

# Ups and downs of public attention on climate change: the southern Brazil floods through Anthony Downs's issue-attention cycle

*Altos e baixos da atenção pública sobre mudanças climáticas: inundações no RS e o "ciclo de atenção" de Anthony Downs*

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## ABSTRACT

This article analyses the public attention in Brazil to the 2024 extreme weather event in Rio Grande do Sul, focusing on the problem of climate change. The study aimed to assess whether public opinion followed Downs' (1972) "Issue-Attention Cycle" or displayed a different pattern. Using a content analysis of the term "climate change" on the *Folha de São Paulo* website, over 3 months before and 6 months after the event, we found a sharp increase in climate change-related coverage following the floods, indicating increased public interest. However, this surge in attention was short-lived, with a significant decline in approximately 30 days after the event. These results suggest that public attention to climate change issues is intense but fleeting, posing challenges for policymakers and other actors seeking to leverage this "window of opportunity" to advance climate-related public policies.

**Keywords:** Climate change. Extreme weather events. Rio Grande do Sul. Issue-attention cycle. Agenda-setting. Public policies.

## RESUMO

*Este artigo analisa a reação da atenção pública no Brasil às inundações ocorridas no Rio Grande do Sul em 2024, com foco no problema da mudança do clima, investigando se esse comportamento segue o “Ciclo de Atenção” proposto por Downs (1972). A pesquisa focou o termo “mudanças climáticas” no website da Folha de S. Paulo para avaliar o volume de reportagens publicadas 3 meses antes e 6 meses depois do evento. Os dados revelam um aumento expressivo na cobertura jornalística sobre mudanças climáticas logo após as inundações, sugerindo maior interesse da população pelo tema. No entanto, cerca de 30 dias após o evento, observou-se uma queda acentuada na quantidade de notícias. Esses resultados indicam que a atenção pública é breve e volátil, limitando o tempo disponível para intervenção por parte de formuladores de políticas públicas, entre outros, em propor soluções durante uma possível “janela de oportunidades” gerada por eventos extremos.*

**Palavras-chave:** Mudanças climáticas. Eventos climáticos extremos. Rio Grande do Sul. Ciclo de Atenção. Formação de agenda. Políticas públicas.

## 1 INTRODUCTION

Between the end of April and the beginning of May 2024, the state of Rio Grande do Sul (RS), located in the southern region of Brazil, experienced an extreme weather event that was considered by the local government as “the greatest meteorological catastrophe in the history of Rio Grande do Sul” (State Government of Rio Grande do Sul, 2024). The floods resulting from the heavy rains affected 96% of the municipalities in RS, impacted 2.4 million people, and left 173 dead and 38 missing (Federal Senate of Brazil, 2024). The impacts on the RS economy were estimated at R\$ 58 billion, or 10% of the state's GDP. In Brazil, the total impacts reached R\$ 97 billion, equivalent to about 1% of the national GDP (Agência Brasil, 2024).

According to Clarke et al (2024), climate change increased the likelihood of this extreme weather event by more than a factor of two, as well as its intensity (an increase of 6% to 9%). According to the authors, other factors also contributed to the worsening of the floods, notably the natural physical phenomenon known as *El Niño*<sup>1</sup> and serious infrastructure failures. Thus, natural occurrences and social phenomena of a political-administrative nature, together with the effects of climate change, contributed to the tragedy in Rio Grande do Sul.

Further studies may help better understand the relationship between climate change and the extreme event that occurred in RS in 2024. In any case, extreme weather events are already becoming increasingly frequent and intense as a result of climate change (UNDRR, 2020). Therefore, it is necessary to address this risk to become more resilient in the face of extreme weather events, whether caused by anthropogenic climate change or by natural climate variability. Thus, public policies aimed at reducing climate risk and impacts are becoming increasingly necessary. Such public policies include, among others, climate change adaptation measures<sup>2</sup>, which consist of “initiatives [...] to reduce the vulnerability<sup>3</sup> of natural and human systems to the current and expected effects of climate change” (Brazil, 2009).

For public policies aimed at addressing a specific social problem to be developed and effectively implemented, broad societal understanding and engagement are fundamental. This also applies to public policies for adapting to climate change. In this sense, keeping the issue at the centre of public attention can contribute to the success of such policies.

This paper presents the results of a study examining how public attention in Brazil responded after the extreme weather event in Rio Grande do Sul, specifically regarding climate change. The study sought to determine whether public attention followed the predictions of Downs (1972) or whether another behavioural pattern emerged. According to the author, the behaviour of public attention, in some

cases, follows a specific pattern he calls "Issue-attention Cycle." For Downs, studying how this cycle operates provides insights into how long public attention is likely to remain focused on any specific issue, generating sufficient political pressure to effect change. Therefore, it is important to understand how certain problems gain public attention and how long they remain at the centre of attention, generating a possible "window of opportunity" for proposing public policies related to a particular undesirable social condition.

## 2 LITERATURE REVIEW

For the area of knowledge concerned with understanding the relationship between the State and society, it is fundamental to understand how public policies are formed and altered, and how public and non-governmental actors seek to influence the outcomes of these processes. Exploring why certain socio-environmental problems are prioritised over others to the point of becoming public policy is an indispensable part of this area of study.

The identification of social phenomena perceived as issues requiring public attention, and the determination of which among them should be addressed through public policy, are processes collectively referred to as agenda-setting. Public issues can become problems, enter the government's agenda, and subsequently become priorities worthy of government intervention. In this context, the agenda represents "the list of subjects or problems to which governmental officials, and people outside the government closely associated with those officials, are paying some serious attention at any given time" (Kingdon, 1995, p. 196). Kingdon (1995) distinguishes between the governmental agenda and the decision agenda. The government agenda is a list of issues to which government officials are paying attention. This list is the result of the recognition of a problem, the degree of visibility that it may generate, or even isolated political will. The decision agenda is a list of issues that are up for effective deliberation to be made by the government. Birkland (2019) also includes in agenda-setting all the proposals to address the identified problem.

