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Muted by a Crisis? COVID-19 and the Long-Term Evolution of Climate Change Newspaper Coverage

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Abstract: The reason for the emergence of environmental issues in public debate have been widely studied, while the reasons for the disappearance of environmental issues from the public agenda are researched to a far lesser extent. This article presents how the newspaper coverage of climate change has evolved in Finland. The study is based on long-term (1990–2020) data from the leading national-level newspaper. The climate coverage has been characterized by an increasing overall trend and remarkable fluctuations in the intensity of debate. The monthly coverage of climate change had four distinctive peak periods. The drops from peak levels are explained by several factors, such as the end of a specific news event or policy process (e.g., international climate policy meetings), lack of weather anomalies (e.g., normal winter weather and snow coverage), silence of key influencers (policy-makers, business elite), and news competition together with reporting fatigue following abundant climate coverage. The first months of the intense phase of the COVID-19 pandemic in 2020 showed a deep, but not unprecedented drop in climate coverage from the preceding peak level. The persistence of anthropogenic climate change, gradual mainstreaming of climate concerns across different societal sectors, and recent policy debates around so-called green or sustainable recovery suggest that climate coverage is not likely to be muted in the near future.

Keywords: agenda setting; climate change; COVID-19; environmental communication; news media; press coverage

1. Introduction

“Can coronavirus bring boomers and zoomers together on climate?” This question was posed by the online magazine Grist in April 2020, during the execution of exceptional policy measures imposed by governments around the world as a response to the COVID-19 pandemic [1]. The question, aptly addressing different vulnerabilities of the older and younger generations, echoed a key issue of sustainability transition, namely the capability of societies to simultaneously tackle the implications of short-term and long-term challenges for different groups. The acute crisis caused by the COVID-19 pandemic and more gradual erosion of socio-ecological systemic resilience caused by challenges such as climate change or biodiversity loss must be managed through balanced orchestration of multiple actors, as noted by many science-based advisory bodies [2,3]. However, such orchestration is challenging because of the different uncertainties, values, and interests involved. Louder calls for “green deals” simultaneously addressing economic and environmental concerns through sustainable investments have been voiced, but the chorus is not without discord. Demands for the easing of environmental regulations in order to overcome the acute economic hardships caused by the pandemic and its management have been voiced as well [4].

In contemporary information-intensive societies, media and social media representations are at the heart of the knowledge sharing, diffusion of new ideas, and mobilization of action. Media representations are important in both democratic and non-democratic regimes as sources of information, disinformation, and misinformation.

In this paper, we aim to draw lessons for environmental communications capable of addressing both the rapidly emerging acute crisis situations and much slower socio-ecological processes related to many key issues of sustainability transitions. We study the long-term evolution of media coverage of climate change and the impacts of examples of short-term factors—including the COVID-19 pandemic—on news reporting. In addition, we study the interaction of climate change and health crises reporting. To do so, we chart the long-term newspaper coverage of climate change from the media archive of *Helsingin Sanomat*, the leading newspaper in Finland.

2. Dynamics of Climate Coverage: A Short Review

The English-language media coverage of climate change has been studied extensively and increasing attention has been paid to other widely spoken languages as well [5–9]. The English-speaking—especially the U.S. and British—media has a considerable impact on global news coverage. Mazur [10] found that the English-speaking media in different countries were strikingly similar in how they give attention to short-term and long-term environmental crises. Knowledge of smaller languages remains scarce and scattered, partly because studies published in vernacular forums often remain difficult to find and utilize.

A more diverse set of languages may enrich the research field since different patterns of attention are possible in different countries and language areas [11]. Climate change is a prime example of a complex issue that involves different uncertainties and disputes over scientific truth fueling public debate [12]. For example, the climate debate in the United States has been strongly influenced by the disputes between parties labelled as alarmists or sceptics [13]. The visibility of such controversies has been relatively low in the mainstream media of Nordic countries such as Finland, characterized by a democratic-corporatist communication system [14,15].

Previous research on the dynamics of the climate change debate and media coverage of environmental and sustainability issues has mainly addressed the reasons for the emergence of issues in the public agenda, while the reasons for the decline of coverage have received less academic attention [6,16–18]. It has been noted that media attention has a “carrying capacity”, meaning that the number and length of news items are limited and can give attention only to selected issues at a given time [19]. In particular, the availability of frontpage space in newspapers and time on primetime television or radio broadcasts has been a key issue for public and policy agenda setting. While online communication has somewhat reduced the importance of the space limitations in newspapers and time limitations in television or radio broadcasts, media organizations still have considerable power as gatekeepers [20]. What issues do get media attention really matters as the news coverage is an important source of information on issues such as climate change for multiple audiences, including not only citizens but also decision-makers [8,10].

