From "Climate Change" to "Climate Crisis"? Analyzing Changes in Global News Nomenclature from 1996 to 2021¹

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Introduction

Climate change – the anthropogenic warming of the earth, corresponding changes in precipitation, seasonal and other weather patterns as well as the subsequent natural and social changes caused by it – has received more public, political, and societal attention in recent years. This is visible in a number of high-profile political events on climate change (Wolling & Arlt 2017), considerable global mobilization around the issue by the "Fridays for Future" movement (Wahlström et al. 2019), news media coverage on the topic (Hase et al. 2021; Schmidt et al. 2013), intense communication on social media (Yu et al. 2021), as well as cultural and artistic events devoted to climate change (Demos et al. 2021).

This increase in public attention mirrors an increased urgency of climatic changes as diagnosed by climate scientists. Recent Intergovernmental Panel on Climate Change (IPCC) reports demonstrate that global warming is ongoing, that emissions of greenhouse gases have not been sufficiently or effectively reduced, and that, globally, humankind is not on track to meet the ambitious goals set out in the United Nations Framework Convention on Climate Change (UNFCCC) Paris Accord in 2015 (UNFCCC 2015). In many areas, the realization of this urgency has led to calls for action directed towards politicians, citizens – and news media. News media portrayals of climate change have been scrutinized and critically questioned. Correspondingly, changes to better underline the urgency of climate change have been proposed (for an overview Schäfer & Painter 2020). For example. the Oxford Climate Journalism Network (https://reutersinstitute.politics.ox.ac.uk/oxford-climate-journalism-network) aims to strengthen journalistic infrastructures as well as coverage about the issue in general. The "Covering Climate Now" (www.coveringclimatenow.org) initiative, started in 2019, tried to motivate news media around the world to increase their coverage of climate change, with 400 outlets around the world joining the movement. Some outlets, including the BBC and the news agency Associated Press, have pledged to "move away from giving space to

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some, and in several cases all, types of climate skeptics or to change the nomenclature to describe them" (Schäfer & Painter 2020: 13). Other initiatives such as Climate Outreach's "Climate Visuals" project have tried to improve the visualization of climate change impacts or of climate-related phenomena such as heat waves (https://climatevisuals.org).

In addition, the language and the wording used to describe the issue in news media coverage has been called into question. After all, language used to describe climate change matters for public perception of the issue – a core insight of the extensive work of Kjersti Fløttum on the issue, whom we would like to honor and warmly congratulate with this publication. While many are "used to thinking of language as a useful device for reflecting and expressing facts and observations[, it] also influences attitudes and behaviour and can produce new realities. Language thus constitutes a vital component of the sociocultural prerequisites underlying societal development and is indispensable for interaction and participation" (Fløttum & Schäfer 2022: 5). This also and explicitly extends to climate change (Fløttum 2017; Fløttum & Gjerstad 2013; Fløttum & Gjerstad 2017). Here, news media in particular play an important role in making issues salient in the minds of decisionmakers (X. Liu et al. 2011) and the broader public (Sampei & Aoyagi-Usui 2009), in framing them (Schäfer & O'Neill 2017), and in indicating their seriousness and urgency (McHugh et al. 2021). Therefore, politicians like US-Vice-President Kamala Harris, activists like Greta Thunberg, NGOs like "Public Citizen" as well as other stakeholders and journalists have argued that journalists using seemingly more neutral terms like "climate change" or "global warming" may fail to convey the urgency of the issue, and that they may be ineffective in leading decision makers and citizens to appropriate action. Accordingly, some have called for journalists to use more urgent terms, like "climate crisis", "climate catastrophe", or "global heating".