It is important to differentiate between the governmental agenda and the public and media (or systemic) agenda (Cobb; Elder, 1972). The governmental agenda encompasses issues that have already been given priority and are considered worthy of public intervention. The systemic agenda, on the other hand, encompasses a wide range of ideas circulating in a given society that have not (yet) been recognised as worthy of attention by those in power. This work focuses on the systemic agenda, based on the understanding that "the means and mechanisms of problem recognition and issue selection are tightly connected with the way a social problem is recognised and perceived on the public/media agenda" (Jann; Wegrich, 2017, p. 45). Thus, the behaviour of public attention and what emerges in the media can be an important driver of certain social problems, moving from the systemic agenda to the governmental agenda and, eventually, being addressed through public policies. This analysis starts with the understanding that the supply of information on a given issue is influenced by demand for that content. According to Downs (1972), the "audience" itself often "manages the news," maintaining or losing interest in a particular subject.

According to Downs (1972), public attention rarely remains focused on a particular problem for very long. Instead, the "issue-attention cycle" for a given problem influences public attitudes and behaviour for a certain period, after which the problem gradually disappears from the centre of society's attention, even if it has not been resolved. The issue-attention cycle, still according to Downs, is influenced by the nature of certain specific problems and by how the mainstream media interacts with the public. Downs identifies 5 stages for this Cycle, which may vary in duration depending on the particularities of the issue at hand. Table 1 presents the 5 phases.

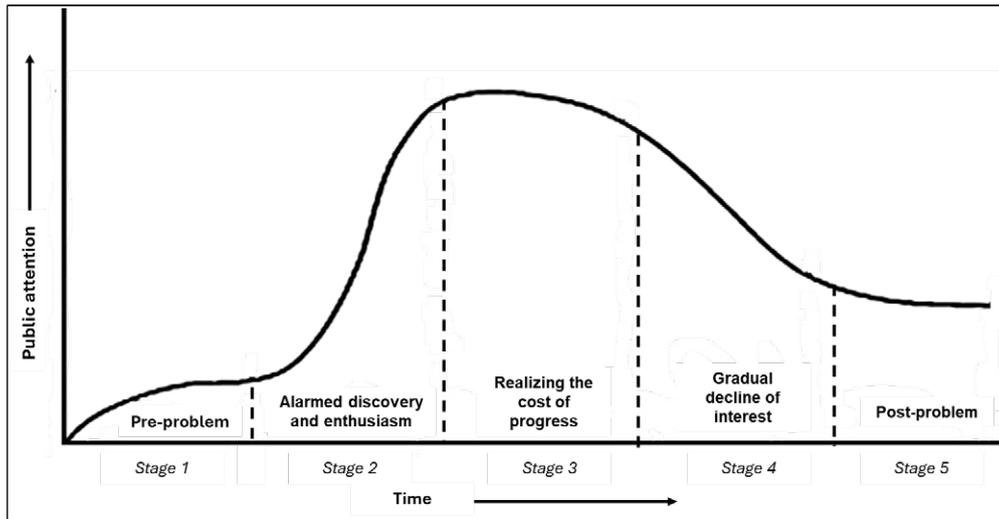
**Table 1 – The five stages of the issue-attention cycle**

<i>Stages</i>	<i>Description</i>
Pre-problem stage	There is a highly undesirable social condition that has not yet captured much public attention.
Alarmed discovery and euphoric enthusiasm	As a result of dramatic events or for some other reason, the public suddenly becomes aware of and alarmed by the evils of a specific problem. This discovery is invariably accompanied by euphoric enthusiasm about society's ability to solve the problem or do something effective within a relatively short time.
Realising the cost of significant progress	Gradually, there is a growing awareness that the cost of "solving" the problem is actually very high. Doing so would require not only significant resources but also great sacrifices from large groups within the population.
Gradual decline of intense public interest.	It becomes increasingly clear how difficult and costly a solution to the problem would be. Three reactions arise here: Some people simply become discouraged. Others feel threatened by thinking about the problem, so they suppress such thoughts. Still others become bored with the problem.
The post-problem stage	The issue shifts from the centre of public attention to a "prolonged limbo" with possible periodic recurrences of interest. However, the problem now has a different relationship with public interest compared to the pre-problem stage. For example, during the time the issue was in the spotlight, new institutions, programs, or public policies may have been created to help resolve the problem. Furthermore, any problem that has been in the spotlight can recapture public interest. In this sense, problems that have once passed through the stages of the Cycle almost always receive a higher average level of attention than in the pre-problem period.

*Source: Adapted from Downs (1972)*

Not all social problems pass through the stages of the Cycle. According to Downs, the issue must, to a certain extent, possess three important characteristics: (1) the problem impacts a small segment of society; (2) the impacts caused by the problem originate from social arrangements that offer significant benefits to a majority of people or to a powerful minority; and (3) the problem does not possess "intrinsically exciting" qualities, or ceases to have them.

Downs' issue-attention cycle can be represented by a figure that reproduces the behaviour of public attention over time (Figure 1). Although not explicitly stated by Downs, we understand that a possible window of opportunity for proposing measures would open at some point during stages 2 and 3.



**Figure 1** – Downs' issue-attention cycle

Source: Adapted from Staggenborg (2016)

For Downs, the public's attitude towards the desire to improve environmental quality offers an example of a type of problem that can be captured by public attention based on a pattern that follows the 5 stages of the issue-attention cycle. In this way, it becomes possible to test how interested society is in a given environmental problem, based on the behavioural pattern advocated by Downs.