The impacts of other crises on the media visibility of climate change have received only limited academic attention so far. This is a potentially serious research gap since many environmental issues are long-term processes spanning decades or centuries and involving interplays between different issues and actors. The volume of debate around a certain issue can fluctuate and the absence of a news issue from public debate does not necessarily mean the absence of the underlying sustainability problem. There is little correlation between the actual severity of environmental risk and the quantity of media coverage [10,21]. News cycles can end with the post-problem phase where the environmental problem—whether successfully solved or not—receives only occasional attention, as suggested by Downs (1972) half a century ago [22].

As postulated by the Quantity of Coverage Theory, the quantity of media attention an issue receives may be more important than the content of the news items [10,23]. The more an issue gathers attention

in the media, the more likely it is that the audience sees it as important [24,25]. Liu et al. [26] (p. 406) argue that for an issue to gather attention, “Something must happen to push that concern above the noise threshold of other issues”. This can lead to short-term crises pushing the longer-term issues such as climate change away from public attention. On the other hand, weather anomalies or natural disasters may increase the attention on climate change as an underlying problem, even if they do not have a clear link to climate change [27]. The question is not only one of internal dynamics of a certain issue; instead, issue saliency is also affected by the complex interplay between different issues. As suggested by TV news reporting in Sweden, media attention on certain environmental issue generates interest in and visibility for environmental issues in general [28]. For example, awareness of climate change can support reporting on biodiversity as rising temperatures pose a threat to many species adapted to the cold climate of northern Europe.

Due to the competition for the media space, only some crises become news stories. There are also other important factors impacting how crises are covered in the media. Crisis coverage in Western media is often tied to the sufferers of the crisis, due to the “othering” of the developing country victims. For instance, the 2004 Indian Ocean tsunami had white Western tourist victims, and thus it became a global news story [29]. In addition, the news coverage of the tsunami was disproportionately focused on the Western tourism, similarly with hurricane Wilma in Cancun in 2005 [30]. However, the 2005 Pakistan-Kashmir earthquake, despite its very high number of casualties, did not receive much information in the Western media [30]. The COVID-19 crisis deviates from these more local crises. Starting from China, and spreading to Europe and the U.S., along with other parts of the world, it is basically impacting everyone. It is also a highly visible global news topic likely to replace other news topics [31–34].

As the notion of agenda-setting suggests [16,35,36], if an issue disappears from the media debates, it is likely to vanish from the public agenda and from the policy agenda. Lack of public salience may also influence the interest of research funders and lead to insufficient environmental monitoring and knowledge generation that, in turn, deepens the vicious circle of societal silence. All of this makes it difficult to implement the pre-emptive actions needed to avoid crossing ecological thresholds or tipping points that make the problems obvious to everyone but that may involve systemic shifts, making return to the previous state impossible [37].

3. Materials and Methods

Finland provides a context of a northern European, affluent and industrialized nation characterized by a strong welfare state. It has an export-oriented economy with strong clusters of forest and metal industries and more recently information and communication technologies. The country has a cold climate and sparse habitation, with about a quarter of the population living in the metropolitan area of the capital Helsinki, on the southern coast of the country. Together with other Nordic countries, Finland occupies top positions in several cross-national comparisons of sustainability [38]. Earlier, Finnish climate policies have been criticized for lacking ambition and being overly aligned with the interests of large energy producers and the heavy industry [39]. The current (2019) government program presents a demanding national goal of reaching carbon neutrality by 2035 and becoming carbon negative soon after that [40].

High readership of quality newspapers and strong trust in journalistic media content has been one of the strengths of climate reporting—and environmental reporting more generally—in the Nordic countries. The media system in Finland is characterized by the relatively strong position of quality press, despite declining print circulation [15]. Over the last decade the digitalization and new patterns of media consumption, staff cutbacks, dwindling subscription rates and increasing competition have seriously challenged environmental journalism. The role of newspapers as gatekeepers of the public debate has eroded, but they still serve as an important hub of information often referred in debates on social media [20].

The analysis focuses on the most widely read newspaper in the country, *Helsingin Sanomat* (HS). It can be characterized as a quality or prestige newspaper independent of political parties. It has a daily circulation of 340,000 including both print copies and digital subscriptions [41]. The material studied here includes 14,333 articles on climate change from the years 1990–2020. The dataset is based on data collected for earlier studies [42–44] (see Supplementary Materials), complemented here with new data from 2015 onwards. The data were obtained from the digital online archive of HS. The search strings include the terms “climate change” (“ilmastonmuutos” in Finnish) and “warming of the climate” (“ilmaston lämpeneminen”). In addition to this, compound words including the term “greenhouse” were included if connected with climate change. The search strategy is described in detail in [43].