To date, it is unclear to what extent news media coverage around the world has changed in that respect, as few studies have explored this topic (for a recent exception, see M. Liu & Huang 2022). We thus present a study that contributes to closing this gap: a large-scale, dictionary-based automated content analysis of labels used to report on climate change, here for news coverage in 16 media outlets from eight countries over a 26-year time span (1996–2021, N = 89,887). By focusing on this observation period, we cover the initial increase of media attention for climate change in the mid-2000s as well as high-profile media events like the Conferences of the Parties (COP) to the UNFCCC in Copenhagen (2009) and Paris (2015) and the Fridays for Future mobilization further underlining the issue's importance from 2019 onwards. By using this data, we assess to what extent more urgent, alarming labels for climate change have been used by news media, how the use of these labels has developed over time, and its spread across countries from the Global North and South.

Changing the News Nomenclature: The Guardian and Beyond?

Changes in the nomenclature of media reporting about climate change have been taken up, and even advocated for, by selected, high-profile international news media outlets. The British "Guardian" is arguably the prime example in this respect: To report on climate change more adequately, the newspaper – along with its Sunday edition "The Observer" – adjusted its style guide for editors. "We want to ensure that we are being scientifically

precise" said Guardian's editor-in-chief Katharine Viner at the time, "while also communicating clearly with readers on this very important issue. The phrase 'climate change', for example, sounds rather passive and gentle when what scientists are talking about is a catastrophe for humanity." (Carrington 2019) This included a variety of changes related to different aspects of reporting. It also, and specifically, highlights the use of a certain terminology when covering climate change. Since May 2019, the Guardian uses the more urgent and more negatively connotated labels "climate crisis" and "climate emergency" instead of climate change (Carrington 2019). Changes were also made with respect to other terms connected to climate change, mostly to simplify scientific terms for a broader audience or to use more concrete language. This includes referring to "biodiversity" as "wildlife" or describing "global warming" as "global heating". The Guardian now also calls "climate sceptics" "climate science deniers" or "climate deniers" to underline their divergence from scientific consensus.

These changes in and for editorial guidelines are part of a larger effort by the Guardian – a founding partner of the "Covering Climate Now" initiative which aims to intensify coverage of the issue – to report on climate change and scientific evidence more adequately. And these changes made by the Guardian led to an intense debate by the journalistic community about the need, appropriateness, and pitfalls of using especially more urgent labels when covering climate change.

On the one hand, some organizations and news outlets changed their guidelines as well. The US-Spanish newspaper Telemundo, the Spanish Agencia EFE, the Indian Hindustan Times, the Polish Gazeta Wyborcza, and the Czech Denik Referendum, among others, switched to more urgent terms such as "*climate crisis*" or "*climate emergency*". Other outlets stated their support for these changes without formally changing their editorial guidelines.

On the other hand, scholars and climate journalists also voiced concerns about "advocacy journalism" (Schäfer & Painter 2020) or "climate emergency journalism" (Nisbet 2019) in general, and about the new nomenclature in particular. German climate journalist Nick Reimer, for example, argues that crises are short term and episodic by definition, and that describing climate change as a "crisis" may therefore not be adequate for the phenomenon of long-term climate change (Reimer 2019). Scholars have emphasized that "a language of crisis and catastrophe and a doom-and-gloom perspective are often used" in climate change coverage and that "such language can successfully direct attention to the issue of climate change", but cautioned that it "can have adverse effects on considerable parts of the population, lowering their perceptions of self-efficacy and hindering climate action" (Fløttum & Schäfer 2022: 53). Communication scholar Matthew C. Nisbet and environmental writer Andrew Revkin argued that such "climate emergency journalism" focuses too unilaterally on worst-case scenarios presented by climate science without referring to the probability of such dramatic scenarios occurring (Nisbet 2019). This, they argue, would lead to a focus on "fear-inducing risks, rather than emphasizing [...] opportunities to protect health or sustainably grow economies" (Nisbet 2019: 24). According to Brüggemann (2017), this "simplifies science and turns context-dependent and preliminary findings into established facts" (p. 65). These concerns mirror broader skepticism about the appropriateness and effectiveness of fear-inducing cues in climate change communication, as these may increase attention to but fail to boost citizens' engagement with the issue (O'Neill & Nicholson-Cole 2009; Reser & Bradley 2017).

