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Emotions running high – do they catch the reader's eye?

A quantitative content analysis on emotional frames in climate
change news – the case of a significant global news publisher's
Cop26 coverage

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ABSTRACT

This dissertation takes its point of departure in two matters. First, in the fact that the use of emotions in journalism to increase accessibility and audience engagement is nothing new, and second, that it is challenging to gain audience attention to news about climate change that can be considered as distant and complex. Yet, examinations on the extent to which emotional frames appear in climate change news and its effects on audience attention have been given little consideration. Hence, this study aims to fill this gap in research through a case study on a significant global news publisher's coverage of the UN climate change summit Cop26. Through a quantitative content analysis, this paper maps the appearance of hope and fear frames in the articles and investigates the relationship between emotional frames and unique inhouse audience attention data on page views and attention time. The findings show that emotional frames of hope and fear, with a vast majority of fear, appeared considerably frequently in news publisher's Cop26 articles. Moreover, articles with emotionally framed headlines, especially those of hope, got a higher number of page views than non-emotionally framed headlines. On the contrary, articles that were dominantly non-emotional gained a higher score on readers average attention time per article. These results indicate that emotionally framed headlines catch the readers interest but challenge the notion that emotional frames help gain audience attention in reading time. For future studies, I call for a larger material on a variety of news outlets and more comprehensive audience data to enhance the understanding of why this pattern appear.

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INTRODUCTION

Climate change has inherently become part of people’s everyday life. Politicians, scientists, and businesses continuously encourage all sectors to undertake carbon neutral transitions and urge individuals to adopt more sustainable lifestyles. However, of most interest for this study is the media and the considerable news coverage on climate change issues that regularly remind people about the challenges and possibilities facing us all. Historically, the complex notion of climate change has challenged journalists to report on it in a clear and understandable way. Former New York Times reporter Andrew Revkin (2007) explain that the technicality, and uncertain, distant nature of climate change effects is incompatible with the well-practiced news process. Global warming has for long not been visible or happened here and now, which is generally what news reporting is about.

Nevertheless, amongst many reasons, new scientific findings and recent increase in extreme weather events have enhanced the sense of urgency and made environmental journalism reach the media spotlight more frequently. On the one hand, through stories about people living on the frontline of global warming, about its disastrous effects on nature and societies. On the other hand, journalists report on remarkable technological innovations and great opportunities for a greener and fairer future. Overall, the former has exceeded the latter and climate change news has long been characterized by more negative and fear-inducing frames rather than positive and hopeful ones (Feldman & Hart, 2021). This trend is evident in general environmental reporting and, according to Nisbet (2019), also in news coverage on international climate reports or multinational climate summits.

In November 2021, world leaders and influential stakeholders gathered in Glasgow for the United Nations’ 26th climate conference (Cop26) to negotiate the implementation of the Paris Agreement and how to intensify global measures to lower carbon emissions and increase the possibilities to reach the 1,5-degree goal. Cop26 was not like any other summit. It was described as a historic breakpoint, the world’s last chance to address climate change (Cochrane, 2021). Stretching over two weeks, journalists worldwide reported on the alarming threats and countries lacking ambition, as well as on the efficacy of solutions and successful

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pledges of climate finance. For the global news publisher, who has expressed ambition to wide-ranging environmental reporting in all journalism from sport to fashion as well as changing the language to *climate crisis* instead of *climate change*, Cop26 was thoroughly covered. Prior to the summit, the news publisher staff took a normative stand in *how* this extensive reporting would unfold and informed their readers that; ‘Importantly, we believe this is a moment for hope, not fear, and will endeavour to provide journalism that offers clarity on the situation, updates on our progress, and ideas and solutions for what more can be done’. While the effects of emotional framing (i.e., hope and fear) in climate change information have become an increasingly relevant research field (e.g., Nabi *et al.*, 2018; Feldman & Hart, 2021), there is a gap in research on audience attention to climate change news in people’s natural settings (Maibach *et al.*, 2008; Lecheler, 2020). Thus, this paper aims to fill this gap in the case of a significant global news publisher, and attempts to:

- 1) Map the extent emotional frames of hope and fear appear in the news publisher’s Cop26 coverage through a quantitative content analysis
- 2) Examine if there is a relationship between emotional frames and the news publisher’s audience attention, and in that case how, by triangulating unique inhouse audience data on page views and attention time per article with the mapped data on emotional frames.

The first chapter outlines previous literature that lays the foundation for this research, stretching from audience attention in digital journalism to emotional framing in climate change news. Second, the methodological chapter provides a comprehensive review of the sampling- and operationalization process prior the empirical and statistical results are presented. Finally, I review and critically discuss the findings in relation to previous research and suggest potential paths for future research to better understand emotional frames in relation to audience attention to climate change news.

LITERATURE REVIEW

Digital journalism and audience attention

Free press and independent journalism play an essential role in a democracy by informing the electorate, being the peoples’ voice in democratic processes, acting as a gatekeeper that detect and disseminate essential content, and as a watchdog of those in power (McNair, 2009; Peters & Witschge, 2015; Schudson, 2000; Janowitz, 1975). Implied in all these democratic functions of journalism is the presumption that media is given some degree of attention by the citizens. Couldry *et. al.* (2010) explain that people’s attention to the media not necessarily translate to, but can be understood as, a *public connection* where peoples’ participation in the public sphere is sustained through the media they consume. However, the wide-range technological development and social media rise have made the context for, and operation of, traditional news outlets ‘interactive, inter-connected, participatory, more global, multi-platform, multi-linear, producing a constant stream of data, analysis, and comment [...]’ (Beckett & Deuze, 2016:1). Thus, this *public connection* has become more intertwined, and the power has to a certain degree shifted from the journalist to the audience (Peters & Witschge, 2015; Beckett, 2015), causing both possibilities and challenges to traditional journalistic practices (Joseph, 2016). This study will focus on the journalistic capacity to attract audiences’ attention, later examined in climate change news coverage.

Chadwick (2013) describes the current landscape as a *hybrid media system* where mass media logic and networked logic interact. In the hybrid media system era, traditional news outlets do no longer obtain the same control over the public agenda and news content since they compete with an immeasurable number of platforms and newsmakers. The audience is similarly encountering an *information overload* which challenges the capacity for journalists to attract attention (Broersma & Graham, 2016; Liu *et al.*, 2020). Moreover, Boczkowski *et al.* (2018), explain that peoples’ constant use of social media platforms on mobile devices and the ocean of information they encounter have affected the way news are consumed. They argue that news consumption has become *incidental* and attention to news *brief and fragmented*. Subsequently, newsrooms must, to a larger extent, consider audiences interests and

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engagement in news production, enhancing the agency of audiences in relation to that of journalists (Bird, 2009).

Other scholars acknowledge the 'hybrid media system' as decreasing newsrooms' ability to attract audiences' attention, but rather emphasize its interactional opportunities. For instance, that it can increase peoples' participation in news production and thus enhance democracy (Beckett, 2008; Dahlgren, 2007). Beckett (2008) argues that a networked journalist (i.e., a mix of mainstream journalism and citizen journalism) that intimately deliberates and engages with the public in the creation of news are to reach broader and their stories to sustain longer. He argues that 'if you are part of a process, you will inevitably feel ownership' (p.71). The idea of networked journalism fits well into the interactive nature of the today's media context. It can serve as a valuable tool for journalists to access information and understand the audiences' interests better (Kröll, 2015). However, while acknowledging journalism to be beyond its previous one-way nature (Bird, 2009), this substantial change of journalistic practices demand and expect an incommensurate commitment from the journalists (Deuze & Witschge, 2018) who already are operating in a demanding environment of time-scarcity, high-speed publishing, and fact-checking (Revkin, 2007).

Moreover, Hermida *et al.* (2011) argue that participatory journalism, mainly through social media platforms, does not necessarily democratize the news production process since journalists still tend to control and claim authority of traditional media (Scott *et al.*, 2015; Josephi, 2016; Thurman & Hermida, 2010). Drawing on the earlier stated fact that attracting audience attention is an important part of the democratic notion of journalism, it is necessary to address the issue of exclusion of some people in media consumption and participatory journalism (Couldry *et al.* 2010). The potential of internet and technological improvements is not per se generating equal participation since not all audiences, or users, actively contribute or do so to an equal degree (Loosen & Schmidt, 2012; van Djick, 2009; Witschge, 2012). Schradie (2011) refers to a *digital divide*; that some participants, dominantly elite opinions, are favoured over others due to differences in prerequisites to contribute. These differences can regard some peoples' lack of access or knowledge (Zamith & Lewis, 2015).

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Relatedly, research shows that audiences’ that do not *understand* news tend to be less interested and engaged, hence paying less attention (Graber, 2001) which some scholars refer to as *news avoidance* (e.g., Strömbäck *et al.*, 2013). Since audiences’ attention can be translated to a necessity for journalism’s democratic function, this *news avoidance*, could enhance peoples’ distrust in democratic institutions (Skovsgaard & Andersen, 2020) and media (Couldry *et al.*, 2010). Furthermore, when people lack trust in media, they might seek for alternative sources than traditional media or completely reject the news information (Reilly, 1999). The latter is more common amongst people with lower socio-economic status, of marginalized groups and ethnic minorities (Couldry *et al.*, 2010). Hence, lacking understanding and an increasing necessity of obtaining *media literacy* is enhancing misinformation pervasiveness, political polarization, and fragmenting the audience (Robinson, 2019). Altogether, these factors risk hurting the possibility for information about pressing issues with societal aims that requires individual and collective action to reach broad audiences – issues such as climate change.

The focus of this paper is climate change news, where fragmented audiences and barriers of understanding are central challenges facing journalists to reach audiences.

Climate change news and audience attention

There is a broad consensus amongst climate change scientists that a) humans are the cause of climate change and b) there is a severe urgency of acting to limit its alarming effects (Cook *et al.*, 2016). The Intergovernmental Panel on Climate Change (IPCC) 2022 report showed that the window for action is closing fast as climate breakdown is proceeding quicker than was first predicted (IPCC, 2022). Although climate change contrarians are still given media attention, several news outlets have taken a normative stand to the issue of climate change, treating it beyond the tradition of general news (Brüggemann & Engesser, 2017). This shows that journalists play an important role to inform about, and make citizens pay attention to, climate change.

Drawing on the challenges to attract audience attention outlined above, (e.g., brief and fragmentated news consumption, lack of knowledge, and misinformation) creating understandable news is increasingly important, especially in scientific topics such as climate change (e.g., Revkin, 2007; Nisbet, 2009). Couldry *et al.* (2010) argue that ‘key barriers to

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understanding include the use of technical terms, lack of context or explanation for events, the rapidly shifting news agenda, and mismatches between visual and verbal information’ (p.32) – all which are difficulties recognized in climate change coverage. For instance, it is hard to visualize global warming and comprehend the 1,5-degree goal. Former New York Times reporter Andrew Revkin (2007) highlights that the technicality and complicated context of climate change events challenge journalists already constrained time and editorial space – ‘there is often simply no time to canvass experts’ and ‘stories about global warming are not granted a few hundred extra words because it is harder than other subjects’ (p.155). Wolfgang Blau (Responsible Media Forum, 2021) suggests an increase of the amount and permeation of climate change coverage to emphasize its urgency and to engage different audiences. However, to increase the volume and width of climate change news might not break the barriers of understanding. Research shows that there is a significant gap between awareness of global warming effects and sufficient responses because of the many struggles in understanding (Markowitz & Guckian, 2018).

Moreover, networked participatory journalism (e.g., Beckett, 2008; Singer *et al.*, 2011) that place substantial responsibility to citizen amateur journalists, fails to address how it would work in reporting on scientifically complicated and politicised topics such as climate change. This because climate change news require the competence to ‘[...] contextualize and critically evaluate expert knowledge, facilitate discussion that bridges entrenched ideological divisions, and promote consideration of a broader menu of policy options and technologies’ (Nisbet & Fahy, 2015: 224). Due to climate changes pressing urgency, it can be considered as one such story that Bird (2009: 295) refers to; ‘some stories ultimately matter more than others, and we need journalists to report them’.