The collection of long-term data from electronic archives involves some caveats and limitations [45]. The visual design and composition of the sections of the newspaper were renewed several times, including a change from broadsheet to tabloid on 8 January 2013. Such changes may have an influence on the number, length, and presentation style of news items. Updates in search engines and content and categorizations of the database may influence the search results. It is also possible that some items related to climate issues are missing from the sample because of the limited set of keywords. However, test searches indicated that adding search terms would complicate the search without substantially increasing the number of relevant hits [43]. Furthermore, the current set of keywords is in line with other studies focusing on other languages, creating possibilities for cross-national comparisons.

The start date of the data collection is based on the availability of data in the database and the end date is the latest possible for this study, representing the period (July 2020) when Finland was momentarily lifting its COVID-19 pandemic response restrictions first time since the pandemic began.

Our analysis framework outlines the long-term evolution of climate coverage and scrutinizes the factors contributing to the rise and decline of coverage. The Quantity of Coverage Theory states that the quantity of news items is the best indicator of how important an issue is considered to be [10,24]. Building on this theory, the first part of our analysis focuses on the volume of climate change debate. We focus on the monthly coverage numbers in order to allow for the analysis of short-term fluctuations. In order to visualize some factors behind the increasing climate change news coverage, we pinpoint the United Nations Climate Change Conferences and Finnish National Climate and Energy Strategies with the climate change news coverage.

The sample includes items focusing on climate issues and items mentioning them only in passing. Therefore, a coding based on the titles was developed to identify items focusing mainly on climate issues, some other environmental issue, energy-related issues or on other issues entirely [43]. Together with the information about the section of the newspaper available from the database, this coding was considered adequate to give an overall picture of the key categories of climate discussion. One caveat is that the titles designed to attract audiences do not necessarily summarize the content of the news item in an undistorted way. This does not diminish the importance of titles, since they nevertheless frame the issue and guide interpretation.

Content analysis is a popular method with which to study media reporting [46,47]. In addition to the quantitative analyses, qualitative approaches are often used to analyze the dominant and emerging themes, framings, narratives, and discourses around environmental, climate change, and energy issues [6,48–50]. The media analyses data sets can be large, and this makes qualitative content analyses based on human interpretation very laborious. Therefore, the qualitatively oriented studies have mostly focused on narrowly defined cases, very short timelines or small samples. For example, Kangas et al. [51] studied the climate change discourse of bioenergy focusing on stump utilization in Finland, and Gkiouzepas and Botetzagias [52] studied a random sample of 100 Greek news items on climate change.

Here, we combine a quantitative approach which aimed to outline long-term development with qualitative investigation based on identification of relevant time periods and selection of a limited set of news items allowing for in-depth interpretations. The qualitative analysis focuses both on manifest contents directly expressed through wordings and latent contents referring to between-the-lines type

of information [47]. Here we focus (1) on the factors behind the greatest rises and falls in the climate change news coverage and (2) on the relationship between climate and health reporting [53]. Qualitative analysis always involves subjective judgements. In order to reduce potential bias, the material was analyzed through multiple rounds of interpretation.

We focus on the peak periods in the climate change news coverage in order to allow more detailed identification of topics discussed during the high volume of the coverage and potential factors influencing the coverage. In addition to the screening of all titles, the content of selected news articles during the peaks is analyzed. The analysis is supported by insights from earlier grey and scholarly literature describing climate debate during the study period, e.g., [39,43,54].

To study the impacts of shorter-term crises on long-term climate crisis media coverage, we selected three health-related crises that were impacting Finland (as well as the rest of the world) during the timeframe studied. The crises selected were the SARS epidemic, swine flu pandemic, and COVID-19 pandemic. We defined the times the crises were active based on the health information provided by the Finnish Health Library Duodecim [55]. All overlapping news items addressing both climate and health issues from the selected time periods were read focusing on two dimensions: (1) What were the dominant topics emphasized by the news item and which themes remained as latent ones, and (2) was the news item specifically comparing climate crisis with a health crisis, and if so, how?

4. Results

4.1. Temporal Development of the Climate Coverage

The sample studied here consists of 14,333 newspaper items, indicating that climate change has occupied a considerable space in newspaper coverage. Climate issues were mentioned in about 150 items per month during the most intensive phases of the debate. The coverage was characterized by rapid fluctuations and a general increasing trend (Figure 1). Both domestic and international factors explain the changes. International meetings of the Conference of Parties (COP) of the United Nations Framework Convention on Climate Change (UNFCCC) induced short-term periods of heightened attention. Four conferences of the parties are clear as distinctive peaks in the debate (COP3 in Kyoto, December 1997; COP6 in the Hague, November 2000; COP15 in Copenhagen, December 2009; COP21 in Paris, November–December 2015). After these news events, the coverage typically dropped immediately. Despite their high policy importance, released of national energy and climate strategies do not manifest as events occupying the headlines.

