021, it had a daily (print) circulation of 105.134 (Tobitt & Majid, 2022). *The Guardian* is distributed to the United Kingdom as a whole. It is important to mention that for the content analysis, only the UK edition will be analyzed. Only news reports were used in the comparative analysis between *De Morgen* and *The* Guardian, so opinion pieces and feature or background articles were not included. Furthermore, it was important to pay attention to the location of the extreme weather event described in the news report. For this analysis, only news articles that cover news about extreme weather in the country itself, being Belgium or the United Kingdom, were analyzed. The main topics of the articles were heatwaves and tropical storms, because these two natural phenomena have occurred multiple times in both countries in the selected time frame. The articles that were analyzed were published between January 2022 and September 2022. Since access to print media was not possible due to geographical constraints, articles were extracted from online archives of *De Morgen* and *The Guardian*. For each newspaper, 12 articles were analyzed. As for *The Guardian*, news articles that belonged to the headline 'extreme weather' were chosen. For the period between January 2022 and September 2022, 28 articles of *The Guardian* met the condition of being a news article and covering news about extreme weather in the United Kingdom. Every third article was then selected until 12 articles were collected. For *De*

Morgen, there were 21 articles that were published between January 2022 and September 2022 that met the conditions and therefore every second article was randomly selected for the analysis, until 12 articles were collected. The relevant articles from the *De Morgen* were found with the term 'extreem weer' via the search bar. This led to a total number of 24 first-hand news reports about extreme weather that were analyzed, 12 from *De Morgen* and 12 from *The Guardian.*

Model of analysis

In order to answer the research questions, a discourse analytic approach was taken. The discourse analysis of the news articles was done in two phases, where the first phase included a textual analysis and the second phase a contextual analysis. Below, each is explained in more detail.

Textual analysis

The final goal of this part of the analysis was to define the core frame of every news article. The analysis was done partly in an inductive manner and partly in a deductive manner. Following Van Gorp (2005), the articles were analyzed by means of defining framing devices and reasoning devices in an inductive way which led to the identification of core frames. Before noting down all framing and reasoning devices, all articles were read for a first time to obtain a general impression of the article. After that, the articles were read for a second time, starting with the analysis of the articles.

First, the framing devices in the articles were analyzed. All articles were analyzed by means of eight framing devices. The first five framing devices were adopted from Dotson et al. (2012) who also investigated the framing of climate change in newspapers. Those framing devices were word count, type of source, focus of the story, valence of the story, and story

content. The original study of Dotson et al. (2012) consisted of eight different categories, but the remaining three categories were not relevant or applicable to this study. The story type was the same for every analyzed article, namely news, which makes it irrelevant to code this category. The category of frame type was excluded because all articles were episodic since they all cover news of a specific event, which makes it unnecessary to code this category. One framing device of Dotson et al. (2012), type of source, was designed in a very specific way because they were mainly focused on governmental and scientific sources. Therefore, the classification of this framing device was retrieved from Chetty et al. (2015) for this study, because they provided a more general list of type of sources. The five framing devices as defined by Dotson et al. (2012) that were used for this analysis are listed below and a more detailed explanation of every framing device can be found in the codebook which is presented in the appendix as appendix A.

1. The word count was noted.

2. The type and the number of sources of information were analyzed. Sources were classified in ten categories, namely no source, academics or experts, non-expert commentators or citizens, business and industry, economists, independent research groups, politicians, NGO's, sceptics, and unnamed experts (Chetty et al., 2015). The frequency of each category was noted as well. A source was regarded as present whenever an actor quoted or paraphrased in the article.

3. The focus of the story was coded. This was then divided in two subcategories, namely whether it was focused on problems, solutions, both, or neither and whether it was focused on people, science, both, or neither.

4. The valence of the story was coded, which could be positive, negative, or neutral.

5. The story content was coded which could be either substantive or ambiguous. When an article is labeled as substantive, specific information is included. When such

specific information is not included, an article would be labeled as ambiguous.

However, after coding, it became clear that all articles in both newspapers were coded

as substantive because every news report included specific information. Since this

framing device was therefore the same for all articles, it was no longer relevant for

making a cross-cultural comparison and was thus not included in further results.

Besides the five framing devices from Dotson et al. (2012), the articles were also analyzed by

means of three rhetorical devices, namely metaphors, exemplars, and catchphrases. The

operational definitions of these three framing devices as defined by Gamson and Lasch (1983)

can also be found in the codebook. These three framing devices were found in an article from

Linstrom and Marais (2012) where a list of several framing devices was presented in order to

identify a core frame. However, all other framing devices had a much stronger linguistic focus

or were aimed at other elements of news writing such as headlines and photos. This led to the

selection of just the three rhetorical framing devices, because other framing devices were in

this specific study not relevant.

