Understanding broadsheet newspaper attention to climate change objective facts in South Africa

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Abstract
South Africa is one of the most vulnerable countries to the impacts and risks of climate change in Africa. News media outlets play an important role in communicating content relating to climate change. Newspaper attention devoted to climate change has been more prolific in the Global North. To understand the portrayal of climate change science in news media in South Africa, this study examined objective facts coverage in three leading broadsheet newspapers between 1996 and 2016. Overall, this study found that newspaper coverage of climate change was at the highest peak in 2011. The findings revealed that attention to objective facts (observed climate trends, climate change impacts, and climate change projections) was not significant over a 20-year period. We found that objective facts generally dominated coverage in 2006 and 2007. Our findings indicate that newspaper attention to objective facts significantly decreased over the years. We also found that climate politics was the most dominant topic in the news articles. This study concludes that there is a considerable disconnect between the print media and objectivity when reporting climate change news stories in South Africa.

1. Introduction

Global climate change is the most pressing problem faced by humanity in the 21st century. With increasing scientific evidence about drastic temperature changes (Hawkins et al 2017; Pfeiderer et al 2018, Hegerl et al 2019) and intensified extreme weather events (Bouwer 2019, Codjoe and Atiglo 2020, Lottering et al 2021), there is a greater consensus around the possible impacts on society. Numerous studies have indicated that extreme weather events are projected to increase globally (Davis-Reddy and Vincent 2017, Mann et al 2018, Ongoma et al 2018), from floods in Mozambique (Mavume et al 2021) and Australia (Bevacqua et al 2020), drought in Kenya (Ayugi et al 2020, Tan et al 2020) and South Africa (Davis-Reddy and Vincent 2017), to heatwaves in Europe (Russo et al 2014, García-León et al 2021). The projected changes will have adverse impacts on agriculture (Kotir 2011, Wiebe et al 2015, Stuch et al 2021), water resources (Davis-Reddy and Vincent 2017, Nhemachena et al 2020), human health (Linares et al 2020, Wright et al 2021), human settlement (Davis-Reddy and Vincent 2017) and biodiversity (Baker et al 2015, Sintayehu 2018). South Africa is one of the most vulnerable countries to climate change because of its exposure to a number of extreme weather events such as drought. Over the last decade, researchers have shed insights on how climate change is contributing to more droughts in the country (Botai et al 2020). In 2015 and 2019, South Africa experienced the worst drought events in recent history, which led to devastating effects on agriculture and water resources.

News media outlets play a vital role in disseminating information about climate change. The news media is particularly crucial because of its influence in shaping public opinion (Hase et al 2021). Despite an increase in literature on newspaper coverage of climate change across the globe (e.g., Schmidt et al 2015, Barkemeyer et al 2017, Bohr 2020, Shea et al 2020), there remain gaps in the understanding of broadsheet portrayal of observed climate trends, climate change impacts and climate change projections in South Africa. In addition, recent research has found that newspaper attention to climate change is prolific in the Global North (Painter and Gavin 2016, Hase et al 2021, McAllister et al 2021). Consequently, news media coverage of climate change is often
underrepresented in the Global South. This study aims to shed light on the news media portrayal of objective facts when reporting climate change, focusing on three leading broadsheet newspapers in South Africa (City Press, The Sunday Independent, Sunday Times) between 1996 and 2016. This research examined whether focusing events are a driving force for newspaper coverage of climate change science. This study contributes to a better understanding of news media attention to the scientific dimension of climate change in South Africa.

2. Climate change objective facts

2.1. Observed climate trends
In the first chapter of the second edition of Climate Risk and Vulnerability: A Handbook for Southern Africa, Davis-Reddy and Vincent (2017) provide a detailed account of southern Africa’s climate trends in the last 10 years. They point out that the region has been warming up in the past five decades due to increasing annual average temperatures. While previous studies have shown changes in annual rainfall over southern Africa, rainfall trends are highly variable. Recent studies reveal evidence of a significant decreasing rainfall trend in large parts of Zimbabwe and South Africa. Changes in rainfall are strongly linked to extreme weather events. For example, there is robust evidence to suggest that there is a relationship between a decreasing trend in rainfall and drought in the Eastern Cape of South Africa (Botai et al. 2020, Mahlalela et al. 2020).