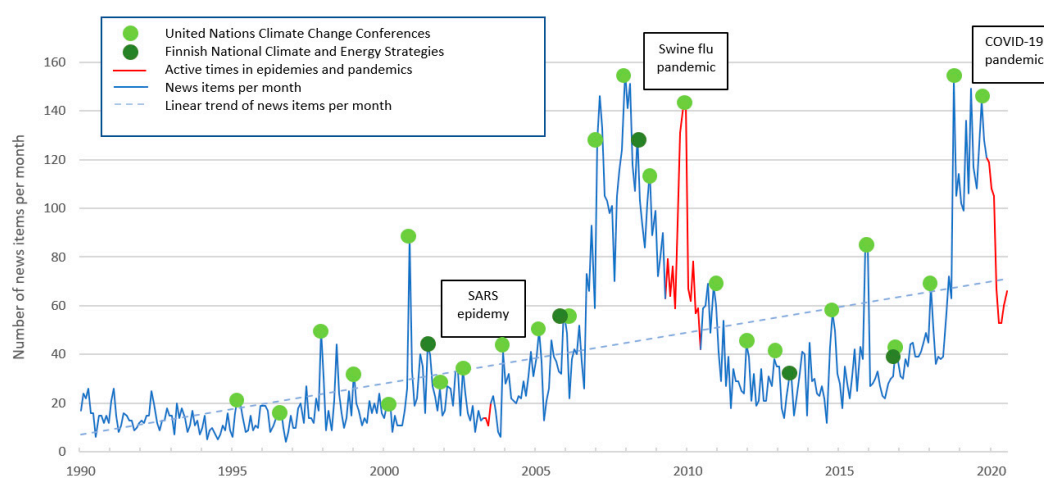


Figure 1. Overview of monthly news coverage of climate change by the newspaper Helsingin Sanomat, January 1990–July 2020 and selected news events potentially increasing (climate policy events shown as green dots) and decreasing (virus outbreaks shown as a red line) climate coverage.

While the early peaks of heightened coverage were caused by single news events, the longer periods of heightened attention were caused by several contributing factors. The first such period between late 2006 and early 2010 started to build as a combination of factors, such as reporting of energy prices and climate-related natural catastrophes, science-based warnings, and the Stern report on the economic implications of climate change, as well as EU-level and domestic policy debates. Additionally, the international visibility of the Al Gore's documentary film *Inconvenient Truth* served as a background for domestic debate, even though the film itself received only minor attention in Finland. The peak in early 2007 was strongly influenced by an interview with a prominent national business influencer showing unexpectedly deep climate concern, followed by equally climate-conscious statements by politicians and other actors. An editorial headline from January 2007 explicates, "The interview with Ollila reveals rapid changes in attitudes". Importantly, the mild winter weather and snowless sceneries of southern Finland provided journalists with convenient framings within which to discuss climate policies and establish links to both everyday experiences of the people and results of climate science [44]. After the heightened debate during early 2007, the coverage decreased later in the year, despite several major scientific assessments released by the International Panel on Climate Change (IPCC). The debate spiked again in early 2008. The winter weather was again exceptionally mild, and debates related to international climate policies fed the news with concerns related both to the changing climate and proposed mitigation measures. No single climate-related issue dominated the news content and soon the debate started to decrease. The decreasing trend of coverage was interrupted by a sharp peak in late 2009, mainly caused by the Copenhagen climate change conference [56]. The disappointing results of the meeting were briefly reflected in early 2010 but during the spring the coverage dwindled, in part because of reporting fatigue resulting from intensive coverage [57].

The coverage stabilized during the subsequent years and remained at a higher level compared with the period prior to 2007. This was somewhat surprising, especially since the economic downturn sparked by turmoil on the US real estate markets also reached the Finnish economy. Earlier studies have indicated that environmental reporting tends to decline during times of economic hardship [44,58]. The decennial average number of items mentioning climate change per month increased from 15.1 in the 1990s to 51.9 in the 2000s and 48.2 in the 2010s. During the past decade, the period of high attention started to build up in late 2018 and lasted until early 2020. One key contributing factor was the release of the IPCC Global Warming of 1.5 °C report [59], which raised attention because of the more direct expressions and even distressing language about the risks of not meeting the targets set at the Paris climate meeting. A news headline from October 2018 stresses "The message of climate scientists is clear: Making excuses must finally stop". The climate strike movement with young Swedish activist Greta Thunberg as a leading figure brought moral pleas to the forefront of the public climate debate [60,61]. A letter to the editor headline from February 2019 paints a picture: "Serious-faced Greta Thunberg is like the future itself that has come to call us to account—But how can a 16-year-old bear such a burden?" Earlier climate coverage in Finland can be characterized as technocratic and focused primarily on reporting of science-based results and economic implications of climate and energy policies [39,43].