Often, the national and international literature uses Downs' issue-attention cycle as a theoretical framework or tool to analyse issues of interest to "public opinion." However, Downs uses the term "public attention." While not equivalent, the concepts are closely related, and in this work, it is understood that a topic that attracts public attention also gains prominence in terms of public opinion. Table 2 explains how both terms are defined in this paper. In both the literature review and the results analysis, the terms are employed in the same way as in the original references.

**Table 2** – Definitions adopted in this article for "public attention" and "public opinion"

Term	Definition
Public attention	We use some of the expressions used in Downs (1972) for our understanding of the term: when there is public attention, society has an "interest" in a subject or shows "concern" about a subject. In other words, the subject is "in the centre of the stage" or "in the public eye".
Public opinion	According to Glynn <i>et al.</i> (2018), this is a concept widely used in academic literature that does not have a single, universally agreed-upon definition. Therefore, the authors present five categories of definitions, which are distinct but also overlap to some extent: (1) public opinion represents an aggregation of individual opinions, (2) a reflection of the beliefs of the majority, (3) is found in the clash between interest groups, (4) reflects the influence of the media and elites, and (5) represents a fiction, that is, a rhetorical construct without connection to reality.

Source: Adapted from Downs (1972) and Glynn (2018)

Brazilian literature on the application of Downs' issue-attention cycle in the field of climate change is still incipient. Nevertheless, some publications attempt to explore the ideas presented by Downs in 1972, offering insights into the behaviour of public attention in Brazil today in relation to socio-environmental issues. Fortunato and Camargo (2018) question whether the Cycle fully explains the fluctuation of environmental news. For them, it is based on vague notions; therefore, the model is not

applicable to all issues and can only be used when the problem can be delimited in time, space, and by the actors involved. Some other Brazilian authors cite Downs briefly or only in footnotes. We refer to Fortunato and Camargo (2018) for a non-exhaustive list of such works up to 2018.

Regarding more recent national studies (post-2018), it is worth mentioning Amaral, Quevedo and Souza (2024), who analysed the communication of a climate disaster on the coast of São Paulo State in 2023, which severely impacted some communities, especially in the São Sebastião Municipality. They concluded that immediate public attention generates opportunities for response and recovery. Nonetheless, for effective risk management, they argue for the importance of mobilising attention even in the "pre-problem" phase of the issue-attention cycle, allowing a window to open for strategies associated with prevention, preparedness and mitigation.

According to Fortunato and Camargo (2018), while Brazilian research tends to adopt the Cycle as a consolidated theoretical framework or analytical tool for issues of public interest, international literature has been dedicated to ratifying it, contesting it through well-founded critiques, or proposing adjustments through the introduction of new variables. The authors present a partial review of international works involving political science, environment, and media up to 2018.

McComas and Shanahan (1999), in a study spanning more than 15 years, argue that Downs and others ignore the role of narratives in media attention to environmental issues. For them, narrative factors constructed by the media itself are central to shaping public attention.

Furthermore, it is worth mentioning Howlett (2000), who presents more forceful criticisms of Downs' arguments. For Howlett, although the Cycle is frequently cited as a model to explain the links between public opinion and the formation of public policies, such a link would not be direct. For him, public opinion constitutes one of the elements of the 'background conditions,' or environment, in which the political process unfolds. Howlett concludes that the media's role in the public policy process has several limitations, making it an imperfect mediator of social perceptions and resulting in an indirect relationship between public opinion and policy formulation.

Regarding more recent studies (post-2018), Reamer *et al.* (2024) analyse 12 years of coverage by six US newspapers on the conservation of the North Atlantic right whale, showing that the media plays a role in shaping environmental policies and follows Downs' issue-attention cycle. They found that the news coverage on this issue went through the first three stages, lost visibility to new topics, but may have recurrences. It is noteworthy that the period between stages 2 and 3 lasted five years.

### 3 METHODS

To identify how public attention behaved after the floods in Rio Grande do Sul, specifically in relation to the problem of climate change, a targeted search was conducted for the term "mudanças climáticas" (climate change) on the website of a Brazilian newspaper with national circulation, *Folha de São Paulo* (FSP) (<https://www.folha.uol.com.br/>). FSP, a newspaper based in São Paulo, was chosen to avoid regional bias in coverage of the event in Rio Grande do Sul, prioritising a broader approach. Furthermore, the newspaper is the largest in Brazil in terms of paying subscribers and one of the most widely circulated nationally (IVC, 2023).

The objective was to determine how many news articles addressed climate change in the three months before the floods and up to six months after. This made it possible to obtain a "baseline" for the number of articles (months 1-3). Defining a six-month time horizon after the floods enabled the collection of a large number of news articles to examine how public attention evolved during this period. Considering that the extreme weather event in Rio Grande do Sul began on April 27, 2024, the time frame adopted was from January 27 to October 31, 2024.

Within the time frame chosen, 1,469 results were found for the term "mudanças climáticas" (climate change) anywhere in the text. For other similar terms, notably "mudança do clima" and "mudança climática", a smaller number of results were found: 479 and 210, respectively. The terms adaptation and mitigation were not used (search for "mudanças climáticas" and "adaptação" or "mudanças climáticas" and "mitigação") because they inherently involve choices for addressing the problem. In contrast, the research focuses on the problem itself and its entry onto the agenda. A search for "mudanças climáticas" and "Rio Grande do Sul" together was also not conducted, given that the objective of the analysis was to understand the behaviour of public attention towards the global problem and not only its regional impacts.

A qualitative review of the 1,469 articles was conducted to determine if climate change was a central theme. Only the headlines were analysed. Based on this review, 606 articles were excluded. Therefore, 863 articles were considered.

