

Rethinking environmental news coverage through Agenda-Setting and the normative function of attributes

Repensando la cobertura informativa ambiental desde la Agenda-Setting y la función normativa de atributos

Repensando a abrangência da informação ambiental a partir da Agenda-Setting e a função normativa dos atributos

DOI: <https://doi.org/10.32870/cys.v2023.8574>

MAXWELL E. MCCOMBS¹

<http://orcid.org/0000-0001-5292-0958>

MARTA MILENA BARRIOS²

<http://orcid.org/0000-0002-5279-1049>

MIGUEL GARCÉS³

<https://orcid.org/0000-0001-6391-3147>

We examined the dominant substantive and affective attributes in 358 news items related to water and waste management in Colombia over five years. The results revealed that the studied texts focused more on the existence of attributes of environmental problems and on positive emotions related to good management practices, than on the effects and solutions. These results explore how Agenda-Setting theory can provide practical guidance for journalists to rethink their environmental coverage from a normative perspective.

KEYWORDS: Agenda-setting; environment; norms; news; public opinion.

Examinamos los atributos sustantivos y afectivos dominantes en 358 noticias relacionadas con la gestión del agua y los residuos en Colombia durante cinco años. Los resultados revelaron que los textos estudiados se centraron más en la existencia de atributos de los problemas ambientales y en las emociones positivas relacionadas con buenas prácticas de gestión, que en los efectos y soluciones. Estos resultados analizan cómo la teoría de la Agenda-Setting puede proporcionar una guía práctica para que los periodistas replanteen su cobertura informativa ambiental desde una perspectiva normativa.

PALABRAS CLAVE: Agenda-Setting; ambiente; normas; noticias; opinión pública.

Examinamos os atributos substantivos e afetivos dominantes em 358 notícias relacionadas à gestão de água e resíduos na Colômbia durante cinco anos. Os resultados revelaram que os textos estudados enfocam mais a existência de atributos dos problemas ambientais e emoções positivas relacionadas às boas práticas de gestão do que os efeitos e soluções. Esses resultados exploram como a teoria do Agenda-Setting pode fornecer orientação prática para os jornalistas repensarem sua cobertura ambiental de uma perspectiva normativa.

PALAVRAS-CHAVE: Agenda-Setting; atmosfera; regras; notícias; opinião pública.

How to cite:

McCombs, M. E., Barrios, M. M. & Garcés, M. (2023). Rethinking environmental news coverage through Agenda-Setting and the normative function of attributes. *Comunicación y Sociedad*, e8574. <https://doi.org/10.32870/cys.v2023.8574>

¹ University of Texas at Austin, United States
maxmcombs@mail.utexas.edu

² Universidad del Norte, Colombia
mbarrios@uninorte.edu.co

³ Universidad Tecnológica de Bolívar, Colombia
mgarces@utb.edu.co

Submitted: 02/10/2023. Accepted: 03/28/2023. Published: 07/05/2023.

INTRODUCTION: CREATING AWARENESS TO FOSTER ACTION

The public's comprehensive knowledge of environmental management and the conservation of natural resources, such as water and waste, is a prerequisite for public awareness and action to prevent further damage to the planet. However, there is a widespread perception that things are not going well in Colombia. Surveying more than 30 000 Colombians residing in 36 municipalities and major cities, *Red de Ciudades Cómo Vamos* (2020) found dissatisfaction with water quality and waste management.

Comprehensive news coverage plays a crucial role in determining what is at the center of public attention and action, a role termed the agenda-setting role of the news media (McCombs & Shaw, 1972; McCombs & Valenzuela, 2020; Kepplinger & Roth, 1979; Weaver & McCombs, 1981). Summarizing the importance of this agenda-setting role, White (1973) noted that no major issue could succeed unless the news media prepares the public mind, creates awareness of the problem, builds a foundation of informed citizens, and stimulates the formation of opinions. However, regarding environmental management in Colombia, little has been studied about the quality of news coverage and the exact details in news stories about water and waste management issues.

This situation calls for in-depth agenda-setting research that examines the news media's contribution to the public's perception of environmental risk. Agenda-setting describes the influence of news coverage about major issues on public opinion. The first level is the agenda of issues selected for news coverage: the issues that are the media's focus of attention. The second level is the agenda of the various attributes used to characterize and describe each issue (McCombs, 2004). Additionally, the study by Guo and McCombs (2015) highlights the importance of information networks in agenda-setting, that is the third level of the theory.

This case study focused on describing for the first time the substantive and affective attributes of the news agenda related to water pollution and waste in the streets in Colombia. Exploring the substantive and affective attributes is crucial for journalists and decision-makers.

For the former, analyzing the attributes can provide norms through which journalists can broaden the spectrum of attributes they include in their news agenda to achieve a more significant impact on the public. For the latter, this analysis can identify the specific attributes of acute problems that are key to mobilizing public opinion on sensitive topics, such as water and waste management.

THEORETICAL FRAMEWORK: AN AGENDA-SETTING PERSPECTIVE

For an in-depth examination of the news media's contribution to the public's perception of environmental risk, this study is grounded in agenda-setting theory (McCombs & Shaw, 1972; McCombs & Valenzuela, 2020; Kepplinger & Roth, 1979; Weaver & McCombs, 1981). In the seminal Chapel Hill study (McCombs & Shaw, 1972), the theoretical core of agenda setting, the transfer of salience from one agenda to another, was explained as issue salience. Issues on the media agenda become salient on the public agenda (Kim & Min, 2015); this is the first level of agenda setting.