Climate change mitigation was discussed in relation to the plans for the EU Green Deal and it was one of the key issues in the Finnish parliamentary elections of 2019. Unlike previous peaks characterized by short periods of highly active debate, this time the high-level coverage was sustained month after month. Between October 2018 and February 2020, the average number of climate news articles per month was 120.0, meaning that every copy of the newspaper featured about four stories focusing on or mentioning climate issues.

4.2. Health Crises and Climate Change Media Coverage

The drop from peak levels was rapid as the COVID-19 pandemic occupied news space. The monthly average number of news items during March–April 2020 (57.7) dropped radically from January–February (106.5). However, the monthly drop of 38 news items (or a 36.2% drop from the previous month) in March 2020 was not an unprecedented one. Greater monthly drops occurred

in December 2000, January 2010, January 2016, and November 2018, related to returns from high levels of reporting during the UNFCCC meetings. Earlier major international virus outbreaks had smaller impacts, although the SARS (Severe Acute Respiratory Syndrome) epidemic in 2002–2003 was one factor potentially explaining the low level of climate coverage. During the so-called swine flu (A(H1N1)v 2009) pandemic (2009–2010) the climate coverage spiked and dropped largely because of the Copenhagen COP15 climate meeting.

Some climate change media coverage overlapped with the reporting of the three health related crises studied, but there were considerable differences between the health crises. During the SARS epidemic outbreak there were no news items covering both climate change and the SARS epidemic. The number of news items covering both the swine flu pandemic and climate change was small (five news items) during the swine flu pandemic. The news items covered two issues: green recovery and comparison of the health and environmental crises. In the case of COVID-19 the situation was very different. In total, 20 percent of news items mentioning climate change also mentioned COVID-19 (Figure 2). COVID-19 and climate change media content were connected especially when reporting covered issues such as air travel, veganism, car sales, green recovery, and Donald Trump’s 2020 presidential campaign. Some news items also compared the two crises, stating often that COVID-19 is a small threat compared to the long-term climate change crisis.

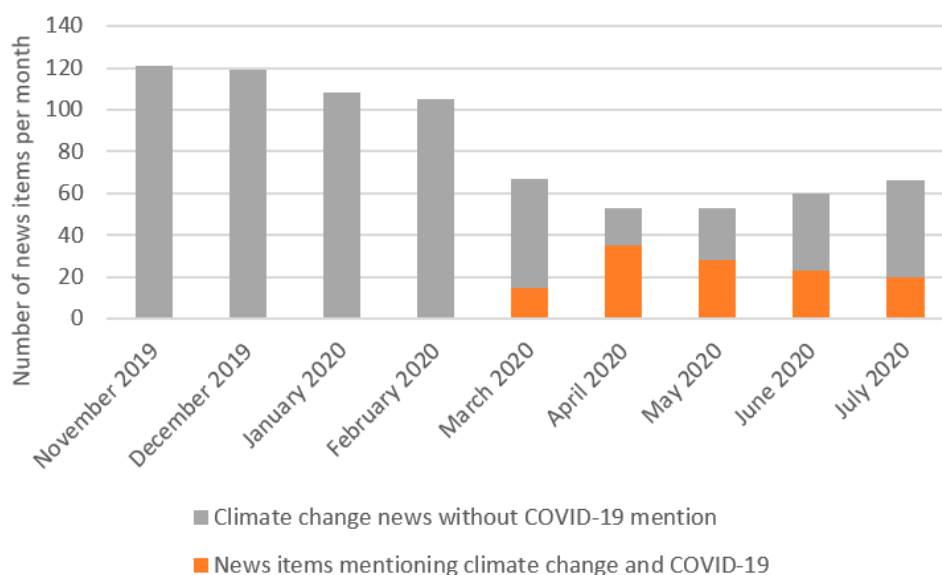


Figure 2. Climate change media coverage in Helsingin Sanomat during the COVID-19 outbreak, divided into news items with and without COVID-19 mentions.

4.3. Reporting Across Newspaper Sections

Less than a third (29.9%) of the sample focused on climate issues, while a quarter focused on other environmental (17.7%) or energy (8.0%) issues (Figure 3). Energy was typically mentioned from the perspective of energy production and energy sources, while energy consumption received only minor attention. Nearly half (44.4%) of the items focused on issues outside the environmental or nature genre. These items included a range of topics, such as climate policies as one factor of government decision making (domestic news) or consumer choices (lifestyle sections), climate risks addressed in theatre plays or in books (culture pages) and carbon emissions of vehicles (motoring pages). The results indicate that climate concerns are not isolated within environmental reporting but are widely discussed and potentially taken into account in decisions and policies outside the domain of environmental protection, too [62]. The culture and lifestyle sections in particular tend to connect climate issues with other topics.