2.2. Climate change impacts
The recent body of literature has provided a comprehensive account about severe impacts of global climate change in Southern Africa (Davis-Reddy and Vincent 2017). This is evident in the latest report by the Intergovernmental Panel on Climate Change (IPCC), particularly the findings from the second working group. There is undoubtedly evidence to highlight that most catastrophic environmental impacts are linked to climate change. In Africa, previous studies have reported that climate change is threatening food security. Recent studies also found that water resources and biodiversity are significantly impacted by climate change (Sintayehu 2018, Nhema 2020). It is also worth pointing out that climate change has already exacerbated human health problems globally.

2.3. Climate change projections
Scientists have constantly agreed that global temperatures will continue to increase in the next three decades. Based on recent scientific findings (i.e., IPCC reports), there is strong evidence to suggest that sea level rise will be strongly influenced by rising temperatures. It is well-documented that Africa will experience an increase in mean annual temperature. There is also evidence of projected changes in annual rainfall patterns. Previous studies have indicated that climate change will mostly be linked to more devastating extreme weather events in the future (Davis-Reddy and Vincent 2017).

3. Theoretical framework
This study is built upon the two complementary theoretical approaches: issue attention and agenda setting. To understand news media portrayal of the scientific dimension of climate change it is important to focus on the factors that trigger newsworthiness in the news media outlets. Issue-attention cycle conceptual model, coined by Downs (1972) has received considerable attention in news media coverage of climate change (Holt and Barkemeyer 2012, Schmidt et al. 2013, Schäfer et al. 2014, Saunders et al. 2018). Downs 1972 proposed three characteristics that make an issue more inclined to the issue-attention cycle. First, the issue is affecting few individuals in society. For instance, research shows that when an issue does not affect the majority of the population, less is talked about. Second, there are significant benefits to a majority of the population or a few powerful individuals. Third, the issue has no intrinsically exciting qualities that can sustain popular interest. The conceptual model has been used to explain how news coverage of climate change fluctuates over time. While climate change is acknowledged as a pressing concern globally, researchers have observed that increasing coverage of the phenomenon is often associated with focusing events such as the United Nations climate summits (Sampié and Aoyagi-Usui 2009, Schmidt et al. 2013, Hase et al. 2021). In a comparative analysis of newspapers in 27 countries across the globe, Schmidt et al. 2013 revealed that media attention ‘fluctuates and peaks around specific events in all countries’ (p.1241). Similarly, a cross-national study conducted by Barkemeyer et al 2017 indicated that issue attention in broadsheet newspapers across 41 countries was driven by focusing events, especially in the late 2000’s. Newspapers play a crucial role in setting agenda and communicating climate change information. For at least 50 years, agenda-setting theory has been frequently cited in previous studies on broadsheet newspaper coverage of climate change. Based on the early study by
McCombs and Shaw 1972, the theory argues that issue salience in news media drives how readers perceive a news story to be important (McCombs et al 2014).

This study draws on McCombs and Shaw 1972 to determine the salience of the scientific dimension of climate change in major broadsheet newspapers in South Africa. The authors asserted that media coverage of news determines the importance of an issue on public agenda. According to Rogers and Dearing 1988, there are three types of agenda-setting: the public agenda-setting, which shows how the public shapes the agenda; the media agenda-setting, which concentrates on the influence of media on the public; and policy or political agenda-setting, in which public agenda and media agenda are influencing decision making of policymakers. Broadsheet newspapers have a strong impact in terms of setting agenda for the public and policymakers (Carvalho and Burgess 2005). Broadsheet newspapers also serve as a primary source of information for other forms of news media such as television and radio (Barkemeyer et al 2017). Recent research found that although social media is threatening news media in agenda setting, Twitter’s agenda on climate change is still influenced by newspapers (Su and Borah 2019).

For the purpose of this study, it may be argued that the combination of the issue-attention cycle theory and agenda-setting theory can provide a strong foundation to better examine newspaper coverage of climate change science in South Africa. There is evidence that this research aligns with related studies that have been guided by the theoretical approaches of choice (Schmidt et al 2013, Barkemeyer et al 2017).

4. Methods

This study examined news articles published in three South African broadsheet newspapers (City Press, The Sunday Independent, and Sunday Times) for the period between 1996 and 2016. The analysis started in 1996 based on the emergence of climate change coverage in news media across the globe during the mid-1990’s. The first United Nations climate conference (COP1) was held in Berlin, Germany, in 1995. This event played an important role in shaping news media coverage of climate change.