   With the identification of framing devices, reasoning devices could be identified as

well. The four reasoning devices as defined by Entman (1993) and followed by Van Gorp

(2005) are problem definition, cause or responsibility, solution, and moral judgement. By

reading every article a third time, it was noted which reasoning devices are present in the

article and which framing devices were used for every reasoning device. However, it was

possible that not all reasoning devices were explicitly stated in the text or that new reasoning

devices emerged. Nevertheless, the reasoning devices could sometimes implicitly be

determined within the context of the news articles.

   By analyzing the framing and reasoning devices in the news articles, it was

highlighted how news about extreme weather due to climate change is covered in the news. In

this way it was possible to see if there were differences between Belgium and the United

Kingdom regarding the framing of news. Then, it was examined in a deductive way whether the results of the analysis could be linked to the common core frames of Semetko and Valkenburg (2000), namely, conflict, human interest, attribution of responsibility, morality, and economic consequences. Due to the frequent occurrence of these five frames in news articles, it was examined whether the outcomes of the identified framing and reasoning devices corresponded to these five frames. It was important to mention that the definition of these five core frames was adapted to the topic of climate change. The conflict frame and the morality frame were initially used in the pilot analysis. However, it turned out that none of the articles included a conflict or a morality frame. This resulted in the omission of these two core frames in further results and analyses. It was also possible that the results of the analysis did not match one of the five already identified core frames. In this case, a new type of core frame was formulated based on the results. Two new core frames were determined, namely the factual frame and the denial frame. The definition and explanation of all core frames can be found in the codebook as presented in the appendix.

Contextual analysis

In the second phase, a contextual analysis was done in order to find possible explanations for the difference in framing between the two countries. A contextual analysis involved, in this case, finding links or connections between three phenomena. These three phenomena were news framing about climate change in the newspapers, the place in the CCPI ranking of Belgium and the United Kingdom which corresponds to the amount of action taken against climate change, and the scores of the cultural dimensions for the two countries as defined by Hofstede. However, this analysis was primarily made on the basis of interpretations which derives particularly from the literature and gathered knowledge. For that reason, it is essential to mention that the results could be hypothetical instead of factual. When

connections were found, it was necessary to investigate why they exist. Here, a two-step plan as explained by Ritchie and Lewis (2003) was followed. First, it was needed "to check exactly how the level of matching between the phenomena was distributed across the whole data set" and after that, it was necessary "to interrogate the patterns of association" (Ritchie & Lewis, 2003, p. 251). With developing the explanation, it was important to keep in mind that outliers were also included in the search for interpretations. Following Rafiee et al. (2021), who also conducted a contextual analysis based on interpretations and made hypothetical conclusions based on relevant aspects of the cultural context, the results of this second phase are discussed in the Discussion section of this paper.

Reliability

In order to obtain an adequate level of reliability, there needs to be a sufficient level of certainty that the internal elements and categories found within the data sample, would also recur outside the study sample (Ritchie & Lewis, 2003). To achieve the highest level possible, articles were chosen randomly, so that it gave a representative picture of the total number of news reports. Furthermore, by following Ritchie and Lewis (2003), the data was obtained in a clear, rigorous, and consistent manner. To obtain only a limited space for free interpretation, the instructions for coding were formulated in a strict way to confine coding to the content as much as possible. The instructions can be found in the codebook, which is presented as appendix A in the appendix. Lastly, 2 articles from each newspaper were checked during two data sessions with a second person who was a native speaker of Dutch and a near native speaker of English. In general, there was a lot of agreement on the identification of framing devices, reasoning devices, and core frames. However, it was sometimes difficult to come to an agreement regarding the valence of an article and whether something was considered as a metaphor or not. In cases of discrepancies, discussions were held until an agreement was

reached. If a discussion failed in agreeing, the opinion of the author of this study was seen as leading, because this person was more familiar with the subject and the research. However, it must be said that, in this way, there will always be some form of subjectivity in the study.

Results

In this section, answer will be given to research question 1 which was as follows: How is extreme weather as a result of climate change framed in *The Guardian* and *De Morgen*? It was found that in *The Guardian* the human-interest frame was dominant. However, some other core frames were also detectable; these include the attribution to responsibility frame, the denial frame, the factual frame, and the economic consequences frame. For *De Morgen*, the denial frame was prevailing, even though other core frames were sometimes present as well, such as the factual frame, the human interest frame, the attribution to responsibility frame and the economic consequences frame. Below, all core frames that were found in both newspapers are described with its corresponding results and explanations. In doing so, a comparison is made between the Belgian and the British articles. Important to mention is that, sometimes, more than one core frame could be observed in an article. That is why the total number of core frames found in a newspaper can be more than 12. A clear overview of all observed core frames and its accompanying reasoning and framing devices from *The Guardian* can be found in the appendix as appendix B. A similar overview for *De Morgen* can be found there as well as appendix C.

