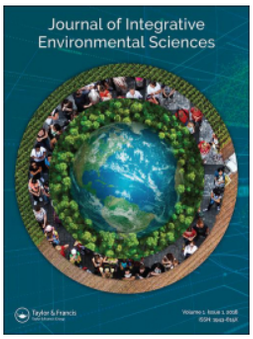

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RESEARCH ARTICLE

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Framing climate futures: the media representations of climate and energy policies in Finnish broadcasting company news

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ABSTRACT

Media representations of the future are a key component of climate change and energy policies. This study integrates media analysis with futures studies and focuses on the media framings and representations of futures related to key national-level energy and climate strategy documents. It utilizes qualitative content analysis of online news articles of Finland's national public broadcasting company committed to high-quality journalism. The results show that a more multifaceted coverage of climate action increased during the study period of 2015–2020, especially in terms of frames and future scenario archetypes, and indicate gradually widening awareness of climate risks. However, climate change has been framed as an isolated policy area, and climate change mitigation and adaptation remain framed as subordinate to economic policy targets.

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Climate policy; framing; news media; online communication; public broadcasting

1. Introduction

High-quality journalism is a key part of the agenda setting in democratic societies, especially related to environmental issues such as climate change (Sachsman and Valenti 2020). However, journalism faces multiple challenges. Because of the rise of television and, later, because of various online platforms, even the most esteemed newspapers have partly lost their traditional dominant position as the "fourth estate" (Temple 2018). The role of journalists as vigilant watchdogs of the policymakers has been challenged by staff cuts in editorial offices and increasing commercialization. The media landscape has fragmented, and the future of high-quality journalism is uncertain, also due to the increasing influence of stakeholder PR and digitalization, that is reshaping the relationships of information producers and users (Schäfer and Painter 2020).

Many have stressed the difficulties of climate change journalism requiring lots of expertise but attracting relatively small audiences and even expelling some advertisers (Sachsman and Valenti 2020). Despite the challenges, news media still acts as a key player in the interplay of the scientific, policy and public agendas. Most people's knowledge of issues such as climate change originates from news media, and especially public service

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news media serve as important hubs of news production in many countries (Aalberg 2017; Schäfer and Painter 2020).

Solving complex societal problems, such as climate change, under democratic regimes requires news media that are capable of successfully setting a public agenda for science-based and solution-oriented policy (Boykoff 2011). Journalists influence public perceptions of climate policy, its successes, failures and contexts (Kortenkamp and Basten 2015). Ideally, journalists provide messages that accurately represent scientific consensus and set climate policies into relevant frames and scales (Sachsman and Valenti 2020). Journalists should be able to not only represent different actors' views in a balanced manner and present the most promising technological and policy solutions but also look at them critically (Chadwick 2017). In practice, such an ideal role is hard to play. The role of non-commercial public service news is especially important in bringing science-based, long-term and intangible global policy issues into public attention (Boykoff 2011). Concerns over "fake news", misinformation and disinformation further highlight that public service media have a particularly important role in providing allegedly objective and impartial information on a non-commercial basis.

This article focuses on the democratic-corporatist media system of Finland, characterized by a long history and a broad diffusion of mass media, a high degree of professionalization and self-regulation of media, as well as strong political media tradition, but current independence from political groups (Hallin and Mancini 2004). Importantly, communication services conceived as public goods are a key aspect of this media system. Finland is a country with a high level of press freedom and strong independent media operating in a context of an economically affluent welfare society.

In particular, the focus is on the Finnish public service broadcast company (Yle) that aims to provide its audiences with reliable, high-quality and comprehensive information. According to Reuters Institute's Digital News Report (Reuters 2022), 84% of Finns find Yle trustworthy. The company emphasizes media accountability, independence and societal responsibility, and declares that it presents the "whole of multivoiced Finland" (Yle 2020). The request for supporting democracy, participation and equality is also based on the law governing the role and operation of the company (Finnish Broadcasting Company Act 22.12.1993/1380). In comparison to the largest commercial newspapers in Finland that limit access to their content via a paywall, Yle's news content is freely available for the public to read, making it a much more accessible channel to find knowledge on issues such as climate change.