Additionally, the nature of climate change news brings more challenges to the newsroom. It contains uncertain and diffuse scenarios with distant effects – both in time and geographically – that are incompatible with the regular news process that desire tangible events right now (Revkin, 2007; Lee, 2009). Subsequently, this would make it difficult for newsrooms to argue for even reporting on climate change. However, the scholarly developed models of newsworthiness around news values that lays the foundation for editorial decision-making

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(see: Galtung & Ruge 1965; Shoemaker *et al.*, 1984), can be aligned with climate change. Lee (2009: 176) summarize frequently used news values to involve ‘novelty or oddity, conflict or controversy, interest, importance, impact or consequence, sensationalism, timeliness and proximity’. While climate change might not fulfil all criteria (such as proximity, conflict, or timeliness), the increase in extreme weather events can assist journalists in attracting the audience by using concrete examples and making sense of its complexity (Painter, 2019). However, reporting on *hot* sensational content over the *cooler* scientific facts to gain attraction risk to downplay the uncertainties accompanied unusual climate change events (Revkin, 2007). Hence, a balance is desirable. And journalists have to ‘understand and convey the tentative nature of new scientific knowledge’ (Ibid, 2007: 157).

Relatedly, Boykoff (2011) argues that journalistic norms and values also impact, what is more central to this study, the *content* of news. Hence, regardless of *if* climate change affiliates with the above-mentioned news values and become news is of less interest than when they do, *how* they are shaped and framed. Since ‘[...] the challenge in most instances is not the amount of coverage but how the risks and solutions to climate change are characterized’ (Nisbet, 2019: 24). Therefore, this paper will hereafter focus on how climate change is *framed* in news coverage. Because framing helps make sense of its complexity (Nisbet, 2009) and generates an interest or engagement among the audience which can contribute to both individual and collective action (Appelgren & Jönsson, 2020).

Framing climate change news

Framing theory suggests that the perspective, or presentation, of information influence how people understand, interpret, and respond to it (Nabi, 2003; Nisbet, 2009). Many scholars refer to the origin explanation of Goffman (1974: 52), that frames are a *schemata of interpretation* for individuals to make meaning of messages through existing views and beliefs. Entman (1993), describes framing as ‘to select some aspects of a perceived reality and make them more salient in a communicating text [...]’. In the context of news, framing is a crucial part of the journalistic procedure to induce relevance in an event and simplify complexity for audiences’ (Nisbet, 2009). This is successfully done when journalists use frames that resonate with the pre-existing perceptual lenses of the audiences or as described by Nisbet (2009), *mental shortcuts* that guide

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their interpretation (Hallahan, 1999; Nisbet, 2009; Cacciatore *et al.*, 2016). However, framing should not be perplexed with different positions on policy issues. The interpretive frame can be the same even though people disagree on the issue (Gamson & Modigliani, 1989). Instead, framing should be understood as emphasizing certain considerations over others (Nisbet, 2009).

In framing climate change news, journalists take use of audiences’ *mental shortcuts* to make sense of the complexity and urgency of climate change. Framing subsequently serves as a tool for journalists to report understandable and accessible to help increase audience attention, and in extension engagement for action (Nisbet, 2009). Scholars have found that changes in words used have effects on peoples’ attention and response to climate change (Feldman & Hart, 2021). For instance, experiment research found that people have higher belief in information that refers to *climate change* than *global warming* (Schuldt *et al.*, 2011). On the contrary, other studies investigating social media have found that *crisis* or *emergency* news framing on climate change does not impact public engagement, but highlights the possibility for other effects if exposed to longer news (Feldman & Hart, 2021).

Nevertheless, concerning climate change issues, the use of positive/negative framing is central. In recent years, the framing has been increasingly negative with references to climate change being a *crisis*, or *emergency* (Feldman & Hart, 2021). More general theory suggests that negative framing brings more attention than positive framing (Pratto & John, 1991) and that negative framing also makes people engage more (Hallahan, 1999). However, when framing climate change negative, different effects are shown. On the one hand, emphasizing the threat in climate change can convey the immediacy and the need for action (Feldman & Hart, 2021). For instance, Hornsey and Fielding (2016) experiment research found that people get more motivated to act when they are encountered with pessimistic climate change messages than by optimistic or neutral messages. On the other hand, scholars argue that immense negative framing can be counterproductive in attempts to get people to act since wordings like *crisis* or *emergency* can be mentally overwhelming and result in people feeling helpless (Asayama *et al.*, 2019; O’Neill & Nicholson-Cole, 2019). Other experiments show that pessimistic messages can have a *boomerang effect*, causing the same pessimism in the receiver that subsequently

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makes them sceptical and doubt the credibility of the information. Negative framing hence risk people to dismiss the problems associated with climate change (Feinberg & Willer, 2011; Revkin, 2007).

Notably, previous research on the effects of negative/positive climate change framing mostly employ controlled experiments where frames are randomly allocated for different participants (Schuck & Feinholdt, 2015). The literature lacks studies on the effects of framing in natural settings such as news consumption, through which people are most likely to encounter climate change information (Maibach *et al.*, 2008; Feldman & Hart, 2021). This paper aims to fill this gap in research by triangulating unique inhouse news audience attention data with the use of frames.

Drawing on the above, it is apparent that audiences’ attention to climate change framing depends on what is emphasized in the news since that shape how the information is being interpreted (Feldman & Hart, 2021). In the next section, I introduce literature on the use of *emotional frames* in climate change news, focusing on the emotions most frequently used in this research field: hope and fear, later examined in case of a significant global news publisher’s coverage of the 2021 UN climate summit Cop26.

Emotional frames in climate change news

Research on the use and effects of emotional frames is a relatively new field (Schuck & Feinholdt, 2015; Nabi *et al.*, 2018). But emotions in journalism is on the contrary nothing new (Peters, 2011). Scholars in the former field have emphasized that emotions in today’s digitalized and networked news production and consumption is essential and effective as audience engagement with news is increasingly driven by emotions (Beckett & Deuze, 2016; Wahl-Jorgensen, 2019; Roeser, 2012). Lecheler (2020: 287) argues that ‘new forms of emotion-driven journalism aims to create reporting that leads to an intimate and trustful relationship with the audience’ which thus helps journalists to ‘re-connect’ with the audience in a digitalized media era. The use of emotions is related to the more established research field of affect theory. Papacharissi (2015: 15) describe affect as the umbrella term for emotion, and emotion to be ‘perhaps the most intense part of affect’.

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To conceptualize the use of emotional frames, Nabi (2003) has developed an emotions-as-frames model suggesting that ‘when a message contains information that is relevant to an emotion’s core relational theme (e.g., imminent threat for fear; possible positive futures for hope), an emotion (i.e., fear; hope) is aroused’ (Nabi *et al.*, 2018: 449). The experience of an emotion because of emotions-as-frames is then anticipated to affect the accessibility and preference of information, and in turn guide action tendency and decision-making (Nabi, 2003). In the case of climate change communication, the goal of evoking emotions through emotions-as-frames would hence be to 1) increase the accessibility and preference of that information to 2) enhance climate mitigation support and action. Moreover, Nabi *et al.* (2018: 449-50) combine this model with loss/gain framing of climate change information. They argue that loss-framed messages capture the core of fear as it ‘point out the harms one might incur as a result of action or inaction’, thus capturing the feeling of fear. Contrarywise, gain-framed messages capture the essence of hope, which ‘emphasize potential positive future outcomes’. This study will not go into detail about previous studies on gain/loss framing but will merge it with the emotions-as-frames model in the conceptual framework.

Following the categorization of hope/fear framing, conflicting results similar to that of positive/negative framing is apparent. Studies show that hope frames in climate change messages predict pro-environmental attitudes (Ojala, 2012), mobilize support for climate change mitigation policies (Nabi *et al.*, 2018) and strengthen the belief of collective efficacy to conquer climate change challenges (Doherty & Webler, 2016). These results affiliate with researchers that are cautious about fearful appeals in climate change messages. They mean that responses can be maladaptive with elements of denial of the existence of a threat, or numbness to climate change as people are more deeply concerned about more current risks such as security issues (Moser, 2007; Maibach *et al.*, 2008). Yet, numerous findings indicate that strong fear or threat appeals in climate change information is more persuasive and motivating for creating behavioural changes (e.g., Witte & Allen, 2000), especially when accompanied by hope appealing messages on efficacy, action, or solutions (Feldman & Hart, 2021; Maibach *et al.*, 2008; Moser, 2007). This conclusion correlates with constructive journalism, an approach that seeks to change journalistic practices by including positive emotions in news and stress

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progress and solutions instead of the commonly used negativity. Scholars explain constructive journalism to make news ‘productive, accurate and engaging’ (Hermans & Gyldensted, 2019, p.536; McIntyre & Gyldensted, 2017) which subsequently would increase audience attention (McIntyre & Gibson, 2016; van Antwerpen *et al.*, 2022).

However, regarding the material of this study (news coverage on Cop26), Nisbet (2019: 24) particularly state that;

‘In coverage of major climate change-related events such as a new IPCC report or United Nations summit (i.e., Cop), journalists also tend to dramatize their significance by emphasizing the most calamitous climate change scenarios, framing new scientific reports’ findings in terms of disastrous and fear-inducing risks, rather than emphasizing in the face of those risks opportunities to protect health or sustainably grow economies’.

This reasoning could imply that news coverage on events like Cop26 do not embrace constructive journalism but is rather dominated by fear appeals.

Before turning to the conceptual framework, I will shortly discuss the news value of objectivity in relation to emotions in journalism.

News values and emotional framing in climate change news

The concept of emotions in news has long been considered as ‘a marker of unprincipled and flawed journalism’ implicating a notion of subjective biases, sensationalism, and tabloid-features (Peters 2011: 298; Örnebring & Jönsson, 2004). Pantti (2010: 169) argues that ‘while *quality* journalism informs and educates citizens by appealing to reason, other kinds of journalism focus on pleasing their audiences by appealing to the emotions’. Hence, emotions have been side-lined, treated as an enemy or threat to traditional journalistic ideals and professional codes that have been relying on Gaye Tuchman’s *strategic ritual of objectivity* (Wahl-Jorgensen, 2013). More recently, scholars have questioned the dominance of objectivity to be *good* and emotions to be *bad* (Frank, 2003; Peters, 2011). Jukes (2017: 74) refers to a ‘false binary divide’ and others propose that emotionality is a complement rather than a contradiction to objectivity (Wahl-Jorgensen, 2013; Kotisova, 2019). Wahl-Jorgensen (2019) argues that a *strategic ritual of emotionality* is running alongside that of objectivity, and that the

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former, although not as openly recognized, is as important as the latter, hence calling for journalist to perform emotional labour to engage the audience (Ekström, 2000).

In Wahl-Jorgensen’s (2019) study of award-winning articles, she demonstrated that ‘emotional labour is outsourced in such a way that journalists do not express their own emotions, but rather serve as ventriloquists for the feelings of their sources’ (p.64) – indicating that journalists fulfil the objectivity criteria while using emotional frames. Furthermore, Wahl-Jorgensen (2019) argues that to make social and political issues (such as climate change) visible and attention-reaching, emotions are inevitable since it stimulates audiences’ consideration. And in today’s audience-focused media environment, scholars have found that news consumers rather criticize *quality* journalism that are disconnected or lack captivation and instead request content that is emotionally engaging (Meijer, 2013).