Human interest frame

The human interest frame was dominating in *The Guardian.* It could be determined in eight out of twelve articles. When looking at *De* Morgen, the human interest frame was found in only two articles. When this frame was used, the articles were mainly focusing on what the

extreme weather meant for the people and what they could do to ensure their safety. In other words, the article was focusing on the societal consequences of extreme weather. In terms of problem definition, most articles focused on the fact that people could die as a result of the extreme heat, or that the extreme heat or drought can cause serious accidents or scenarios if no measures are taken. In *The Guardian*, the UK Health Security Agency quoted for example that "illness and death may occur among the fit and healthy, and not just in high-risk groups". The suggested cause is more or less the same in all articles with this frame. Climate change is, implicitly or explicitly, identified as the cause. With regard to solutions, the articles offered one of the following solutions: only call 999 if life is at risk, no barbecuing, dispose cigarettes safely, store and move water, curb the use of water, drink enough fluids and avoid alcohol, and try to keep out of the sun. In cases that a moral judgement is stated explicitly, it all comes down to same conclusion: we have taken our climate for granted and if we want to combat climate change, we must do it now, because we are the only ones who can do something for our globe. All reasoning devices could be determined with the help of several framing devices such as sources, catchphrases, metaphors and exemplars.

Denial frame

The dominating core frame in *De Morgen* was the denial frame and it was found in seven out of twelve articles. The denial frame was also observable in three articles from *The Guardian.* When this core frame was used, a problem was defined without acknowledging climate change as the cause, even though the problem was a clear consequence of climate change. The problem definition was in all articles one of the following: possible damage and nuisance from a storm or extreme heat and/or drought. The problem was always described in a very factual and simple way and further consequences or difficulties were not implied. In terms of a cause, climate change was not designated as an underlying reason in any of the

articles. In some cases, where extreme drought was identified as the problem, extreme heat was labeled as the cause, but this seems like a case of a vicious circle. Regarding solutions within the denial frame, explicit solutions to fight the extreme weather itself are not given. Some simple tips such as drinking enough water are mentioned. Nonetheless, this is remarkable for the denial frame because without the recognition of a cause, it might be difficult to provide solutions. With regard to a moral judgement, almost all articles agree on the statement that the extreme weather conditions are bad and that something should be done against it. "We cannot carry on as we are" is an example from *The Guardian* that makes this clear.

Attribution to responsibility frame

The attribution to responsibility frame was present in three articles from *The Guardian* and in one article from *De Morgen*. This core frame made clear that someone or something was held accountable for the occurrence and consequences of extreme weather and climate change. The problem definition involved one of the following statements: "the UK does not know how to deal with extreme weather", or "the storm can do very extensive damage if no measures are taken". Climate change was in all articles defined as the cause. The solutions provided in the articles were varied, even though all articles mentioned one of the following solutions: reaching net zero greenhouse gas emissions or following advice such as driving a car as little as possible and tying up loose material. The moral judgement was the deciding factor that an article contained the attribution to responsibility frame. In all articles, it came down to the same thing: humans are responsible for climate change, and they are also the ones who can make a change. This was clearly stated by Bob Ward, the policy and communications director at LSE's Grantham Institute, in *The Guardian*: "we must adapt and

do a better job of protecting ourselves, particularly those who are most vulnerable to hot weather".

Factual frame

The factual frame was present in three articles from *De Morgen* and in two articles from *The Guardian.* These articles were characterized by just presenting the news how it is, without giving more information than necessary, which makes it thus very factual. With regard to the problem definition, the articles always included one of the following statements: the breaking of records of critical climate indicators, or extreme weather conditions such as heat and drought. One example from *De Morgen* that stated the problem is the following catchphrase: "The summer of 2022 is Europe's warmest ever". In every article where the factual frame was present, climate change was acknowledged as the cause. "These droughts could happen more often because of climate change" is what professor Chris Binnie said in *The Guardian*. In terms of solutions, no long-term influential solutions were offered. In some articles, short-term solutions were offered such as storing or reusing water in periods of drought. Regarding a moral judgement, the articles generally agree on the statement that we are already several years behind schedule in terms of climate change mitigation.