Expanding the theory, a second level of agenda setting explained the transfer of salience as the transfer of attribute salience from the media agenda to the public agenda. These attributes have two dimensions: The substantive dimension consists of the specific elements or aspects used to describe an issue. For example, attributes of the Ukraine War include military operations, international assistance to Ukraine, and the problems of the Russian military. The second dimension is the tone in presenting these attributes –positive, negative, or neutral. Both of these dimensions are examined in our content analysis of environmental news coverage in Colombia.

Previous studies have demonstrated the influence of media attribute agendas on the salience of environmental issues. Ploughman (1984) detailed *New York Times* coverage of the unnatural Love Canal environmental disaster that aroused public concern. Also, during the months leading up to the 1992 United Nations Conference on Environment and Development, Japanese newspapers steadily increased their coverage of eight aspects of the global environment. The result was a strong correlation (+ 0.68) between the media and public agendas (Mikami et al., 1995).

Another study that examined US public opinion about environmental problems from 1970 to 1990 found no relationship between the salience of these problems on the public agenda and “reality” measures of air and water pollution. However, a substantial relationship (+ 0.92) between the public agenda and the prominence of environmental stories in the *New York Times* was found (Ader, 1995).

Next, media attention to aspects of the environment in Canada influenced both the public and policy agendas (Soroka, 2002). Finally, an analysis based on three substantive attributes of climate change—existence, effects, and solutions—stratified by level of affect found strong effects on public perception of climate change (Vu et al., 2020). Overall, the empirical evidence justifies our study, which seeks to analyze whether news coverage of environmental issues influenced public opinion on water and waste management topics in Colombia.

On the epistemological level, agenda-setting states that beyond the frequency of coverage for an issue, individual characteristics of an issue on the media’s attribute agenda also can influence the salience of issues among the public. These attributes are known as compelling arguments (Ghanem, 1997).

Second-level agenda-setting research has documented the importance of attributes and how attributes alone can be persuasive elements. Vu et al. (2020) found that “all three substantive attributes—existence, effects, and solutions— exerted strong, compelling arguments effects on the public perception of climate change, which was measured by issue priority” (p.17). Attribute agenda-setting influence on an issue’s salience often equals or exceeds the first-level agenda-setting effect based on total coverage.

In turn, the increased salience of an issue stimulated by compelling arguments can influence the formation of an opinion about the problem and the direction of that opinion. This was evidenced by Baumgartner and Jones (2010), who found that for topics long-standing, such as nuclear power, pesticides, and smoking, increased news coverage and not only increased their salience among the public but that this coverage also redefined these issues with subsequent shifts in public opinion. Nuclear power and pesticides went from beneficial scientific applications to significant threats to public safety. Smoking has become increasingly defined as a threat to personal health.

In a sense, our research in Colombia contributes to the theoretical understanding of compelling arguments by including the affective dimension in the analysis of news coverage on water and waste management, considering that compelling arguments studies have focused primarily on substantive attributes.

In the same way, Valencia (2015), in his guide for journalists, “The Green Agenda”, emphasizes a lack of technical knowledge about addressing environmental care and preservation issues. Also, in a comparative study of news coverage of the environment in *El Espectador* (Colombia) and *El País* (Spain), Cano and Rincón (2015) found that while climate change had achieved visibility in some media, climate change’s journalistic treatment is still perceived very abstractly. For example, in Spain, climate change is one of the most relevant issues, “occupying 28.3% of the environmental news; however, this subject in Colombia only occupies 13.3% of the stories, primarily information about environmental disasters, with 26.5%, the most predominant in the media” (p. 46). Therefore, a detailed study of the environmental coverage in Colombian newspapers is justified.

Although attribute agenda setting provides a more detailed and nuanced analysis of the issues on the media and public agenda, first-level studies of issues have far exceeded those at the second level. Within the second level, studies of the environment are a minority, accounting for less than a fifth of all attribute agenda-setting studies (Kim et al., 2017). That is, despite the extensive developments that agenda-setting theory has undergone since its formulation by McCombs and Shaw in 1972, the second level, attribute agenda-setting, frequently has failed to include the affective component of the attribute agenda. This study is a contribution to the reduction of that gap.

The ideal attribute news agenda encompasses an extensive attribute description, not just sketches of one or two of them. In sum, an explicit journalism norm calling attention to the media’s agenda of attributes is essential in building the coverage of public issues. Said norm needs to expand its practical usefulness for journalists in their daily coverage of issues crucial to the common good, such as proper environmental management. Therefore, considering the exploratory nature of this study, it was possible to answer the following research questions:

- RQ1: Which substantive attributes dominate the journalistic coverage of environmental water and waste management in Colombia?
- RQ2: Which affective attributes prevail in the journalistic coverage of Colombia's environmental water and waste management?
- RQ3: Which substantive and affective attributes related to the management of water and waste function as compelling arguments that influence public opinion on these issues?

METHOD

We studied the 2010-2014 period, focusing on the specific water and waste management issues topics in the annual *¿Cómo Vamos?* Public Opinion Surveys. The data set mentioned above, with more than 38 000 interviews, is the only longitudinal data in Colombia regarding public opinion about the environment. For the news analysis, we chose the newspapers *El Tiempo*, *El Heraldo*, *El Colombiano*, and *El Universal*, recognized as those with the highest circulation in the cities studied by the Association for Mass Media Research (AIMC, 2019).