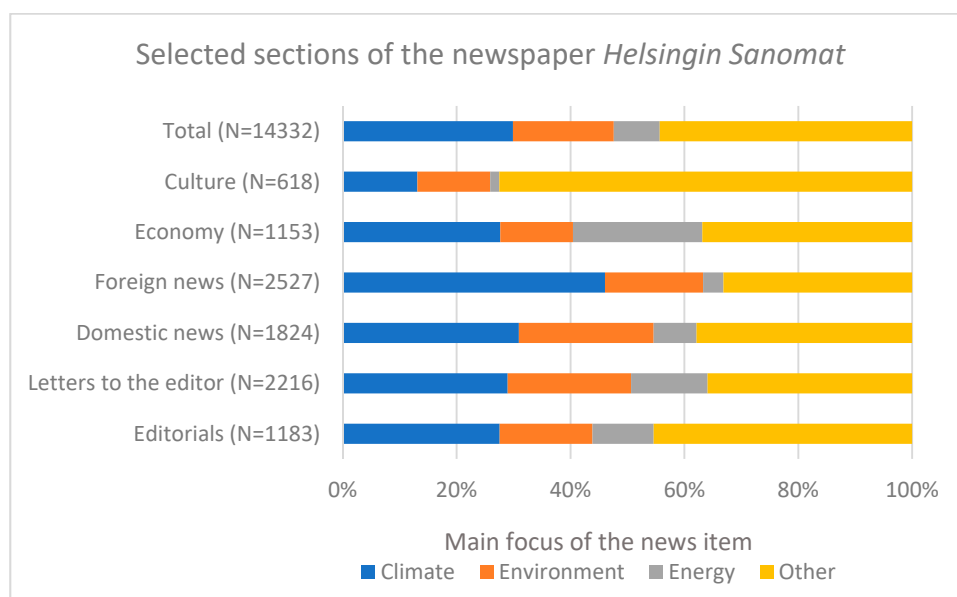


Figure 3. Overview of the main focus of news coverage of climate change by Helsingin Sanomat, January 1990–July 2020.

Domestic news in this sample mainly focused on national-level climate policies, but some attention was also paid to local-level effects and risks, as well as locally-based climate change mitigation and adaptation measures. Energy issues were featured during policy debates focusing on forest-based bioenergy, use of peat, nuclear energy, and public subsidies and environmental effects of wind energy. These debates have been driven by polarizations between parties emphasizing different environmental and economic effects of energy production [51,63–65]. Despite persistent societal disagreements, such debates are prone to fade from the headlines in the absence of topical national-level policy processes and decisions.

Foreign news was the top section when measured by the number of climate related stories published during the whole study period. The popularity was largely explained by the attention given to international climate meetings and EU-level climate and energy policies [56]. The year 2019 was the top year with over 300 foreign news items addressing climate issues.

The science section popularized the results of climate science at a relatively steady pace. The highest annual number of climate news items in this section was in 2018. Interest in climate science was heightened partly because of the IPCC special report published that year [59]. However, overall visibility of the IPCC was low. Only 48 titles directly mentioned the IPCC, most of them either presenting warnings about future climate change or questioning the credibility of the IPCC, especially during the so-called “climategate” episode in 2009. It should be noted that the episode received only modest attention compared to in many other countries [66,67] and, more generally, the visibility of climate skeptic or denialistic views in titles remained very low in the sample. Climate research was also often referred to in sections other than science news.

Inclusion in editorials and opinion pieces fluctuated. In the early 2010s editorials showed a particularly radical drop. During 2011–2013 the number of editorials addressing climate change was less than one tenth of the frequency during 2007–2009. Discussion in the Letters to the Editor section declined gradually and reached its lowest level in 2017 at only four percent of opinion pieces published compared to 2008.

The treatment of climate issues in the newspaper sections focusing on culture and arts is one indication of the widening scope of the climate debate [62]. In 2019 climate coverage hit its record level in these sections. Climate change or climate risks were mentioned typically as a side topic or background for other issues. Sports remained the major newspaper section with the lowest proportion

of climate news. Climate issues were mentioned only occasionally and most often in news items describing the risks of warming weather for outdoor winter sports.

Sections focusing on lifestyle issues mentioned climate change typically as a side topic of consumer choices. This involved an underlying tension between environmental effects and consumer behavior. For example, news stories focusing on cars routinely mention the carbon dioxide emissions but at the same time create framings supporting the use of privately-owned cars—together with car advertisements, which fell outside of the sample studied here. Recent coverage increasingly emphasized the possibilities of individual consumers to make environmentally and climate friendly choices.

Coverage of climate issues in newspaper sections related to the economy in 2019 was about half of the level of coverage during the previous peaks of coverage of 2007 and 2008. This is rather surprising since during the 2010s climate change became widely acknowledged not only as a reality for many businesses but also as an economic opportunity, especially for firms focusing on green technologies. The lack of environment-economy controversy may have decreased the news appeal [54]. It is also possible that nowadays climate issues are increasingly discussed under various labels falling outside the key words used to collect the sample. This may also partly explain why energy issues seem to be addressed relatively rarely in recent climate coverage. For example, current news coverage related to energy may speak about “emissions” or “emission trade” without mentioning terms related to greenhouse gases or climate change.