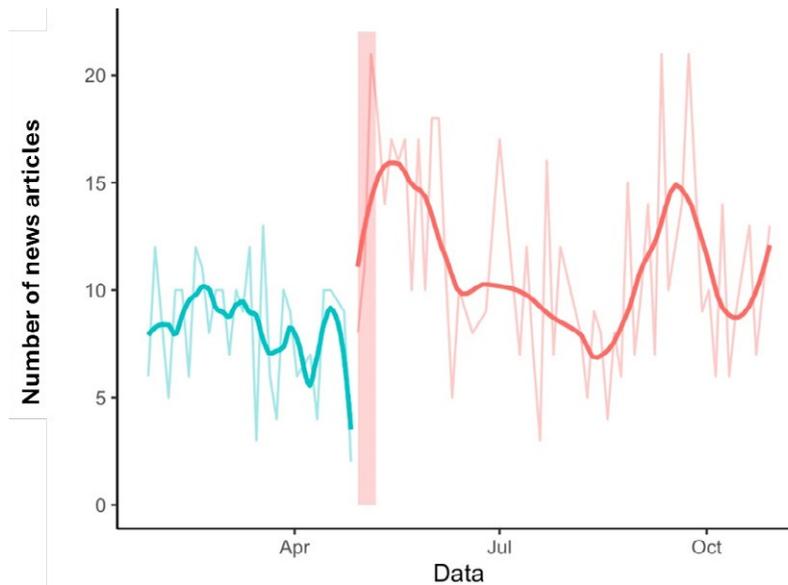
We used the Rvest package to retrieve the publication date of each of the 863 articles (R Core Team, 2021; Wickham, 2024). The Rvest package allows searching (scraping) websites to extract metadata associated with a given web page. Dates for which no articles were found were assigned a value of zero.

Using the publication dates, articles were grouped into three-day intervals, and the resulting frequencies over time are presented in Figure 2.

Finally, we calculated the percentage variation in the number of articles on climate change published every three days relative to the average number of news items for the entire period (Figure 3).

## 4 RESULTS AND DISCUSSION

The results obtained are presented in Figures 2 and 3. Figure 2 shows the number of news articles addressing the topic of climate change in absolute values for the period between January 27, 2024, and October 31, 2024. The news articles are grouped into three-day periods to avoid large daily distortions that can occur, including drops on weekends and holidays. The vertical red bar indicates the timing of the extreme weather event in Rio Grande do Sul, between April 27, 2024, and May 4, 2024. There is also a bold line indicating the trend in the number of articles on the topic. Finally, there is a colour differentiation for the pre-event period (in green) and the post-event period (in red).



**Figure 2 – Number of articles on climate change, FSP (Jan. 27, 2024 - Oct. 31, 2024).  
News items grouped into three-day periods**

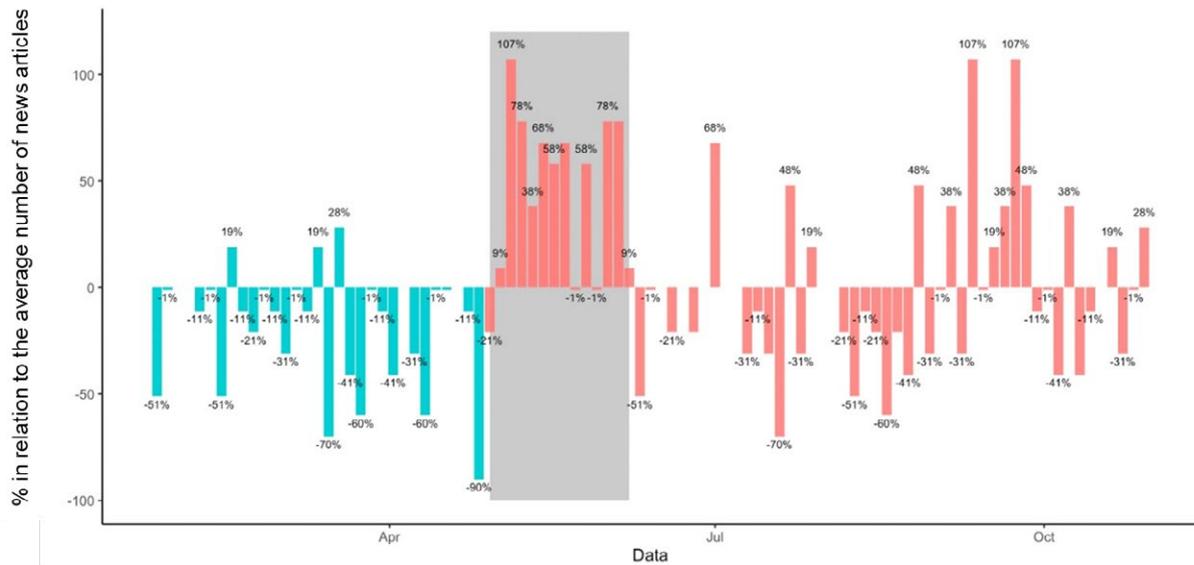
*Source: The authors*

In Figure 2, a significant increase in news coverage of climate change is observed starting on April 27th, which may indicate growing public interest in the topic. Based on the figure, it is also possible to argue that there was a direct association between the extreme weather event in Rio Grande do Sul and the problem of climate change, since news about its probable cause emerged soon after the floods. In other words, society quickly identified the causal relationship, indicating how widespread public knowledge about climate change has become, even though extreme weather events can also occur due to natural climate variability.

Figure 2 shows a sudden drop in the number of news items approximately 30 days after the floods. Therefore, public attention to the issue of climate change was not sustained for a long period. Thus, a timeframe for action would be quite limited for those aiming to act on a possible "window of opportunity," when public attention would be more focused on a particular problem, resulting in greater susceptibility to solutions.

Finally, we identified in Figure 2 two other periods of increased news coverage of climate change, one at the end of September and another at the end of October. Based on an analysis of the selected news articles on climate change during these periods, it was possible to observe an association with an increased interest in articles about the forest fires that occurred mainly in the Amazon during the beginning of the second half of 2024 and about expectations for the COP 29 Climate Conference in Azerbaijan, which took place in November of the same year.