We will now provide information on the procedure to describe the dominant attributes of the news items selected for content analysis. To determine the size of the news sample, we assumed a 95% confidence level and an error of 3% on the proportion of news from the newspaper with the lowest overall representation [*El Colombiano* = 8.49%] in the population of 931 news items, to assure its representativeness. Thus, the minimum expected size was 333 news items, whose distribution maintained the proportion per newspaper (*El Colombiano* = 8.49%, *El Heraldo* = 14.07%, *El Tiempo* = 29.86%, and *El Universal* = 47.58%) and its specific proportion of news items for each of the years studied (2010 = 20.84%, 2011 = 13.75%, 2012 = 19.66%, 2013 = 19.66%, and 2014 = 26.10%).

This period 2010-2014, was selected because severe disasters that affected Colombia, such as heavy floods and droughts, occurred during these five years. In this historical period, these disasters generated food security problems and a wave of forest fires that forced several regions to declare an environmental emergency. The climatic changes in these

years were abnormal since they went from an intense season of rains between 2010 and 2011 to another marked by severe droughts that peaked in 2014.

The final sample size was 358 news items to maintain the same proportion, exceeding the calculated minimum value by 5%. We used the pre-configured Excel function to ensure the random selection of news. Since the substantive and affective attributes that define the second level of the media agenda were studied in this research, we followed the study of Vu et al. (2020), who identified three substantive attributes –existence, effects, and solutions– when studying environmental problems. Therefore, we carried out a news content analysis to identify these attributes following the procedures Neuendorf (2017) and Krippendorff (2018) suggested.

Coders manually identified and counted the appearance of each substantive attribute in the news pieces and tracked the changes over time. The paragraph was the unit of analysis since news items typically contain more than one; there were a total of 1 849 in the study. In those excerpts, we identified the presence of at least one attribute. The origin of codebook for this research comes from Vu et al. (2020), but was adapted to account for the Colombian context. Paragraphs focusing on the three main attributes of existence, effects, and solutions in the content about water and waste pollution were coded as follows:

Existence, two items were evaluated (e.g., the news piece mentioned that environmental pollution does exist and/or acknowledges anthropogenic causes; the article says environmental pollution does not exist, and/or humans do not cause it). *Effects*, five items (e.g., harmful effects, the article indicates possible negative consequences of environmental pollution of water and waste such as climate change/global warming such as “environmental disaster”, “health risk”, “loss of life”, “threat to infrastructure”, “land degradation”, etc.; no effects; sound effects; N/A; other). *Solutions*, two items (e.g., the article discussed solutions to prevent or mitigate the pollution; did not discuss).

To identify the affective attributes, we used *Linguistic Inquiry and Word Count (LIWC)*, a dictionary-based text analysis application, to analyze the paragraphs that we identified in the first step. *LIWC* counted the words into psychologically significant categories and compared the

input texts with a dictionary of over 6 000 words. We used the Spanish dictionary provided by this text analysis tool (Pennebaker et al., 2015; Tausczik & Pennebaker, 2010), developed by Ramírez-Esparza et al. (2007). The Spanish analysis tool evaluates many linguistic and psychological constructs, such as emotional, cognitive, and social processes.

It has been widely used to analyze the content of documents and news in linguistics and mass communication, among other fields (Kahn et al., 2007; Stieglitz & Dang-Xuan, 2012). For this study, we identified four affective dimensions: positive emotions (e.g., love, friendly, sweet, etc.); negative emotions (e.g., hurt, ugly, nasty, etc.); rage (e.g., hate, kill, annoyance, etc.); and sadness (e.g., crying, sad, grief, etc.).

Two B.A. graduates with previous experience in research performed the coding. They were trained on the fundamental conceptual and methodological aspects of this study. Intercoder reliability was 0.93, using Krippendorff's alpha, indicating a high consensus in the ratings. To identify the most prominent categories within the waste and water pollution news coverage, we counted the number of times each item was mentioned in the articles every year (2010-2014). Subsequently, paragraphs containing attributes—existence, effects, and solutions—were selected, counted, and processed.

Similarly, we analyzed the substantive attributes of existence, effects, and solutions in the news stories based on the indicators described in the codebook. We determined the differences between the substantive attributes. We used the software G*Power for the last two analyses. For the news analysis, we chose the newspapers *El Tiempo*, *El Heraldo*, *El Colombiano*, and *El Universal*, recognized as those with the highest circulation in the cities studied by the Association for Mass Media Research (AIMC, 2019). The online search used the keywords “waste,” “garbage,” “pollution,” and “water.” We did not consider photo news, editorials, and letters to the editors.

Although this study's analysis was carried out in an earlier time frame, 2010 to 2014, the authors conducted a qualitative examination of the newspapers in recent years, finding that the coverage pattern remains the same. Satisfaction/dissatisfaction regarding waste and water management was based on secondary data from the national

public opinion survey *¿Cómo Vamos?* which presents Colombians' opinions regarding the structural environmental problems that affect them the most in its six main cities.

The dependent variable, satisfaction/dissatisfaction with the natural environment's management, is measured by the answers to the following questions in the annual *¿Cómo Vamos? Public opinion surveys*: 1) Indicate your level of satisfaction related to environmental management of street waste; and 2) Indicate your level of satisfaction with environmental management of water pollution (rivers, wetlands, streams). Both questions had five response options. We considered the percentages of satisfaction/ dissatisfaction each year in the six main Colombian cities: Barranquilla, Bogotá, Bucaramanga, Cali, Cartagena, and Medellín.