Fittingly, studies come to very different conclusions regarding the effectiveness of different labels on citizens' perceptions of and behavior towards climate change, often depending on partisan affiliation (Benjamin et al. 2017; Feldman & Hart 2021; Hung & Bayrak 2020; Jaskulsky & Besel 2013; Schuldt et al. 2011; Schuldt et al. 2017; Soutter & Mõttus 2020).

Prior Scholarship on Labels for Climate Change in the News

Scholarship on climate change communication (Comfort & Park 2018), including scholarship on media representations of climate change (Schäfer & Schlichting 2014) and linguistic scholarship on the language of climate change (Fløttum 2016, 2017), has diversified in recent years and is considerable by now. However, only few studies have analyzed the labeling of climate change in news reporting. More importantly, none of these studies have analyzed which labels are used in coverage across countries and over longer periods of time, especially by covering the changes proposed and executed by the "Guardian" and other outlets in recent years.

Scholarship on these questions often draws on the linguistic work of Brigitte Nerlich, Nelya Koteyko and colleagues in their studies on "carbon compounds" – i.e. on the "lexical combinations of at least two roots around 'carbon' as the lexical hub" (Koteyko et al. 2010: 26) such as "*carbon footprint*" or "*carbon neutral*". Nerlich and Koteyko (2009) introduced the concept of "carbon compounds" in an article focusing on news media debates around carbon offsetting. Drawing from a small but diverse sample of US news media articles and blog posts between the 1990s and 2008, the authors illustrated the evolving and often creative use of the term "climate indulgences". By doing so, Nerlich and Koteyko (2009) also highlighted how carbon compounds can be seen as "indicators of trends in human thinking and behaving towards climate change" (p. 352).

Following up, Koteyko and colleagues (2010) examined compounds in online discourses between 1990 and 2008. Across the variety of terms used in such debates, three phases of recurring carbon compounds were identified. While early-on, carbon compounds were tentatively used in a financial context (e.g., "*carbon budget*"), this changed to using more lifestyle-oriented compounds (e.g., "*carbon footprint*") in the early 2000s. Finally, in the mid-2000s, attitudinal compounds like "*carbon bigfoot*" became more prevalent (Koteyko et al. 2010). According to Koteyko and colleagues (2010), these "compounds can be seen as indicators for key junctures in a debate" (p. 48) and "serve as traditional framing devices" (p. 47) in climate change communication.

Later studies often referred to, and build upon, these seminal early works – including analyses of news media portrayals of climate change. They suggest, for example, that news media cover climate change by emphasizing conflicts around the issue (Fløttum & Schäfer 2022). News coverage was also found to rely on fear-inducing cues, for instance by conveying threats associated with climate change (Hart & Feldman 2014; Hase et al. 2020) including societal implications of climate change such as the outbreak of diseases or threats to habitable spaces (Hase et al. 2021).

Few studies within this strand of research have focused on the explicit use of varying labels in coverage. As an exception, a recent study by M. Liu and Huang (2022) analyzed differences in the labeling of climate change as "*climate change*" compared to "*global warming*" by the New York Times between 2000 and 2019. Findings indicate that

both terms are used similarly, with "*climate change*" being more politicized and "*global warming*" being used in a science-related way (M. Liu & Huang 2022). In the New York Times, impacts of "*climate change*" are also framed as more serious compared to "*global warming*" (M. Liu & Huang 2022). The authors also state that "*climate change*" is used increasingly, hinting at a gradual replacement of the term "*global warming*" (M. Liu & Huang 2022).

While M. Liu and Huang (2022) focus on neutral terms news media use to describe the phenomenon, more alarmistic news reporting has also been studied to some extent. Parks (2020) examines the characterization of climate change as a "*crisis*" in news media coverage around the 2001, 2007, and 2013 IPCC reports by analyzing articles of four major US news outlets before and after these focusing events. Results demonstrate that the connection of climate change and "*crisis*" in US news media is increasing over time (see similarly, Chow 2019). Except from 2007, characterizations of the issue as a "*crisis*" also increased after the IPCC reports (Parks 2020).