Figure 3 shows the percentage variation between the number of articles published every three days and the average number of news items every three days for the entire period. Similar to Figure 2, there is a colour differentiation between the periods before (green) and after (red) the extreme weather event. Additionally, a vertical grey bar has been included, indicating a period with a number of articles about climate change well above the average for the entire period.



**Figure 3** – Percentage variation between the number of articles published every three days (FSP) and the average number of news items (also every three days) for the period 01/27/2024 to 10/31/2024

Source: The authors

Between April 27, 2024, and June 7, 2024 (shown in grey), the average number of news items about climate change every three days was 14.64. In the pre-flood period, the average was 8.04; in the post-extreme event period, 9.95; and in the total period analysed, 10.12. In other words, as previously indicated in the analyses based on Figure 2, Figure 3 demonstrates a "window of opportunity" of approximately 30 days to discuss and propose solutions.

One news item included in the sample is noteworthy and may indicate a possible increase in demand for information on climate change following the extreme event in Rio Grande do Sul. On May 22, 2024, less than a month after the floods, a news item was published entitled: "Folha [de São Paulo] now has a climate correspondent, an unprecedented function in the Brazilian press." This report is emblematic, as it signals an action by this newspaper to increase its coverage of the climate change issue, indicating a possible increase in public interest in the subject after the Rio Grande do Sul tragedy.

As Downs (1972, p. 38) points out, public interest can create a window of opportunity for effective change in addressing a given problem. Although the study does not allow us to validate this hypothesis, we list here some news items that present demands and proposals for public policies, or criticisms about the lack of public policies, from both public and private actors.

- Federal Senate committee schedules vote on bill to create disaster management policy (May 6, 2024).
- Brazilian Mayors' Front (Frente de Prefeitos) wants a law allowing one city to donate money to another (May 6, 2024).
- In the climate emergency, the inertia is from Congress (May 7, 2024).
- Public policies ignore science in the field of climate change (May 9, 2024).
- Opponents avoid attacks, but tragedy is likely to be central to the Porto Alegre [capital of RS] election (May 12, 2024).
- Federal Senate approves general guidelines for climate change adaptation plans (May 15, 2024).

- Dismantling of policies is responsible for Brazil's biggest climate crisis (May 21, 2024).
- Federal House of Representatives (Camara) approves bill with guidelines for climate change adaptations (June 4, 2024).
- Lula [Brazilian President] signs law creating guidelines for adapting to climate change (June 27, 2024).
- Congressman wants national registry of volunteers to expedite disaster response (August 9, 2024).

All the news items mentioned above, in some way, refer to the extreme weather event in Rio Grande do Sul. Furthermore, we note that most of the news was published within approximately one month of the floods. We highlight here the National Congress's approval of a law that establishes guidelines for developing climate change adaptation plans within this one-month timeframe. There are three news items that address the progress of this same law.

The increased public attention following the extreme event in Rio Grande do Sul seems to have resulted in a change in public policy, considering the enactment of the aforementioned law. However, caution is needed regarding claims about the existence of a central and unique role of public opinion as an inducer of changes in public policies. Here, we refer to Howlett (2000), who argues that there is only an indirect link between public opinion and changes in public policy. The way the population perceives a given issue would be only one element of the "background conditions," with other aspects of the political process also influencing it. Burstein (2003), on the other hand, reinforces the link. The author used data from 30 empirical studies on the impact of public opinion on public policies and concluded that (1) public opinion affected policies in three-quarters of the times its impact was measured. Furthermore, the results showed that the more "salient" or noteworthy the issue, that is, the greater the public attention to a given issue, the greater the impact of public opinion on policies.

Even though public attention may have played a significant role in the adoption of the law about guidelines for adapting to climate change, it is important to question the extent to which these changes will be effective, or whether they arose to provide an immediate response to society. In this specific case, it is noted that a National Adaptation Plan (NAP) already exists (Brazil, 2016). Perhaps it would be more effective to strengthen the implementation and monitoring of this existing regulatory framework. In this sense, it could be argued that the changes promoted in the months following the extreme event aimed more at accommodating an immediate demand from society, without a genuine desire to propose measures that would be lasting and effective. Bachrach and Baratz (1962) argue that there are power dynamics that manifest themselves not only in the decisions made but also in the ability to prevent certain issues from effectively advancing on the governmental agenda. These dynamics, which the authors call "nondecision-making" or "mobilisation of bias", allow elites or dominant groups to keep the debate restricted to issues considered "safe," excluding matters that could threaten their interests.

Based on the results presented in Figures 2 and 3, it is possible to compare how public opinion reacted to the problem of climate change after the floods in Rio Grande do Sul and the pattern proposed by Downs through the issue-attention cycle. This comparison is presented below in Table 3.

**Table 3** – Comparison between Downs' issue-attention cycle and the stages observed for public attention on the topic of climate change, FSP (January 27, 2024 – October 31, 2024)

<i>Stages of the issue-attention cycle (Downs, 1972)</i>	<i>1. Pre-problem</i>	<i>2. Alarmed discovery and euphoric enthusiasm</i>	<i>3. Realising the cost of significant progress</i>	<i>4. Gradual decline of intense public interest</i>	<i>5. Post-problem</i>
<b>Description</b>	A highly undesirable social condition has yet to capture public attention.	The public suddenly becomes aware, and the alarming discovery is accompanied by euphoric enthusiasm to solve the problem.	There is a growing perception that the cost of "solving" the problem is actually very high.	People are discouraged from solving the problem because of its complexities.	The issue shifts from the centre of public attention to a prolonged "limbo" of little social interest.
<i>Observed stages (FSP News)</i>	<i>1. Pre-problem</i>	<i>2. Sudden increase in public interest and opening of a "window of opportunity"</i>	<i>3. Window of opportunity to propose actions</i>	<i>4. Sudden decline in public interest</i>	<i>5. Post-problem/pre-problem</i>
<b>Description</b>	A highly undesirable social condition has yet to regain public attention	Drama or crisis brings a particular social condition back into the public spotlight. This opens a window to propose measures.	There is a short-term window of opportunity for proposals aimed at solving the problem.	The problem quickly loses the attention of society and/or competes with other social problems.	The issue reverts to a stage similar to the pre-problem phase, awaiting the reappearance of a new crisis and/or other problems.