¿Cómo Vamos? states a sample of 37 056 surveys were collected in the country's main cities and distributed equally across the years under study. The demographic information regarding the participants of the survey was as follows: ages were 18 to 25 years (18.26%); 26 to 35 years (17.78%); 36 to 45 years (17.34%); 46 to 55 years (18.22%); and over 55 years (28.39%). Regarding their gender, 49.52% were male, and 50.48% were female. Information on the educational level of the participants was not reported.

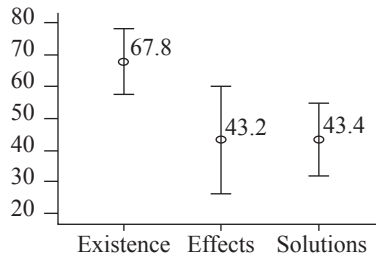
RESULTS: MAPPING THE RELATIONSHIP BETWEEN AGENDA-SETTING AND PUBLIC OPINION ABOUT ENVIRONMENTAL MANAGEMENT

Substantive Attributes of the Environmental News Media Agenda

In the case of the substantive attributes –existence, effects, and solutions– Figure 1 and Table 1 show that existence was mentioned far more frequently than effects and solutions. Waste contamination in the streets and water pollution were mentioned in the 358 news stories across the five years, averaging 67.80 times per year ($SD = 8.35$). Effects had an average of 43.20 mentions ($SD = 13.52$), and solutions were mentioned 43.40 times ($SD = 9.15$). Table 1 indicates that the frequency of appearance of the substantive attribute of existence is statistically significant and greater than effects ($t = 3.46$; p -value =

0.009) and solutions ($t = 4.40$; p -value = 0.02). In addition, both cases have a large effect size (d effects = 0.93; d solutions = 0.99), which was calculated using *Cohen's d*.

FIGURE 1
SUBSTANTIVE ATTRIBUTES COMPARISONS BETWEEN WATER POLLUTION
NEWS AND WASTE POLLUTION



Source: Own elaboration.

TABLE 1
SUBSTANTIVE ATTRIBUTES COMPARISONS BETWEEN WATER POLLUTION
NEWS AND WASTE POLLUTION

	Substantive attributes		
	Existence	Effects	Solutions
Mean	67.8	43.20	43.40
Standard Deviation	8.34	13.51	9.15
Levene Statistic	F	3.09	0.26
	p -value	0.11	0.62
<i>Student's t</i>	t	3.46	4.40
	p -value	0.00	0.00
Effect size (<i>Cohen's d</i>)		2.18	2.78
Power (1- β)		0.93	0.99

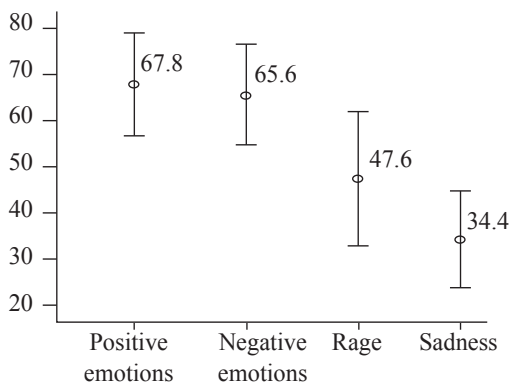
Source: Own elaboration.

These results reveal significant differences between the substantive attributes of environmental news on water and waste management. The attribute of existence predominated more frequently in the news coverage of these environmental issues than the attributes of effects and solutions.

Affective Attributes of the Environmental News Agenda

The four affective attributes in Table 2 shows statistically significant differences ($F = 13.84$; $p\text{-value} = 0.001$), the most prominent dimension being positive emotions ($M = 67.80$; $SD = 8.89$), followed by negative emotions ($M = 65.60$; $SD = 8.70$) with no significant difference with the highest affective attribute, positive emotions. There are statistically significant differences ($p\text{-value} < 0.05$) and large differences ($d > 0.80$) within the remaining two affective attributes. In decreasing order, they are rage ($M = 47.6$; $SD = 11.63$; $p\text{-value} = 0.015$) and sadness ($M = 34.4$; $SD = 8.41$; $p\text{-value} = 0.000$).

FIGURE 2
AFFECTIVE DIMENSION COMPARISONS BETWEEN WATER
AND WASTE POLLUTION NEWS



Source: Own elaboration.

TABLE 2
AFFECTIVE DIMENSION COMPARISONS BETWEEN WATER POLLUTION
NEWS AND WASTE POLLUTION NEWS

		Affective dimensions			
		Positive Emotions	Negative Emotions	Rage	Sadness
Mean		67.8	65.6	47.6	34.4
Standard Deviation		8.89	8.70	11.63	8.41
Levene	<i>F</i>		0.05	0.89	0.00
Statistic	<i>p-value</i>		0.81	0.37	0.92
<i>Student's t</i>	<i>t</i>		0.39	3.08	6.09
	<i>p-value</i>		0.70	0.01	0.00
Effect size (<i>Cohen's d</i>)			0.24	1.95	3.85
Power (1- β)			0.09	0.87	0.99

Source: Own elaboration.

