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Bailey, Ian

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RESEARCH ARTICLE



Media coverage, attention cycles and the governance of plastics pollution

Ian Bailey 0

School of Geography, Earth and Environmental Sciences, University of Plymouth, Plymouth, UK

Correspondence

lan Bailey School of Geography, Earth and Environmental Sciences University of Plymouth Drake Circus, Plymouth, PL4 8AA, UK.

Email: ibailey@plymouth.ac.uk

Abstract

Fluctuations in media and public attention create major challenges for the governance of environmental problems but detailed investigations of how issueattention cycles affect environmental governance processes remain limited. This article addresses this gap using a literature analysis to examine the effects of issueattention cycles on policy responses to plastics pollution. It explores trends and features of media coverage of plastics, their influence on public pressure for action, linkages between shifts in attention and measures to govern plastics at the international, national, sub-national and corporate levels, and options to utilise issue-attention cycles to support greater action on plastics. The review indicates that heightened media coverage has encouraged greater public engagement with plastics overall but that elements of media reporting raise questions about the coherence and longevity of public pressure for change. Links between attention peaks and increased policy activity also remain unclear, though some policy-makers have used peaks to inject momentum into policy processes and initiate longer-term reforms that buffer policy against declining interest. Alongside these techniques, new framings emphasising the economic, social and health impacts of plastics may assist in extending concern and pressure for action. The article concludes by arguing the need to deepen understandings of the properties of attention cycles for different environmental problems and their implications for governance efforts.

KEYWORDS

governance, issue framing, issue-attention cycle, media coverage, plastics pollution, public engagement

1 | INTRODUCTION

Mounting public concern about plastics pollution in recent years has been driven at least partly by heightened media coverage of the issue since 2017. Although the adverse effects of plastics had been documented by researchers and in the media for many years, David Attenborough's narration of the effects of discarded plastics on marine wildlife in the BBC's Blue Planet II series appeared to mark a

watershed in media, public and political attention to plastics pollution (Males & van Aelst, 2020).

While this crystallisation of concern offers some hope of progress against an accumulating global problem, Downs (1972) argued that public attention rarely remains focused on individual issues for long periods, even those that pose a serious threat. Instead, issues tend to follow a systematic *issue-attention cycle* of rising and falling awareness (also Howlett, 1997; Rose et al., 2017; Soroka, 1999). This cycle

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begins with a *pre-problem* phase, when an issue has not yet captured the public imagination, although experts and interest groups may already be researching it. There then follows an *alarmed discovery* phase, where an event or other factors trigger heightened media coverage and the public begins clamouring for solutions. This is commonly followed by a *realisation of the costs of significant progress*—often related to financial, technological or lifestyle constraints—that dampens enthusiasm for radical solutions. The fourth stage, *declining public interest*, occurs as other issues start to captivate audiences before, in the *post-problem* stage, the issue enters "a twilight realm of lesser attention or spasmodic recurrences of interest" (Downs, 1972: 40).

Downs never contended that issue-attention cycles prevent environmental problems being solved, especially where they present major risks or affordable substitutes exist (Lofstedt, 2014). Even short-lived demand for action may lead to durable remedies or learning on how to address issues on future occasions (Nilsson, 2005). However, loss of media and public attention has eroded the impetus for policy on many environmental issues, especially where action is opposed by influential groups (Dauvergne, 2018b; 2018b). How long plastics pollution will maintain media and public attention and what outcomes will result are difficult to predict. Research on the sources and effects of plastics may help to intensify the issue's salience (e.g., Antão Barboza et al., 2018; Chiba et al., 2018; Geyer et al., 2016; Jambeck et al., 2015; Koelmans et al., 2017; Mendenhall, 2018; Vince & Hardesty, 2017). So too may research on plastic governance (Bonanno & Orlando-Bonaca, 2018; Clapp, 2012; Dauvergne, 2018a. 2018b; Gold et al., 2014; Landon-Lane, 2018; Löhr et al., 2017; Peppitas et al., 2016; Raubenheimer & McIlgorm, 2017; Vince & Hardestv. 2017: Vince & Stoett. 2018: Xanthos & Walker. 2017). However, continued media attention is likely to be crucial in maintaining pressure for action (Vince & Hardesty, 2018).

Despite this, detailed investigations of how issue-attention cycles influence the governance of environmental issues remain sparse (McDonald, 2009; Schäfer et al., 2014). Most studies instead focus on charting changes in attention or the strength of links between the public salience of issues and policy activity (Howlett, 1997; Peters & Hogwood, 1985; Soroka, 1999). Although some studies suggest that issue-attention cycles only partly capture why issues experience bursts of policy development (Holt & Barkemeyer, 2012; Howlett, 1997; Soroka, 1999), they often centre on whether issue-attention cycles can predict policy activity when they may have greater value as a heuristic lens for exploring how shifts in attention affect the dynamics of environmental governance. Equally, there remains limited research on how attention cycles vary for different environmental problems despite the potential significance of these variations for how each issue is governed.

The aim of this article is to address these gaps by investigating the implications of the issue-attention cycle for the governance of plastics pollution. The article is based on a thematic review of literature relevant to understanding the effects of issue-attention on the governance of plastics, but also draws on, and provides lessons for, other environmental problems. Three main themes are discussed. The

first considers trends in media reporting of plastics and its effects on public engagement. The second examines links between issue-attention cycles and measures to govern plastics at the international, national, sub-national and corporate levels. The third reflects on options to manage issue-attention cycles in ways that support greater action on plastics pollution, before conclusions are offered.