CONCEPTUAL FRAMEWORK AND RESEARCH QUESTIONS

Drawing on existing literature outlined above, there is a broad range of research on the effects of emotional frames in climate change news and how emotional frames can generate attitudinal change or action. Of particular interest for this study is what Nisbet (2019) argues; that news coverage from the United Nation climate summits, such as Cop26, tends to highlight fear-inducing risks over hope-inducing possibilities. To understand this potential negative tendency and fear appeals in news about Cop-summits one can ask; what is the purpose of using emotions-as-frames in news coverage like this? I would argue that the aim probably is limited to Nabi’s (2003) step 1) to increase accessibility and preference of news content, rather than step 2) to boost climate mitigation support or action. As stressed in the beginning of this literature review, one of the functions of journalism in a democracy is to provide the electorate with sufficient information to make educated decisions (e.g., Peters & Witschge, 2015; Schudson, 2000), not necessarily to generate support for policies or action. At the same time, newsrooms are aware of the importance as well as the challenge to get audiences’ attention to this information. To succeed, journalists are guided by news values, amongst which *negativity and conflict* long has been identified as newsworthy elements – both coherent with fear appeals

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which could help explain the negative tendencies (Galtung & Ruge, 1965; Harcup & O’Neill, 2017; Wahl-Jorgensen, 2019). This study first aims to investigate whether this pattern of fear framing over hope framing is apparent in the news publisher’s coverage of Cop26 and suggests the following research question and accompanying hypothesis:

RQ1: How and to what extent does emotional frames of hope and fear appear in the significant global news publisher’s climate change coverage on Cop26?

H1: Elements of fear framing appear more frequently than hope framing in the news coverage on Cop26.

H2: Headlines with fear framing appear more frequently than hope framing in the news coverage on Cop26.

Following, this paper attempts to fill a research gap; whether emotional frames in climate change coverage help gain audience attention. The evidence outlined above indicate that the use of emotional frames aims to increase accessibility and subsequently audience attention. Previous, more general, literature have concluded that people tend to pay more attention to fear-framed information than hope framed information (Hallahan, 1999; Pratto & John, 1991). However, studies on emotional frames in climate change coverage has mainly focused on experiments and the field lack research on natural settings like news consumption (Maibach *et al.* 2008; Feldman & Hart, 2021). To enable empirical observations, scholars call for research using inhouse newsroom data of audience perceptions (Lecheler, 2020). This will be employed by using unique audience data from the global news publisher on page views and attention time to answer the second research question and test the other hypotheses:

RQ2: Is there a relationship between emotional frames in Cop26 articles and audience attention? If so, how is this pattern appearing?

H3: Articles with emotionally framed headline gained more page views than articles with no emotionally framed headlines.

H4: Articles with fear framed headlines gained more page views than articles with hope framed headlines.

H5: Articles with emotional dominant frames gained more audience attention than articles with no emotional dominant frames.

H6: Articles with fear as dominant frame gained more audience attention than articles with hope as dominant frame.

To carry out this study, four principles drawing on the literature review are especially useful:

- (1) It is increasingly difficult for news outlets to gain audience attention in today’s ‘hybrid media system’.
- (2) The scientifically complex notion, and uncertain and distanced nature of climate change makes it somewhat incompatible with the traditional news production process.
- (3) Framing can be used as a tool to combat (1) and (2).
- (4) Emotional frames of hope/fear are central in the context of climate change coverage.

Based on these principles, emotional framing is of particular conceptual importance for this research. The investigated frames are inspired by the emotions-as-frames model by Nabi (2003), the developed conceptualization by Nabi *et al.* (2018), and categorized in two:

- a) Negative and *fear*-inducing frames, emphasizing the threat, and harmful impact of the alarming climate crisis because of action or inaction.
- b) Positive and *hope*-inducing frames, emphasizing the efficacy of solution-based examples and optimistic future possibilities of action or inaction.

METHODOLOGICAL CHAPTER

This chapter outlines the study’s design and methodological procedure, as well as points to obstacles and limitations encountered while doing this research.

Methodology rationale

To conduct this framing analysis, a deductive *quantitative content analysis* (QCA) is the most appropriate and most commonly used systematic methodology (Semetko & Valkenburg, 2000). QCA is suitable because this research aims to identify and quantify the frequency of key features in news media content (Deacon *et al.*, 1999; Franzosi, 2008). More specifically, it aims to investigate how and the extent to which emotional frames of hope and fear appear in news articles on Cop26. According to Hansen (1998), QCA is appropriate when examining how

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news coverage reflects broader social and cultural matters (i.e., emotions). Although qualitative methods like critical discourse analysis are beneficial when the research aims to obtain a deeper understanding of these social and cultural issues in the media content (Blackstone, 2012), they do not allow for analyses of large datasets or ‘making replicable and valid inferences by systematically identifying specified characteristics of the message’ (Krippendorff, 1980: 21). Hence, a detailed qualitative methodology would be logistically challenging for this research where classification of emotional frames in a large sample of articles is desired (Riffe *et al.*, 2019). Moreover, Janis (1943) stresses that another strength of QCA and the large data it can analyse is the possibility to conduct statistical tests of significance. Since the second aim for this research is to statistically test the relationship between different emotional frames and audience attention, QCA is appropriate (Carr, 1994). Nevertheless, limitations exist for this methodology as well. Positivist critics have argued that QCA, as many other research methods, is not fully objective since it is based on subjective decisions by the researcher on which characteristics are most significant to focus on and later analysed (Hansen, 1998). However, since QCA is a systematic and replicable method (Holsti, 1969; Krippendorff, 1980) this disadvantage is more obvious in research such as surveys or critical discourse analysis that employs subjective evaluations more comprehensively (Jørgensen & Phillips, 2006). To avoid the human-coded judgement to result in varied interpretation of the variables and the coding material, Riffe *et al.* (2019) argue that the codebook should be well-defined and comprehensive. This to put less responsibility to the coders subjective interpretation and establish the validity and reliability of the findings, as other researchers may duplicate the study to verify the results (Hansen, 1998).

Another disadvantage of QCA is that it does not uncover any underlying causes to, or meanings of, the results (Rahman, 2017). Thus, explanations to *why* certain patterns in the material might appear or the implications to their occurrence will not be answered through a QCA (Hansen, 1998). For the analysis of the results, it is therefore important to remember that ‘it is not valid to assume that quantitative factors such as size and frequency of media messages equate to impact’ (Macnamara, 2005: 5). However, by conducting statistical tests and relying on previous research when discussing the results and its indications can help circumvent this

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issue without having to communicate with the sender, i.e., the journalists (Riffe *et al.* 2019; Hansen, 1998).

Sampling and data collection

While QCA enables for extensive data collection, analysing all media content of Cop26 is rarely achievable or even necessary. Therefore, a manageable collection of data is reached through *media selection, issue sampling, and relevant content* (Hansen, 1998; Riffe *et al.*, 2019).

Media selection

News media outlets worldwide covered The United Nations summit Cop26. However, since this study heavily relies on the access to inhouse audience data to answer RQ2, I purposively selected the global news publisher that has an outspoken climate pledge and accepted my data access request (Macnamara, 2005). Due to the use of audience data, I focused on their online version and all their published articles instead of a variety of news outlets, to allow for statistical tests on the whole sample and make this research more beneficial for the news publisher.

Sampling of articles and relevant content

In this study, the units of analysis, i.e., the items being evaluated, are online news articles on Cop26 from the global news publisher (Neuendorf, 2011). Since the relevant content in these articles concerns the headline, preamble, and body text about an event, the sampling was guided by time and date of that event (Hansen, 1998). Hansen argues that ‘the key to understanding the role and nature of media coverage would often necessitate analysis of coverage both before and after the dates or period of a specific event’ (p.102). Thus, the purposive sample were all news publisher’s articles where *Cop26* was a key word and was published during the official dates of Cop26 (Oct 31–Nov 11) and three days before/after (i.e., 28–30th Oct + 12–15th Nov). While several different article formats are examined, I excluded live feed updates running over several pages and hours, since their audience data metrics were difficult to interpret for the purpose of this study. All articles (N=226) were saved as PDFs, coded in the analytical software tool MAXQDA, and results entered in an Excel spreadsheet.

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Coding design and operationalization

To measure the extent to which emotional frames appear in the sampled news articles, one has to develop ‘a predefined set of content-analytical indicators that represent the frame’ (Schuck & Feinholdt, 2015: 2). In this paper, these indicators were for example *severe urgency* or *unique opportunity*. Riffe *et al.* (2019) explain that the conceptual definitions are then converted into quantifiable category variables in the codebook, a procedure called *operationalization* (Table 1). The operationalization of the news publisher’s data set followed the categorization in the conceptual framework (Section 3.0). Matthes (2009) points to insufficient operational accuracy as a common problem when making frames quantifiable. This problem was mitigated through a reviewing process of randomly selected articles in the material to create clear definitions, indicators, and examples of how each frame should be empirically interpreted.

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Table 1 - Operationalization

Category variable	Description and indicators
Fear frame	<p>The article contains an element with a negative and fear-inducing frame, emphasizing an alarming threat, or harmful impacts of the climate crisis, pessimistic future opportunities <i>because of action or inaction</i>.</p> <p><u>Indicators</u>: damaging natural disasters; harmfully affected societies; disastrous levels of global heating; going to be too late; severe urgency; disastrous impacts; inundation of many low-lying areas; suffering health damage; climate breakdown; irreversible changes; climate emergency; greater destruction; warnings; catastrophe; global emergency; climate anxiety; impossible;</p> <p><u>Commitments subgroup indicators</u>: fail in commitments; unease about lack of progress; risk of failure; insufficient action;</p>
Hope frame	<p>The article contains an element with a positive and hope-inducing frame, emphasizing efficacy of solutions to climate change, optimistic future possibilities or progress <i>because of action or inaction</i>.</p> <p><u>Indicators</u>: benefits for the climate or nature; opportunity; unique opportunity to protect; safer, greener, fairer future; still a chance; technological potential; achievable goals; key to solutions; positive momentum; effective protection of the environment; good signs;</p> <p><u>Commitments subgroup indicators</u>: successful commitments; important pledges; remarkable achievements; potential success; ambitious plans; improvements;</p>

The next step in the coding design process was to develop category variables and determine the values they can adopt in the codebook (Appendix 1). The first section revolve what Hansen (1998) call the *identifier* categories; ID-number, URL, headline, date of publication, author, and genre. These are necessary to examine the impact of for instance the genre or the publication day on the use of emotional frames.

In the codebook’s second section, I developed theory-driven category variables (DeCuir-Gunby *et al.*, 2011) drawing on the operationalization (Table 1). I separated the coding of emotional frames of the headline, preamble, and in the body text to enable more detailed analysis. In the body text, I coded the number of hope-/fear-frames. Moreover, I added a sub-

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variable to the variable of hope-/fear-framed elements that clearly concerns success/fail in commitments. This, since the scene set for Cop26, was framed as a ‘unique urgency’ by climate experts and media (ukcop26.org, 2021, para. 5), and ‘crucial to the future of humanity’ (Brooks, 2021, para. 2). Subsequently, if the article contained elements highlighting whether world leaders showed or did not show power of action and made or failed to make important promises, these were counted as hope- or fear frames too. The final variable in this section concerns the dominant frame of an article. This variable forced me to decide the foremost emotional frame of an article; hope, fear, both, or none.

Furthermore, the variables in the second section were developed to fit Schuck & Feinholdt’s (2015: 4) ‘basic model how to analyse the role of emotions in news framing effect research’. This model uses media content analysis together with panel survey data, but it can be adjusted to fit different investigations and outcomes of interest. For this study, the media content analysis part was kept, ‘measuring the presence of certain news frames in news content over a certain period of time’ (ibid). However, instead of using panel survey data about their media exposure, I used inhouse audience data, see section three. The data regarded i) number of page views per article, and ii) a benchmark-score (0–100) on attention time against the aggregated attention time of pieces of similar word count from the year before, calculated, and used by the news publisher to measure audience attention. Howison *et al.* (2011) argue that content analyses that uses digital trace data are beneficial since they provide high external validity.

In addition to well-defined category variables, I followed Riffe *et al.* (2019) and elaborated the codebook with specific guidelines, coding principles, definitions, and example quotes guiding the quantification and allowing a range of coders to replicate the coding. Most essential, to count as an emotional frame, that part of the article must be an *independent element*. With an independent element I mean textual information that stands alone and does not directly relate to or rely on other emotionally framed content in the text. For instance, if the beginning and the end of the same quote or reasoning are fear-framed, they are part of the same element and are counted as one, not two. Furthermore, simple references to facts, such as ‘rising sea levels’ or ‘global warming’, which are negative effects of climate change, are not counted as fear-frames. As implied in the operationalization, to count as an emotional frame, the element must

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be part of a context that includes a hopeful or fearful reason or consequence. Examples of these rules and other coding principles are provided in the codebook (Appendix 1).