Overall, however, similar studies on the labeling of climate change in the news media are rare. They often focus on coverage in the 2000s, thus not including recent developments, and often solely include US coverage, thus not comparing developments across countries. In light of these pronounced gaps in scholarship, scholars including Kjersti Fløttum have called for studies on the use of different "climate change compounds" and labels of climate change across communication domains as well as by specifically focusing on news media coverage (Fløttum & Schäfer 2022: 49). Following these calls, we address three research questions with our study:

RQ1: Which labels do news media use for reporting on climate change and how important are more neutral vis-à-vis more urgent labels in coverage?

RQ2: How has journalistic use of these labels developed over time?

RQ3: What similarities and differences are discernible in news media coverage across countries?

Method

Data

To answer these questions, we conducted a secondary analysis of a pre-existing dataset of news media articles. It was based on a study (see Hase et al. 2021; Keller et al. 2020 for details) that analyzed global newspaper coverage focusing on climate change in eight countries from 1996 to 2021. The selection of countries was based on several factors: It was supposed to represent countries with varying degrees of vulnerability to climate change impacts according to the Climate Risk Index (Eckstein et al. 2021) and varying levels of responsibility for action under the Kyoto Protocol (UNFCCC 1997). To account for the global nature of the topic, we selected countries from the "Global North" and the "Global South". While reflecting upon debates over the accuracy of such terms and respective country classifications (Koch 2021; Nguyen & Tran 2019), we here interpreted Australia, Canada, New Zealand, the UK, and the US to represent the Global North and

India, Thailand, and South Africa to represent the Global South. For each country, we selected two leading national quality newspapers as research has shown that legacy news media amplify public attention to current issues (Langer & Gruber 2021). News outlets were chosen based on their domestic circulation, reputation, accessibility in databases and the question whether they appear in English. While the domestic status of the selected newspapers varies, they are all relevant quality news media in the respective countries.

The resulting sample includes the following countries and newspapers: Australia (*The Australian, Sydney Morning Herald*), Canada (*Globe & Mail, Toronto Star*), New Zealand (*NZ Herald, The Press*), the UK (*The Guardian, The Times*), and the US (*The New York Times, The Washington Post*) for the Global North; India (*Hindu, Times of India*), South Africa (*Sunday Times, The Star*), and Thailand (*Bangkok Post, The Nation*) for the Global South. The time-period of the analysis covers 26 years, starting with 1996, as most newspapers in our sample were available electronically from that point on. The entire time frame thus covers high-profile political events related to climate change (e.g., several COPs, the Paris Agreement), public mobilization (e.g., the emergence of the "Fridays for Future" or "Extinction Rebellion" movements), and efforts by news organizations to pursue a more sensitive language on climate matters, e.g., changes by the Guardian in 2019.

To restrict the sample to news articles primarily focusing on climate change, the underlying study retrieved articles from newspaper databases (e.g., Nexis Uni) that featured the following search terms at least twice: *climate change** OR *global warming** OR *greenhouse effect**. These search terms were previously validated (precision = .85, recall = .98, F1 = .91; see further Hase et al. 2021), resulting in a robust sample of climate-related news coverage that, however, did not explicitly search for articles containing "urgent" nomenclature. The described process resulted in a sample of 89,887 articles (see Table 1).