Source: Downs (1972) and the authors

Some similarities can be observed between Downs' issue-attention cycle and the stages identified in this study's results. In both, there is a sudden increase in public interest for a particular social problem, marking the beginning of a period when there may be greater susceptibility to proposing solutions to the issue (stages 2 and 3). Then, there is a decline in interest followed by a period of low public attention to the problem. However, in the stages observed based on news about climate change in the FSP newspaper, it was not possible to identify a gradual decline in public interest, but rather an abrupt drop. This may be related to two factors: (1) environmental problems such as climate change are no longer new and are routinely the subject of news, either after another critical event or for other reasons, and (2) the volume of news currently circulating is much greater, not only due to the existence of online newspapers, but also due to the speed at which news is currently "consumed," compared to 1972.

The 30-day window of opportunity identified in this research would represent a short period for proposals to be put forward and have a greater chance of advancing. This period, which would encompass stages 2 and 3 of both Downs' cycle and "our" cycle (Table 3), is considerably shorter than the same stages identified in Reamer *et al.* (2024). In that study, periods 2 and 3 of the cycle took five years to complete. However, some differences between the two works should be mentioned: The study analysed 12 years of coverage in six newspapers on whale preservation, a well-defined topic. Similarly, longer-term research in Brazil, with a specific focus within climate change, such as local adaptation to extreme events, could deepen the analysis of the use of Downs' issue-attention cycle, assessing whether public attention would generate only immediate developments focused on response and recovery, as argued by Amaral, Quevedo, and Souza (2024), or whether other behaviour patterns would emerge.

Regarding the thematic scope, it is also important to refer to Fortunato and Camargo (2018), who criticise the use of Downs' issue-attention cycle for problems that are not specifically defined. This research aimed to do just that, focusing on the topic of climate change in a broad sense, without a chronological, geographical, or actor-specific focus<sup>4</sup>. Without such a focus, according to Fortunato and Camargo, it would be impossible to determine when stage 5 would occur, which represents the post-problem moment when the issue ceases to receive public attention. For the authors, a broader environmental concern, such as "pollution" or "degradation," has never ceased to be in the public eye since the conception of Downs' cycle in 1972. In this sense, Downs' ideas would be better applied to more specific areas. In our work, as seen in Table 3 above, we adapted the definition of the Downs cycle, understanding that the problem of Climate Change in its broadest sense, upon entering the 5th phase, would not disappear from public attention into a "prolonged limbo" of little social interest. It would, in fact, enter a stage in which it would simultaneously be in the post- and pre-problem phases, reinforcing the idea of a cyclical process of public attention to an environmental problem that is not specifically delineated.

This research started from the hypothesis that newspaper publications directly reflect public attention to a particular topic. In this sense, the supply of news would be a "proxy" for its demand. Downs argues similarly. For him, the audience itself manages the supply, losing or maintaining interest in a particular subject. This view can be interpreted as a simplification of reality, since what is transmitted by the media is the result of something more complex, which is determined by a set of social and cultural factors. For Denis McQuail (2010), the media (the author uses the term mass communication) could be considered "a phenomenon that is both 'social' and 'cultural'. The institution of the media [...] is part of the structure of society, and its technological infrastructure is part of the economic and power base, while the ideas, images and information disseminated by the media are evidently an important aspect of our culture" (McQuail, 2009, p. 70). In this sense, neither would the media linearly determine public opinion (as argued by the hypodermic needle theory<sup>5</sup>), nor would public opinion manage what emerges in the media, as argued in Downs (1972).

The media, to a certain extent, would act as an inducer of public opinion through the construction of narratives, as argued by McComas and Shanahan (1999). In these cases, the media would frame the news, aiming to "construct a reality" (Scheufele, 1999), with the objective of influencing how a particular content is received and perceived by the population. This would be a way of selecting "some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition" (Entman, 1993, p. 52). Alternatively, the media could seek to "set an agenda"<sup>6</sup>, not to influence how people should think, but rather which problems should be considered more prioritised (McCombs, 2008). The greater the dissemination of a particular topic, the greater the stimulus for people to form their opinions on that subject (Coleman, 2009).

It is also necessary to deepen our understanding of the role of the general population, which is an active and highly diverse actor that selects information based on its beliefs and biases. This is the argument of the Uses and Gratifications Theory, which holds that the public actively chooses the media to meet informational, social, or entertainment needs, reversing the logic of theories focused solely on media effects. In other words, "media use depends on the perceived satisfactions, needs, wishes or motives of the prospective audience member" (McQuail, 2010, p. 352).

The general population might even choose to ignore certain issues when, for example, it comes to opinions perceived as minority views, reinforcing apparent consensus, according to the Spiral of Silence theory (Noelle-Neumann, 1991). For the author, there is a fear of isolation, which leads individuals to constantly assess the climate of public opinion. The results of this assessment affect their behaviour in public, especially their willingness or unwillingness to openly express opinions. There would also be a third actor, which would be the public opinion leaders, representing an intermediary entity, like a "broker" of news for the segment of society with which they interact. The Two-Step Flow of Communication model shows that opinion leaders mediate media messages, retransmitting them on

their social networks. Thus, the effects of the media would be limited and filtered by interpersonal interactions (Katz; Lazarsfeld, 1955).