Pilot study and intercoder reliability

To test the validity and appropriateness of the codebook and ensure coding consistency, I undertook a pilot study. According to Steenkamp and Northcott (2007), pilot studies help recognize beneficial modifications to create more feasible category variables and, in the coding process, decrease uncertainty or redundancy. First, I conducted the pilot analysis on 10% of the material (n=24), sampled by the order of items, i.e., article number 10, 20, 30...238. Then, a second coder was deliberately selected to code the same sample. The second coder was fulfilling the criteria of being a regular news consumer familiar with the methodology and the coding procedure, but with no prior knowledge in the research field of climate journalism or emotional framing. This to contrast my position as a researcher. To determine the intercoder reliability, I used Cohen's kappa coefficient of agreement for nominal scales (Cohen, 1960). I divided the number of agreements, i.e., same coding of emotional frames in the articles, with the number of agreements predicted by chance, resulting in a score between 0 and 1. The score estimate the strength of the agreement; 0.00–0.20 = *slight*; 0.20–0.40 = *fair*; 0.41–0.60 = *moderate*; 0.61–0.80 = *substantial*; 0.81–1.00 = *almost perfect or perfect* (Landis & Koch, 1977). The average ICR score was 0,897, indicating a codebook with highly reliable variables.

Ethics and reflexivity

I was conscious of my subjective stance as a researcher while conducting this study. Thus, I relied on scientific findings about climate change to justify the interpretation of comprehensive agreements to combat climate change effects as hopeful, i.e., *successful commitments*, and lacking pledges as fearful i.e., *fail in commitments*.

Moreover, I sought consent from the dissertation supervisor before the research design process to verify that the project complied with the ethical codes of the university. I demonstrated reflexivity in the selection of articles by justifying the news outlet and period of investigation. For the codebook construction, I was guided by previous research which allowed me to retain a 'neutral' researcher viewpoint. This was crucial since I wanted to avoid being swayed by

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preconceived notions as I looked for correlations rather than causal explanations. Furthermore, the second coder helped assure validity and reliability by removing concerns about possible bias (Neuendorf, 2011).

Finally, Rahman (2017) stress that principles like confidentiality, privacy, and consent are important when making ethical considerations. These were key when I handled the sensitive data obtained from the global news publisher. For instance, I agreed to not explicitly mention the news outlet of examination, and to keep the journalists anonymous, therefore I created numerical codes for all the authors and did not use any example quotes from the examined articles.

RESULT AND ANALYSIS

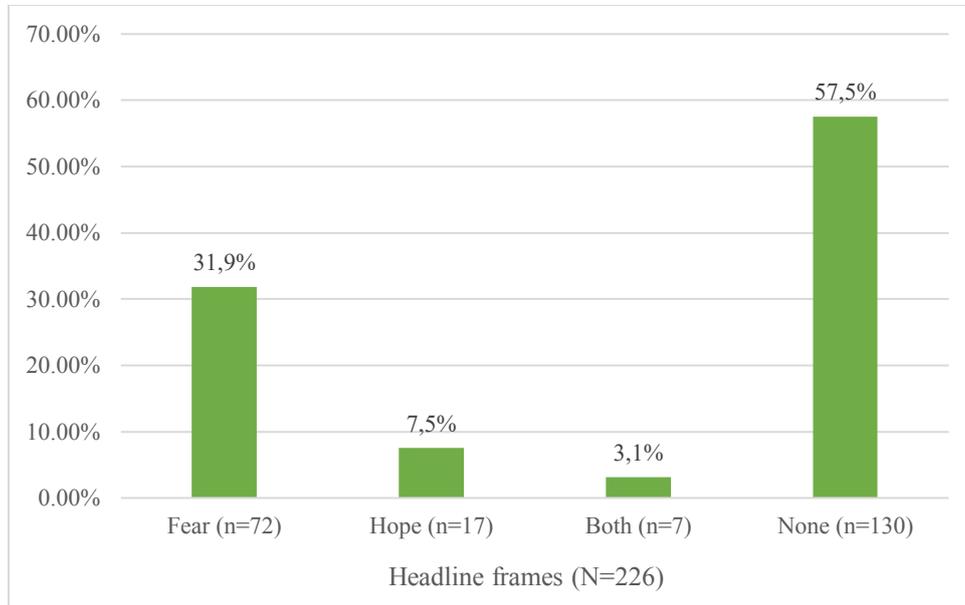
In this chapter, I present the results generated from the data analysis. First, I demonstrate descriptive statistics, followed by statistical analyses on emotional frames in relation to page views and benchmark score. The variable on authors is not analysed because more than 70 authors were identified, and their numerical codes would not strengthen the analysis on the appearance of emotional frames.

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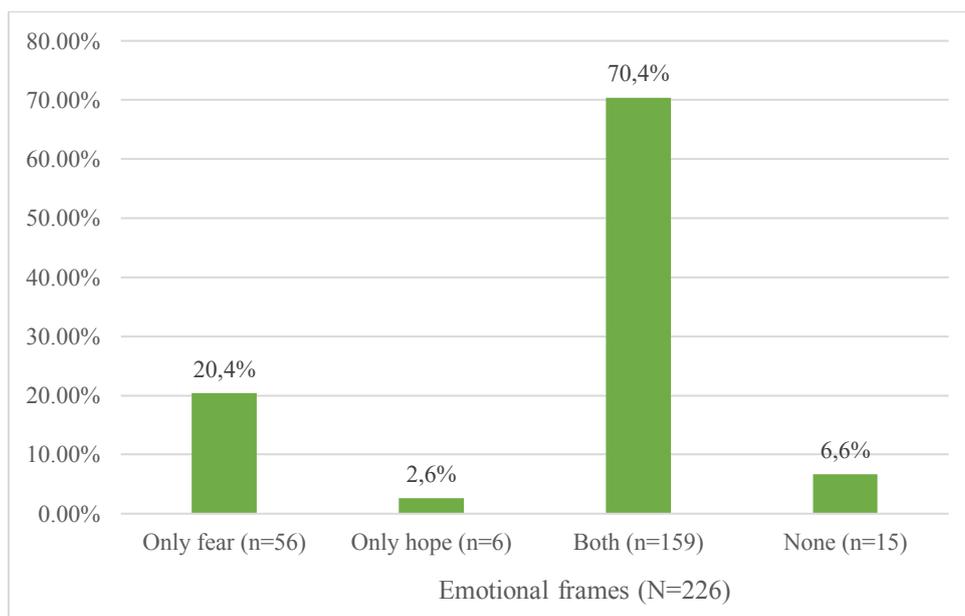
Descriptive statistics of emotional frames in Cop26 articles

Figure 1 – Proportional distribution of headline frames



The extent to which the global news publisher’s Cop26 articles had emotionally framed headlines is relatively low in relation to the majority with no emotional frame [Figure 1]. However, we can tell that fear-framed headlines appeared more frequently (31,9%) than hope-framed headlines (7,5%).

Figure 2 – Proportional distribution of emotional frames in the body text



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To understand the extent to which emotional frames appear in the body text of the articles, I demonstrate the proportional distribution of emotional frames. In a vast majority of the articles (70,4%), *both* hope- and fear-framed independent elements appeared. It was more common for only fear-frames to appear (20,4%) than only hope-frames (2,6%) or no emotional frames at all (6,6%) [Figure 2].

Figure 3 – Frequency distribution of emotional frames in the body text per article

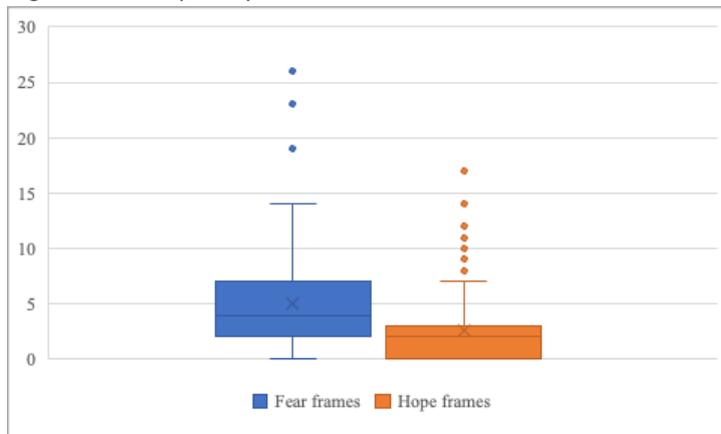


Table 2 – Descriptive statistics of fear and hope frames

<i>Fear frames</i>		<i>Hope frames</i>	
Mean	4,969026549	Mean	2,53539823
Standard Error	0,259595904	Standard Error	0,19064744
Median	4	Median	2
Mode	4	Mode	0
Standard Deviation	3,902582157	Standard Deviation	2,86605948
Sample Variance	15,23014749	Sample Variance	8,21429695
Kurtosis	5,042652497	Kurtosis	3,99350488
Skewness	1,584722427	Skewness	1,78463283
Range	26	Range	17
Minimum	0	Minimum	0
Maximum	26	Maximum	17
Sum	1123	Sum	573
Count	226	Count	226

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The boxplot [Figure 3] shows that the dispersion of fear-framed independent elements was greater than that of hope-framed independent elements in the news publisher’s Cop26 articles. Moreover, the median, i.e., middle value, for fear-frames (4) is greater than for hope-frames (2) [Table 2]. This indicates that there are more units of analysis (articles) in this sample where the number of fear-frames are higher than the number of hope-frames. The outliers in Figure 3 and the fact that the mean is greater than the median for both fear (4,97) and hope (2,54), indicate that the distributions are positively skewed. The most frequently occurred value (mode) is 0 hope-frames and 4 fear-frames.

Figure 4 – Proportional distribution of emotional frame type

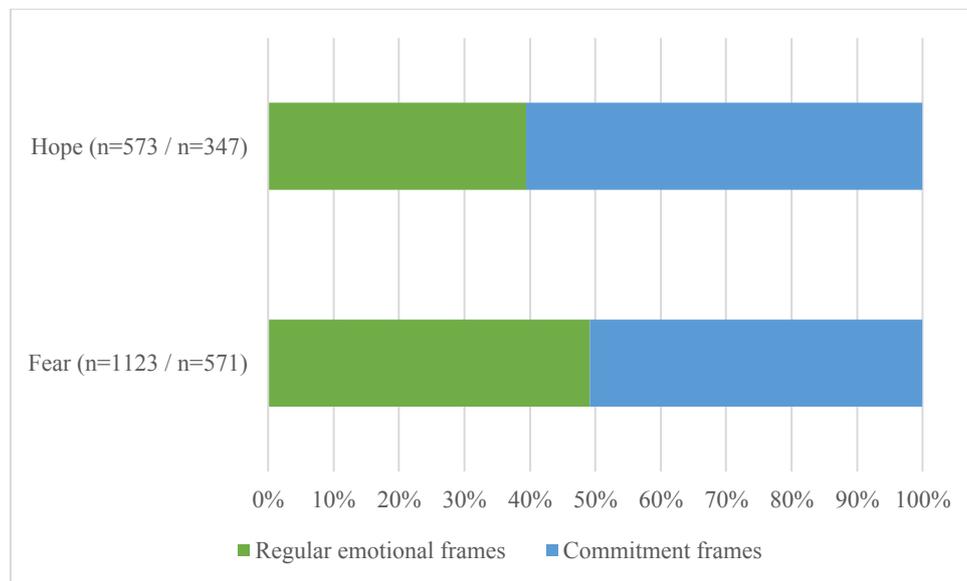


Figure 4 demonstrates that out of the total number of fear-framed independent elements, the share of commitment frames was lower (50,85%) than the share of commitment frames of hope-frames (60,56%). To remind ourselves, commitment frames were the subcategory to emotional frames developed to map successful achievements or lack of progress of Cop26.