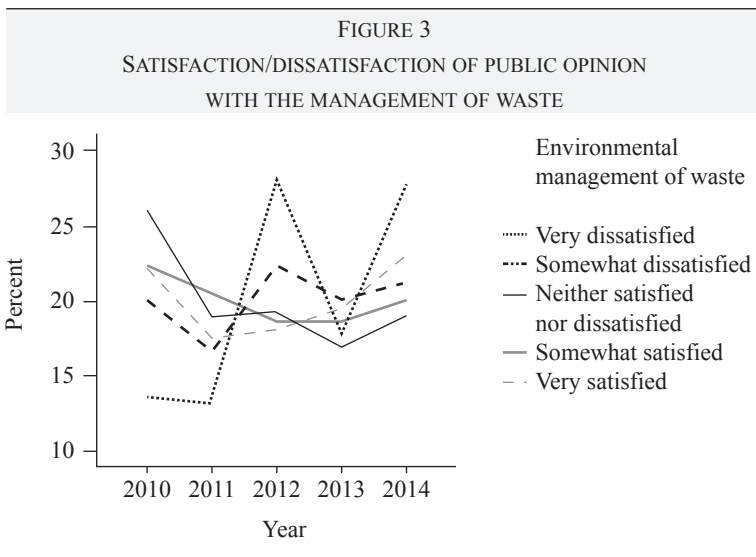
Of the four affective attributes evaluated in the news, we found that positive emotions had the highest frequency, with a mean of 67.80 and a standard deviation of 8.89. In second place were negative emotions, with a mean of 65.60 and a standard deviation of 8.70. Emotions associated with anger and sadness had the lowest values, as shown in Figure 2. However, when analyzing the *p-value*, Levene, *T-Student*, and Cohen's effect size, the differences are not statistically significant when comparing positive and negative emotions. We found significant differences between the two remaining affective attributes. Those above were comprehensive and more significant than 0.80 in effect size.

The findings revealed that positive emotions prevailed over negative ones. We believe this is because many news items referred to recovered green areas, cleaning and recycling campaigns, preventive campaigns to avoid flooding due to rains, and news related to the State's public investment in environmental matters. In the news, with positive emotions, journalists used public servants, politicians, and other official sources, and these tended to highlight their performance as public administrators. In this sense, it would seem that the ruling elite is leading the agenda on water and waste issues in Colombia. Journalists

are lagging in doing independent research on these issues and including a plurality of voices in their texts.

Substantive & Affective Attributes in the News as Predictors of Public Opinion

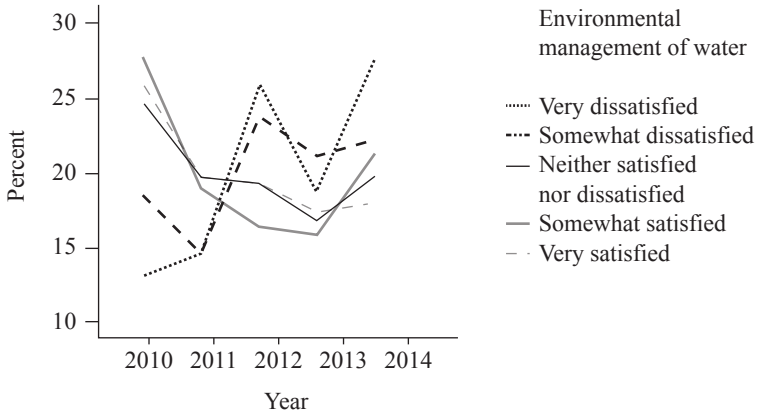
Regarding public opinion on the environmental management of water and waste, Figure 3 below indicates a slight variation in people's satisfaction with waste management over the years. However, dissatisfaction (43.9%) was more prominent among the public than satisfaction (21.3%). The percentage of dissatisfaction was obtained by adding the frequencies of "1. Very dissatisfied" and "2. Somewhat dissatisfied"; in the case of satisfaction, the options "3. Very satisfied" and "4. Somewhat satisfied" were added together.



Source: Own elaboration.

Similar behavior occurred when dealing with the public's level of satisfaction with aspects related to environmental management of water pollution; rivers, wetlands, and streams (see Figure 4). In this aspect, dissatisfaction (43.1%) concerning water's environmental management was also higher than the percentage of satisfaction (20.5%).

FIGURE 4
SATISFACTION/DISSATISFACTION OF PUBLIC OPINION
WITH WATER MANAGEMENT



Source: Own elaboration.

The distribution of opinions is nearly identical for the two environmental issues. Moreover, the public's ambivalent response to waste and water management, neither satisfied nor dissatisfied, about one-third of the public, reflects a striking public indifference to the issue. Overall, the survey results indicate a lack of strong public opinion.

Now we focused on analyzing the substantive and affective attributes of the news agenda evaluated in Table 3, which explain between 2.1% and 2.8% of the dissatisfaction in public opinion regarding water management, and between 1.5% and 2% of the dissatisfaction concerning waste management. We considered it appropriate to explain dissatisfaction at the predictive level since it was higher within these public opinion data.

Table 3 lists all seven potential compelling arguments for public dissatisfaction with waste and water management. All three substantive attributes—existence, effects, and solutions—and one affective attribute—positive emotions—are significantly related to public opinion regarding waste and water management. The other three affective emotions on

TABLE 3
 PREDICTIVE ATTRIBUTES OF PUBLIC OPINION REGARDING
 ENVIRONMENTAL WATER AND WASTE MANAGEMENT

Predictors analyzed	Dissatisfaction with water management (β)	Dissatisfaction with waste management (β)
Existence	0.106***	0.077***
Effects	0.027***	0.012***
Solutions	0.043***	0.048***
Positive emotions	-0.182***	-0.139***
Negative emotions	-0.012	-0.019
Rage	0.013	0.020
Sadness	-0.045	-0.041

Source: Own elaboration.

the media attribute agenda –rage, sadness, and negative emotions– are not related to public opinion on environmental management. Also, these three attributes were ruled out as predictors due to redundancy or multicollinearity problems.