Representations of climate policies are an interesting case study to scrutinize the challenges of public service media as the stronghold of impartial journalism. Accusations of both too alarmist reporting and the underestimation of risks in an era of "climate crisis" have been voiced (Risbey 2008). We aim to cover several gaps. General level framings in the climate debate have been widely studied (e.g. Scholte et al. 2013; Ballantyne 2016; Schäfer et al. 2017) but here we focus on framings connected with specific policy documents. Studies of English-language print news reporting still dominate the field and also in countries such as Finland the overall development of climate change news in print media is relatively well known (Lyytimäki et al. 2020). Here we focus on the under-researched area of online news by public service media. Agency is another widely studied topic in climate change media content analysis (Boykoff 2011). For example, the influence of science advice bodies such as the International Panel on Climate

Change, environmental and industry advocacy groups and think tanks, individual persons such as Al Gore or Greta Thunberg or companies such as ExxonMobil on the development of climate debate has been thoroughly addressed (Boykoff 2011; Murphy 2021; Supran and Oreskes 2021). Here agency is studied from the perspective of future action. We aim to advance an interdisciplinary understanding by integrating the perspectives of media analysis and future studies. We combine Matthew C. Nisbet's (2009) typology of the media frames applicable to climate change with Jim Dator's (2009, 2014) model scenario archetypes of social change, "the four futures", as detailed in the next section.

We analyse how the media frames climate change in public debate on climate policies and the related policy documents and how the future perspectives of related social change are narrated, what characteristics different stakeholders emphasize, which actors have a say and what are the dominant topics in the news. The next section justifies our specific research questions: (1) How are climate policies and the futures in them represented and framed in public service journalism? And (2) Which actors have agency through their visibility in public media articles covering climate policies?

2. Theory, methods, and material

2.1 Framing climate policies and futures in media

Climate policies contain framings of both the current situation, climate change as a policy problem, and an idea for a preferable future based on complex power relations and social imaginaries (Lakoff 2010; Fischer and Forester 1993). Vice versa, politics are embedded in imagining the climate future (Granjou et al. 2017). Popularizing the policies in news media adds another layer of framing that may follow, complement, or oppose the framings offered by the policy documents (Stoddard et al. 2021). This layer of framing is not usually formed independently from the policymakers' aims, but with different operational journalistic norms, such as personalization, dramatization, novelty, authority-order bias and balance (Boykoff 2011, p. 100).

Framing is a widely used concept with roots in both psychology and sociology (Cacciatore et al. 2016). Generally, *a frame* refers to how an issue is portrayed and understood. Framing theory in mass media, as presented by Goffman (1974), highlights the importance of how data is selected, interpreted, processed and communicated. According to Boykoff and Roberts (2007), framing permeates all facets of interactions between science, policy, media and the public. Analysing which kinds of frames are present in the news helps to reveal how media shape policy debates by legitimating certain viewpoints while discouraging or precluding others. Using frames to communicate complex issues via metaphors and storylines makes policy proposals easier to understand and places them in a context that is perceived as relevant. As Stecula and Merkley (2019) point out, certain media framings of climate change emphasizing potential economic harms or uncertainty of climate mitigation policies have had an adverse reaction to people's propensity to support and engage in climate action. The opposite is seen with framings highlighting the economic benefits of climate action. The media framing of climate change is also in flux and can obtain different sub-topics in different times, such as the COVID-19 pandemic (Lyytimäki et al. 2020) or expand to cover various traditional topics

such as economic development or employment (Nisbet 2009). An effective frame links new concepts to existing narratives that are familiar to its intended audience.

Here we focus on two aspects of framing: how different frames represent different futures and temporalities related to climate policies and how they construct agency for different actors. Climate change is a prime example of an environmental issue including different temporalities ranging from immediate consumer choices to policy issues debated under election cycles of a couple of years, energy investments looking over decades and ecological and climatological processes evolving through centuries. In environmental news, near-term actions and actors involved often receive excessive attention (Lyytimäki 2007). Here the focus is on temporalities relevant to national-level policy making. Framings of the long-term futures represent a crucial terrain of climate reporting, and at the same time, remain a major challenge to journalists, policy-makers and the public (Moser 2016; Eide and Kunelius 2020). Agency is another key issue since media can provide – or deny – actors a space to present their views (Murphy 2021; Supran and Oreskes 2021).

To analyse media representations of climate change as a policy issue from a future-oriented perspective, we combine and adapt Nisbet's (2009) frame typology with scenario archetypes on the social change proposed by Dator (2009) (Table 1). There are some parallels between Nisbet's (2009) framing typology and Dator's (2009) four futures approach. Dator's scenarios are, in essence, tools of framing or, as Nisbet puts it, storylines that set a specific train of thought in motion.

Nisbet (2009) argues that the suggested frames take no position on any specific policies and may include pro, anti, and neutral arguments. For example, an economic

Table 1. A typology of the frames and scenario archetypes applicable to climate change (adapted from Nisbet 2009; Dator 2009).