Using the keywords ‘climate change’ and ‘global warming,’ news articles were retrieved from the Sabinet-SA Media database for newspaper outlets in South Africa. The database has a collection of almost 5 million searchable articles from more than 30 South African newspapers. It provides original articles that were published over the past 40 years (Botma 2019). The City Press, The Sunday Independent and the Sunday Times were selected because they have a national presence and proven record for reporting environmental issues. Between 1996 and 2016, these newspapers were by far the most influential English-language Sunday broadsheets with significant circulation across all South African provinces (R Mulauodzi 2017, personal communication, 23 May). The three broadsheet newspapers represent a significant portion of the Sunday’s press market in South Africa.

This study only focused on the news reports genre. The key element of this type of newspaper article is objectivity, and the aim of this research is to shed light on newspaper coverage of scientific facts. Newspaper articles which focus on other genres such as editorials and commentary were excluded. A total of 1,648 articles were extracted from the Sabinet-SA Media for the period 1996 to 2016. During coding, only 266 news articles were found to be relevant (table 1). This study followed a manual approach to content analysis. The process involved manually searching the database to gather relevant news reports from the City Press (54 articles), The Sunday Independent (144 articles) and the Sunday Times (68 articles). Although manual retrieval of the newspaper articles is a tedious and time-consuming process, it provides the best means for extracting relevant types of newspaper articles. After retrieving relevant news report articles, each article was assigned to the following story themes: observed climate trends, climate change impacts, climate change projections, and response measures. Based on previous studies (Billett 2009, Chand 2017), a modified coding book was derived from the four themes (table 1).

Source: Billett 2009, Chand 2017 and authors’ modifications.

5. Results

The results from this study indicate that coverage of climate change was at its lowest point during the period 1996 to 2003. Climate change silence across major broadsheet newspapers is an indicator that other issues were given more attention. In the years 2004 and 2006, there was some increase in coverage. The first remarkable increase in the number of news articles was observed in 2007. There was a declining phase in 2008, with some fluctuations in coverage from 2009 to 2010. This study argues that climate change was overshadowed by the 2009 South African general elections and the 2010 FIFA World Cup South Africa. The stand-out year in climate change coverage was 2011. This period coincides with the Durban Climate Summit which was held in South Africa. Newspaper attention to climate change significantly plummeted from 2012 to 2016 (figure 1).
Newspaper attention was at its highest peak in the months of November and December, suggesting the important role of focusing political events (i.e., COPs) in the coverage of climate change. Previous studies have revealed similar trends in major newspapers across Europe (e.g., Gunster 2011, Lyytimäki 2011, Fernández-Reyes et al 2015, Robbins 2018).

To understand the objectivity in reporting climate change, it is crucial to examine the coverage of objective facts in the news media. Overall, this study found that climate change impacts (67 news articles) dominated the scientific dimension about climate change. However, the climate change response measures were the dominant theme during the timeframe of this study. It is not surprising that climate politics was the most prevalent topic in the news articles (163 news articles). The South African press arguably started to devote unprecedented attention

![Newspaper Coverage of Climate Change in South Africa (1996-2016)](#)

**Figure 1.** South African newspaper coverage of climate change in the City Press, The Sunday Independent, and the Sunday Times from November 1996 to December 2016. Source: Authors.