A broader sampling, encompassing a larger number of newspapers and other media outlets, could help to better address the complexities outlined above. By considering a larger number of newspapers, it would be possible to reduce the risks of framing or agenda-setting inherent in biases specific to a single media outlet. By expanding the types of media considered, including, for example, online platforms, social networks, podcasts, and videos, it would be possible to encompass a greater heterogeneity of news "consumers," avoiding a distorted sample due to specific choices (or rejections) of certain groups or their opinion leaders.

## 5 FINAL CONSIDERATIONS

The research presented here aimed to analyse a socio-environmental crisis that occurred in Brazil in light of Downs' issue-attention cycle (1972). In practical terms, the study showed that there was a brief period of increased public attention following a severe environmental impact event in Brazil. During this period, measures and public policies were proposed to address the problem. We argued that a "window of opportunity" could have opened, indicating greater receptiveness to changes in public policy after the event.

Regarding its contribution to the research topics addressed in the article, the work applies Downs' analytical model to a contemporary case in Brazil, highlighting the relevance of ideas conceived more than fifty years ago and demonstrating their pertinence, provided they are properly contextualised and complemented to enhance the complexity of the results.

It is important to emphasise that, because the research explores how public attention behaved after the occurrence of only one critical event based on a sample focused exclusively on a single newspaper, the results should be interpreted with caution, and it is not possible to make more generalised considerations.

Furthermore, as we considered only the headlines of the articles to verify the centrality of the story regarding the topic of climate change, it is not possible to affirm that 100% of the included articles actually had this topic as the main subject. More research is needed to complement the findings and resulting analyses, either from a sample that explores the occurrence of more than one environmental crisis and/or that includes more than one periodical or other existing media.

## NOTES

1 | The abnormal warming of the surface of the Pacific Ocean near the Equator. The phenomenon occurs every 5 to 7 years and has been occurring since June 2023, causing different impacts in all regions of Brazil (Brazilian National Institute of Meteorology, 2024).

2 | There are also measures to mitigate climate change, which consist of initiatives aimed at reducing climate risks and impacts by reducing or removing greenhouse gases.

3 | Degree of susceptibility and inability of a system [...] to cope with the adverse effects of climate change, including climate variability and extreme events (Brazil, 2009).

4 | Although this research focusses on the timing of the extreme weather event that occurred in Rio Grande do Sul in 2024, the assessment of public attention to the problem of climate change was carried out more broadly, as described in section 3 - Methods.

5 | Also known as the Magic Bullet theory, it conceives of media communication as a direct stimulus-response process, in which individuals would passively receive messages, without the possibility of questioning or resistance. Widely disseminated in the 1930s and 1940s, this perspective was later widely rejected by academic literature for greatly "exaggerating the probability of effect and the vulnerability of the receiver to influence" (Mcquail, 2010, p. 391).

6 | Here, the same term discussed earlier is used, regarding the identification of social phenomena that may become problems to be addressed by public authorities.

## STATEMENT ON THE USE OF ARTIFICIAL INTELLIGENCE

The authors declare that no generative AI or AI-assisted technologies were used in the creation, writing, or editing of this manuscript.

## REFERENCES

AGÊNCIA BRASIL. Agência Brasil, 2024. Rain in Rio Grande do Sul could impact the national economy by R\$ 97 billion. Available in: <https://agenciabrasil.ebc.com.br/economia/noticia/2024-07/chuvas-no-rs-podem-impactar-em-r-97-bilhoes-economia-nacional#:~:text=A%20trag%C3%A9dia%20clim%C3%A1tica%20no%20Rio,na%20economia%20brasileira%2C%20este%20ano>. Accessed on: 15/11/2024.

AMARAL, M. F.; QUEVEDO, J. P.; SOUZA, E. Evento climático extremo e vulnerabilidades: a comunicação de um desastre no Twitter. *Intexto*, n. 56, 2024. Available at: DOI: <https://doi.org/10.19132/1807-8583.56.135975>. Accessed on: 15 nov. 2024.

BACHRACH, P.; BARATZ, M. S. Two Paces of Power. In: **Paradigms of political power**. Routledge, 2017. p. 118-131. Available at: <https://doi.org/10.4324/9781315125992>. Accessed on: 01 oct. 2025.

BIRKLAND, T. A. **An introduction to the policy process**: theories, concepts, and models of public policy making. London: Routledge, 2019. Available at: <https://doi.org/10.4324/9781351023948>. Accessed on: 01 oct. 2025.

BRAZIL. Ministério do Meio Ambiente. **National Adaptation Plan to Climate Change**. Brasília, 2016. Available at: <https://antigo.mma.gov.br/clima/adaptacao/plano-nacional-de-adaptacao.html>. Accessed on: 01 oct. 2025.

BRAZIL. Law 12.187, of 29 of December 2009. Establishes the National Policy on Climate Change - PNMC and provides other measures. Brasília, DF: **Official Journal of the Union**, 2009. Available at: [http://www.planalto.gov.br/ccivil\\_03/\\_ato2007-2010/2009/lei/l12187.html](http://www.planalto.gov.br/ccivil_03/_ato2007-2010/2009/lei/l12187.html). Accessed on: 01 oct. 2024.

BURSTEIN, P. The impact of public opinion on public policy: a review and an agenda. *Political research quarterly*, v. 56, n. 1, p. 29-40, 2003. Available at: <https://doi.org/10.1177/106591290305600103>. Accessed on: 01 oct. 2025.

CLARKE, B. *et al.* Climate change. El Niño and infrastructure failures behind massive floods in southern Brazil. London: **Grantham Institute for Climate Change**, 2024. Available at: <https://spiral.imperial.ac.uk/handle/10044/1/111882>. Accessed on: 15 nov. 2024.

COBB, R. W.; ELDER, C. D. **Participation in American Politics**: the dynamics of agenda building. Boston, MA: Allyn and Bacon, 1972. Available at: <https://doi.org/10.2307/1958664>. Accessed on: 01 oct. 2025.