5. Discussion

The long-term evolution of environmental news is influenced by many factors, such as the gradual changes in public awareness and policy interests and accumulation of scientific understanding of socio-ecological changes. As shown by the results presented here, the climate change debate is characterized by rapid and radical short-term fluctuations that easily mask the long-term evolution. The main reasons for a decline of coverage related to an environmental issue after the periods of heightened debate as noted by earlier literature include issue fatigue and competition with other news topics [19,22,68]. Both were evident in the Finnish case. Issue fatigue refers to declining levels of interest among both journalists and audiences. This is a key explanatory factor, but as the recent period of high-volume debate between October 2018 and February 2020 suggests, wide-based treatment of climate issues outside the core environmental or energy debate also helps to sustain a high level of coverage over a relatively long period. New climate-related viewpoints step in as debate over individual news events dwindles.

Competition with other news topics can lead to replacement with a “hotter” news topic partly irrespective of the importance of the topic as assessed based on science-based evidence. Such competition may prevent an issue from becoming widely recognized in the first place. This type of non-recognition prevailed in Finland in the early phase of the debate until late 1990s. The recent relatively high proportion of climate news that also addresses COVID-19 suggests that in addition to competition, convergence of different news topic may be a relevant approach for studying the evolution of the media debate on sustainability issues.

A decline in coverage may involve a realization of a “false alarm” created by exaggerated initial findings not supported by subsequent analysis [21]. Only weak signs of this were detected based on our sample. Interest among journalists may also decline if a consensus over a controversial issue is reached or all arguments by opposing parties have been addressed. In our sample, the visibility of climate skeptic views was low, and the controversies were mostly related to the implications of climate policies.

Much of the fluctuation in our sample was related to so-called calendar journalism, i.e., news topics that are regularly occurring. Such topics include annual international climate conventions attracting hundreds or even thousands of journalists or more or less regularly occurring socio-ecological processes such as wildfires or algal blooming during summer heat waves [26,42]. As shown by our results, the news coverage is typically intensive during the event and evaporates soon after the event is

over. This creates a challenge for the follow-up of policy decisions or ecological processes with long-term effects.

The newspaper coverage of climate change news showed a pattern of gradually increasing long-term attention between periods of heightened coverage. These patterns partially followed different phases of environmental debate as postulated by the issue attention model [22] but also indicated a rising baseline level as suggested by the punctuated equilibrium model [17].

The pre-problem stage of the climate debate had already occurred before the sample studied here. The first peak of news coverage of climate change—or the then greenhouse effect—occurred back in the late 1980s [58]. Compared to the peaks in 2000s, the first periods of intensive coverage were relatively minor ones and mainly introduced the concepts of the greenhouse effect, alongside other global environmental issues such as the ozone hole and loss of biodiversity.

It should be noted that even though environmental issues are nowadays routinely addressed, and coverage of climate change has increased radically from the early 1990s, they remain marginal compared with other news topics such as entertainment, sports, or politics. Earlier research has indicated that on average only 0.4% of all coverage in HS mentioned climate issues and 0.1% of all coverage focused on climate issues between 1990 and 2014 [42].

The decrease in the climate change coverage in early 2020 resulted mainly from the emergence of COVID-19 as a competing news topic. Climate coverage dropped radically in many other countries during March and April 2020 as well [69]. This suggests that the short-term changes in climate coverage can be strongly governed by external factors instead of internal dynamics of the environmental debate. Thus, applicability of the original issue-attention model [22] focusing on the internal dynamics of environmental news is limited. Models putting more emphasis on the external factors influencing the complex interplay of environmental debate are better equipped to explain the evolution of current climate coverage.

Models focusing on interrelations between different issues are also important because climate issues have gradually been mainstreamed into various arenas. As the climate debate has matured, it has gained discursive power. For example, Kotilainen [70] suggests that the climate debate is an important source of new concepts related to COVID-19. He notes that new concepts have been invented by replacing the word “climate” with the word “corona” in compound expressions commonly used in the Finnish language. He gives examples such as corona crisis (*koronakriisi*) treated in a similar way to climate crisis (*ilmastokriisi*), corona anxiety (*korona-ahdistus*) derived from climate anxiety (*ilmastoahdistus*), and corona refugee (*koronapakolainen*) from climate refugee (*ilmastopakolainen*). He also notes the use of new expressions such as corona believers or corona zealots by those who belittle the seriousness of the pandemic. Such belittling appears to follow the logic of climate skeptics. Such intersection between different debates may provide fruitful learning opportunities for sustainability transitions.