**Table 1.** Codes used on coverage of science, impacts, projections, and response measures.

| Code 1 - coverage of the existence of climate change |
|-----------------------------------------------------|
| S1 Article argues that climate change does not exist today |
| S2 Article argues that climate change may exist today |
| S3 Article argues that climate change does exist today |
| Of those coded S3: code 2 - coverage of the evidence and causes of climate change |
| S4 Suggests that present-day climate change is naturally forced |
| S5 Suggests that present-day climate change may be naturally and/or anthropogenically forced |
| S6 Suggests that climate change is anthropogenically forced |
| R1 Uses extreme events as evidence that climate is changing |
| R2 Uses scientific research as evidence that climate is changing |
| Of those coded S2 and/or S3: Code 3 - Coverage of impacts and projections of climate change |
| A1 Article refers to the impacts of climate change |
| A2 Article refers to the projections of climate change |
| A3 Article refers to the impacts of climate change in South Africa |
| A4 Article refers to the projections of climate change in South Africa |
| A5 Article refers to the impacts of climate change in Africa |
| A6 Article refers to the projections of climate change in Africa |
| A7 Article refers to the impacts of climate change globally |
| A8 Article refers to the projections of climate change globally |
| A9 Article refers to the impacts of climate change as a threat |
| A10 Article refers to the potential future effects of climate change as threat |
| Code 4 - coverage of the existence of climate change response measures |
| G1 Argues that interventions for climate change is global and equal |
| G2 Argues that the Global North is responsible for climate change mitigation and adaptation interventions |
| G3 Argues that the Global North and the Global South are responsible for climate change mitigation and adaptation interventions |
to climate change projections (18 news articles), climate change impacts (13 news articles), and observed climate trends (13 news articles) in 2006. Despite climate change projections dominating news articles in 2006, a decline of eight new articles was recorded in 2007. This is nearly half the amount of coverage in 2006. It was also revealed that attention to observed climate trends in 2007 declined by one article from 2006. This study found that coverage of climate change impacts was consistent in 2006 (13 news articles) and 2007 (13 news articles). Coinciding with the decline in the overall climate change coverage across the newspapers, attention to the scientific dimension decreased by 50% from 2008 to 2010 (figure 2).

The response measures represented a greater proportion of coverage in 2009. This may be linked to the Copenhagen Climate Summit (COP15) in Denmark. South Africa played an active role during the climate change negotiations. A slight recovery in attention to observed climate trends was recorded in 2011 (seven articles compared to three articles in 2010). The results demonstrated that response measures were the central topic during this period, which accounted for nearly 50 news articles throughout the year. This study revealed that coverage of all objective facts significantly declined from the beginning of 2012 until 2016. According to data from the Media and Climate Change Observatory (McAllister et al 2021), there is evidence to suggest that the overall coverage of climate change in the world’s leading broadsheet newspapers such as The Guardian and The New York Times remained broadly stable from 2012 to 2014, with a clear upsurge in 2015 and 2016. We argue that other issues took prominence over climate change in South Africa’s newsrooms. This confirms stage four of issue-attention cycle theory by Downs 1972 - there is a gradual decline in media attention due to the direct impact of an emerging issue.

6. Discussion

Overall, this study has revealed that climate change attention in South Africa’s news media reached an all-time high in 2011. The salience of the focusing events, United Nations climate change conferences, needs to be highlighted regarding the upsurge trend in issue attention to climate change. This study found that a significant proportion of news articles dealt with the latest developments of the Durban Climate Conference or COP17 held in South Africa from November to December 2011. The following were among the leading headlines in 2011: ‘COP17: Hope for SA to pave way’ (City Press); ‘COP17 dithers as Earth withers’ (City Press); ‘Gloom and doom hang in the air at climate talks’ (The Sunday Independent); ‘Green Fund may be only positive to come from COP17’ (The Sunday Independent); ‘Smaller nations despair as agreement eludes summit’ (The Sunday Independent); ‘Half-baked forecast for climate talks’ (Sunday Times); and ‘COP17 deal unlikely amid uncertainty’ (Sunday Times). The findings show that the years 2007 and 2009 were tied for the second-highest peak. This study also observed that the third-highest notable peak was in 2006. It is evident that the South African print media appetite for climate change during these periods was more likely driven by the publication of the Stern Review on Climate Change in 2006, the presentation of the Intergovernmental Panel on Climate
Change (IPCC) Fourth Assessment Report in 2007, and the Copenhagen Climate Summit (COP15) in 2009 (figure 3). This research is consistent with previous analysis that examined newspaper coverage of climate change in leading Spanish newspapers from 2000 to 2014 (Fernández-Reyes et al 2015).

Based on the analysis in this study, we argue that focusing events can play a crucial role in increasing attention to climate change. Despite poor coverage of the scientific dimension in the news articles, this research provides evidence that the prominence of climate politics was largely triggered by political focusing events such as the Copenhagen Climate Summit and the Durban Climate Summit. Previous studies have illustrated this common trend in several countries in the Global North. Eskjær2017 showed significant rise in issue attention to climate change in two leading Danish newspapers (Berlingske Tidende, and Politiken) during the Copenhagen Climate Summit (COP15) in December 2009. This is also consistent with the observation made in the major French broadsheet newspapers during the Paris Climate Conference held in France from November to December 2015 (Gurwitt et al 2017).