COLEMAN, R. *et al.* Agenda setting. In: **The handbook of journalism studies**. Routledge, 2009. p. 167-180. Available at: <https://doi.org/10.4324/9780203877685>. Accessed on: 01 oct. 2025.

DOWNES, A. Up and down with ecology: the “issue-attention cycle”. In: **Agenda setting**. Routledge, 2016. p. 27-33. Available at: <https://www.taylorfrancis.com/chapters/edit/10.4324/9781315538389-4/ecology-issue-attention-cycle-anthony-downes>. Accessed on: 01 oct. 2025.

ENTMAN, R. M. Framing: towards clarification of a fractured paradigm. *McQuail's reader in mass communication theory*, v. 390, p. 397, 1993.

FEDERAL SENATE OF BRAZIL. Agência Senado, 2024. **The tragedy in Rio Grande do Sul showed that Brazil needs to prepare for climate change.** Available: <https://www12.senado.leg.br/noticias/infomaterias/2024/06/tragedia-no-rs-mostrou-que-brasil-precisa-se-preparar-para-mudancas-no-clima#:~:text=Nos%20dias%20finais%20de%20abril,173%20mortos%20e%2038%20desaparecidos>. Accessed on: 15 nov. 2024.

FORTUNATO, I.; DE CAMARGO PENTEADO, C. L. A visibilidade de desastres ecológicos no século XXI: revisitando o issue-attention cycle de Downs. **Acta Scientiarum. Human and Social Sciences**, v. 40, n. 3, p. 42188, 2018. Available at: <https://doi.org/10.4025/actascihumansoc.v40i3.42188>. Accessed on: 01 oct. 2025.

GLYNN, C. J.; HERBST, S.; LINDEMAN, M.; O'KEEFE, G. J.; SHAPIRO, R. Y. **Public opinion**. Routledge, 2018.

GOVERNMENT OF RIO GRANDE DO SUL. **Government of Rio Grande do Sul, o futuro nos une, 2024.** Governor presents a report on the first 30 days since the start of the floods. Available at: <https://www.estado.rs.gov.br/leite-apresenta-balanco-de-30-dias-apos-inicio-das-enchentes>. Accessed on: 15 nov. 2024.

HOWLETT, M. A dialética da opinião pública: efeitos recíprocos da política pública e da opinião pública em sociedades democráticas contemporâneas. **Opinião Pública**, v. 6, p. 167-186, 2000. Available at: <https://doi.org/10.1590/S0104-62762000000200001>. Accessed on: 01 oct. 2025.

INMET. National Institute of Meteorology, 2024. **El Niño: learn about the phenomenon's impact on Brazil.** Available at: <https://portal.inmet.gov.br/noticias/el-ni%C3%B1o-saiba-como-foi-a-atua%C3%A7%C3%A3o-doen%C3%B4meno-no-brasil>. Accessed on: 15 nov. 2024.

IVC. Verified Communication Institute, 2023. **Newspapers in Brazil.** Available at: <https://static.poder360.com.br/2024/01/circulacao-jornais-2015-2023-IVC.png>. Accessed on: 25 sept. 2025.

JANN, W., WEGRICH, K. "Theories of the policy cycle". In: FISCHER, F.; MILLER, G. **Handbook of public policy analysis**. [s.l.], Routledge, 2017 p. 69-88. Available at: <https://doi.org/10.4324/9781315093192>. Accessed on: 01 oct. 2025.

KATZ, E.; LAZARFELD, P. F. **Personal Influence** (Glencoe, IL, Free Press). 1955.

KINGDON, J. W. **Agendas, alternatives, and public policies**. New York: HaperCollins College Publisher, 1995.

MCCOMAS, K.; SHANAHAN, J. Telling stories about global climate change: measuring the impact of narratives on issue cycles. **Communication research**, v. 26, n. 1, p. 30-57, 1999. Available at: <https://doi.org/10.1177/009365099026001003>. Accessed on: 01 oct. 2025.

MCCOMBS, M. **Setting the agenda: the mass media and public opinion**, 2008.

MCQUAIL, D. **McQuail's mass communication theory**. Sage publications, 2010.

NOELLE-NEUMANN, E. The theory of public opinion: the concept of the spiral of silence. **Annals of the International Communication Association**, v. 14, n. 1, p. 256-287, 1991. Available at: <https://doi.org/10.1080/23808985.1991.11678790>. Accessed on: 01 oct. 2025.

R CORE TEAM. **R: a language and environment for statistical computing**. R Foundation for Statistical Computing. Available at: <https://www.R-project.org>. Accessed on: 30 nov. 2024.

REAMER, M. *et al.* A "war" over lobster and whales: the issue-attention cycle, media discourse, and political ecology of right whale science and conservation in six US newspapers. **Frontiers in communication**, v. 9, p. 1417414, 2024. Available at: <https://doi.org/10.3389/fcomm.2024.1417414>. Accessed on: 01 oct. 2025.

SCHEUFELE, D. A. Framing as a theory of media effects. **Journal of communication**, v. 49, n. 1, p. 103-122, 1999. Available at: <https://doi.org/10.1111/j.1460-2466.1999.tb02784.x>. Accessed on: 01 oct. 2025.

STAGGENBORG, S. **Social movements**. Oxford University Press, USA, 2016.

UNDRR. The human cost of disasters: an overview of the last 20 years (2000-2019). Geneva: **United Nations Office for Disaster Risk Reduction**, 2020. Available at: <https://www.undrr.org/quick/50922>. Accessed at: 20 nov. 2024.

WICKHAM, H. **Rvest**: easily harvest (Scrape) web pages. R package version 1.0.4, 2024. Available at: <https://github.com/tidyverse/rvest>, <https://rvest.tidyverse.org/>. Accessed on: 30 nov. 2024.