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Figure 5 – Frequency of hope and fear frames based on word count

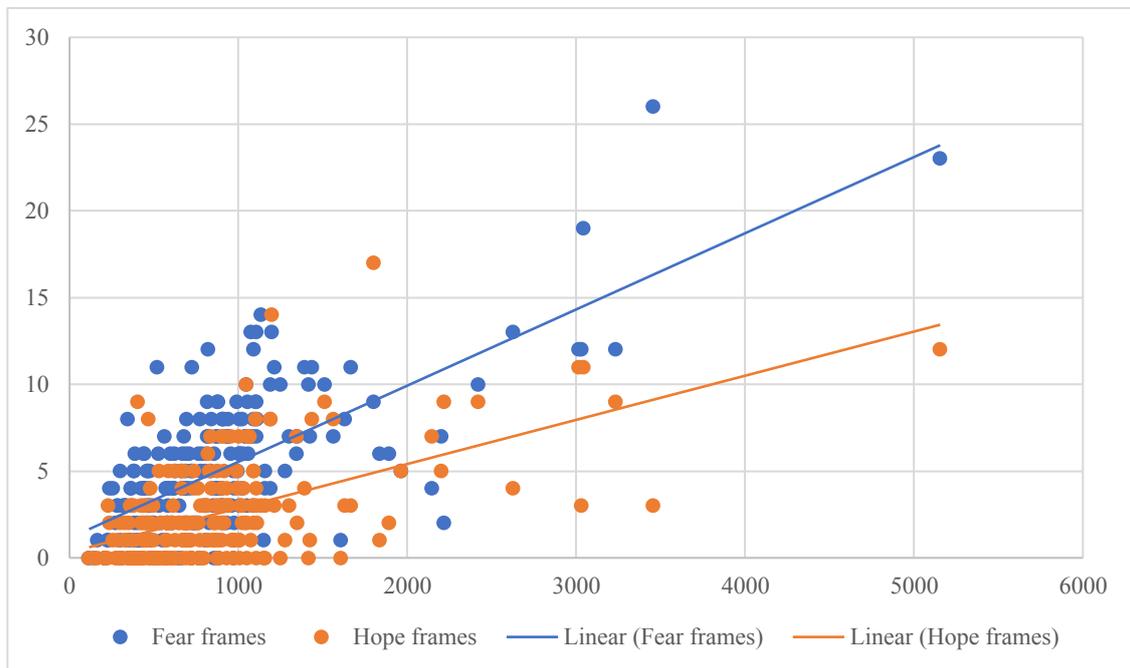


Figure 6 – Average number of emotional frames per article and genre for every 1000 words, contingent on the average word count for each genre

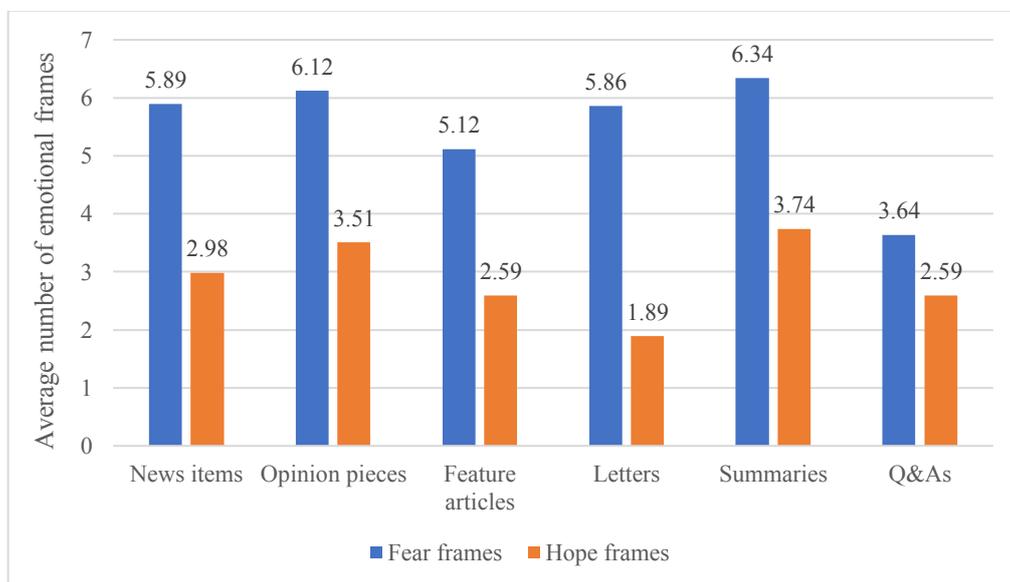


Figure 5 shows that there is a positive linear association between word count and number of emotional frames, i.e., the number of emotional frames increase with the number of words. Thus, I calculated the average number of emotional frames per article and genre for every 1000 words contingent on the average word count for each genre [Figure 6]. Fear-frames appear

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more frequently than hope-frames in all genres. Summaries have the highest average of both fear- and hope-framed independent elements, while Q&As have the lowest average of fear-frames and letters the lowest number of hope-frames.

Figure 7 – Distribution of average number of emotional frames per article over time

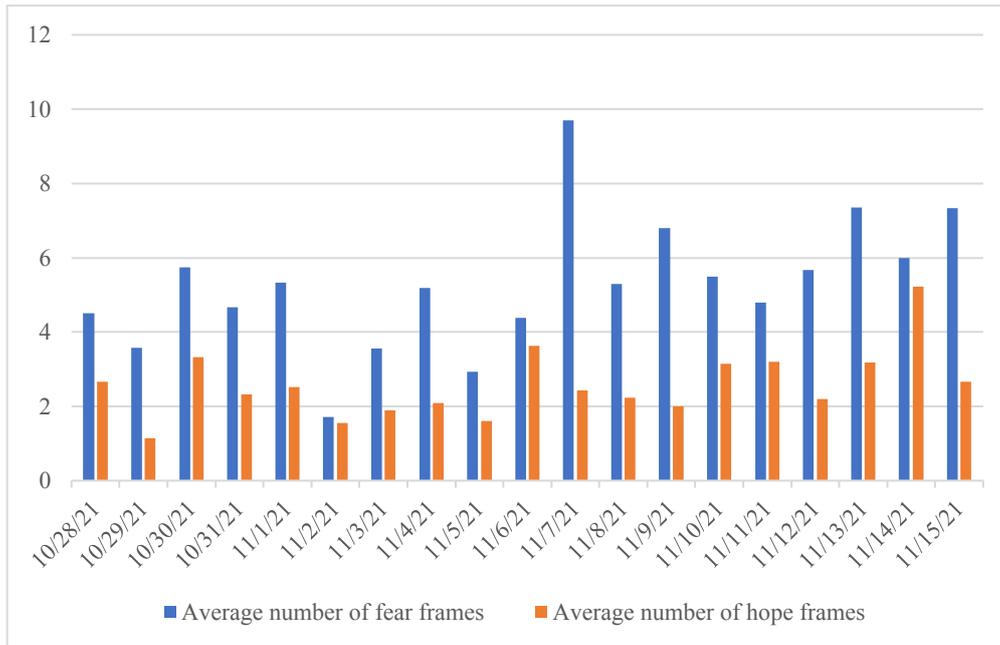
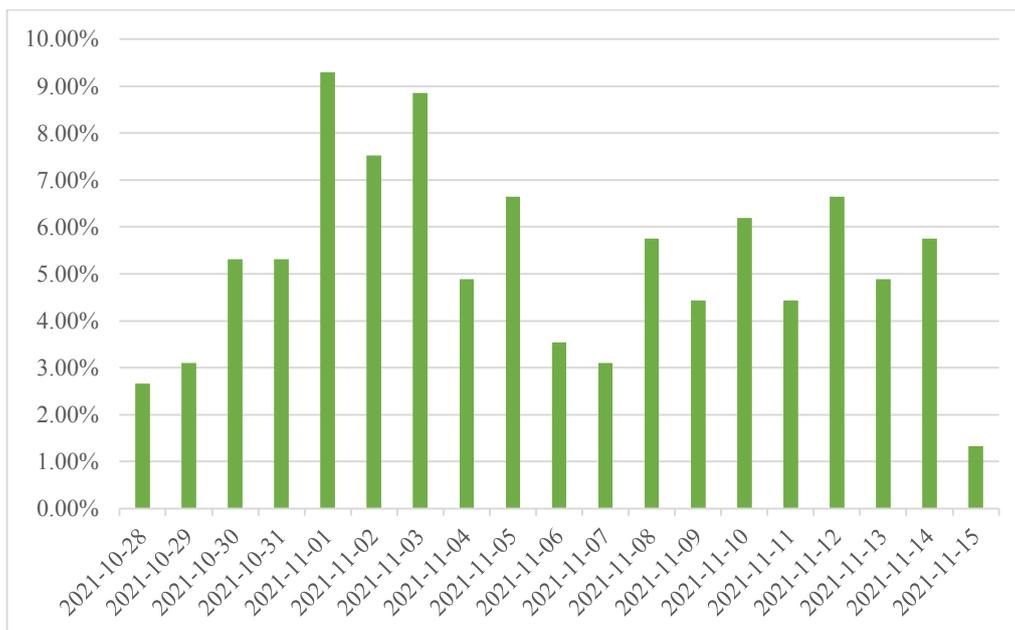


Figure 8 – Proportional distribution of Cop26 articles per day



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The average number of fear-frames per article extended the number of hope-frames every day, but were comparatively even November 2nd, 6th, and 14th [Figure 7]. The overall trend in Figure 7 shows that the average number of emotional frames per article slightly increased the second half of the dates examined. During the three days with the highest proportion of published Cop26 articles (Nov 1-3rd) [Figure 8], the number of emotional frames were relatively low, thus I made a scatterplot of the relationship between these two variables.

Figure 9 – Average number of emotional frames per article and day in relation to the number of articles published the same day

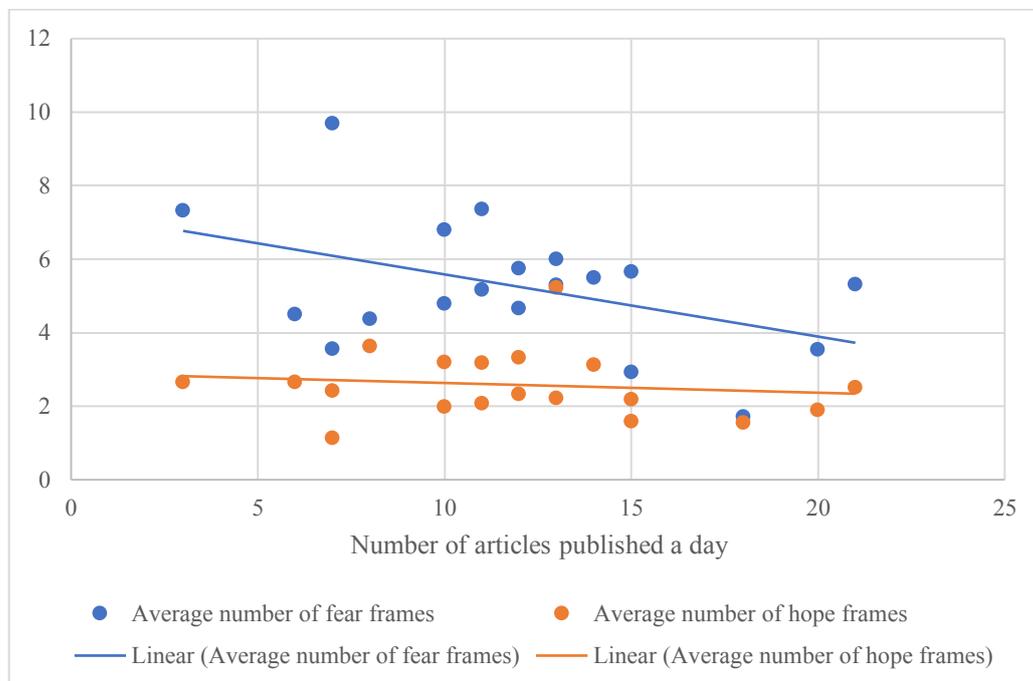
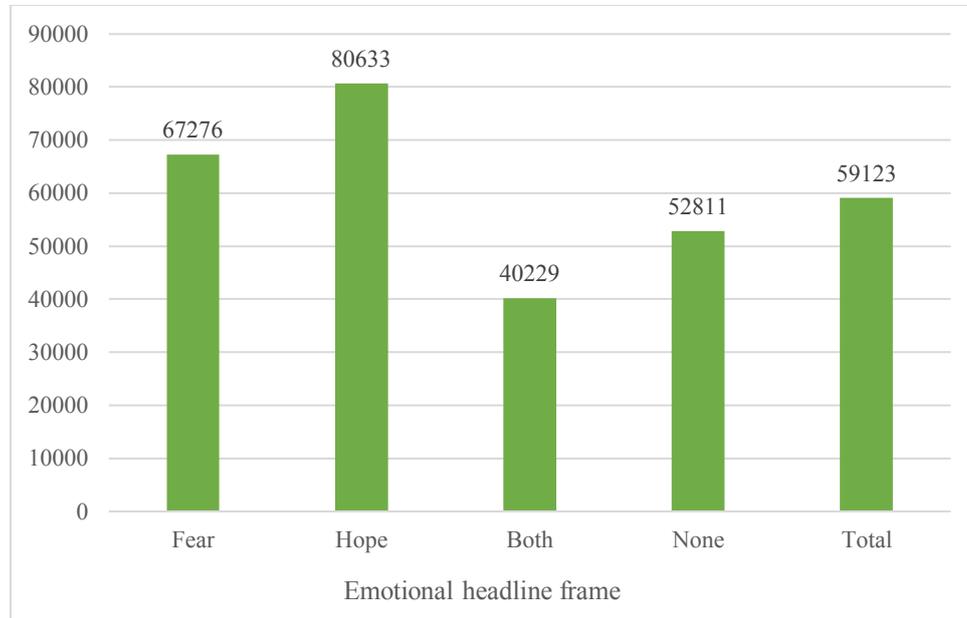