Frame	How the frame defines climate change as a policy issue
Social progress	A means of improving the quality of life or solving problems on a societal level
Changing lifestyles and living standards	An arena of cultural choices, identities and external demands on an individual level
Economic development and competitiveness	An affair of economic investment; a market benefit or risk; or a point of local, or national competitiveness
Morality and ethics	A matter of right or wrong; or as a matter of respect or disrespect for limits or thresholds
Scientific and technical uncertainty	A matter of expert understanding or consensus; a debate over what is known versus unknown, or peer-reviewed, confirmed knowledge versus hype or alarmism
Pandora's box/Frankenstein's monster/runaway science	A need for precaution or action in the face of possible catastrophe and out-of-control consequences; or alternatively as fatalism, where there is no way to avoid the consequences or chosen path
Public accountability and governance	An affair of political discussion, serving the public interest or serving special interests, emphasizing issues of control, governance, transparency, participation, responsiveness or ownership
Middle way/alternative path	A need for third, alternative or neutral way between conflicting or polarized views or options
Conflict and strategy	A game among elites, such as who is winning or losing the debate; or a battle of personalities or interest groups (usually a journalist-driven interpretation)
Scenario archetype	**How the scenario archetype defines societal change related to climate change**
Continuation	Business as usual, status quo growth
Limits and discipline	Behaviours to adapt to environmental limits
Decline and collapse	System degradation or failure as crisis emerges
Transformation	New technology, business or social factors that change the game

argument can be used to support climate policies, such as creating green new jobs, or against climate action by arguing climate policies may hinder economic growth due to, for example, implementing stronger regulation. Additionally, the frames often translate to certain types of frame devices such as metaphors, terms or catchphrases. As "creating green jobs" translates to the economic development frame relative to climate change, larger policy proposals such as "Green New Deal" can evoke several additional frames such as ones related to energy transition and social progress.

According to Dator (2009), all the possible future scenarios of societal change are either a variation or a combination of four growth-based alternative scenario archetypes. These archetypal scenarios include "continuation", "decline and collapse", "limits and discipline" and "transformation". Dator assumed that "continuation" or "continued growth" is the dominant scenario in public and policy debate as it has been the assumed baseline for the future of all modern governments and economies. The dismal "decline and collapse" scenario has been salient in various forms, including the Cold War-era nuclear disaster dystopias or more recent climate fiction genre (Death 2022). This scenario highlights the risks of uncontrolled changes. The scenario of a "disciplined society" often arises to counter the continued growth that is seen as undesirable for its implications of over-consumption and increasing inequalities, and as unsustainable on a planet of finite resources. It can also be seen as a well-organized gradual shift or even as a continuation of the current society as opposed to seeing it as the disruptive future of the "transformational society". Here we understand the disciplined society as a relatively smooth development path following the ideals of eco-modernism, green and circular economy (Loiseau et al. 2016) while transformational society represents a sustainability transition process characterized by leverage points (Abson et al. 2017).

Here we test the capability of integrated analysis of frames and future archetypes to produce understanding of the climate debate. In addition to drawing an overall picture of frames and futures by the online reporting of a public broadcaster, we pay special attention to economic aspects that can be considered as a particularly policy-relevant theme. Both Nisbet's frames and Dator's futures also include the point of view of economics which can be seen as an overarching theme.

2.2 Data and content analysis

The analysis focuses on the online news covering the six selected climate and energy policy documents published during 2015–2020 by Yle. This allows the detection of differences, if there are any, between media representations of, firstly, the different policy documents within this five year period and, secondly, the two governmental periods. The policy documents are summarized in Table 2. They include two government programmes: (Prime Minister's Office 2015, 2019) and four other policy documents that implement the two government programmes and the EU's climate and energy policies in Finland. The government programme is the most important strategic document of a government in Finland (Paloheimo 2003; Tiili 2008). The Finnish government programmes are long and detailed, and they outline the political priorities and objectives in various fields (Kekkonen and Raunio 2011).

The most important new climate change objective in the 2015 government programme was the decision to phase out the use of coal in energy production during the

Table 2. Policy documents and the analysed media items.

Code for the media items related to the policy document	Policy document	Publication date	Type of document and the reference	Mentions of the term *climate* per page and the total number of pages*	Media items related to the policy document (n = 55 for all the documents) and all the media items from the search (n = 227 for all the documents)	Main new climate targets, policies and actions
PD1	*Finland, a Land of Solutions*	29 May. 2015	Government programme (Prime Minister's Office 2015)	0.22 (74)	7 (38)	• Finland achieves 2020 climate change targets ahead of time, by 2019 • The share of renewable energy will increase to more than 50% during the 2020s • The phasing out the use of coal in energy production during the 2020s • Cutting imported oil use by half during the 2020s • Increasing the share of renewable transport fuels to 40% by 2030
PD2	*Government Report on National Energy and Climate Strategy for 2030*	24 November 2016 (final publication: 31 January 2017)	National climate and energy strategy (Prime Minister's Office 2016)	2.72 (68)	17 (26)	• No new permits for coal power plants • A proposal for an act to phase out coal use in energy production • Increasing wood use in district heating and biofuel production • Increasing biofuel use in road transportation and in the light fuel oil used for the heating of buildings • Tendered subsidies for new wind power plants during 2018–2020, totalling 2 TWh
PD3	*Government Report on Medium-term Climate Change Plan for 2030: Towards Climate-Smart Day-to-Day Living*	25 Sept. 2017	Medium-term climate change plan (Ministry of the Environment 2017)	4.04 (146)	1 (31)	• The reduction of transport emission by half by 2030 compared with 2005 levels • An obligation to blend the fuel oil used for heating with 10% bioliquid • Phasing out oil heating in central government premises by 2025 • Halving the amount of food waste in institutional kitchens by 2030

(*Continued*)

Table 2. (Continued).