Country	Newspapers	Categorization	Articles (% of corpus)
Australia	The Australian Sydney Morning Herald	Global North	10,592 (11.78%) 7,567 (8.42%)
Canada	Globe & Mail Toronto Star	Global North	5,945 (6.61%) 7,073 (7.87%)
India	Hindu Times of India	Global South	5,566 (6.19%) 4,392 (4.89%)
New Zealand	NZ Herald	Global North	5,033 (5.6%)

Table 1. Corpus	(<i>N</i> = 89,887)
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	The Press		2,457 (2.73%)
South Africa	Sunday Times The Star	Global South	402 (0.45%) 1,357 (1.51%)
Thailand	Bangkok Post The Nation	Global South	1,690 (1.88%) 1,906 (2.12%)
UK	The Guardian The Times	Global North	12,798 (14.24%) 5,582 (6.21%)
USA	The New York Times The Washington Post	Global North	11,308 (12.58%) 6,219 (6.92%)

Operationalization & Analysis

To identify compounds used to label climate change (e.g., "climate catastrophe" or "global warming"), we combined a deductive and inductive approach. Deductively, we drew on existing studies – including both content analyses and experimental studies analyzing the prevalence or effects of such labels – to gather a list of common compounds used to describe the phenomenon (Asayama et al. 2019; Feldman & Hart 2018; Grundmann & Scott 2014; Höijer 2010; Hung & Bayrak 2020; Jaskulsky & Besel 2013; Nerlich & Jaspal 2012; O'Neill & Nicholson-Cole 2009; Schäfer & Schlichting 2014; Song et al. 2021). Based on these studies, we identified "climate change", "global warming", and "greenhouse effect" as more neutral labels as well as "climatic disruption", "climate catastrophe", "climate chaos", "climate crisis", "climate disaster", "climate emergency", and "global heating" as more urgent, alarming labels.

In addition, inductively, we relied on a keywords-in-context approach: We identified bigrams, that is, sequences of two words, with which climate change is commonly described. To do so, we collected unigrams appearing right before or after "*climate*", "*warming*", "*heating*", or "*greenhouse*" via an automated content analysis. After manually reading through all compounds appearing at least 100 times in the corpus (N = 409), we added "*climate warming*", "*climatic change*", "*greenhouse warming*", and "*warming climate*" as more neutral labels as well as "*climate breakdown*" and "*climate threat*" as more urgent labels. For these seven neutral and nine negative/urgent labels, we then identified their relative frequency in news media coverage – i.e., the percentage of articles using either one of these labels at least once.

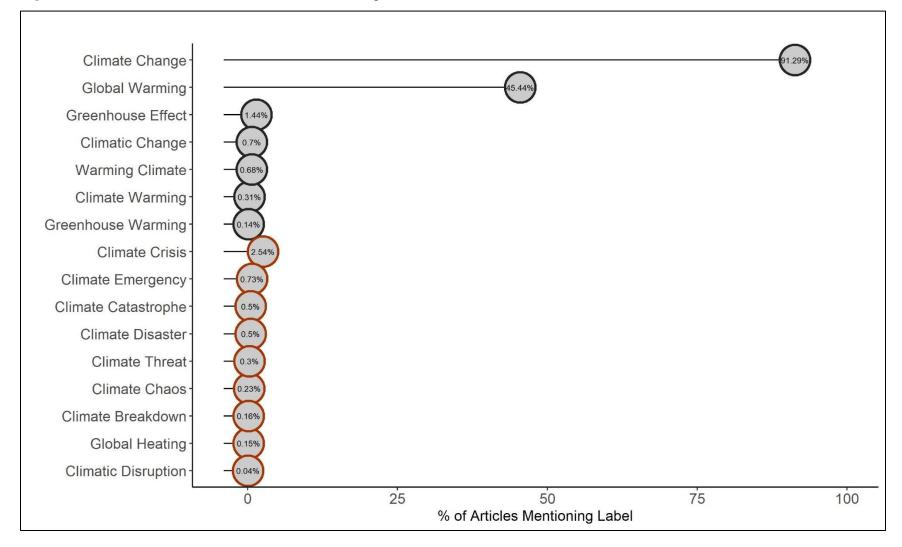
Results

Describing Neutral & Urgent Labels in Climate Change Coverage

Overall, neutral labels for climate change were found more often in news media coverage of climate change (see Figure 1). Related to RQ1, we found that neutral labels were used