Figure 9 shows that there is a negative association between the number of articles published a day and the average number of fear-frames per article and day. For the average number of hope-frames per article and day, the association is also negative but considerably weak.

Page views and headline frame

Figure 10 – Average page views per article based on headline frame

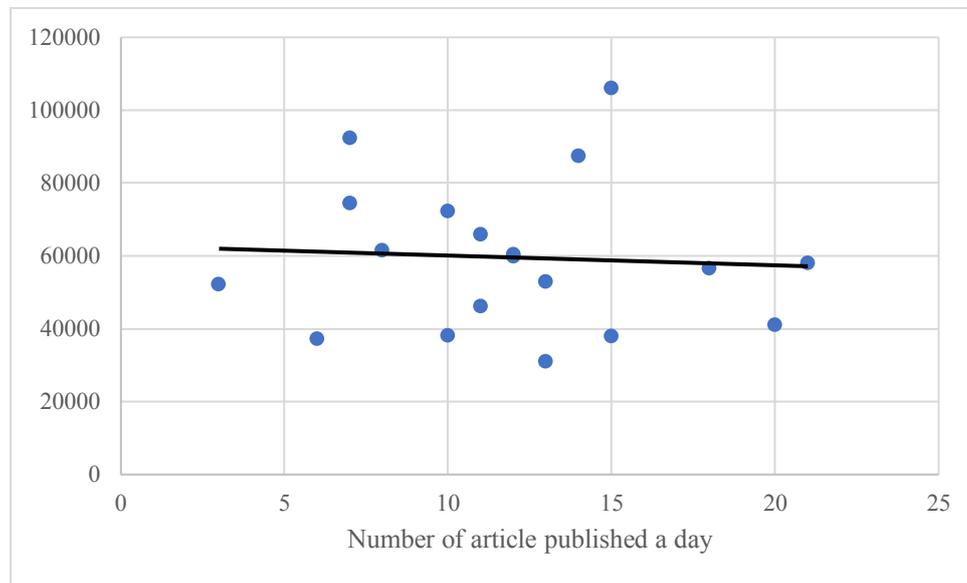


This figure was developed to describe the relation between the variables headline frame and average page views. The average page views per article is highest when the article’s headline is hope framed, and second highest when it is fear framed [Figure 10]. When the article has no emotional frame, the average page views is somewhat lower (52811) than the average page views of the total number of articles (59123). Moreover, the average page views for the emotionally framed headlines combined (fear, hope, and both) was 67669, which equals an increase in 28,13% from the non-emotional framed headlines (52811).

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Figure 11 – Average page views per article per day



To understand whether the number of articles published a day impacted number of page views, I calculated the average page views per article and day in relation to the number of articles published each day [Figure 11]. There is a noticeably weak association between these two variables, implying that the number of articles a day did not have any significant effect on the average page views.

Table 3 – t-Test assuming unequal variances of page views for emotionally framed headlines and not emotionally framed headlines

	<i>Emotional headline</i>	<i>Not emotional headline</i>
Mean	67669,375	52811,03846
Variance	5742088870	7935399782
Observations	96	130
Hypothesized Mean Difference	0	
df	219	
t Stat	1,351568143	
P(T<=t) one-tail	0,088953949	
t Critical one-tail	1,651841182	
P(T<=t) two-tail	0,177907898	
t Critical two-tail	1,970855367	

Since the two samples, articles with emotional and not emotional headlines, are of different sizes and have different variances, an unequal variance t-test was conducted [Table 3]. The t-score (1,35) is relatively low, and the two-tailed p-value is $p > 0.05$. Thus, we cannot reject the hypothesized mean difference (i.e., 0) and have to conclude that, in the population of the news

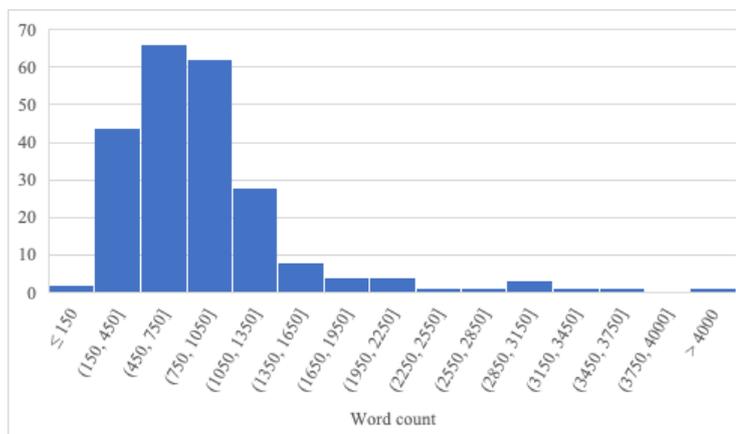
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publisher’s Cop26 articles, there is no statistically significant association between emotional headline and page views. Since few units had a hope framed headlines (n=17) [Figure 1], a t-test on the association between fear and hope headlines was not conducted.

Benchmark score and dominant emotional frames

Figure 12 – Histogram of average benchmark score based on word count

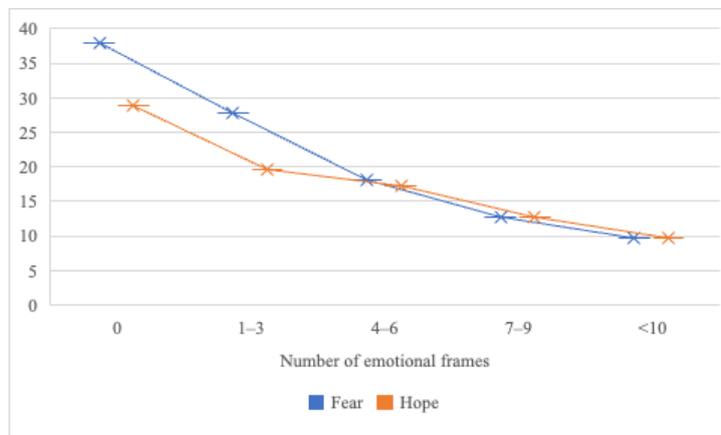


The benchmark score, i.e., a score between 0–100 on the average attention time benchmarked against the aggregated attention time of pieces of similar word count from the year before, is highest among articles with a word count of 450–750. The overall distribution of articles benchmark score depending on their word count is positively skewed [Figure 12]. This indicates that people tend to read more of shorter articles than longer.

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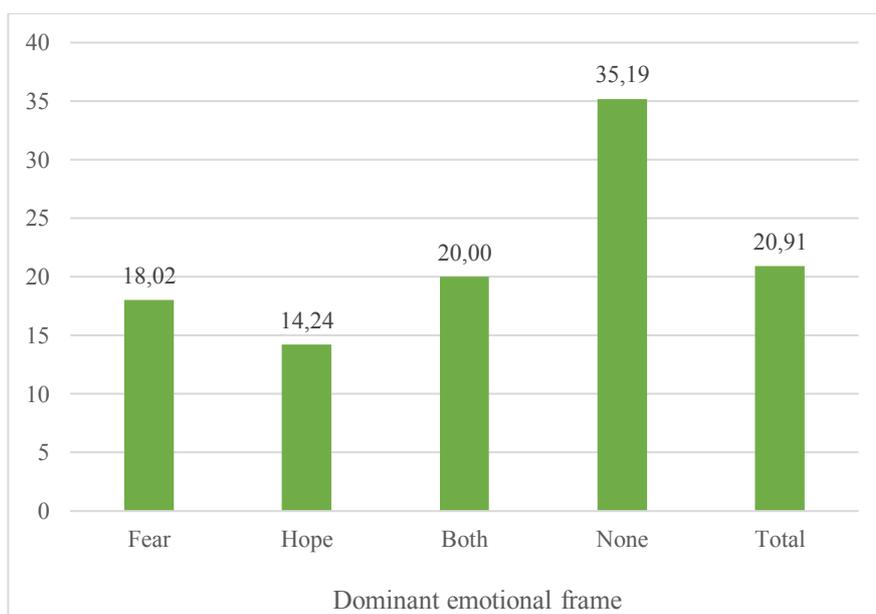
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Figure 13 – Average benchmark score per article based on number of emotional frames



For both fear and hope, the average benchmark score decreases as the number of emotional frames increases. When an article has 0–3 emotional frames, fear-frames have a higher average benchmark score than hope-frames, while the difference in benchmark score becomes more even as the number of emotional frames increases [Figure 13]. Taking the results in Figure 13 into account, these findings could indicate that the higher word count, the higher number of emotional frames and subsequently a decreasing benchmark score.

Figure 14 – Average benchmark score per article based on dominant emotional frame

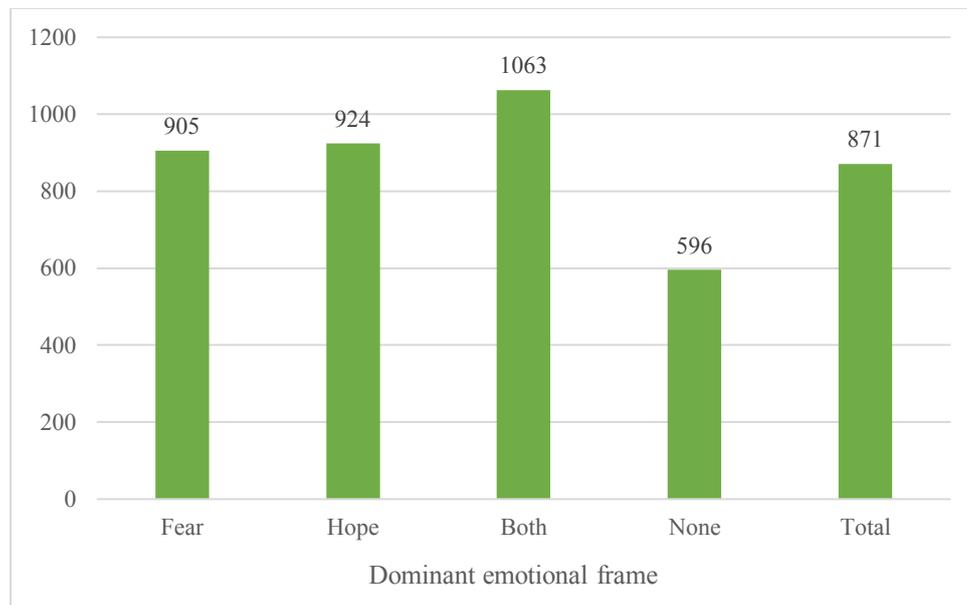


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The average benchmark score is highest when the dominant frame of an article is non-emotional (35,19). When the dominant frame is emotional in any way, the average benchmark score is lower than the total average. It is slightly higher when both hope and fear is equally dominant (20,00), and hope has in comparison to fear a lower average benchmark score (14,24 vs 18,02) [Figure 14].