Code for the media items related to the policy document	Policy document	Publication date	Type of document and the reference	Mentions of the term *climate* per page and the total number of pages*	Media items related to the policy document (n = 55 for all the documents) and all the media items from the search (n = 227 for all the documents)	Main new climate targets, policies and actions
PD4	*Unified Climate Policy Goals of the Parties in Parliament*	20 Dec. 2018	Government announcement (Prime Minister's Office 2018)	11.00 (2)	5 (25)	• Finland supports carbon neutrality in the EU before 2050 • Finland supports the goal to tighten the EU's emission reduction goal for 2030 to at least 55% of the 1990 level • Finland's greenhouse gas emissions will be negative in the 2040s • Finland's electricity and heat production must be made nearly emission-free by the end of the 2030s'
PD5	*Inclusive and Competent Finland: A Socially, Economically and Ecologically Sustainable Society*	6 June 2019	Government programme (Prime Minister's Office 2019)	0.58 (214)	11 (53)	• Finland will be carbon neutral by 2035 and carbon negative soon after that • Finland supports tightening the EU's emissions reduction target to at least 55% below the 1990 level • Electricity and heat production in Finland will be made nearly emission-free by the end of the 2030s • Cutting the use of peat in energy production by half by 2030 • Phasing out fossil fuel oil use in heating by 2030 • Cutting the amount of food waste by half by 2030
PD6	*Fair Transition towards Carbon Neutral Finland: A Roadmap for Achieving the Carbon Neutrality Goal*	3 Feb. 2020	Government announcement (Prime Minister's Office 2020)	7.00 (5)	14 (54)	• The renewal of energy taxation • Sectoral plans for carbon neutrality • A roadmap for a fossil-free transport sector • A new medium-term climate change plan in 2021 • A new climate and energy strategy in 2021 • A climate change plan for the land use sector

*In the main document, excluding appendixes.

2020s. Otherwise, the programme's climate efforts mainly focused on forest-based bioenergy promotion in different sectors. This echoed the strong emphasis on bioenergy in earlier government programmes (Kivimaa and Mickwitz 2011). In 2016, the climate- and energy-related objectives of the government programme 2015 were outlined as concrete actions in the National Energy and Climate Strategy for 2030 (Prime Minister's Office 2016). The Medium-term Climate Change Plan for 2030 (Ministry of the Environment 2017) continued the implementation of the government programme and the EU's climate policy targets. The focus of the emission reductions in the plan was put on the transport sector. In addition, eight parties in the Finnish Parliament agreed on common climate policy goals in 2018 (Prime Minister's Office 2018).

The government programme 2019 (Prime Minister's Office 2019) outlined multiple important new climate change policies, of which the most important one was to achieve carbon neutrality in Finland by 2035. As the prime minister changed, a roadmap for the transition towards climate-neutral Finland was formed in the government programme 2020 (Prime Minister's Office 2020). The roadmap mainly outlined the need for new sectoral plans and roadmaps towards climate neutrality rather than concrete new policy targets and measures.

The media data sample was collected from one week period after the publication of each of the six policy documents, 2015–2020. The study period was selected as the focus is the media representations of finalized climate strategies and plans. However, the published policy documents are only the outcomes of the often lengthy and eventful process of policy planning and negotiation. This process, as well as the time before the official procedure, are significant phases of policy agenda-building and communication, also within the media sphere (e.g. Hopmann et al. 2012). However, it is assumed that the publication of these strategy and plan documents are media events where all the preceding processes culminate.

The media data were obtained from the online archive of Yle. The search strings include the terms "climate", "emission", "carbon" and "greenhouse" (*ilmasto, päästö, hiili* and *kasvihuone* respectively in Finnish). Since the aim was to acquire a comprehensive sample of the climate debate, the search strategy resulted in 111 hits not related to climate issues. These were removed from the final sample. Furthermore, of the 227 items focusing on climate issues, most do not mention the studied climate policies. Thus, the final sample consisted of 55 items that focus on or mention the studied climate policies.