2 | RESEARCH STRATEGY

The research consisted of a thematic literature review examining a range of issues relevant to understanding the effects of issueattention cycles on the governance of plastics pollution. The literature search focused on analysis of media coverage and governance initiatives in the academic literature (e.g., Anderson et al., 2016; Borg et al., 2020; Dauvergne, 2018a, 2018b; Keller & Wyles, 2021; Loges & Jakobi, 2020) using Scopus and Google Scholar searches but did not involve primary analysis of media coverage or individual governance initiatives. The literature research was restricted to the English language literature but was not geographically bounded and included case examples from Europe, Asia, Latin America, Africa, Australia and the United States. The temporal coverage was also unrestricted to capture a broader range relevant publications examining media coverage of plastics and plastics governance. However, the majority of sources were published between 2017 and 2021, coinciding with heightened media and governance attention to plastics following the Blue Planet II series.

A sequential enquiry was used to investigate each research theme identified below. The primary search terms "plastics," "plastic pollution," "plastic waste," "ocean plastic" and "ocean litter" were used to capture the various terminologies used in articles to discuss plastics pollution (Males and van Aelst, 2020). Thematic word searches (identified below) were then tailored to the individual issues investigated:

- 1. Quantitative and qualitative characterisation of media coverage of plastics, examining trends in media and public attention to plastics (Males & van Aelst, 2020). Search terms used for this characterisation were: "media," "news," "television," newspaper," and "social media" (appended to "coverage" and "reporting") to identify articles examining coverage in different types of outlet. Qualitative differences in coverage between outlets were then derived from characteristics identified in articles reviewed, for example, print news (Keller & Wyles, 2021), social media (Abreo et al., 2019), broadcast (Jennings, Allen, & Vu Phuong, 2021; Jennings, Suzuki, & Hubbard, 2021), online news (Eagle et al., 2018), and those comparing media forms (Zhang & Skoric, 2018). This phase identified broad peaks and troughs in coverage of plastics but provided only limited insight on the nature of coverage or public responses to media reporting of plastics.
- To profile how public engagement with plastics has been affected by issue-attention cycles, further searches were conducted for literature on public attitudes to plastics and studies examining links between media coverage and public opinions. The same media

terms were used alongside terms identifying articles on public engagement and policy, "public attitudes/awareness/understanding/opinion/perception". The searches were performed in conjunction with the plastics terms identified above but also revealed significant literature on public attitudes to reporting of climate change, which provided additional insights on: fluctuations in media coverage; journalistic norms and the nature of reporting during peaks of coverage; contrasts in between traditional and social media; and the influence of media reporting on public engagement and policy agendas.

- 3. The third phase examined literature on governance regimes for plastics pollution to inform consideration of the effects of peaks and troughs in media and public attention on the governance of plastics. Search terms used included "policy," "political," and "governance", again in conjunction with plastics. This analysis explored current measures at the international level (Dauvergne, 2018a, 2018b), a selection of national and sub-national jurisdictions, and initiatives by corporations (Landon-Lane, 2018), paying particular attention to the strengths and weaknesses of current governance measures discussed in the literature.
- 4. The final stage sought to develop insights from the literature on options for generating, capitalising on, and prolonging media, public and policy attention to plastics. Gaps in specific literature on the effects of issue-attention cycles on plastics again meant that other areas of literature were explored on themes such as agenda setting and public engagement with environmental problems.

The filtering of articles consisted of preliminary reading of abstracts to identify the relevance of each source, followed by detailed readings of selected sources to aid the categorisation of insights according to each theme of enquiry. One challenge facing the research was the need to draw on ideas from other branches of literature caused by gaps in publications on the issue-attention cycle and plastics pollution. This raised questions of how far lessons from other spheres of environmental governance and media research could be applied to plastics. Conversely, the approach drew in insights from different disciplines, including media studies, political science, sociology, and psychology. Equally, the review could only provide partial coverage of the implications of issue-attention cycles for plastics governance. Comprehensive coverage of national and sub-national legislation was unfeasible because of the variety of bans, taxes, and other measures operating in different jurisdictions. The literature on plastics pollution is also expanding rapidly, so the review was necessarily time-bound. The emphasis was therefore less on providing comprehensive or realtime analysis compared with capturing the essence of the relationship between issue-attention cycles and the governance of plastics.

3 | MEDIA REPORTING OF PLASTICS: TRENDS, STYLES AND ISSUES

Plastics pollution exhibited many hallmarks of the pre-problem stage of issue attention throughout the 1980s, though research was being

conducted and policy attention began to be directed at packaging waste in the 1990s with the adoption the German Packaging Ordinance in 1991 and the European Union Packaging and Packaging Waste Directive in 1994 (Bailey, 1999). Scientific research on plastics also stretches back several decades, with early works including Kenyon and Kridler's (1969) study of plastics ingestion by Layson Albatrosses, Carpenter & Smith's (1972) analysis of plastics in the Sargasso Sea, and Thompson et al.'s (2004) review of microplastic debris in Plymouth Sound, UK. However, Nielsen et al. (2020) estimate that research articles on plastics pollution intensified from 0.2% of the total published literature in the environmental sciences and environmental studies in 1990 to around 3.3% in 2018, with particularly strong growth in work on marine and microplastics. Social science research on plastics also increased from fewer than ten articles per year until 2014 to over 30 articles per year by 2018 (Heidbreder et al., 2019).