News media attention to climate change tends to increase in the build-up and during the months of the political focusing events (Fernández-Reyes et al 2015). This study has found a growing attention to climate change in the last two months of the year. The findings indicate that the rising issue attention in December and November was associated with the COP events. Researchers have argued that there is a strong relationship between a higher peak in climate change coverage and the month/s during which the COP event is taking place. For example, Lyytimäki 2011 found that Finnish newspapers devoted more attention to climate change in the months of November and December. This is consistent with the analysis conducted in leading Spanish newspapers from 2000 to 2014 (Fernández-Reyes et al 2015, Mulaudzi and Kioko 2020). Their study exhibits similar global trends in terms of increasing issue attention to climate change in November and December.

While this study found evidence of the influence of COP events on newspaper coverage of climate change, the release of the scientific reports by the IPCC is equally important in issue attention. This study has revealed that the IPCC report contributed to the overall coverage of climate change news stories in the press in 2007 (figure 3). However, it is important to point out that newspapers fail to simplify the scientific content contained in the report. This contributes to a worsening communication gap between the news media and the public. We conclude that the dEarth of climate science journalism in the newsroom is the main contributor. This will require a new approach for reporting the findings of the IPCC. It includes equipping journalists with the prerequisite knowledge of the basic scientific facts about climate change.

In 2009, there was a peak in issue attention to climate change in newspapers across the globe. Based on previous news media and climate change research, increasing attention was due to the coverage of Copenhagen Climate Conference (COP15) in Denmark. Although there was a second peak in 2009 (equivalent to 2007), newspapers in South Africa were still lagging far behind the UK, US, Canada, Australia, and New Zealand (Mulaudzi and Kioko 2020, McAllister et al 2021). This is despite the fact that South Africa was one of the leading negotiators during the COP15.

Regarding attention to the scientific dimension of climate change, this study identified three remarkable phases in the South African press. The first phase took place from 1996 to 2003. There was extremely poor
coverage of the objective facts. In comparison to the overall coverage of climate change in the Global North, the results suggest that South African newspapers were following a global trend. The second phase was when the coverage of objective facts was at its peak in 2006 and 2007. There is evidence to suggest that the global news outlets started to increase their coverage of climate change during this period (McAllister et al 2021). The third phase was a declining period of coverage, with some fluctuations, from 2008 to 2016. The political dimension of climate change was arguably the central topic in the news articles during this period.

7. Conclusion

This study highlights that the greatest peak in issue attention to climate change coincides with climate-related events. The study found that the overall coverage of climate change in South Africa’s major broadsheet newspapers showed significant improvement in 2011. This research suggests that the Durban Climate Summit held in South Africa in 2011 was strongly linked to the overall increasing attention. It is also worth pointing out that this study can also conclude that the first peak in coverage in 2006 and 2007 was largely driven by the release of the Stern Report on Climate Change and the presentation of the IPCC Fourth Assessment Report. However, this study argues that news outlets do not provide thorough reporting about the scientific findings. The findings are consistent with previous research that shows that focusing events contribute most significantly to coverage of climate change in the news media (i.e., Sampei and Aoyagi-Usui 2009, Schmidt et al 2013, Hase et al 2021). In the context of South Africa, this study sheds light on how news media attention to climate change plummeted after the Durban Climate Summit.

Related to attention to objective facts about climate change, the overall analysis paints a grim picture of newspaper coverage of climate change science over the 20-year period (1996–2016). This study reveals that the scientific dimension of climate change is not an agenda of particular importance across major broadsheet newspapers. It provides evidence that there is poor reporting of basic scientific facts about climate change in South Africa’s print media. Low-quality scientific reporting in the news media can have a significant effect on public understanding of climate change in South Africa. It may increase uncertainty about the topic of climate change among the consumers of news. However, news outlets must avoid dumping jargon in their news articles when reporting climate change science.

The research contributes to the emerging body of knowledge of news media coverage of climate change science in the Global South. In addition, the study is also contributing to existing research on issue attention and agenda-setting globally. It is important to indicate that this research was limited to climate change attention in South Africa’s leading broadsheet newspapers from 1996 to 2016. Finally, the findings from this research show an urgent need for news media outlets to go beyond focusing events on reporting climate change.

Data availability statement

The data that support the findings of this study are available upon reasonable request from the authors.

Competing interest

The authors declare no competing interests.

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