In 2020, Yle's online and mobile services reached on average 3.1 million Finns every month (Yle 2021). According to Yle, their online services reached 73% of Finns over the age of 15 every week. Yle Uutiset ("Yle News") publishes hundreds of news articles weekly on a broad spectrum of both domestic and international topics. While "climate" does not have its own news segment on the site menu structure, such as the segments "Politics" and "Nature", Yle has introduced several specific, overlapping "topic words" for climate-related news, such as *hiilineutraalius* ("carbon neutrality") and *ilmastonmuutoksen hillitseminen* ("climate change mitigation").

The analysis mainly relies on qualitative media content analysis (Macnamara 2005; Neuendorf and Kumar 2016). The analysis framework outlines the types and topics of the articles and scrutinizes the actors' affiliations and their gender balance, the frames and future scenario archetypes and the time frames of reported change in the articles. The construction of the coding categories was partly deductive, based on a theory, Nisbet's

Table 3. Coding variables and coding schema.

Coding variables	Definition	Coding and categories in coding schema
Type	Type of the media item	• News • Column
Topic	• Topic of the media item • Linkages to aspirations or forecasts of future development • Linkages to technology, social justice impacts of climate policy, and climate activism	Open coding
Primary actors	Actors whose actions have been reported, and/or who have had a first-hand impact on the content, e.g. as interviewees	Occupation • Government and governing parties • Opposition parties • Other public sector • Companies • Business and advocacy organizations • Academic institutions and researchers • Media and journalists • eNGO's • Fourth sector (informal volunteering, self-organizing activism and hybrid organizations) • Citizens • Other
Secondary actors	Actors who have been mentioned by other actors	Coding schema identical with the coding schema of the primary actors
Frame	How the climate change as a policy issue is portrayed and understood (Nisbet 2009)	• Social progress • Changing lifestyles and living standards • Economic development and competitiveness • Morality and ethics • Scientific and technical uncertainty • Pandora's box/Frankenstein's monster/runaway science • Public accountability and governance • Middle way/alternative path • Conflict and strategy
Scenario archetype	Growth-based narrative of societal change (Dator 2009)	• Continuation • Limits and discipline • Decline and collapse • Transformation

(2009) typology of frames and Dator's (2009) typology of scenario archetypes. As Nisbet's approach to framing derives specifically from communicating climate change, it offers an inherently relevant typology for our topic. Furthermore, as the policy documents contain both current and future framings for climate policies, the combination of Nisbet's framings for climate change and Dator's scenarios serve as a relevant approach to interpreting the policies' representations in media. The categorizations of the actors' occupations and the time frames of reported change were constructed inductively during the coding. The coding categories are summarized in Table 3. The analysis was conducted using NVivo for text coding, Excel for grouping media items, and Excel and Python for visualization. The Excel codebook is provided in Appendix. The coding was based on two independent human coders. Potential bias caused by reliance on subjective expert judgements and differences in interpretations was addressed through iterative discussion rounds until a complete agreement was reached.

There are several limitations that should be noted. The case study is based on one news outlet, the online news of the Finnish public broadcaster (Yle). It should be noted that Yle's online news search is by no means perfect and will not always provide the desired results, especially if the search term used is too specific or rare, or if the search string is too similar to a more popular search term. For example, the search application programming interface (API) may guess that the researcher actually meant to search for *lasikatto* ("glass ceiling") when they in fact intentionally searched for *lajikato* ("biodiversity loss"). Using broader search terms covering the overall topics of our interest ensured that the dataset was not likely to omit any news articles relevant to our study. The sample size of media articles related to each policy document is limited. This is partly due to the search periods that consist of a week after the publication of each policy document (starting from the publication date) in order to capture the initial representation. It is also possible that there are articles that discuss single policy actions or regulated technologies without mentioning any of the search terms. The amount of those articles is likely to be small and their relevance to analysing overall climate policy representations is limited. In some of the analysed articles, the climate policy document only had a small role, whereas some of them were centred around representing the documents. Finally, content analysis allows only limited interpretations of the intentions and meaning construction of the communication. Furthermore, we used predefined typologies of frames and scenario archetypes. These models are, of course, broad tools with which to envision the present and the future. By using this approach, the analysis may have missed additional frames and scenario archetypes that weren't included in these categories. To address this, we supplemented the frame typology (Table 1) with an additional frame that was identified as being used in the media material, "Changing lifestyles and living standards" to capture defining climate change as an arena of cultural choices, identities and external demands on an individual level.

3. Results

3.1 Article types and topics

Out of the 55 articles directly related to the six policy documents, 87% were journalistic articles and the rest were columns written by journalists and invited writers. When looking at the sample of all climate change-related articles in the study periods (n = 227), the studied climate policy documents were mentioned in just a minority of them (Figure 1). However, the Energy and climate strategy (2016) was a notable exception as it was mentioned in 65% of the articles in the study period. There is no clear temporal trend, but a slight increase from 2019 onwards is likely to reflect increasing overall public interest and the policy mainstreaming of climate issues (Lyytimäki et al. 2020). Notably, the 2020 study period took place in early February, before COVID-19 news displaced climate change news. Topic categorization of the 172 articles not related to the policy documents showed that 50% of the articles focused on another climate change or environmental issue, 13% on other national policy issues and 38% on other issues that were largely not environmental. These shares are generally in line with the earlier focus of the climate debate in Finland (Lyytimäki 2011).