When analyzing the standardized regression coefficients (β) values in this study, it can be observed that the attribute of existence was the significant predictor that most influenced public opinion's dissatisfaction related to water ($\beta = 0.106$) and waste management ($\beta = 0.077$). Aforementioned is followed by predictive attributes that focus on the solution (with β values ranging from 0.043 to 0.048) and effects (with β values ranging from 0.012 to 0.027), also contributing significantly to the increase in public dissatisfaction about water and waste management.

On the other hand, we found that affective attributes focused on positive emotions were significant predictors that influenced the decrease in public dissatisfaction with water ($\beta = -0.182$) and waste ($\beta = -0.139$) management. The other three affective emotions on the media attribute agenda (rage, sadness, and negative emotions) are unrelated to public opinion on environmental management. Also, these three attributes were ruled out as predictors due to redundancy or multicollinearity problems.

Overall, the data presented in this table indicates that an increase in the presence of positive emotions in news coverage leads to higher levels of public dissatisfaction with the management of water and waste. Conversely, data shows a greater emphasis on informative attributes highlighting the problems associated with such management results in higher public dissatisfaction. Although in response to RQ3, all three substantive attributes and one affective attribute are significant predictors of public opinion, none of these results indicate a strong journalistic impact on public opinion.

DISCUSSION AND CONCLUSION: TOWARDS A MORE SPECIALIZED ENVIRONMENTAL COVERAGE

This study of two environmental problems in Colombia, water pollution and waste management, was grounded in attribute agenda-setting. In the first portion of the research, the concept was used in its traditional role of describing the substantive and affective attributes of the media agenda and examining the links between the attributes of the media agenda and measures of public opinion in Colombia regarding water pollution and waste management.

In relation to substantive attributes, we found that the journalists mentioned the attribute existence of the problems far more frequently than effects or solutions. Over the five years studied, journalists described environmental issues but needed to improve in conveying their short and long-term impact and the answers to the problems.

Similarly, our study revealed few connections between the environmental issues locally addressed by Colombian newspapers and significant global concerns such as climate change. Among the 358 news items analyzed in our study, only 4.75% used the broader term “climate change.” Moreover, news regarding environmental mismanagement in local contexts in Latin American media is “approached from a catastrophic and apocalyptic perspective” (Massarani et al., 2017, p. 8). Scholars like Gaudiano (2005) consider this may generate a negative effect among the public, such as resistance to participation and induce feelings of despair. While journalists tend to have a local perspective, there is a need to create greater awareness of how recurrent problems in the local news agenda are also global.

At the same time, we concur with Castrillón et al. (2011), who found that environmental news in Colombia lacks scientific evidence. Moreover, our study suggests that journalists must seek a broader array of news sources to achieve a more comprehensive attribute agenda. In addition, the recurrent use of politicians as spokespersons for environmental issues is a concern for us and other researchers (Arcila-Calderón et al., 2015; Massarani et al., 2017).

Subsequently, regarding the dominant affective attributes, a key finding was the prominence of expressions conveying optimism and hope for the government's work in recovering areas deteriorated by waste. Also, the joy of the communities for having new recreational spaces appeared more frequently in the news. News relating to emotions associated with anger and sadness received less coverage than positive emotions.

Next, regarding the substantive and affective attributes that function as compelling arguments and influence public opinion, findings reveal dissatisfaction among the public with the authorities' environmental management of water and waste pollution. This specific result reflects citizen anger with government environmental management's perceived poor performance overall. Valencia (2015) considers that this view is associated with the generalized deficiency among the public of technical knowledge to address environmental and preservation problems. However, these results can also be interpreted as a voice of citizen protest, a clamor that demands journalists adopt a broader civic role in their stories. Castrillón et al. (2011), Massarani et al. (2017), and Arcila-Calderón et al. (2015) question the imbalance of sources that could also explain the inequality in the attributes' agenda, where reporters paid less attention to the consequences and possible solutions.

Finally, the analysis of the predictive power of the attributes in the news coverage revealed that the attribute existence of a problem was the predictor that had the most significant influence on the increase of public opinion dissatisfaction on this issue. Although modest, the predictive power of the attribute existence was far above the attributes of effects and solutions with lower values in terms of prediction and appearance in the news. The low appearance of effects and solutions

strongly suggests the value of an explicit media issue attribute norm to achieve a more robust coverage of issue attributes.

At the affective level, the positive emotions analyzed were the significant predictor with the greatest influence on decreasing dissatisfaction in the news related to the environmental management of water and waste. This result is an invitation for journalists to review whether the frequent appearance of positive emotions results comes from a strategy by the government to change the perception of dissatisfaction with the environmental management of water and waste. Journalists should consider whether their sources of information are consciously conscious or unconsciously using them.

We began with the traditional empirical analysis of the news coverage on these environmental issues because it was the catalyst for examining attribute agenda as a normative concept to guide news coverage. Our empirical results and the shortcomings they reveal contribute to the serendipitous exploration of an attribute agenda news norm. This norm focuses on the scope of the media attribute agenda. Building on these results, the second portion of the research examined using the attribute agenda-setting concept as a normative guide in constructing and organizing the media attribute agenda.