Economic consequences frame

The economic consequences frame was found in only one article from *De Morgen* and also in only one article from *The Guardian*. The use of this core frame highlighted the great economic damage caused by the extreme weather. The problem definition was in both articles related to the fact that the extreme weather caused enormous economic harm. In *De Morgen*, the following simple catchphrase made that clear: "Around 500 billion euros". In terms of a cause, both articles labelled climate change as the culprit. The two articles also agreed on the

solution, namely that countries should invest in further adaptation and that this can be done by achieving the climate goals drafted in the Paris climate agreement. Lastly, one shared moral judgement was found: negative effects will never go away, even if we adapt.

Conclusion and discussion

This study aimed to investigate how extreme weather as a result of climate change is framed in British newspaper *The Guardian* and Belgian newspaper *De Morgen*.

By performing the textual analysis for 24 articles from *The Guardian* and *De Morgen*, various framing devices and reasoning devices were determined which led to the identification of core frames. The dominating frame in articles in *The Guardian* was the human-interest frame and it could be found in eight out of twelve articles. When this frame was used, the article was focusing on the societal consequences of extreme weather. The article was then concerned about what the extreme weather meant for the people and what they can do to keep themselves safe, meaning that solutions are given. Important to mention here is that climate change was almost always seen as the underlying cause of extreme weather. The dominating frame in articles in *De Morgen* was the denial frame. This frame was present in seven out of twelve frames. When the denial frame was used, climate change was not recognized or addressed as the underlying cause and no solutions or tips for taking action against climate change were given. However, for both newspapers, it must be said that other frames such as attribution to responsibility, economic consequences, or the factual frame, were rarely observed in the articles. With this study, two new core frames that add to the literature were identified for presenting news about climate change, namely the denial frame and the factual frame. These two frames might also occur when presenting other social themes in the news. The literature review showed that there exist differences, as well as similarities between and within certain countries. It can now be added to the literature that

there exist differences between the United Kingdom and Belgium regarding the framing of climate change news. A study by Barkemeyer et al. (2017) showed that there existed a positive relationship between the degree of media coverage and a country's regulatory regime. Until now, it was not yet clear whether there also exists a relationship between the way and form of media coverage and a country's regulatory regime. Since a country's regulatory regime is part of the cultural context of a country and thus concerns a contextual factor, the answer for this will be formulated when answering the second research question.

The second research question concerned how possible framings could be explained in terms of the cultural context of the United Kingdom and Belgium. Belonging to this cultural context is the position in the CCPI index which is linked to the amount of actions taken against climate change. The lower the position in the index, the less action is taken to combat climate change. In *De Morgen*, eight out of twelve articles did not include any sort of tips or solutions. Without the offer of tips or solutions, no possible measures or actions to combat climate change are provided. This is in line with the low position of Belgium in the Climate Change Performance Index. In eight out of twelve articles, climate change was not even mentioned even though the extreme weather conditions described were a clear consequence of climate change. Again, this can be linked to the low position of Belgium in the ranking because climate change is apparently not considered as something tremendously important that occupies a high position on the public agenda. By contrast, the United Kingdom does attach value to climate change to a large extent and takes enough measures to combat climate change as much as possible. This can be clearly seen in the core frames established in news reports in *The Guardian*. The human-interest frame was dominant which focused on what people can do to keep themselves and others safe. In addition, in seven out of twelve articles, climate change was specifically addressed as an underlying cause which means that it is considered as something more serious and important. In all those news reports, a solution

could be found that might connect to measures or actions that can be taken to prevent or combat climate change. Multiple texts in *The Guardian* give as solution to use renewable energy and to reduce greenhouse gas emissions to zero and these two factors play an important role in determining the position in the CCPI ranking. In conclusion, there was a relationship between the framing of climate change news and the actions taken against it, which corresponds to the position in the CCPI ranking. A positive relationship was found between a country's regulatory regime, coinciding with the degree of action taken to combat climate change, and the offer of solutions and the acknowledgement of climate change in a news article. In other words, when a country takes more measures to combat climate change, news articles provide more solutions and climate is a more recognized cause.

When looking at the cultural dimensions as defined by Hofstede, no clear connections can be seen between the cultural dimensions and the results of the textual analysis. For both uncertainty avoidance and long term/short term orientation, Belgium has a higher score than the United Kingdom. Both dimensions could be linked to the offer of solutions because a solution will make situations less uncertain and it could imply that with offering solutions, a country is more focused on the long term. However, news reports in the Belgian newspaper rarely gave a solution and if solution was given, it was often only for the short term. This therefore contradicts Belgium's high score in these two dimensions which also prevents them from further contributing to the explanation of the core frames. So, in explaining how cultural contexts can explain the difference in framing, the cultural dimensions were not contributing to an explanation.