The topics of the articles related to the climate policy of the Government programme (2015), henceforth referred to as PD1, included the objectives of phasing out the use of coal and replacing it with renewable energy sources, replacing fossil oil with biofuels, permitting new energy sources, such as horse manure, in bioenergy production, and the feasibility of electric cars in varied transportation needs. Social justice was mentioned in an article, published on 25 May 2015, that focused on road user charges planned by the government. The article stated, repeating the government's message, that there should be a procedure to compensate domestic transport industry entrepreneurs so that they wouldn't be burdened with additional costs. Four out of the seven articles were focused on technological possibilities for climate change mitigation.

Energy and climate strategy (2016) was most frequently covered in the media articles. Henceforth the related media articles are referred to as PD2. The articles focused on the biofuel policies, acceptability of increasing car fuel prices, electric cars, the impact of EU energy policies on Finnish climate policy objectives, renewal of the wind power subsidy system, and finally, the impacts of the policy objectives, especially on wood prices and renewal of car fleet. Many of the articles reported judgements and comments of different actors, for example, two of the articles presented a reaction of two energy sector companies. Of the 17 articles, 14 were focused on technological possibilities for climate change mitigation. Social justice was discussed in an article that reported the process of lobbying against wind power, published on 24 November 2016. The article quoted politicians' comments on the speculated health effects of wind turbines on local people.

The Medium-term climate change plan (2017), was covered in one article, henceforth referred to as PD3. The article reported the perceptions of the sitting and the previous ministries of the environment of the policy objectives and their adequacy for mitigating climate change. The articles covering the eight parties' unified climate policy goals (2018), henceforth referred to as PD4, were focused on the changing role and ambition of Finland in climate policy field, also in relation to the EU, and the process of party politics behind the policy output. Of the 5 articles, one was technically focused.

The Government programme (2019), set climate change to the core of national policy topics, "climate change" being the first term mentioned in the policy document. Henceforth the related media articles are referred to as PD5. The articles that covered the climate policies in the government programme were focused on the perceptions of the opposition of the climate policy objectives, the differing perceptions of ministries on

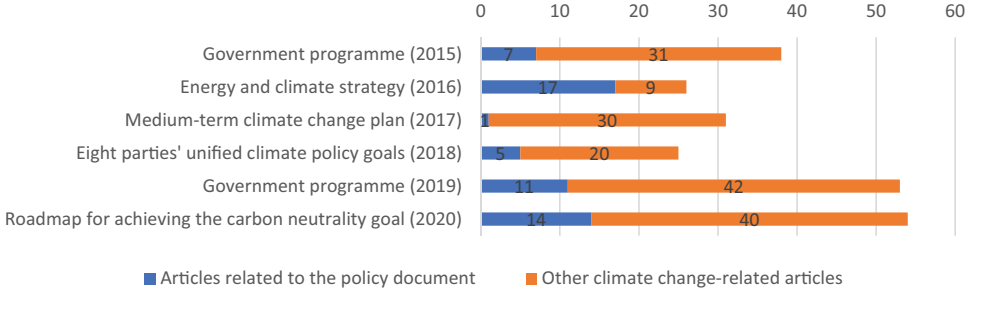

Figure 1. The number of articles related to the climate policy documents compared to other climate change-related articles after the publication of each policy document.

the adequacy of wood production in relation to the needs of bioeconomy, the long-term development of road traffic, and the role of business subsidies in mitigating climate change. The perspective of social justice was included in two articles, both published on 12 June 2019. The first of them reported the governments' aim to increase funds for development cooperation and allocate them to climate change adaptation. The other quoted opposition politicians' comments from the first parliamentary discussion of the governmental programme, one of them criticizing the social effects of the economic costs of climate policy. Two of the articles were technically focused.

The topics of the articles related to the most recent policy document, the roadmap for achieving the carbon neutrality goal (2020), henceforth referred to as PD6, included summaries and expert evaluations of the policies and their impacts, presenting the efficiency of the policy measures in reducing emissions, reporting the political process, and the effect of the policies to the national and municipal economy. Three articles had a technical focus: the first focuses on how the decision to decrease industrial electricity tax impacts emission levels, the second on representing the nuclear power views of the Green League, and the third on the feasibility of electric cars in long-distance driving. Social justice perspectives were included in four articles, all via quoting interviewees. In two articles, published on 3 February 2020, representatives of environmental NGOs' criticized that postponing impactful climate decisions is socially irresponsible and that employment impacts of using peat for energy have been overestimated and falsely used as an argument. In an article, published on 7 February 2020, a representative of the Finns Party criticized that the climate policies increase regional inequality. The fourth article, published on 8 February, quoted a representative of the Centre Party who called for climate action that is socially just and "not only punish the daily lives of the poor".