This study is the only attribute agenda-setting study of environmental problems in Colombia and adds to the small cache of attribute agenda-setting studies conducted worldwide. Importantly, this study's attribute media agenda is linked conceptually to another attribute agenda-setting environmental study, Vu et al.'s (2020) examination of the salience of climate change in the U.S. Although this study essentially replicates the U.S. findings in outline—all three substantive attributes and one affective attribute are significant predictors of public opinion—none of these results indicate a strong journalistic impact on public opinion in Colombia. Attributes in the news predict between 2.1% and 2.8% of dissatisfaction in public opinion regarding water management and between 1.5% and 2% of dissatisfaction regarding waste management.

As Vu et al. (2020) noted, within the context of media attribute agenda setting, individual attributes can also be examined as instances of compelling arguments, attributes that resonate strongly with the

public and enhance the salience of an issue among the people. These theoretical links are present in the Colombian data, but as noted, none of these attributes strongly impacted public opinion in the country. The weak attribute agenda-setting effects found in Colombia were the catalyst for examining the application of the attribute agenda-setting concept as a normative guide to the construction and organization of the media attribute agenda. In other words, explicit consideration of the concept of the media attribute agenda may be a helpful guide to editors, news directors, and reporters.

The core norms of journalism, news values, determine which issues are on the media agenda at the first level of agenda-setting. Examining the media's issue attribute agenda as a news norm focuses on the second level of agenda setting: the attributes –which aspects of an issue– are included on the media agenda. The breadth of the attribute agenda and the substance of those attributes included in the news coverage indicates the coverage's quality for creating an informed public. The ideal attribute news agenda encompasses an extensive attribute agenda, not just sketches of one or two attributes.

A variety of approaches exist for constructing a comprehensive attribute agenda. One direction is to draw extensively upon universities' scientific and scholarly work and think tanks regarding the effects and potential solutions to these environmental problems. A complementary approach familiar to journalists is systematically observing other news organizations' attribute agendas. This can be done informally or, better yet, through systematic content analysis of news coverage. For example, an extensive content analysis of a national news archive and Twitter regarding news coverage of the nuclear issue in South Korea identified 18 attributes of the issue, a far more nuanced attribute agenda than a simple dichotomy of national security and energy production (Kim & Min, 2015). An international content analysis of seven major newspapers in North and South America, Asia, and Europe identified 31 attributes of the Iraq War coverage (Guo & McCombs, 2015). Beyond these traditional sources, Merritt & McCombs (2014) outline various local sources for expanding the attribute agenda, such as conversations and discussions at civic organizations and on neighborhood listservs.

Using attribute agenda setting as a news norm can overcome the shortcomings in Colombian newspapers' coverage of the environment. That is, news coverage should encompass an extensive and comprehensive attribute agenda. Among the attributes that will enhance this coverage are scientific studies, both the local and international aspects of the environment and the public's sentiment about the environment, in addition to public officials' and politicians' views.

Attribute agenda setting –both in terms of agenda-setting effects on the formation of public opinion and as a news norm guiding the construction of the media agenda– can be helpful for journalists. In conclusion, in Colombia, we found a truncated media attribute agenda. Environmental management of water pollution and waste is far more complex than the news coverage detailed in our content analysis of the substantive and affective attributes. A more comprehensive examination of the media's attribute agenda is needed, both an examination by the journalists who set the media agenda and scholars to identify which attributes resonate with the public. Future studies should further explore the relationship between the frequent occurrence of positive emotions and the prevalent use of political or governmental sources in reporting environmental issues.

For journalists, an explicit news norm, the media attribute agenda, guiding the second level of agenda-building, can advance the news' breadth, scope, and quality. This new theoretical strand can contribute to journalists rethinking their news coverage and positively impacting public opinion. Finally, this research's results suggest the need to cover environmental management with specialized reporters. Currently, the coverage of these topics is carried out by journalists who cover general information.

Bibliographic references

- Ader, C. R. (1995). A longitudinal study of agenda setting for the issue of environmental pollution. *Journalism & Mass Communication Quarterly*, 72(2), 300-311.
- AIMC. (2019). Estudio General de Medios: Audiencia de Internet. <https://www.aimc.es/blog/entrega-resultados-egm-1a-ola-2019/>
- Arcila-Calderón, C., Freyle-Granados, J. & Mercado, M. (2015). De la Cumbre de Nairobi (2006) a Copenhague (2009): Cobertura del

- cambio climático en medios digitales en español. *Cuadernos.Info*, 37, 107-119. <https://doi.org/10.7764/cdi.37.779>
- Baumgartner, F. R. & Jones, B. D. (2010). *Agendas and instability in American politics*. University of Chicago Press.
- Cano, A. & Rincón, L. (2015). La información medioambiental en los periódicos nacionales de Colombia y España: un estudio comparativo. *Respuestas*, 20(2), 34-53. <https://dialnet.unirioja.es/servlet/articulo?codigo=5364582>
- Castrillón, T. A., Hermelin, D. & Bustos, T. P. (2011). La cobertura de la ciencia en los noticieros colombianos: del análisis de resultados a las reflexiones metodológicas para su investigación. *Ensaio Pesquisa em Educação em Ciências (Belo Horizonte)*, 13(3), 151-166. <https://doi.org/10.1590/1983-21172011130310>
- Gaudiano, E. G. (2005). *Comunicación y conflictos ambientales en México. Educación para la conservación*. Editorial Facultad de Ciencias UANL.
- Ghanem, A. A. (1997). The limits of parliamentary politics: The Arab minority in Israel and the 1992 and 1996 elections. *Israel Affairs*, 4(2), 72-93.
- Guo, L. & McCombs, M. (Eds.). (2015). *The power of information networks: new directions for agenda-setting*. Routledge.
- Kahn, J. H., Tobin, R. M., Massey, A. E. & Anderson, J. A. (2007). Measuring emotional expression with the Linguistic Inquiry and Word Count. *The American Journal of Psychology*, 120(2), 263-286. <https://www.jstor.org/stable/20445398>
- Kepplinger, H. M. & Roth, H. (1979). Creating a Crisis: German Mass Media and Oil Supply in 1973-74. *Public Opinion Quarterly*, 43(3), 285-296.
- Kim, J. & Min, Y. (2015). An issue attention cycle analysis of the network agenda setting model. In L. Guo & M. McCombs (Eds.), *The power of information networks: new directions for agenda setting* (pp.132-143). Routledge.
- Kim, Y., Kim, Y. & Zhou, S. (2017). Theoretical and methodological trends of agenda-setting theory: A thematic analysis of the last four decades of research. *The Agenda Setting Journal*, 1(1), 5-22.
- Krippendorff, K. (2018). *Content analysis: An introduction to its methodology*. SAGE.