Media coverage of plastics equally has a lengthy history (e.g., Plastic Planet in 2009, and Plastic Oceans in 2012), though coverage prior to 2010 was generally low and intermittent. Precise measures of coverage intensity are challenging even for single countries because of the range of media and terminology employed (plastics, plastics pollution, marine plastics/debris/litter, microplastics etc.). However, GESAMP (2015) indicates that 29 items on microplastics were published in UK newspapers between July 2004 and July 2012, with coverage rising since 2012. The LexisNexis database indicates a further 307 articles published in UK newspapers since 2015, with a steady increase over the period 2016-2018, partly coinciding with the Blue Planet II series (Figure 1) (Henderson & Green, 2020). Some slowing of coverage occurred in 2019-2021 as climate change and Covid occupied greater media space, but reporting remained higher than before 2015. Males and van Aelst (2020) similarly identify increases in media and public attention in the UK during and 10 months after the airing of Blue Planet II in 2017 compared with the previous 10 months (Table 1). Public attention continued to grow after the series, while a modest decline occurred in media attention.

While these studies indicate the movement of plastics through the alarmed discovery and early "declining-coverage" stages of the

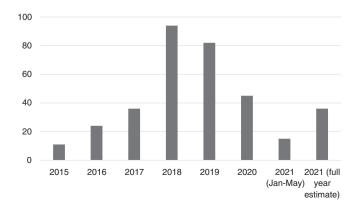


FIGURE 1 Frequency of UK newspaper articles with the term micro plastics, 2015–2021

TABLE 1 Monthly attention to plastics pollution on public and media agendas

| | Before (10 months) | During (4 months) | After (10 months) |
|---------------|-----------------------|----------------------|----------------------|
| Public agenda | 18.4 | 46.9 | 61.3 |
| Media agenda | 9.4 | 53.5 | 38.4 |

Note: The table gives the frequency and average relative popularity of key terms, plastic pollution, plastic waste, ocean plastic, and ocean litter. The frequency for the media agenda relates to the total mentions of key terms in The Guardian and The Daily Mail articles, the two UK newspaper analysed. The public agenda shows the average relative popularity of the key terms used in Google searches, out of 100.

Source: Males & van Aelst (2020: 12).

attention cycle, further analysis is needed of how plastics were reported to gauge its effects on public engagement. Dilkes-Hoffman et al. (2019) and Heidbreder et al. (2019) identify heightened public awareness and concern about plastics during 2017 and 2018, particularly food packaging. However, challenges remain for media reporting of the complexities of how plastics are produced and used (Collignon et al., 2014; Napper et al., 2015; Rillig, 2012; Taffel, 2016), affect ecological systems and human health (Barnes, 2002; Gall & Thompson, 2015; Galloway, 2015; Geyer et al., 2016; Horton et al., 2017; Mendenhall, 2018; Rist et al., 2018; Smith et al., 2018). and are governed at the international, national and sub-national levels (Dauvergne, 2018a, 2018b; Horton et al., 2017). Oversimplification may lead to poor audience comprehension, while excessive detail may cause dejection and disengagement, and both may lead to people basing opinions on inaccurate understandings (Moser, 2010). Other research suggests that detailed knowledge of environmental problems may be unnecessary to mobilise public pressure for policy. Bord et al. (2000) report that the most reliable predictor of public support for climate policy is general understanding of its causes rather than detailed subject knowledge. Males and van Aelst (2020) similarly suggest that many outlets used Blue Planet II to spotlight the issue rather than to explore the technical and scientific dimensions of plastics pollution.

Boykoff and Boykoff (2007) argue that how audiences interpret environmental information is also affected by the journalistic norms media outlets use to select and shape media content (Eagle et al., 2018; Johns & Jacquet, 2018). Personalisation is based on the premise that news value stems from human interest, individual claim-makers and personal sufferings, and discourages systematic analysis of the power relations, economic forces and social processes affecting environmental problems (Boykoff & Boykoff, 2007). Dramatisation similarly encourages the reporting of crises and conflict while muting complex scientific and political information that does not contribute to an immediate sense of excitement or controversy, while novelty privileges saleable drama over chronic and previously discussed problems. Finally, balanced reporting occurs where media outlets give both sides roughly equal attention in contentious debates, regardless of the balance of opinion and evidence (Boykoff & Boykoff, 2007).

Elements of these reporting norms are identified in Keller and Wyles' (2021) analysis of articles on plastics published in four online UK newspapers. The articles covered a variety of topics but indicated a greater emphasis on explaining current issues associated with marine plastics compared with actionable measures or producer responsibility. Reporting also tended to be events-focused, with journalists often anchoring stories to other coverage of marine plastics, such as Netflix's Our Planet documentary in April 2019, or supermarket initiatives to reduce single-use plastics. While such approaches personalised and brought novelty and distinctiveness to reports, many articles targeted one form of plastic at a time to capitalise on recognisable concerns and make them accessible to a broader readership (Keller & Wyles, 2021). Analysis by Völker et al. (2019) comparing scientific and media reporting of plastics similarly suggested that while 67% of scientific publications framed microplastics risks as hypothetical or uncertain, 93% of media articles implied that these risks were highly probable

The creation of simple narratives about plastics raises a number of issues about the effects of high points in issue-attention cycles on public engagement. Keller and Wyles (2021) argue that simple storylines can raise awareness of plastic products, alter behaviour, and increase pressure to reduce plastics and improve waste management. Conversely, spotlighting a few companies, (often non-human) victims, and a limited range of recognisable products (plastic bottles, singleuse bags and straws) can detract attention from other products and overarching issues (Loges & Jakobi, 2020; Ritchie & McElduff, L., 2020; Villarrubia- Gómez et al., 2018). Focusing on controversies that over-extrapolate scientific findings (Rist et al., 2018) can equally lead to fragmentary knowledge slanted towards judgements promoted in the media and increase the chances of maladaptive responses focused on marginal issues and symptoms rather than causes (Eagle et al., 2018; Jacquet et al., 2015). Some industry groups have argued that media reports on the health effects of plastics give misleading impressions of risks (British Plastics Federation, 2018). Stafford and Jones (2019) further argue that media suggestions that plastics pollution can be solved by quick fixes, such as marine clean-ups, biodegradable plastics and minor lifestyle changes, distracts from debate on deeper changes in behaviour and economic systems to address overconsumption.