3.2 Actors and agency

The dominance of politicians and civil servants was expected in the articles that were related to national climate policies (Figure 2). In total, the public sector represents 57% of the primary actors in the articles and 31% of the secondary actors. The private sector has also had a visible role, representing a fourth of both the primary and secondary actors. Several companies were present as secondary actors, mostly representing fields that are influenced by the policies, but sometimes also as climate solution innovators. Mentions of large companies' actions were common, as were mentions of their stances related to sectors impacted by the policies and having weight in economic policy discussion in Finland, such as forestry, steel production and energy production. Academic institutions and researchers represented a tenth of all the primary actors. The visibility of environmental NGOs was rather low, especially compared with business and advocacy organizations. Environmental NGOs were only represented as primary actors in articles related to PD6. The visibility of fourth sector actors was very low in climate policy news reports. Notably, the presence of individual citizens, randomly picked out to represent the views of ordinary citizens, is more extensive than organizational forms of civil society, eNGOs and the fourth sector together.

The visibility of different stakeholder groups varied between the policy documents. The government and ministers were the most frequently mentioned actors in PD6 and PD2. On one hand, the targets of the policy documents, climate neutrality roadmap and

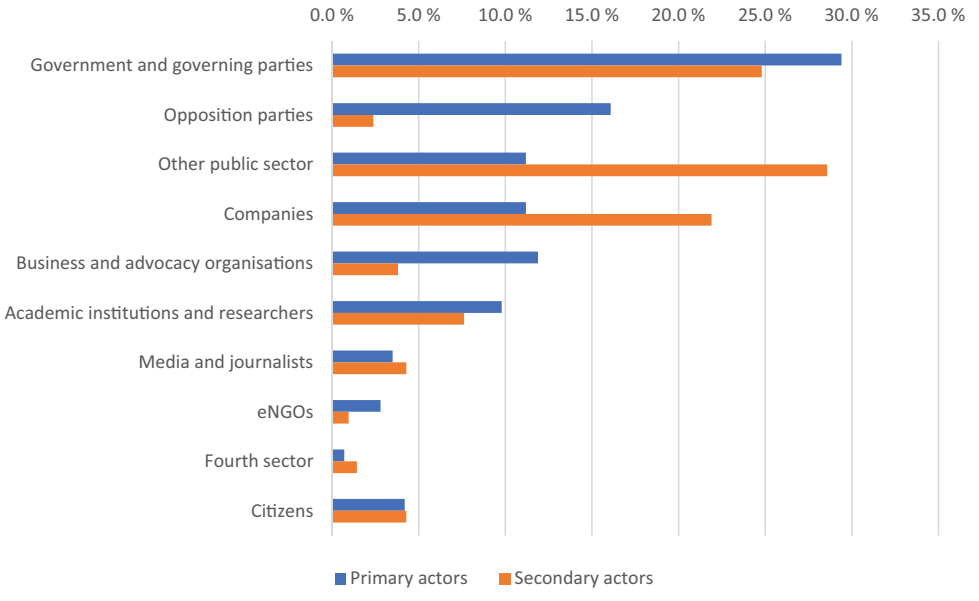

Figure 2. Actors' affiliations in articles related to the climate policy documents.

energy and climate strategy, were strongly framed as the government's outputs, and on the other hand, the discussion was linked to the responsible ministers. Government and ministers were often primary actors also in PD4. This was mainly due to the discussion on the process of outlining the joint climate targets for most parliamentary parties. Governing parties as well as opposition parties had the most visibility in PD5. The climate objectives of the government programme provoked discussion both within the government, on a party level, and between governmental and opposition parties.

The visibility of companies, and business and advocacy organizations was largest in PD2 (40% of occurrences of all actors). One of the main focuses of the media discussion on the energy and climate strategy was how the energy sector and companies see the plans of action. The share of the private sector was also large in PD1, being nearly 30%, partly due to the focus on biofuels and their producers. The visibility of academic institutions and researchers was highest in PD1, where the share was 35%, also due to the discussion on the biofuels' socio-technical potential. Environmental NGOs only had primary roles in PD6, although their views of the policies were frequently quoted and even raised in the headlines. The fourth sector representatives were only the main actors in PD2, whereas the visibility of citizens spread over the news of four of the policy documents.