in 99.67% of climate change-related articles – a clear finding even though it may be partly due to the fact that the sampling process of the underlying study relied on such neutral terms. Most articles referred to "climate change" (91.29%), nearly half describe the phenomenon as "global warming" (45.44%). Other neutral labels such as "greenhouse effect" (1.44%), "climatic change" (0.7%), "warming climate" (0.68%), "climate warming" (0.31%), or "greenhouse warming" (0.14%) were far less prevalent. In comparison to these neutral labels, more urgent, even alarming labels played a considerably smaller role: They were used in 4.52% of all articles. As Figure 1 indicates, journalists especially refer to climate change as the "climate catastrophe" (0.5%), or a "climate disaster" (0.5%). Other more urgent labels such as "climate threat" (0.3%), "climate chaos" (0.23%), "climate breakdown" (0.16%), "global heating" (0.15%), or "climatic chaos"

Figure 1. Prevalence of Labels in Global News Coverage



Use of Labels over Time

Regarding RQ2, we found considerable changes over time. Both the overall use of urgent labels as well as the choice of distinct labels within the broader categories of neutral and urgent labels shifted over time (see Figure 2 and 3). Related to the overall use of more alarming labels, around 2.47% of coverage used at least one urgent label for climate change before 2019. From 2019 onwards, the effect of changing editorial guidelines, however, became more visible: an increasing share of coverage mentioned at least one more alarming label in 2019 (12.47%), 2020 (14.64%), and 2021 (17.09%).

Moreover, the choice of distinct labels preferred to describe the phenomenon also changed between 1996 and 2021: when choosing neutral labels, news media increasingly used the term "*climate change*" over time: in 1996, 68.1% of all articles referred to the issue this way – compared to 98.56% in 2021. In contrast, outlets less often used other labels such as "global warming" (from 80.37% in 1996 to 37.79% in 2021), "greenhouse *effect*" (from 20.25% in 1996 to 0.49% in 2021), "*climatic change*" (from 4.91% in 1996 to 0.23% in 2021), or "*climate warming*" (from 1.23% in 1996 to 0.3% in 2021) over time. Overall, news media thus seem to have agreed on "*climate change*" as the preferred neutral label.

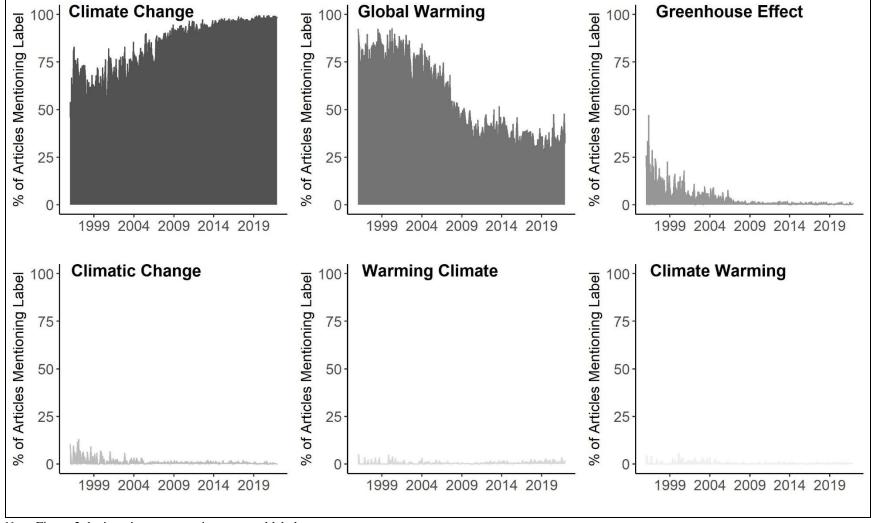
We also identified shifts over time concerning the prevalence of specific urgent labels: While few terms have consistently been used less ("*climatic disruption*", mostly used in the 1990s), new urgent labels emerged over time ("*climate crisis*" around 2004, "*climate chaos*" around 2005, "*climate breakdown*" around 2008, and "*climate emergency*" around 2019). While "*climate crisis*" seems to predominantly be used in underlining the threat of climate change, the prevalence of specific, more alarming labels still peaked at certain points in time. The term "*climate emergency*", for instance, was increasingly used by news media since 2019. This may be due to several thousand scientists around the world declaring climate change an climate emergency in public statements (Ripple et al. 2019), similar to actors such as Greta Thunberg applying pressure on governments to use this term (Colitt & Parkin 2020). This indicates that news media took up political and scientific framing of the phenomenon in coverage.