Although television news, documentaries and newspapers have been important catalysts for the alarmed discovery and ongoing concern about plastics pollution, social media has become a primary news source for many individuals (Brandtzaeg et al., 2016). Among other things, the reach of social media has conveyed ideas about plastics to previously less-engaged audiences, improving environmental information efficacy and stimulating debate through interactive tools like Tweets, shares, and comments (Jennings, Suzuki, & Hubbard, 2021). Many social media advocacy campaigns additionally offer greater opinions and advice than traditional media on behaviour change, community initiatives, and political activism, including campaigns shaming litter producers and calling for new regulations (Loges & Jakobi, 2020; Ritchie & McElduff, 2020; Zhang & Skoric, 2018). Further social media activities noted include providing vivid imagery and citizen-science

data on the effects of plastics on wildlife (Abreo et al., 2019; Coram et al., 2021; McNicholas & Cotton, 2019). Jennings, Allen, and Vu Phuong (2021) additionally argue that a social-media advocacy video opposing single-use plastics increased risk perception among both Democrat and Republican voters in the United States. However, no increases were identified in viewers' willingness to advocate reductions in single-use plastics or their intent to engage in consumer activism.

While this raises doubts about social media's capacity to promote political or behavioural activism, one of its major contributions has been in magnifying and prolonging debates initiated by traditional media (Li, 2020; Walther et al., 2021). However, social media coverage has shown a greater tendency to elicit negative emotions, misperceptions and division in debates on plastics (Li, 2020). Anderson et al. (2016) equally note how the personalisation of social media content and advertisements exposes different groups to disparate forms and styles of information, and increases the chances of people encountering information that reinforces their existing views. Competition between different ways of framing plastics can also contribute to audience confusion or fragmentation. Some of the main narratives identified include: emotion, problem/solution (often centred on common behaviours or technological solutions, such as biodegradable plastics and plastics-consuming bacteria); the promotion of new social norms: and disparagement of current consumption and waste-manpractices (Hai-Jew. 2020: Kolandai-Matchett Armoudian, 2020). Brandtzaeg et al. (2016) additionally contend that lack of observance of journalistic ideals of impartiality, objectivity and accuracy by some social media platforms has compounded a broader decline in trust in the media.

Overall, heightened social and traditional media attention, combined with the characteristics of the plastics problem, appears to have precipitated a substantial "alarmed discovery" of plastics by public audiences since 2017. How much pressure this has generated for stronger regulation of plastics is less clear, not least because the domination of media headlines since 2019 by climate change and Covid hampers detection of a clear "realisation of the costs of action" phase in the plastics attention cycle. Media debates on plastics have largely avoided the levels of disputes and balanced reporting that have complicated climate policy in many countries (Boykoff, 2007). However, the fragmented nature of much media coverage—typified by episodic stories about individual products, initiatives, locations and animals rather than sustained discussion of broader economic and political issues (Henderson & Green, 2020; Keller & Wyles, 2021)-raises doubts about the coherence of public pressure for stronger governance of plastics.

The persistence of public interest in plastics despite reductions in reporting also leaves uncertainty over the dynamics of the declining interest and post-problem stages of the cycle. Landon-Lane (2018) argues that continuously growing awareness of marine plastics will intensify demand for solutions, though some journalistic norms may leave patchy comprehension and reduce the urgency of demand for action as other issues dominate media agendas. However, Rousseau and Deschacht (2020) find no indication of a decrease in Google

Trends searches for environmental topics since the Covid crisis. Environmental problems tend to remain higher on public agendas where they are visible, severe, or affect large or influential sections of the population, and where belief persists in the possibility of solutions (Downs, 1972). Images of the effects of plastic debris (even in areas remote from audiences) have prolonged concern, while plastic bag charges and bans on microbeads and plastic straws have demonstrated the potential for action. However, regular reminders and new ways of framing the problem are likely to be needed to counter audience fatigue with existing frames (Pralle, 2009; Thøgersen, 2006).

4 | PLASTICS GOVERNANCE AND THE ISSUE-ATTENTION CYCLE

The number of initiatives developed at the international, national and sub-national levels to reduce flows of plastics into marine environments has grown steadily in recent decades. At the international level. UNCLOS Part XII deals indirectly with plastics by seeking to minimise releases of persistent toxic, harmful or noxious substances into the oceans (Vince & Hardesty, 2017), as does the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter.ⁱⁱ The revised Annex V of the International Convention for the Prevention of Pollution from Ships (MARPOL) entered into force in 2013, prohibiting the disposal of plastic from ships (Vince & Hardesty, 2017), while the 2011 Honolulu Strategy provides a cooperative planning tool for preventing plastics from entering the oceans (Raubenheimer & McIlgorm, 2017; Vince & Hardesty, 2018). Finally, UN General Assembly Resolution 72/249 in December 2017 established a two-year conference process to agree a treaty to protect biodiversity in areas beyond national jurisdiction, including through the reduction of marine plastics (Tiller & Nyman, 2018).

Despite this growth in governance activity, most assessments concur that international action on plastics remains deficient because many measures only cover plastics indirectly or focus on a limited number of plastics sources (Borrelle et al., 2017; Dauvergne, 2018a, 2018b). Most also rely on state legislation and enforcement and limited progress has been made on measures to reduce plastics use (Bonanno & Orlando-Bonaca, 2018; Gold et al., 2014; Peppitas et al., 2016; Vince & Hardesty, 2018; Vince & Stoett, 2018). These criticisms notwithstanding, the timing of these initiatives indicates that international action has evolved more in response to scientific and institutional processes than the recent spike in media and public attention. This can be regarded as having both positive and negative implications. The shielding of institutional processes from fluxes in public attention theoretically creates more stable conditions for dialogue and policy development (Andresen, 2007). Conversely, exposure to public pressure may inject greater urgency into international processes, as protestors and campaigners sought to do at the 2021 G7 summit in Cornwall by petitioning delegates to intensify action on plastics (Guardian, 2021). These activities included an open letter from businesses, NGOs and MPs calling for a global plastics treaty.