Figure 15 – Average word count per dominant frame



Since the benchmark score decreases as the word count increases [Figure 15], Figure 17 shows us that articles with no emotional dominant frame on average have the lowest word count compared to articles with an emotional dominant frame. Among these, articles with *both* hope and fear as dominant frame have the highest word count.

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Table 4 – t-Test assuming unequal variances of benchmark score for articles with emotional dominant frame and not emotional dominant frame

	<i>Dominant frame emotional</i>	<i>Not emotional</i>
Mean	17,65217391	35,1904762
Variance	380,5778095	827,816492
Observations	184	42
Pooled Variance	462,4384613	
Hypothesized Mean Difference	0	
df	224	
t Stat	-4,769138275	
P(T<=t) one-tail	1,66644E-06	
t Critical one-tail	1,65168456	
P(T<=t) two-tail	3,33288E-06	
t Critical two-tail	1,970610961	

Table 4 shows that the t-score is $-4,769$ and the two-tailed p-value is $p < 0.001$ which means that the result is statistically significant at $p < 0.05$. Thus, we can reject the null hypothesis at a 5% significance level and conclude that, in the population of the news publisher’s Cop26 articles, there is a difference in benchmark score mean between articles with a dominant emotional frame and articles with a non-emotional dominant frame. The difference in mean, i.e., the average benchmark score in these two samples, (17,65 vs 35,19) gives us the indication that articles where the dominant frame is not emotional get a higher average benchmark score than articles with an emotional dominant frame.

Table 5 – t-Test assuming unequal variances of benchmark score for articles with fear as dominant frame and hope as dominant frame

	<i>Fear dominant</i>	<i>Hope dominant</i>
Mean	18,01639344	14,24242424
Variance	414,7931175	218,6893939
Observations	122	33
Hypothesized Mean Difference	0	
df	68	
t Stat	1,191832214	
P(T<=t) one-tail	0,118735002	
t Critical one-tail	1,667572281	
P(T<=t) two-tail	0,237470005	
t Critical two-tail	1,995468931	

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In table 5, the t-score is 0,99 and the two-tailed p-value is $p > 0.05$, the result is therefore not statistically significant, and we fail to reject the hypothesized mean difference (null hypothesis). Subsequently, there is no statistically significant difference in means of benchmark score between articles with fear as dominant frame and hope as the dominant frame.

Table 6 – t-Test assuming unequal variances of benchmark score for articles with emotional preamble and not emotional preamble

	<i>Emotional preamble</i>	<i>Not emotional preamble</i>
Mean	16,64761905	24,61157025
Variance	348,4227106	619,1895317
Observations	105	121
Hypothesized Mean Difference	0	
df	220	
t Stat	-2,74202308	
P(T<=t) one-tail	0,003304395	
t Critical one-tail	1,651809286	
P(T<=t) two-tail	0,006608791	
t Critical two-tail	1,970805592	

This output demonstrates a t-score of $-2,74$, and a two-tailed p-value of $p < 0.05$ [Table 6]. This means that we can reject the null hypothesis at a 5% significance level and conclude that there is a difference in benchmark score means between articles with emotional preamble and articles with non-emotional preamble in the population of the news publisher’s Cop26 articles. The mean difference (16,65 vs 24,61) indicates that the benchmark score is higher when articles preamble is non-emotionally framed compared to when it is emotionally framed.

Table 7 – Multiple Regression with benchmark score as independent variable

<i>Regression Statistics</i>	
Multiple R	0,354792188
R Square	0,125877496
Adjusted R Square	0,118037833
Standard Error	21,14874455
Observations	226

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	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	39,30171427	3,55181028	11,06526283	5,7084E-23
dominant_frame	-15,21132538	3,702693494	-4,108178384	5,6017E-05
word_count	-0,006895571	0,002351791	-2,932050794	0,00371827
	<i>Lower 95%</i>	<i>Upper 95%</i>		
Intercept	32,30230752	46,30112103		
dominant_frame	-22,50807149	-7,914579262		
word_count	-0,01153015	-0,002260993		

The regression output in Table 7 tells us that the association between the dummy variable *dominant_frame* (non-emotional=0; emotional=1) and benchmark score is statistically significant at a 5% significance level ($p < 0.005$) when we control for the continuous variable *word_count* (t-score $-4,11$). Although the adjusted R score, i.e., the extent to which the model can explain the association, is relatively low (11,8%), we can reject the null hypothesis. We can conclude that, in the population of the news publisher’s Cop26 articles, there is a negative association between an article’s dominant frame and its benchmark score, where articles with non-emotional dominant frame has a higher benchmark score than articles with an emotional dominant frame, regardless of word count.

DISCUSSION

This section provides a more in-depth engagement with the results to answer the research questions and test the hypotheses in relation to previous research. Following that, the paper’s limitations are discussed.

Interpretation: Descriptive statistics of emotional frames in Cop26 articles

First, the results of this content analysis demonstrate an understanding of the extent to which emotional frames of fear and hope appear in the global news publisher’s Cop26 coverage (RQ1). While it was most common with headlines without an emotional frame, a vast majority of the articles contained both fear- and hope framed independent elements, and only a few had no emotional frames at all. This indicates that emotions-as-frames were commonly

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apparent in the news publisher’s coverage of Cop26. Although we must be careful about drawing conclusions to *why* this is the case, we can point to previous research to make sense of the findings. According to Nisbet (2009), framing is in general used as a journalistic tool to simplify the complexity of events and give it value and purpose for the audience. And emotional framing, is according to Nabi et al. (2018), used to increase the accessibility and preference of climate change information. Although the number of fear frames heavily extended hope frames, the large share of articles with both hope and fear shows that constructive journalism is highly evident in the material, i.e., that positive emotions, progress, or solutions balance the common negativity which climate change coverage tend to be characterized by (Hermans & Gyldensted, 2019; McIntyre & Gyldensted, 2017). According to several scholars, climate change information is more likely to persuade and motivate the audience for behavioral change when strong fear appeals is accompanied by hope appeals such as efficacy or solutions (eg. Moser, 2007; Maibach *et al.*, 2008). This study confirms this pattern.

Overall, the descriptive statistics in section 5.1 support the first two hypothesis (H1 & H2), that fear-framing appear more frequently than hope-framing in the articles and the same regarding their headline frames. This negative and fear-heavy tendency in the news publisher’s Cop26 articles align with previous research on climate change coverage (Feldman & Hart, 2021) and the idea of Nisbet (2019:24), that

[...] journalists tend to dramatize [UN summits’] significance by emphasizing the calamitous future climate change scenarios, framing a new scientific report’s findings in terms of disastrous and fear-inducing risks, rather than emphasizing in the face of those risks opportunities to protect health or sustainably grow economies’

This could be understood as a result of traditional news values, *negativity and conflict*, that are guiding journalistic practices and decisions on newsworthiness (Galtung & Ruge, 1965; Wahl-Jorgensen, 2019). Or as general framing theorists suggest; that fear-framing is more persuasive and motivating for creating change in behavior (e.g., Witte & Allen, 2000). However, I do believe the former can explain this pattern better than the latter, because, as highlighted in the

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conceptual framework (section 3.0), one can assume that newsrooms not necessarily wish to generate behavioral change with their Cop26 coverage, rather to provide accessible and adequate information for an audience as large as possible (Nabi, 2003).

Moreover, the results also show *how* these emotional frames appear in the material. Since Cop26 was about influential global actors’ commitments to combat climate change, it is interesting to conclude that the proportion of commitment frames (elements highlighting whether world leaders showed or did not show power of action and made or failed to make important promises), amongst hope-frames were slightly higher than the proportion of commitments amid fear-frames. One explanation to this could be that the narrative of climate change easily becomes fear framed due to the urgency of global warming, which not necessarily is linked to powerful actors failed commitments on Cop26. On the contrary, the hopeful notion surrounding Cop26 was to a larger extent about the proposed solutions, and possible agreements during the summit, which is stronger associated with the participating actors’ commitments.

Furthermore, regarding genres, the results show that there is no substantial difference in the ratio between genres and the average number of hope-/fear-frames, which implies that the genre has no clear influence on the number of emotional frames. However, for Q&As, the average number of fear-frames per article for every 1000 words was the lowest, and for hope-frames, the average was comparatively low too. If part of the reason to why these Cop26 articles contain emotional frames is to simplify complex events (Nisbet, 2009) or increase accessibility (Nabi, 2003), the Q&As, which one can argue aim to make sense of complicated climate change issues, would show a contradictory pattern. Instead, it is possible to assume that Q&A articles are more emotionally neutral because their purpose is not to encourage climate mitigation support or action (Nabi, 2003). In addition, another reason could be that Q&As align with one of the key roles of journalism; to inform and educate the electorate (e.g., Schudson, 2000; Peters & Witschge, 2015), which according to Pantti (2010) is not compatible with emotional appealing.

Another relevant *how*-related variable is time. The average distribution of emotional frames per article was highest in the second half of the days examined during and around Cop26.

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This could, according to previous research, be because the news publisher wanted to boost the interest of articles about Cop26 outcomes (Nabi, 2003), or had to simplify and explain the complexity of the final agreements (Nisbet, 2009). Moreover, the negative association between average number of fear-frames per article and number of articles published a day could indicate an avoidance of the *boomerang effect*, that too extensive negative or pessimistic framing can make people skeptical and doubtful about climate change information (Asayama et al., 2019). Thus, the fact that the news publisher seems to have avoided to publish too many articles with high numbers of fear-frames can be seen as an attempt to minimize the risk that people would dismiss the information about climate change’s damaging effects (Feinberg & Willer, 2011).

The only three days where the ratio between hope-frames and fear-frames were more even are interesting to look closer at. On November 2nd several successful commitments were made such as the Glasgow Breakthrough Agenda. The 6th of November, the summit’s first week was summarized, whereas the successful promises were highlighted. On November 14th, one day after Cop26 finished, the coverage consisted of concluding remarks about the summit’s achievements, highlighting successful elements during Cop26. These results align with my earlier point that the hopeful notion around Cop26 was about the successful commitments and agreements.

Interpretation: Page views in relation to headline frames

To answer RQ2, i.e., if there is a relationship between emotional frames in Cop26 articles and audience attention and if so, how, I first conducted an analysis of the headline frame and page views. This, since the headline most often is the only written part of an article that determines the number of clicks on the article. The t-test (Table 5.2.3) did not show a statistically significant result of the mean difference in page views, i.e., the difference in average page views, between emotionally and non-emotionally framed headlines. However, the descriptive statistics do provide interesting results – especially since they disregard number of articles published a day to influence the daily average page views. On average, emotionally framed headlines had 28,13% more page views than non-emotional headlines, thus supporting the third hypothesis (H3). This indicates that emotional frames of the first encountered information, the headline,

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can help create an engagement and interest of climate change articles (Wahl-Jorgensen, 2019; Roeser, 2012). Moreover, the findings suggest that climate change news headlines that through framing take use of readers *mental shortcuts* generate a greater interest (Nisbet, 2009), which in turn can contribute to both individual and collective action (Appelgren & Jönsson, 2020; Feldman & Hart, 2021).

Nevertheless, amongst the emotionally framed headlines, the findings showed the opposite to what was anticipated in the fourth hypothesis, since hope-framed headlines on average gained more page views than fear-framed headlines. Hence, hopeful headlines that point to optimistic future outcomes seems to better attract the interest of people at first, which is the opposite of what general theory argue; that fear-framing generate more audience attention (e.g., Pratto & John, 1991). But it is in line with Doherty & Webler (2016), who argue that it can boost people’s belief that collective efficacy can conquer climate change challenges.