Use of Labels across Countries

Considering RQ3, we also compared the labelling of climate change in news outlets across countries. Figure 4 illustrates that, firstly, news media in all analyzed countries relied mostly on neutral labels. Both in the Global North and the Global South, journalists predominantly used neutral labels (99.92% in the Global North, 99.62% in the Global South), mainly "*climate change*" (91.62% in the Global North, 89.68% in the Global South). Similarly, countries from the Global North only slightly more often used negative labels (4.72% of coverage) compared to countries from the Global South (3.56%). We did, however, find stronger variation when inspecting countries far more often used the label "global warming", especially instead of "*climate change*". The US (59.67% of all articles mentioning "global warming") and Thailand (54.23%) in particular pushed this term – compared to for example Australia (36.05%) or New Zealand (37.17%). Similarly,

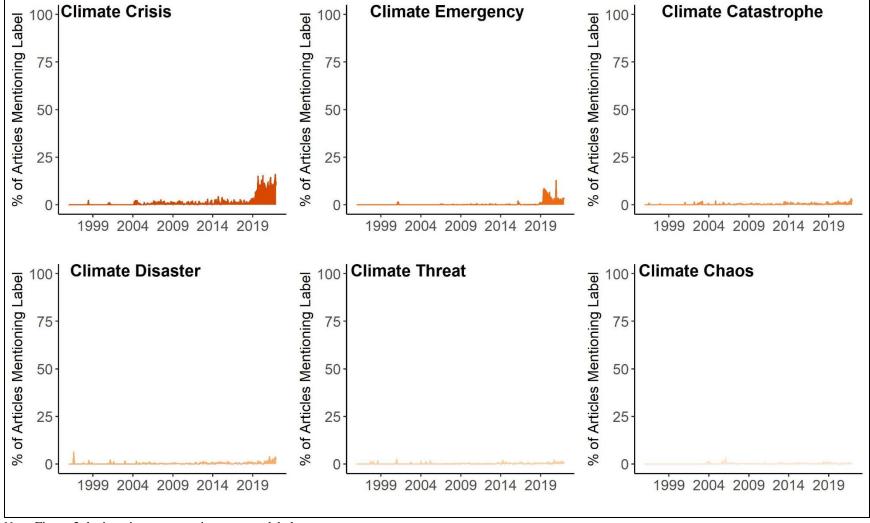
we found urgent or alarming terms to be more prevalent in coverage by the US (6.65% of all coverage) or Thailand (5.78%) than for instance India (2.45%) or Australia (2.59%). Much like shifts in labelling over time, differences across countries seem to emerge in line with national events as well as changing editorial guidelines within national outlets. An example here is New Zealand, which – compared to other countries – far more often used the label "*climate emergency*" in climate-change related coverage: While, for instance, UK news media (0.58%) as well as US news media (0.74%) relied less on the term, outlets in New Zealand often did (2.23%). This may be due to key focusing events: In New Zealand, several local governments may have pushed reliance on this term by declaring a global "climate emergency" in the late 2020s (Nissen & Cretney 2022).

Figure 2. Neutral Labels in Coverage over Time



Note. Figure 2 depicts six most prominent neutral labels.

Figure 3. Urgent Labels in Coverage over Time



Note. Figure 3 depicts six most prominent urgent labels.