The G7 communiqué included a statement indicating support for working through the UN Environment Assembly to strengthen existing instruments and create a potential new agreement or other instrument to address marine plastics (The White House, 2021). Although links between peaks in public attention and international policy on plastics remain limited, the European Union's plastics strategy indicates politicians' use of public sentiments to justify greater action on plastics. Addressing the European Parliament debate on the EU plastics strategy in January 2018, First Vice President of the Commission, Frans Timmermans, noted a tide of public awareness of plastic pollution, including a Eurobarometer survey where 84% of respondents expressed concern about plastics and an 800,000-person petition calling on the EU to deliver an ambitious plan (European Parliament 2018)

Males and van Aelst (2020) reveal further intricacies in linkages between media/public attention and policies to address plastics. Their analysis of the effects of *Blue Planet II* indicates that plastics were rarely mentioned in the UK parliament between 1980 and 2015, except for small peaks in 2003 and 2008 linked to packaging, recycling and waste produced by supermarkets. References to plastics increased moderately in 2015 and 2016 with the introduction of a mandatory charge in England for single-use plastic bags supplied by larger retailers and calls to ban micro-beads in cosmetic products. However, mentions intensified in 2017, correlated with (and referring to) the intensified coverage of plastics by media outlets and the Draft Environmental Protection (Microbeads) (England) Regulations 2017.

Political attention to plastics thus appears to have been loosely connected to media attention, but the analysis also highlights that significant time lags can occur between increased coverage and policy responses. For example, the UK plastic packaging tax due to take effect from April 2022 originated from a call for evidence in November 2017 on using the tax system to tackle single-use plastic. The call was made just 3 days after the Blue Planet II plastics episode, making a link unlikely. By the time the tax was announced in 2018, however, the UK government acknowledged that its new resources and waste strategy was being driven by a combination of opportunities to refresh environmental policy following Brexit, the UK's Industrial and Clean Growth Strategy, and "[d]evastating evidence of the damage to wildlife and habitats... shown in programmes such as Blue Planet II [...] and Sky's Ocean Rescue campaign" (DEFRA, 2018: 5). Draft legislation was subsequently published in 2020 for a tax of £200 per tonne on plastic packaging with less than 30% recycled content for businesses manufacturing or importing 10 tonnes or more of plastic packaging (UK Government, 2020).

Kenya's ban on single-use plastic bags, which came into effect in 2018, similarly reveals that media attention had some impact in driving new regulation. In this case, previously successful business resistance to action on plastics was overcome by pressure from activist groups and international environmental agencies, and the impact of the social media hashtag #banplasticsKE, which was changed to #IsupportbanplasticsKE after Kenya's Secretary for Environment and Natural Resources tweeted her support (Behuria, 2021). Walther et al. (2021) likewise report how a surge in traditional and social media

reporting on plastics in Taiwan since 2017 intensified other pressures to adopt a far-ranging 10-year Action Plan for Marine Plastics Governance in 2018. In addition to underlining the amplifying effect of media coverage on other policy drivers, the cases highlight geographical variations in issue-attention peaks and the utility of concentrating campaigns towards specific plastics rather than viewing attention cycles as uniform, even for individual categories of pollutant. The 90% reduction in purchases of single-use plastic bag from UK supermarkets since the introduction of its plastic-bag charge similarly indicates the potential for attention peaks to produce longer-term effects where consumer behaviour is a major contributor to reducing plastics use (BBC, 2019).

Further channels exist for peaks in media and public attention to plastics to influence local governance where petitioning occurs for local regulations or channels concerns towards local authority waste management (Kedzierski et al., 2010; Vince & Hardesty, 2017). Olsen et al. (2020) report how increased media coverage has created momentum for local regulations to reduce or clean up plastic debris in Norway and the United States, while Conlon (2021) stresses the benefits of developing locally-appropriate solutions by focusing attention towards local governing bodies. Other examples illustrate that local actions can sometimes accumulate into national regulation. The introduction of a plastic-bag ban by the Pucón municipality in southerncentral Chile in 2013 sparked intense media coverage because of the novel and radical nature of the measure. The subsequent adoption of local regulations by 62 other municipalities prompted national media, public, scientific and political debate that culminated in a countrywide ban in 2018 (Amenábar Cristi et al., 2020).

Although not unique to plastics, local campaigns to foster engagement and local governance responses highlights the potential to generate "mini" attention cycles for local problems that reflect the geographical dimensions of plastics pollution (Kolandai-Matchett & Armoudian, 2020). Local regulations targeting individual issues nevertheless fall short of comprehensive governance (Viera et al., 2020) and may be further constrained by legal and financial restrictions on local governments (Banerjee & Sarkhel, 2020). Vince and Hardesty (2017) consequently stress the need for policy approaches that integrate international, national and local governance actors, scientific expertise, community participation, and market actors while recognising the challenges of synchronising media and public attention across different jurisdictions and scales to generate integrated policy.