By analyzing 24 news reports, 12 for each country, other interesting and relevant findings have emerged. The wordcount from the articles in *The Guardian* ($M = 792$) was almost twice as long as the wordcount from the articles in *De Morgen* ($M = 400$). As a result, in the news reports in *The Guardian*, there was much more room for more and different

framing and reasoning devices. In conclusion, even though differences exist in the use of core frames, reasoning devices, and framing devices in *The Guardian* and *De Morgen*, this may be due to the longer length of articles in *The Guardian*, as there is more space to detect possible differences.

The results must be interpreted with some caution and a number of limitations should be borne in mind. The first limitation concerns the sample size. The larger the sample, the more precise and representative the results will be. Since the coding and analysis of the articles was very enduring and complex, a sample of only 24 articles was obtained. Therefore, the results may not be fully representative of the entire population. Secondly, no statistical tests were conducted to obtain the results, so it can be difficult to say whether the results are representative for a wider population. Lastly, an optimal level of reliability could not be achieved. Even with the creation of a detailed codebook to confine coding to the content as much as possible, the analysis will always involve some level of subjectivity.

Future studies could beneficially explore the issue of representativeness further by conducting a similar study with a bigger sample size. Furthermore, it may be interesting to look at other types of articles that can be found in newspapers, for example background articles. More depth and explanation of all kinds of phenomena can be found in these articles. Lastly, it can be interesting to look at other framing devices. A lot of different framing devices exist and due to time constraints, only a small collection has been used for this study. For example, technical devices such as headlines, subheadings, photo captions, and leads may be interesting to be explored.

References

Barkemeyer, R., Figge, F., Hoepner, A., Holt, D., Kraak, J. M., & Yu, P. (2017). Media coverage of climate change: An international comparison. *Environment and Planning C: Politics and Space, 35*(6), 1029-1054.

Carter, M. J. (2013). The hermeneutics of frames and framing: An examination of the media's construction of reality. *SAGE Open, 3*(2), 1-12.

Chetty, K., Devadas, V., & Fleming, J. S. (2015). The framing of climate change in New Zealand newspapers from June 2009 to June 2010. *Journal of the Royal Society of New Zealand, 45*(1), 1-20.

Dotson, D. M., Jacobson, S. K., Kaid, L. L., & Carlton, J. S. (2012). Media coverage of climate change in chile: A content analysis of conservative and liberal newspapers. *Environmental Communication: A Journal of Nature and Culture, 6*(1), 64-81.

Ebi, K. L., Vanos, J., Baldwin, J. W., Bell, J. E., Hondula, D. M., Errett, N. A., Hayes, K., Reid, C. E., Saha, S., Spector, J., & Berry, P. (2021). Extreme weather and climate change: Population health and health system implications. *Annual Review of Public Health, 42*, 293-315.

Entman, R. (1993). Framing toward clarification of a fractured paradigm. *Journal of Communication*, *10*, 155-173.

Gamson, W. A., & Lash, K. E. (1983). The political culture of social welfare policy. In S. E. Spiro & E. Yuchtman-Yaar (Eds.), *Evaluating the welfare state: Social and political perspectives* (pp. 397–415). Academic Press.

Germanwatch e.V. (2022, March 21). *CCPI FAQs*. Climate Change Performance Index. Retrieved September 30, 2022, from https://ccpi.org/faqs/.

Goffman, E. (1974). *Frame analysis: An essay on the organization of experience*. Harvard University Press.

Han, J., Sun, S., & Lu, Y. (2017). Framing climate change: A content analysis of chinese mainstream newspapers from 2005 to 2015. *International Journal of Communication, 11*, 2889-2911.

Hofstede, G. (2001). *Culture's consequences; comparing values, behaviors, institutions and organizations across nations*. Sage publications Inc.

Hofstede Insights. (2022). *Country comparison*. https://www.hofstede-insights.com/country-comparison/the-uk/.

Kussendrager, N., & Van der Lugt, D. (2007). *Basisboek journalistiek achtergronden, genres, vaardigheden.* Noordhoff Uitgevers bv.

Leyda, J., & Negra, D. (2015). Introduction: Extreme weather and global media. In J. Leyda & D. Negra (Eds.), *Extreme weather and global media* (pp. 1-28). Routledge.

Linström, M., & Marais, W. (2012). Qualitative news frame analysis. *Communitas, 17*, 21-38.

Neuman, W. R., Just, M. R., & Crigler, A. N. (1992). *Common knowledge: news and the construction of political meaning.* University of Chicago Press.