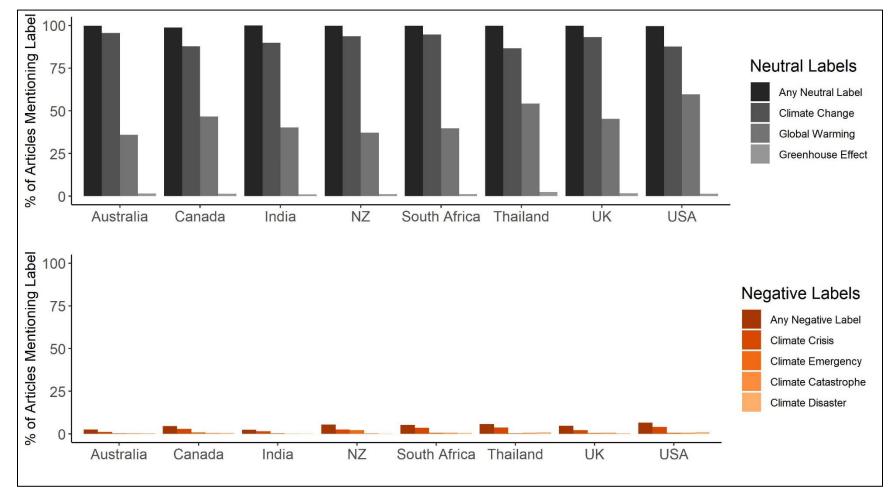


Figure 4. Distinct Neutral and Urgent Labels in Coverage across Countries

Note. Due to space constrains, Figure 4 depicts only selected neutral and urgent labels.

Conclusion

Climate change is a crucial contemporary challenge of humankind, and it matters how the news media portray the issue. This includes the nomenclature of coverage, i.e., how news reporting labels climate change, which can oscillate between more neutral and more urgent terms. In recent years, some news organizations, journalists, pundits, and scholars – with the British "Guardian" in a pioneering role – have called for a change towards a more urgent labelling: from more neutral terms like "*climate change*" or "*global warming*" to more urgent terms like "*climate crisis*", "*climate emergency*" or "*global heating*".

In this study, we analyzed if this change occurs, how pronounced it is, and in which countries news media have followed suit. Relying on a secondary analysis using automated content analysis of climate change coverage from 16 news outlets in eight countries between 1996 and 2021 (N = 89.887), we have shown that, firstly, neutral terms are still more common in news media to describe the phenomenon. The term "climate change" in particular is widely used, both in countries of the Global North and the Global South. In contrast, more urgent terminology appears far more rarely overall, with the term "climate crisis" being the most prominent one. Secondly, we find shifts over time – including "global warming" being replaced by "climate change" in coverage (see similarly, M. Liu & Huang 2022). Another pronounced change constitutes the shift towards more alarming labels since 2019 as the year in which the "Guardian" and other news outlets started to advocate for change in the journalistic nomenclature. The use of more urgent, pressing labels increased considerably, especially journalistic reliance on the terms "climate crisis" and "climate emergency" (in line with Chow 2019; Parks 2020). Thirdly, our results demonstrate similarities and differences across countries. While the general focus on more neutral terms and particularly "climate change" as a label holds true across countries, the prominence of more urgent terms is particularly pronounced in some countries (e.g., Thailand, the US) and less so in others (e.g., Australia, India).

Overall, our results still suggest that a shift from more neutral terms (e.g., "*climate change*") to more urgent ones (e.g., "*climate crisis*") is happening but not overly pronounced, at least for now. But the use of urgent terms has been increasing strongly since 2019 and the use of alarming terms clearly extends beyond the case of the UK and the "Guardian". It remains to be seen if this steep increase continues – a question future research might elaborate on. This is also true for other aspects our analysis could not touch upon in detail: Future studies should compare the coverage of specific, and more, news outlets while also tracking influences between these media more closely. They should also provide explanations for potential media and country differences to better understand differences across time and countries. And they should do so based on primary datasets that use a wider range of search terms than this study could.

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