Few studies have been published on how attention cycles influence the corporate governance of plastics, despite an extensive literature on media campaigning and corporate social responsibility (Cullen-Knox et al., 2017; Diprose et al., 2018). Those which exist suggest that targeted publicity, such as Malaysia's weekly No Plastic Bag Campaign Day, can influence retailers' approaches if issues are spotlighted over a long-enough period (Zen et al., 2013). Richards and Zen (2016) argue that media scrutiny can also persuade companies to adopt deeper commitments to social responsibility, but that corporate policies always involve elements of marketing. McNicholas and Cotton's (2019) Q-analysis of the effects of media coverage of plastics on public attitudes towards UK retailers, meanwhile, indicates a

growing narrative that retailers need to take greater responsibility for reducing and avoiding plastic packaging. One notable case where adverse media attention affected corporate actions involved the Australian supermarket chain, Coles, which announced in June 2018 that it would join other retailers in withdrawing free single-use plastics bags. Coles then decided to continue offering free thicker plastic bags to "help customers adjust" but announced just 24 hours later that it was introducing a 15-cent charge on bags following a backlash on social media platforms (Borg et al., 2020).

Although media coverage can play an important role in creating social norms and consumer pressure for companies to reduce plastics (Borg et al., 2020; Ma et al., 2020), other studies highlight the challenges of influencing businesses through media activities. First, coverage of individual issues has been identified as encouraging piecemeal initiatives and backsliding on commitments as media and public attention fades (Loges & Jakobi, 2020; Viera et al., 2020). Herbes et al. (2020) equally highlight a tendency among consumers in France, Germany and the US to rely on retailer information to recognise environmentally friendly packaging, some of which was found to be unreliable or misleading. Which? (2021), the independent UK consumer organisation magazine, similarly identifies wide variation in the labelling of plastic packaging by UK supermarkets. However, it also notes the impact of the UK's Plastics Pact in encouraging deeper commitments to reduce plastic packaging and offer reusable, recyclable or compostable packaging (Gong et al., 2020), iii The pact's launch in April 2018 provides a further signal that peaks in attention can accumulate into more durable responses, while Selfridges' Project Ocean campaign promoting awareness of micro-bead free products and sustainable seafood offers reciprocal evidence of the scope for corporate actions to shape public opinion (Vince & Hardesty, 2018).

Summing up, although an upswell in governance activities has coincided with heightened media and public attention to plastics since 2017, links between the two remain difficult to verify. International initiatives have been driven mainly by institutional and political processes, though the 2021 G7 communiqué and EU plastics strategy suggest that public opinion has added urgency to politicians' efforts to confront the costs of action. There are firmer signs that the media and public's discovery of plastics has had some bearing on national and local political debates, and on business actions. However, a feature of debates in the UK and some other countries has been that high-points of interest have stimulated longer-term policy processes, such as the Plastics Pact and packaging tax, that have persisted as other issues have supplanted plastics in the media. The realisation of costs and declining interest phases of the attention cycle may thus not always lead to a stalling of regulation if issues remain salient long enough for policies to gain their own momentum.

The analysis also suggests greater intricacy in the media-policy relationship than the general trends depicted in Downs' (1972) issue-attention cycle. Spatial variations in the timing and focus of attention phases may have ramifications for governance responses, as can miniand localised attention peaks. Another feature of the plastics issue-attention cycle is the large range of plastic applications and routes through which plastics pollute the environment (Jambeck et al., 2015;

Mendenhall, 2018). Media coverage of these individual streams and poster-child issues (Keller & Wyles, 2021) can create multiple pressure points for regulation as part of an assemblage of attention cycles (contrasting with Downs' more monolithic account) but be less effective in encouraging comprehensive action (Gattringer, 2018). The evidence nevertheless suggests that the capacity for media coverage to amplify concerns has encouraged greater policy impetus (Walther et al., 2021). The next section now explores ways features of the plastics issue-attention cycle might be utilised to promote the continued growth of plastics regulation (Holt & Barkemeyer, 2012).

5 | WORKING WITH AND MANAGING THE PLASTICS ISSUE-ATTENTION CYCLE

Issue-attention cycles are complex phenomena that cannot be neatly orchestrated or managed. However, activists and policy-makers may still be able to apply their knowledge of the cycle's features to anticipate events and adapt initiatives even if attempts at steering public opinion and policy unfold only partly as intended (Shove & Walker, 2007). Rose et al. (2017) identify four such areas of opportunity: (i) anticipating and creating new windows; (ii) responding quickly to opening windows; (iii) framing ideas in ways that reflect political priorities and the attributes of individual windows; and (iv) persevering when policy and attention windows appear closed.

Foreseeing and creating new surges in attention is among the toughest tasks facing advocates of environmental action because it requires an event capable of drawing attention from other issues. Blue Planet II's impact stemmed from a combination of David Attenborough's skills in environmental communication, the BBC's international audience, and imagery that struck a chord on an issue that was already attracting concern. Such ingredients are not easily replicated, though Cook et al. (2014) argue that techniques like horizon scanning and scenario planning can help in detecting emerging threats and provide a starting point for planning publicity campaigns. High-profile scientific reports can also sometimes generate publicity and challenge perceptions of environmental problems. The Stern Review on The Economics of Climate Change (Stern, 2006) and the Intergovernmental Panel on Climate Change Special Report on Global Warming of 1.5°C (2018) both helped to re-energise discussions on climate policy, while the Pew Charitable Trusts/SystemIQ Breaking the Plastic Wave report sought to stimulate policy debate on plastics by projecting pollution trends and offering proposals for reducing marine litter (Pew Charitable Trusts/SystemIQ, 2020).

Features of plastics pollution may themselves also help in reviving attention. The visibility of plastics in everyday life makes the issue more relatable, though its embeddedness can also have a concealing effect, while beaches blighted by plastics, although physically remote from many audiences, can hold strong symbolic meanings (Jefferson et al., 2014; Keller & Wyles, 2021). The propensity for issues that have gone through previous issue-attention cycles to maintain some level of concern may also help in rekindling interest. This might be attempted, for example, by revisiting issues that captured sympathy

during earlier cycles, highlighting new threats if previous ones fail to ignite concern, and demonstrating that previous responses have proven inadequate (Downs, 1972).