Padhy, S.K., Sarkar, S., Panigrahi, M., & Paul, S. (2015). Mental health effects of climate change. *Indian Journal of Occupational & Environmental Medicine, 19*(1), 3-7.

Papayiannis, S., & Anastassiou-Hadjicharalambous, X. (2011). Cross-Cultural Studies. In S. Goldstein & J. A. Naglieri (Eds.), *Encyclopedia of Child Behavior and Development (pp. 438-440.).* Springer.

Rafiee, A., Spooren, W., & Sanders, J. (2021). Framing similar issues differently: a cross-cultural discourse analysis of news images. *Social Semiotics*, 1-24.

Redactie De Morgen. (2021, March 25). *'De Morgen' is grootste groeier op Belgische krantenmarkt.* De Morgen. Retrieved October 3, 2022, from https://www.demorgen.be/nieuws/de-morgen-is-grootste-groeier-op-belgische-krantenmarkt~bfea10d2/.

Ritchie, J., & Lewis, J. (2003). Generalising from Qualitative Research. In J. Ritchie & J. Lewis (Eds.), *Qualitative Research Practice: A Guide for Social Science Students and Researchers* (pp. 263-286). SAGE Publications Ltd.

Schmid-Petri, H., & Arlt, D. (2016). Constructing an illusion of scientific uncertainty? Framing climate change in German and British print media. *Communications, 41*(3), 265-289.

Schmidt, A., Ivanova, A., & Schäfer, M. S. (2013). Media attention for climate change around the world: a comparative analysis of newspaper coverage in 27 countries. *Global Environmental Change, 23*, 1233-1248.

Semetko, H.A., & Valkenburg, P.M. (2000). Framing European politics: A content analysis of press and television news. *Journal of Communication, 50*(2), 93 – 109.

Tobitt, C., & Majid, A. (2022, September 20). *National press ABCs: FT only newspaper to see annual circulation growth in August.* Press Gazette. Retrieved October 3, 2022, from https://pressgazette.co.uk/most-popular-newspapers-uk-abc-monthly-circulation-figures/

Tol, R. S. J. (2009). The economic effects of climate change. *Journal of Economic Perspectives, 23*(2), 29-51.

United Nations. (n.d.). *What is Climate Change?* Retrieved October 13, 2022, from https://www.un.org/en/climatechange/what-is-climate-change.

Van Gorp, B. (2005). Where is the Frame? Victims and intruders in the Belgian press coverage of the asylum issue. *European Journal of Communication, 20*(4), 484-507.

Van Gorp, B. (2007). The constructionist approach to framing: Bringing culture back in. *Journal of Communication, 57*, 60-87.

Appendix A

Appendix A. Codebook with list of framing devices, reasoning devices, and core frames

Framing device	Categories	Description
Word count	N/A	Number of words that the article contains
Type of source	No source	No source present
	Academics or experts	Individual climate scientists, university research group, academics
	Non-expert commentators	Citizens, celebrities, public figures with no scientific expertise
	Business and industry	Business and industry groups, lobby groups, business representatives/figures
	Economists	Economists or economic institutions
	Independent research groups	Unaffiliated/independent research groups
	Politicians or political organizations	Government, politicians, political elites, governmental officials
	NGO's	Environmental organizations, non-governmental organizations
	Sceptics	Actors noted as sceptics, well-known sceptics, sceptical lobby groups
	Unnamed experts	Expert quoted unnamed
Problem vs solution focus	Problems	Article is focusing on the problems caused by extreme weather
	Solutions	Article is focusing on possible solutions to the (often) negative effects of extreme weather
	Both	Article is focusing on problems and solutions
	Neither	Article is not focusing on problems, nor on solutions
People vs science focus	People	Article is focusing on the societal side and consequences of extreme weather. What does the extreme weather mean for the population?
	Science	Article is focusing on the scientific side and consequences of extreme weather. The article contains information where extreme weather is explained in a scientific way
	Both	Article is focusing on people and science
	Neither	Article is not focusing on people, nor on science
Valence	Positive	Overall focus on solutions, actions taken, resolutions passed, or progress toward change

	Negative	Overall focus on problems, lack of action, blame, lack of funding, finger pointing, or blame
	Neutral	Neither a positive or negative valence, or a balance of both
Content (excluded)	Substantive	Includes specific information such as specific effects of climate change. Information is formulated as "temperature will rise 3 degrees" or "up to 1500 deaths can be expected just from this one period of heat"
	Ambiguous	Includes no specific information. Information is formulated as "climate change is bad" or "extreme weather has negative consequences"
Metaphor	N/A	A comparison where the principal subject that the metaphor is intended to illuminate and the associated subject that the metaphor invokes to enhance readers' understanding are juxtaposed
Exemplar	N/A	Real events of the past or present that are frequently used to frame the principal subjects
Catch phrase	N/A	Attempted summary statements about the principal subject. Single theme statement, tagline, title or slogan that is intended to suggest a frame