- Massarani, L., Rocha, M., Pedersoli, C., Almeida, C., Amorim, L., Cambre, M., Nepote A. C. & Cordioli, L. (2017). *Aproximaciones a la investigación en divulgación de la ciencia en América Latina a partir de sus artículos académicos*. Editorial Fiocruz-COC.
- Mikami, S., Takeshita, T., Nakada, M. & Kawabata, M. (1995). The media coverage and public awareness of environmental issues in Japan. *Gazette (Leiden, Netherlands)*, 54(3), 209-226.
- McCombs, M. E. (2004). *Setting the agenda: The mass media and public opinion*. Polity Press.
- McCombs, M. & Valenzuela, S. (2020). *Setting the agenda: Mass media and public opinion*. Polity Press.
- McCombs, M. E. & Shaw, D. L. (1972). The agenda-setting function of mass media. *Public Opinion Quarterly*, 36(2), 176-187.
- Merritt, D. & McCombs, M. (2014). *The Two W's of Journalism: The why and what of public affairs reporting*. Routledge.
- Neuendorf, K. A. (2017). *The content analysis guidebook*. SAGE.
- Pennebaker, J. W., Booth, R. J., Boyd, R. L. & Francis, M. E. (2015). *Linguistic Inquiry and Word Count: LIWC2015*. Lawrence Erlbaum Associates
- Ramírez-Esparza, N., Pennebaker, J. W., García, F. A. & Suriá, R. (2007). La psicología del uso de las palabras: Un programa de computadora que analiza textos en español. *Revista Mexicana de Psicología*, 24(1), 85-99. <https://www.redalyc.org/pdf/2430/243020635010.pdf>
- Ploughman, P. D. (1984). *'The creation of newsworthy events: an analysis of newspaper coverage of the man-made disaster at Love Canal'* [Unpublished doctoral dissertation]. State University of New York at Buffalo.
- Red de Ciudades Cómo Vamos. (2020, 15th December). Resultados 2da medición Encuesta Virtual #miVozmiCiudad. <http://redcomovamos.org/diciembre-2020-resultados-2da-medicion-encuesta-virtual-mi-vozmiCiudad/>
- Soroka, S. N. (2002). *Agenda-Setting Dynamics in Canada*. UBC Press.
- Stieglitz, S. & Dang-Xuan, L. (2012). Political communication and influence through microblogging-An empirical analysis of sentiment in Twitter messages and retweet behavior. In *2012 45th Hawaii International Conference on System Sciences* (pp. 3500-3509). IEEE. <https://doi.org/10.1109/HICSS.2012.476>

- Tausczik, Y. R. & Pennebaker, J. W. (2010). The psychological meaning of words: LIWC and computerized text analysis methods. *Journal of Language and Social Psychology*, 29(1), 24-54. <https://doi.org/10.1177/0261927X09351676>
- Valencia, M. C. (2015). *Guía periodística agenda verde: una mirada a la problemática del medio ambiente y el cambio climático en Colombia*. Gráficas Editores.
- Vu, H. T., McCombs, M., Russell, A. & Pain, P. (2020). Deepening the concept of ‘compelling arguments’ Linking substantive and affective dimensions of attributes in assessing the effects of climate change news on public opinion. *The Agenda Setting Journal*, 4(2), 219-240.
- Weaver, D. H. & McCombs, M. E. (1981). Journalism and social science: A new relationship? *Public Opinion Quarterly*, 44(4), 477-494. <https://doi.org/10.1086/268618>
- White, T. (1973). *The Making of the President, 1972*. Atheneum Publishers.

PROFILES

Maxwell E. McCombs, University of Texas at Austin

He is an American journalism scholar recognized for his work in political communication. He is the Jesse H. Jones Centennial Chair Emeritus for Communication at the University of Texas at Austin. He is particularly known for developing the theory of media agenda setting with Donald Lewis Shaw.

Marta Milena Barrios, Universidad del Norte

She has a PhD in Social Science and is an Associate Professor at the School of Communication and Journalism at Universidad del Norte, in Barranquilla, Colombia. Professor Barrios’ academic interests include the study of the relation between Colombian society and informative media. Her teaching and research include journalism, public opinion, and agenda-setting.

Miguel Garcés, Universidad Tecnológica de Bolívar

He has a PhD in Communication and is an Associate Professor at the Universidad Tecnológica de Bolívar in Colombia. His research interests are focused on Journalistic Cultures and Communication for Development. He is an active member of two renowned studies of global scope: Journalistic Role Performance Around the Globe Project and World's Journalism Study.