Typical characteristics of environmental changes as slowly emerging, abstract global level phenomena make it difficult to create news framings and narratives empowering and activating people. Potential solutions are often portrayed in a distanced manner, as highlighted by the climate coverage of international level policy negotiations about future greenhouse gas reduction targets. Furthermore, reporting addressing the easily observable (alleged) symptoms of environmental change, such as exceptionally mild winter weather, may shift public attention away from the long-term driving forces and from the underlying systemic relationships. While the Finnish case highlights issues that are important in the Nordic context it can also provide lessons for other countries. Importantly, media coverage of heat waves, droughts, wildfires, storms, floods, and other climate-related issues highlighted in other countries [71–74] appear to share the focus on immediate effects and lack of representations of long-term effects of human actions. Taken together, these case studies suggest that media coverage reports on local-level symptoms of global environmental change rather than potential long-term remedies preventing or curing the problem.

The COVID-19 pandemic adds a new layer to these concerns because of the danger of focusing on short-term management of the crisis and recovery strategies. On the other hand, the temporary reduction of environmental pressures has attracted considerable public and policy attention and debates over sustainable or green investment schemes have become part of the climate debate. Together with media coverage addressing moral claims raised by activists such as Greta Thunberg, this raises expectations of the critical re-evaluation of assumptions related to economic growth and well-being [75].

There are several limitations that should be noted. First, the study is based on one news outlet. Secondly, only material published in a printed newspaper was included despite the increasing importance of online and social media debates. Third, content analysis allows only limited interpretations on the motivations of news sources or effects of the communication. Furthermore, generalizations must be made with caution, since this research focuses on a distinctive language of Finnish, belonging to the Finno-Ugric languages together with Estonian, Hungarian, and several Uralic languages. Finnish is the official language of Finland, an EU member state with 5.5 million inhabitants. Furthermore, the study represents only the first attempt to study the interactions of climate change and short-term crises news coverage and it offers only limited content analysis. Improving the data analysis methods (e.g., data mining with big data and machine learning) would allow for more comprehensive analysis in future studies. Computer-based methods already offer opportunities for the analysis of large datasets [76,77].

6. Conclusions

The fluctuations in climate coverage have been influenced by several factors including competing news events, changes in journalistic practices brought by new communication technologies and commercial pressures of the newspaper industry, accumulation of scientific knowledge on climate change, activity of news sources, expectations and actual results of international climate policy negotiations, domestic debates over energy policies, and weather anomalies connected with climate change. In Finland, the mild and snowless winter weather has a particularly strong connection with the high level of climate news.

Media attention on climate change dropped in early 2020 because of COVID-19 but based on previous patterns of media coverage and scientific understanding of climate change as a global level, persistent socio-ecological challenge, the coverage is likely to bounce upward. The timing and height of this upward bounce is highly uncertain. At least two key drivers for climate coverage can be anticipated. First, an increase in climate coverage may be fueled by climate-related catastrophes such as large-scale wildfires resulting from elongated heat waves. Second, climate coverage may build up from the economic recovery actions highlighting climate change mitigation and adaptation as the key issue for sustainable and resilient post-COVID economies.

The storyline of the “boomers and zoomers” article by the magazine *Grist* ended with a hopeful message about the similarities between the COVID crisis and climate crisis, emphasizing that management of both problems requires listening to scientists, being prepared and—importantly—being kind and generous with each other [1]. This advice may sound naïve, but it addresses a key issue. Climate change is a prime example of a complex and collective problem that requires well-meaning collaboration between different actors [78,79]. In other words, without kindness complex problems cannot be solved.

Media reporting can play an important role in sustainability transitions not only by screening out unreliable information but also by creating common understanding. Journalistic media can build bridges between different topics and actors as well as creating representations and framings focusing not only on immediate concerns and controversies but also on the root causes of and complex interactions related to long-term climate change and acute crisis such as COVID-19. On the one hand, the media can create and deepen polarizations and paralyze decision-making by creating mistrust toward science and policy-making. The media can also forestall changes by uncritically serving as a lapdog for rather than a watchdog over the ruling elites. Case studies of climate debate provide important in-depth

understanding of specific contexts of reporting, but further studies are needed to build a coherent understanding of key differences and commonalities behind the context-specific reporting.

Climate change is an example of global change characterized by long-term processes spanning decades and centuries or even longer timeframes. The media news representations have traditionally cast attention on short-term, dramatic, and tangible events of immediate interest. The challenging new task for news media is to bridge these two ends of the temporal and spatial spectrum in a way that informs and inspires key actors.

Supplementary Materials: The earlier dataset describing the years 1990–2010 is freely available from the Finnish Social Science Archive: <http://urn.fi/urn:nbn:fi:fsd:T-FSD2828>. The updated data is available upon request from the authors.

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