Recognising that attempts to activate new phases of attention may suffer multiple setbacks, a core priority in responding to new peaks is to set clear goals on what can be achieved within limited timeframes and at different points in the cycle. For example greater scope may exist to pursue radical approaches earlier in cycles when appetites for change are higher, whereas defending gains and preparing for future cycles may become priorities later on. Singling out highprofile concerns for early action may also help to generate momentum and show that action is achievable even if initial reductions in plastics pollution are marginal (Dauvergne, 2018b). Responding effectively also depends on identifying appropriate ways to frame issues and policy responses. Developing coherent frames for a multifaceted problem like plastics is again challenging but choosing options may be aided by appreciating that existing frames often lose their impetus if they are repeated constantly (Pralle, 2009). Images of wildlife and beaches affected by plastics remain essential to communicating plastics pollution but can fall victim to compassion fatigue, particularly among audiences for whom they have lower salience (Markowitz et al., 2013). Stressing the economic and social co-benefits of circular economy approaches to plastics or the health benefits of reducing plastics may provide alternative ways of maintaining belief that solutions exist (Antão Barboza et al., 2018; Axelsson & van Sebille, 2017; Galloway, 2015; Morrissey, 2019). For example, Axelsson and van Sebille (2017) identify lower waste-collection and sewage-treatment costs, improvements in the amenity of parks and beaches, and increases in property values resulting from reduced blighting by litter among the co-benefits of reducing plastics litter. Morrissev (2019). meanwhile, argues that stressing the health benefits of marine areas can counter opposition to investments in reducing ocean plastics.

From an activist perspective, Rose (2017) stresses the need for diverse framings that capture the full range of ecological and human problems caused by plastics, including links between plastics waste and justice and the climate effects of degrading plastics (Stoett & Vince, 2019). Rose (2017) also emphasises a need to sharpen public enthusiasm for action by framing plastics as an inherently dangerous pollutant, rather than as irritating but harmless litter that can be remedied through clean-up campaigns. Rist et al. (2018), however, stress the need for accuracy and perspective, arguing that most health studies on plastics show the presence of plastic particles in different environments but are not aimed at evaluating the hazards they pose to human health. More generally, misleading claims and ill-judged solutions may damage the reputation of initiatives or organisations working to address plastics pollution (Stafford & Jones, 2019).

A key question during the declining interest and twilight stages of attention cycles is how to sustain the salience of plastics as attention shifts towards new issues. Some studies suggest that Covid lockdowns have increased engagement with recycling and consumption as people have reflected on their lifestyles and global issues (Tchetchik et al., 2021), though others indicate that environmental concerns have been displaced and that purchases of food packaging and single-use

plastic bags have risen (Leal Filho, 2021). Conflicting evidence on this issue raises questions about the finite pool of worry hypothesis – that environmental concerns diminish as other worries increase (Evensen et al., 2021) – but suggests that some salience might be maintained during attention lulls by concentrating efforts towards elements of the plastics that continue to resonate or align with new concerns. Much of the recent concern about plastics has converged around items such as single-use bottles and coffee cups that might provide leverage for continued engagement, while concern has grown about disposable face masks and other PPP (Leal Filho et al., 2021). Working to embed plastics into current and emerging framings—in particular post-Covid "build back better" narratives—may also help to renew impetus for action as the pandemic eases.

While multiple options exist to create and exploit attention to plastics, their impact ultimately depends on how governing bodies utilise issue-attention cycles. Delays to plastics legislation in many countries—to ease economic burdens during the pandemic—underline the susceptibility of policy to other issue-attention peaks (Pinto da Costa, 2021). Managing losses in attention by concentrating policy activity within short-lived windows increases the risk of poorlydesigned and disjointed measures, especially if media and public debate becomes fragmented and emotionally charged (Cullen-Cox et al., 2017). Another option involves preparing new regulations in advance to enact during the next attention peak (Compston, 2009), though uncertainty over the timing and intensity of future coverage creates difficulties for this approach. Governments may alternatively use issue-attention peaks to instigate long-term regulatory processes that buffer policy against opposition and declining interest. Creating long-term legal principles, obligations and implementing measures is central to the logic of climate change acts (Nash & Steurer, 2019), and is advocated for plastics by Policy Connect, a UK cross-party parliamentary think-tank for the collaborative development of policy ideas (Policy Connect, 2019). Industry and political resistance to microbeads bans in several US states and earlier, failed attempts to ban single-use plastic bags in Kenya nonetheless highlight the risk of radical initiatives stalling during the realisation of costs and declining interest phases of the attention cycle (Behuria, 2021; Dauvergne, 2018a). Alternatively, fiscal measures like the UK plastic packaging tax have a potentially broad impact and can be adjusted relatively easily by altering recycled-content and taxation rates.

A broader consideration for how governing bodies utilise attention peaks concerns the level of emphasis given to transformative change in plastics production and use compared with more incremental approaches targeting individual plastics streams. Flagship policies such as the EU's circular economy package and the UK's plastic packaging tax can have long gestation periods and attract serious opposition. The introduction of flagship measures may be aided by attention spikes, but their adoption and implementation need to withstand the realisation of costs and declining interest phases of cycles if they are to achieve long-term impact. Conversely, targeting single types of plastics may be easier to link to attention peaks and can enable learning on policy design and how to utilise attention peaks (Fitch-Roy et al., 2020). Managing the risks of high-profile policy informed the

adoption of plastic bag charges in England, where the results of charges in Wales, Northern Ireland and Scotland aided assessment of economic impacts and public acceptance and helped to soften resistance from retailers. Thomas et al. (2019) report that public support for bag charges in the UK grew rapidly after their introduction and predict greater support for other charges to reduce plastic waste. Despite the advantages of such purposeful incrementalism, including its adaptability to new scientific information, such approaches can lack strategic direction or lull the public into thinking plastics pollution has been solved and dampen demand for further policies (Coglianese & d'Ambrosio, 2008).