Reasoning device	Description
Problem definition	What problem is described in the article?
Cause or responsibility	Someone or something that is responsible for the problem that is described in the article
Solution	Ideas or tips given to solve the described problem
Moral judgement	Decision in a problematic situation about whether something is wrong or right

Core frames	Description
Conflict frame (eventually omitted from analysis)	Emphasis on a conflict about climate change between individuals, groups, organizations, or institutions
Morality frame (eventually omitted from analysis)	Putting the event, problem, or issue in the context of religious tenets or moral prescriptions. Principles about climate change that make distinction between right and wrong
Human interest frame	Human face or emotional angle is brought to the presentation of an event, issue, or problem. What does the extreme weather mean for the people? The article focuses on the societal consequences of extreme weather
Economic consequences frame	Reporting an event, problem, or issue in terms of the consequences it will have economically on an individual, group, institution, region, or country

Attribution to responsibility frame	Presenting an issue or problem in such a way as to attribute responsibility for its cause or solutions to someone or something. Holding someone or something responsible for the occurrence of extreme weather or even climate change
Factual frame	Climate change is recognized as the underlying problem and cause, but the articles does not provide any solutions or tips. The article just presents the facts as the way that they are
Denial frame	The article does not address or recognize climate as the underlying cause and problem at all. Consequently, the article does not discuss any possible solutions or actions that could be taken against it

Appendix B

Appendix B. Frame matrix for *The Guardian* with their representative reasoning and framing devices

Human interest frame

Reasoning devices

Problem definition	Cause	Solution	Moral judgement
Extreme heat of which thousands of people could die Serious accidents or scenarios because of extreme heat and/or drought	Climate change	Only call 999 if life is at risk No barbecuing or bonfires Dispose cigarettes safely Lower emissions to net zero Store and move water Curb the use of water Drink enough fluids and avoid alcohol Try to keep out of the sun	We have taken our planet for granted Take care of your vulnerable family, friends, and neighbors

Framing devices

Sources	Exemplars	Catchphrase	Metaphor	Focus	Valence
Academics or experts Politicians or political organizations Non-expert commentators Business and industry	"A woman was forced to leave all her cancer drugs behind during the mass evacuation" "The London fire brigade Had received more than 1600 calls for assistance by Late Tuesday afternoon"	"Please avoid calling 999 unless life is at risk" "At least four dead as worst storm in decades roars in"	"Heat dome" "Absolute hell" "Skeletal trees"	People Problems and solutions	Negative

Attribution to responsibility frame

Reasoning devices

Problem definition	Cause	Solution	Moral judgement
The UK does not know how to deal with extreme weather Hotter, longer lasting, and more	Human-caused climate change	Reduce global greenhouse gas emission to net zero Tougher government action on climate	Humans are responsible for climate change, so humans should be the ones to take

frequent heatwaves in the UK		change		action against it	

Framing devices					
Sources	Exemplars	Catchphrase	Metaphor	Focus	Valence
Academics or experts Politicians or political organizations Unnamed experts Business and industry	"Heatwaves that used to be rare are now common; heatwaves that used to be impossible are now happening and killing people"	"Impacts of climate change are with us now"	"Heat dome"	People Problems and solutions	Negative Neutral

Denial frame

Reasoning devices			
Problem definition	Cause	Solution	Moral judgement
Declaration of drought Outbreak of hundreds of accidents Dangerous situations because of extreme heat	(Climate change)* Extremely high temperatures	Keeping blinds down Drink enough water Curb use of water	Action should be taken We cannot carry on as we are

Framing devices					
Sources	Exemplars	Catchphrase	Metaphor	Focus	Valence
Academics or experts NGO's Politicians or political organizations Business and industry Unnamed experts Non-expert commentators	"Almost 3bn litres of water is leaked every day in England and Wales"	N/A	"At bursting point"	People Problems	Negative

Factual frame

Reasoning devices			
Problem definition	Cause	Solution	Moral judgement
Critical climate indicators broke records Serious consequences because of drought	Climate crisis Climate change	Use renewable energy Store and move water Manage water resources	We have taken our water supply for granted The climate is changing