Interpretation: Benchmark score in relation to dominant frame

To examine the two final hypotheses to RQ2, a benchmark score on audience average attention time per article was analysed in relation to the articles’ dominant frame. To remind ourselves, the benchmark score (0–100) discloses the average audience attention time against the aggregated attention time of articles with similar word count from the year before. Word count is clearly influencing the benchmark score; the longer the article the lower the benchmark score, which indicates that audience news consumption of the news publisher’s Cop26 articles is incidental and brief (Boczkowski et al., 2018). The same pattern of decreasing benchmark score is shown as the number of hope/fear frames increases. Here, amongst articles with lower number of fear frames got a higher benchmark score than the equivalent of hope frames which supports the sixth hypothesis (H6) and general theory that suggests that negative framing gets more attention than positive framing (e.g., Pratto & John, 1991). Moreover, it can reflect that negative framing engage people more (Hallahan, 1999). However, articles where both hope and fear were dominant got a slightly higher average benchmark score than when fear or hope was dominant individually, indicating that constructive journalism, where both optimistic messages and pessimistic messages are present in the article, make news more engaging and thus gain better audience attention (Hermans & Gyldensted, 2019).

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However, the overall descriptive results demonstrate that when the dominant frame was non-emotional the benchmark score was considerable higher than when it was emotional (fear, hope or both). From the t-tests, we concluded that there is a statistically significant mean difference in benchmark score between non-emotional dominant frame and emotional dominant frame, and the same regarding preamble. Although articles with non-emotional dominant frames were comparatively shorter than articles with emotional dominant frames and could help explain this result, the same statistically significant conclusion remained ($p < 0.005$) when controlling for word count in the multiple regression analysis. Hence, the fifth hypothesis (H5), that articles with emotional dominant frames gained more audience attention than non-emotional dominant frames, was rejected.

According to previous research, emotions are driving audience engagement with news and can thus help journalists ‘re-connect’ with a distant and audience in an increasingly competitive digitalized media landscape (Beckett & Deuze, 2016; Roeser, 2012; Lecheler, 2020). Above, we concluded that emotionally framed headlines had higher page views than non-emotional headlines which indicates that emotional frames increase the news publisher’s audience attention to click on Cop26 articles. However, when analyzing the dominant frame of the whole article, the opposite result appeared. The audience spend more time reading the Cop26 articles when the articles were more factual and without an emotional dominant frame. Thus, contradicting the argument of Meijer (2013) that audiences request emotionally engaging news content. Subsequently, emotions to increase engagement and attention would hence only be true for headlines amongst the news publisher’s readers. This somewhat reflects the argument of Boczkowski et al. (2018), that today’s digitalized media landscape and information overload influence the way people consume news (i.e., emotionally dominant Cop26 articles); incidental, brief, and fragmented. Moreover, this result can reflect that the content of dominantly fear-framed articles that attract the audience less, is mentally overwhelming and generate a feeling of helplessness (e.g., Asayama *et al.*, 2019).

To sum up, the audience can get interested by a hope-framed headline and click on those articles, but might lack the time, engagement or understanding to continue reading articles that are dominantly emotionally framed. How can this be understood? As discussed earlier, if

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emotions-as-frames are used to boost the articles accessibility for the readers and to make them more understandable (Nisbet, 2009), one explanation could be that the pre-understanding of climate change news, and hence the accessibility of Cop26 content, is relatively high among the news publisher’s readers. This would further be in line with Graber (2001) who suggests that people that do not understand certain news tend to pay less attention to that news, and hence the other way around. If this is the case, the complexity of climate change summits would not be a barrier for news publisher’s readers. On the contrary, one could argue that readers would turn to the more emotionally neutral and factual articles, that explicitly clarify the complexity in an objective way, if they seek to increase their understanding of climate change.

Limitations

Although noteworthy conclusions have been made above, one must be aware of the limitations to this study. Due to limited time and resources, the study was unable to control for all factors that could help explain the results. For instance, we cannot rule out that the impact of the device used by the audience, when during the day people consume the news, nor through which channel they encounter the article. Moreover, in the analysis of audience attention in relation to headline frame and dominant frame, images or the article’s location on the website might also influence page views and benchmark score. All of these factors could be matters for future research.

Furthermore, in the literature review, I discussed the challenges for climate change news to gain audience attention because of, for instance, its lack of compatibility with existing news values such as closeness in time and place or its complexity (Revkin, 2007). But the audience attention data, i.e., page views or benchmark-score, cannot tell us whether the global news publisher’s coverage on Cop26 succeed in combating these challenges, nor if and how this has changed over time. Nevertheless, we cannot make any comparisons about Cop26 articles audience data in relation to other news topics such as entertainment, politics, or sports.

CONCLUSION

The aim of this research was to examine how and to what extent emotional frames of hope and fear appeared in a significant global news publisher’s coverage on Cop26, and to determine whether and how there is a relationship between emotional frames and audience attention. Moreover, the paper’s ambition was to fill a gap in research by conducting a quantitative content analysis using unique inhouse audience data on peoples’ news consumption in natural settings, not experiments, which several scholars have called for (Lecheler, 2020; Feldman & Hart, 2021).

The descriptive results showed that fear-framed headlines and elements appeared more frequently than the equivalent of hope-frames, opposed to what the global news publisher stated prior the summit; ‘Importantly, we believe this is a moment for hope, not fear [...]’. This result aligns with what previous research suggests - that negativity is emphasized in climate change news in general (Feldman & Hart, 2021), and amongst UN Summit coverage in particular (Nisbet, 2019). However, a vast majority of the Cop26 articles contained both hope- and fear-framed independent elements, which indicates that constructive journalism characterized the material; and hence proved the news publisher’s adherence to the journalistic practice to balance the common negativity with elements of positive, hopeful frames that highlights solutions or progress of an issue (Hermans & Gyldensted, 2019). The *how*-related variables demonstrated that hope-frames accounted for a larger share of the sub-variable commitments than fear-frames which reflects the nature of Cop26 – around which the optimism was about possible agreements and pledges. The fact that the number of emotional frames in Cop26 articles increased during the second half of the days examined could tell us that the final negotiations and agreements were complex and had to be simplified (Nisbet, 2009).

The findings from the analyses on audience attention in relation to emotional frames were somewhat unexpected in regard to the stated hypotheses. While the result from the test on headlines and page views were not statistically significant, the descriptive statistics demonstrated that emotionally framed headlines motivated clicks since they on average got more page views than non-emotionally framed headlines, for which the page views of hope-

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frames was higher than amid fear-frames. Conversely, the opposite was shown regarding the benchmark score on attention time. On this complex subject about climate change negotiations, and the characteristics of this declared to be exceptionally urgent event for the future of this planet, the global news publisher’s particular audience paid more attention to dominantly non-emotionally framed Cop26 articles. We have to be careful in drawing wide conclusions about these results, but previous research can guide our understanding to why this pattern appeared. Boczkowski et al. (2018) among others explain news consumption to be brief and fragmented in today’s digitalized media landscape where anyone anywhere can produce and consume, creating an information overload for the audience. This could be one explanation to that emotionally framed headlines, particularly hope-framed headlines, might catch an initial interest of the news publisher’s audience. But when the article continues to be dominantly emotional, their engagement decreases, and they stop reading earlier than when the article is non-emotional. Another explanation to this finding could be that the dominantly fear-framed articles content can be mentally overwhelming and create a feeling of helplessness in the audience (e.g., Asayama *et al.*, 2019).

Instead, the audience spend longer time reading the more emotionally neutral articles, despite the length of the piece. In a way, this reflects a false binary amongst the news publisher’s audience, and contradicts scholars stating that climate change news is too scientifically complex for readers to pay attention to (Revkin, 2007). As stated earlier, Nisbet (2009) suggests emotional frames to increase the accessibility of climate change news that are complex and difficult to understand. Thus, on the one hand, these findings could reveal an already high understanding of climate change news amongst the news publisher’s readers, because if you comprehend news content, you tend to pay more attention to it (Graber, 2001). On the other hand, this result could imply that the more emotionally neutral and factual articles, that openly clarifies the complexity, attracts readers that seeks to increase their understanding of climate change.

For further investigation, it would be interesting to use more advanced statistical data and include other variables such as device used, or the effect of emotional images. Comparisons between different news outlets and various Cops would also generate a more comprehensive

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understanding of how emotional frames impact audience attention to climate change news. Moreover, this study call for future research to include social media data such as shares of the examined articles due to today’s increasingly interactive media system. Altogether, these additions would help us better understand that if emotions are running high, when and how would they catch the readers’ eye?

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APPENDIX 1: CODEBOOK

First Section: Identification Variables

1. What is the ID-number of the article? [1–238]
2. What is the URL? [open]
3. What is the web headline of the article? [open]
4. Date of publication [year/month/day]
5. Who is the author(s) of the article? [more than one possible – entered in different cells] (anonymous codes for each author)

1–74, 99, 100

6. What kind of article/genre is it?
 1. News item
 2. Editorial/opinion
 3. Feature article
 4. Letters
 5. Cop26 Summaries

6. Q&A
7. Other

Second Section: Emotional Framing

For the following variables, look for emotional frames of independent elements in the articles. An independent element is understood as textual information that stands alone and do not directly relate to or rely on other emotionally framed content in the article. For instance, if the beginning and the end of the same quote or reasoning are emotionally framed, they are part of the same independent element and should be counted as one, not two.

Category variable

Description and indicators

Fear frame

The article contains an element with a negative and fear-inducing frame, emphasizing an alarming threat, or harmful impacts of the climate crisis, pessimistic future opportunities *because of action or inaction*.

Indicators: damaging natural disasters; harmfully affected societies; disastrous levels of global heating; going to be too late; severe urgency; disastrous impacts; inundation of many low-lying areas; suffering health damage; climate breakdown; irreversible changes; climate emergency; greater destruction; warnings; catastrophe; global emergency; climate anxiety; impossible;

Commitments subgroup indicators: fail in commitments; unease about lack of progress; risk of failure; insufficient action;

Hope frame

The article contains an element with a positive and hope-inducing frame, emphasizing efficacy of solutions to climate change, optimistic future possibilities or progress *because of action or inaction*.

Indicators: benefits for the climate or nature; opportunity; unique opportunity to protect; safer, greener, fairer future; still a chance; technological potential; achievable goals; key to solutions; positive momentum; effective protection of the environment; good signs;

Commitments subgroup indicators: successful commitments; important pledges; remarkable achievements; potential success; ambitious plans; improvements;

Coding principles

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- Just mentioning the words ‘hope’ or ‘fear’ should not be counted as a frame.
- Consider that climate change per se is a negative issue, and that facts presented on a negative matter and should not be counted as a fear-frame. For instance, just stating “the arctic ices are melting” or “sea levels are rising” should not be counted as an element with a fear-frame, the element must be part of a context that includes a hopeful or fearful frame about its reason(s) or consequence(s).
- The frame of hope or fear can appear in contexts that are not climate change specific but about climate change policies, agreements, diplomacy, technological suggestions etc. These should also be considered and counted according to the guidelines above.
- If one independent element contains both hope and fear framing, it should be counted as one hope frame and one fear frame.
- Generic texts in the beginning or end of an article will not be coded.
- Urges and statements on what is needed to combat climate change should not be counted, only if it is part of a reasoning on threatful impacts or efficacy solutions.

7. How is the headline framed?

1. Fear
2. Hope
3. Both
4. None of the above

8. How is the preamble framed?

1. Fear
2. Hope
3. Both
4. None of the above

9. How many fear-framed independent elements appear in the article? [open]

- a) How many of these concern ‘lack of commitments’? [open]

10. How many hope-framed independent elements appear in the article? [open]

- a) How many of these concern ‘succeeded commitments’? [open]

11. Which is the dominant frame of the whole article?

1. Fear
2. Hope
3. Both
4. None of the above

Third Section: Audience Attention data

The coding for the following variables is provided by the news publisher and therefore already specified in the spread sheet.

12. How long is the article? [word count]

13. What are the page views of this article? [number of page views]

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14. What is the benchmark score of time spent reading the article based on word count? [1–100]

15. What are the key words in the article? [open]

APPENDIX 2: ICR-results

Variable	7	8	9	9a	10	10a	11	12	13
ICR	1.0	0.87	0.86	0.87	0.86	0.87	0.87	0.87	1.0

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