A further option might involve rallying coverage around established solutions. Landon-Lane (2018) explores the creation of a Plastics Stewardship Council that capitalises on the reputation of forest and marine accreditation while promoting industry collaboration and knowledge-sharing on circular economy approaches to plastics. Building operational infrastructure for a plastics certification scheme would require long-term commitments from governments, business and NGOs that may extend beyond high points in attention. However, the UK's Plastics Pact again indicates how peaks in attention can help to initiate more structured approaches to plastics production and management (Gong et al., 2020).

6 | CONCLUSION

Plastics pollution has risen rapidly up the ladder of public concerns in recent years, driven at least in part by heightened media coverage of the issue. While this growth in concern provides some hope of greater progress in tackling plastics pollution, environmental problems are widely recognised to be susceptible to the fluctuations of the issue-attention cycle. The aim of this article has been to investigate the implications of this cycle for governing plastics by examining three main issues: (i) trends in media reporting of plastics and its effects on public engagement; (ii) links between issue-attention cycles and measures to govern plastics at the international, national, sub-national and corporate levels; and (iii) options to manage issue-attention cycles in ways that support stronger action on plastics pollution.

Increased media coverage since 2017 has prompted a major increase in public engagement with plastics pollution and appears to have generated pressure for policy responses that has endured during the attention cycle's realisation of costs and declining interest phases (Males & van Aelst, 2020). However, elements of the ways the media has reported on plastics—through human-interest, dramatised and fragmented stories rather than systematic analysis of its economic and political causes—raises questions about the coherence and longevity of public pressure for policy change (Keller & Wyles, 2021). Important contrasts also emerged between the role of traditional media as a principal catalyst for the alarmed discovery of plastics and social media as an amplifier of concerns, and as an advocate, debating chamber and disseminator of opinions and solutions (Walther et al., 2021).

Although some links were identified between media/public attention and policy activity, these were generally limited and public attention has been, at most, a contributory factor to policy development. However, the analysis also revealed how politicians have invoked public sentiment to inject momentum into policy processes and have initiated longer-term policy processes during attention peaks to help insulate policy development against the declining interest and twilight stages of the cycle. Greater understanding of how issue-attention cycles operate also provides useful insights on options to advance plastics regulation. Engineering new alarmed discovery phases remains challenging but some traction may be gained by horizon scanning for emerging threats, revisiting issues that resonated with audiences during previous cycles, and commissioning high-profile reports to invigorate public and policy debate. At the same time, new framings emphasising the economic, social and health benefits of reducing plastics and promoting circular economy approaches to waste may be needed to counteract audience fatigue (Morrissey, 2019). Targeting publicity and policy towards individual types of plastics may again help to maintain attention, though the merits of incremental approaches need to be balanced against the need for comprehensive action to stem the flow of plastics into marine and terrestrial environments.

These possibilities for utilising elements of the issue-attention cycle to aid plastics governance should not be interpreted as implying that attention cycles are easily manageable. Events, media coverage and public attention are rarely amenable to deliberate steering (Shove & Walker, 2007) and caution is needed in how insights on plastics are extrapolated to other environmental problems that have different properties, levels of visibility, geographies and contours of media, public and policy attention. General principles may be derived about using alternative framings and initiating long-term policy processes but must be accompanied by detailed understanding of the causal factors affecting the dynamics of issue- and policy-attention for individual problems, jurisdictions and audiences.

Inconsistency in public attention to environmental problems represents a serious, but underexplored, challenge for environmental governance. By examining the plastics issue-attention cycle, this article has sought both to advance understanding and encourage further research on this relationship. Future lines of enquiry include how issue-attention cycles vary between issues and places. Downs (1972) described the cycle as a suite of general peaks and troughs; in reality, complex problems like plastics and climate change experience multiple differentiated spikes in attention, often focused on different facets of the problem. Case study research in high, middle and low-income countries would also clarify how economic, social and political distinctions influence public debate and policy initiatives, while further work on coverage by traditional and social media, the effects of different framings, and the capacity for attention cycles to trigger long-term policy processes would deepen understanding of the attention-policy relationship. When and how far plastics will fade from the limelight is difficult to foretell but further investigation of how attention cycles affect the governance of plastics and other major environmental problems is essential for avoiding the repeat of past mistakes.

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ORCID

Ian Bailey https://orcid.org/0000-0002-6865-8306

ENDNOTES

- ⁱ Males & van Alest (2020) measured public attention using Google Trends analysis of the terms 'plastic pollution', 'plastic waste', 'ocean plastic' and 'ocean litter' between 2004 and 2018. Media attention was measured by mentions of the terms in the *Guardian* and *Daily Mail*, two UK newspapers with left- and right-leaning political views respectively, that both reported on plastics prior to Blue Planet II. The results only indicate UK trends and do not discuss the content of articles.
- ii Only wastes listed in Annex I of the protocol (e.g. dredged material, fish waste, vessels and platforms) can be dumped at sea in accordance with permits issued by contracting state parties.
- The pact involves around 120 manufacturers, retailers and plastics reprocessors. Targets for 2025 include: eliminating problematic or unnecessary single-use plastic packaging through redesign, innovation or re-use; 100% reusable, recyclable or compostable packaging; recycling or composting of 70% of plastic packaging; and 30% average recycled content across all plastic packaging (Which? 2021).

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