		Take precautionary actions			before our eyes

Framing devices					
Sources	Exemplars	Catchphrase	Metaphor	Focus	Valence
Academics or experts Business and industry Politicians or political organizations Unnamed experts	"The WMO noted exceptional heatwaves in 2021 in western North America and the Mediterranean, deadly flooding in Henan, China, and western Europe, and rain being recorded for the first time on the summit of the Greenland's ice sheet"	"The only sustainable future is a renewable one" "These droughts could happen more often because of climate change"	N/A	People and science Problems	Negative

Economic consequences frame

Reasoning devices			
Problem definition	Cause	Solution	Moral judgement
Severe floods and other extreme weather have cost Europe about half a trillion euros in the past four decades	Climate crisis	Invest in further adaption, as progress on protecting against the effects of the climate crisis varied widely across Europe	(Even in case of adaptation, some negative impacts will never go away)*

Framing devices					
Sources	Exemplars	Catchphrase	Metaphor	Focus	Valence
Academics or experts Politicians or political organizations	"Between 90.000 and 142.000 deaths were attributed to weather and climate-related events over the period 1980 to 2020"	N/A	N/A	Problems	Negative

*Reasoning devices between brackets were not explicitly mentioned in the text

Appendix C

Appendix C. Frame matrix for *De Morgen* with their representative reasoning and framing devices

Denial frame			
Reasoning devices			
Problem definition	Cause	Solution	Moral judgement
Possible damage and nuisance because of the storm Severe consequences because of extreme heat and/or drought	(Climate change)* Drought Extreme weather conditions	(Drink enough water)* (Reduce emissions to net zero)* (Fasten loose parts)* (Think about your water consumption)*	(Take good care of yourself and others if extreme weather scenarios occur)*

Framing devices					
Sources	Exemplars	Catchphrase	Metaphor	Focus	Valence
Academics or experts Business and industry Politicians or political organizations	"Today it is sunny and warm again" "On 1 August, groundwater levels were low or very low at 79 per cent of monitoring sites"	"Situation is severe" "We stand by and watch"	"A heatwave is on the horizon"	Problems	Neutral Negative

Factual frame			
Reasoning devices			
Problem definition	Cause	Solution	Moral judgement
More extreme weather conditions Water shortage due to drought The summer of 2022 is the hottest ever with some severe consequences	Climate change Global warming	Store more water Reuse water (Reduce emissions to net zero)* (Invest in further adaptation)*	Accurate climate information is important We are already several years behind schedule in terms of climate change mitigation

		Framing devices			
Sources	Exemplars	Catchphrase	Metaphor	Focus	Valence
Academics or experts Politicians or political organizations	"Globally, the past seven years were the warmest on record" "July was the driest month since the 19th century and August added a heat wave"	"That does not look good" "That catching up will take years"	"Waterbomb"	Science Problems	Negative

Human interest frame

		Reasoning devices	
Problem definition	Cause	Solution	Moral judgement
We will have to deal with enormous economic harm and human cost The occurrence of extremely high numbers of fires that keep firefighters extremely busy	Climate change The current drought	Achievement of climate goals drafted in Paris climate agreement Be careful with cigarettes and glass Postpone barbecues	Even if we adapt, extreme weather conditions will take its toll on human lives

		Framing devices			
Sources	Exemplars	Catchphrase	Metaphor	Focus	Valence
Academics or experts Politicians or political organizations Business and industry	"Recall the 2003 heatwave: it claimed 70.000 lives across Europe" "The current drought is causing a lot more fires in Flanders"	"Postpone your barbecue"	N/A	Problems and solutions People	Neutral

Attribution to responsibility frame

		Reasoning devices	
Problem definition	Cause	Solution	Moral judgement
The storm can do very extensive damage, if no measures are taken	(Climate change)* The tropical storm Eunice	People need to prepare themselves Drive a car as little as possible	If you do not feel like getting in touch with your

		Tie up loose material			insurance company, you know what to do

Framing devices					
Sources	Exemplars	Catchphrase	Metaphor	Focus	Valence
Academics or experts Politicians or political organizations Unnamed experts	"Those who believe such a thing is unrealistic: earlier this week, a house under construction in Wetteren already collapsed"	"Prevention remains the most important" "How to keep it safe"	N/A	People Solutions	Positive

Economic consequences frame

Reasoning devices			
Problem definition	Cause	Solution	Moral judgement
We will have to deal with enormous economic harm and human cost	Climate change	Achievement of climate goals drafted in Paris climate agreement	Even if we adapt, the world economy would still shrink

Framing devices					
Sources	Exemplars	Catchphrase	Metaphor	Focus	Valence
Academics or experts Politicians or political organizations	N/A	"Around 500 billion euros"	N/A	Problems	Negative

*Reasoning devices between brackets were not explicitly mentioned in the text