3.3 Frames and future representations

Global scenarios by the IPCC and various national scenarios and future outlooks have played a key role in constructing and narrating the climate policies, but none of the analysed articles mentioned the scenarios behind the policies. However, in a third of the articles, visions of potential alternative progressions and pathways were constructed by journalists or interviewees. These ranged from speculations about the real-world

implications of different policy implementation measures to predicting technological development, human behaviour development and future outlooks based on reported scientific results (for example, on the implications of climate change).

The articles integrated several frames and scenario archetypes of social change simultaneously. Figure 3 presents the identified dominant frames and scenario archetypes. Using Nisbet's (2009) frames typology, "economic development and competitiveness", "public accountability and governance" and "social progress" were most frequently present. All frame types were identified except the "morality and ethics" frame. More skewed distribution was identified from the scenario archetypes of social change (Dator 2009), "transformation" and "limits and discipline" being the most frequent ones.

The most frequent frame and scenario archetype combination was "economic development and competitiveness" connected to "transformation". In these articles, the represented main goal of climate action was enabling innovation and the benefit of the national economy. Climate targets were subordinate to economic policy and analysed through economic variables, such as employment, exports, competitiveness, taxation, subsidies, investments and regional development. For example, an article published on 4 February 2020 represented the increasing competitiveness of national industry as a primary goal of government's decision to reduce the industrial electricity tax and presumed that it would also support transition to low-carbon energy production and clean energy system. Technology was the driver of change, highlighting the potential of new innovations supporting the development of dominant industries, such as forest biofuels and other bioenergy. The transformation of mobility, especially through the changing car traffic fuels, was a key theme, in discussing the economic feasibility of biofuels. Some articles illustrated in detail how much a certain industrial investment related to climate change mitigation provides employment in different phases of

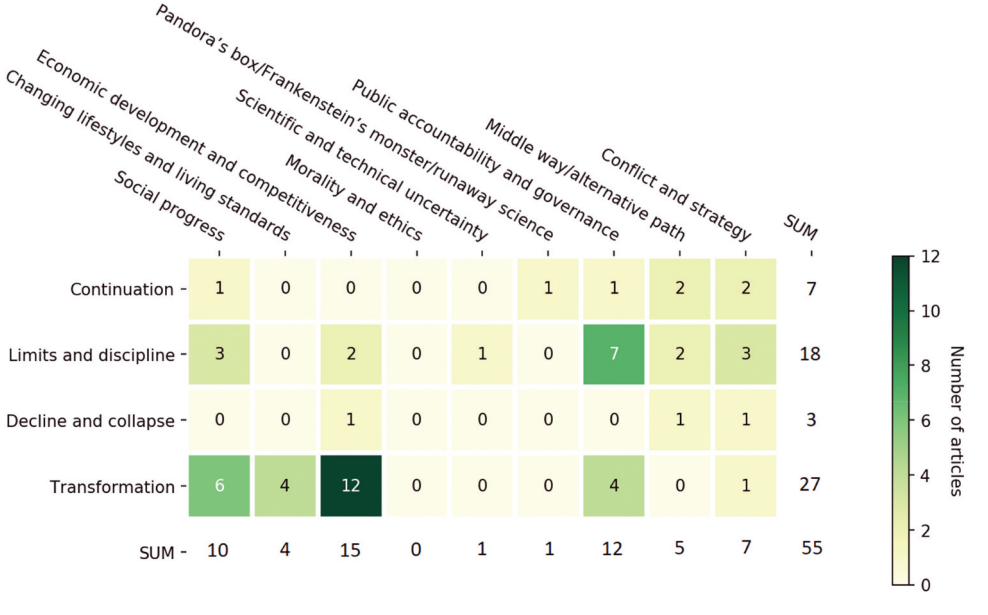

Figure 3. Frames and scenario archetypes in articles focusing on the climate policy documents.

construction and use, with no mention of actual emissions reductions. The representatives of the private sector were often primary actors in the articles, and they also strongly brought up the impacts of climate policies on corporation earnings and bureaucracy. For example, an article published on 25 November 2016 focused on the evaluations of two energy sector CEOs on how the outlined investment aid, supporting the transition towards a low-emission energy system, supports their businesses.

The combination of the "social progress" frame and the "transformation" scenario focused on urban and infrastructure development, food system transformation and integrating justice deliberation and support schemes in climate policy implementation. For example, an article published on 12 June 2019 envisioned how new experimental hyperspectral cameras could help reducing food waste throughout the production chain. Economic and technological perspectives were strongly present in also the "social progress" frame emphasizing the perceived importance of employment and livelihoods of the vulnerable groups and the societal benefits of technological development. The articles that combined the "public accountability and governance" frame with the "limits and discipline" scenario typically covered the climate policy negotiation process and results from the perspective of their effectiveness and feasibility. The headline of an article published on 3 February 2020 gives an example: "Experts call government's new climate action inadequate – 'More courage and political will needed'".

A comparison of the frames of the articles related to different policy documents shows that while most of the policy documents were addressed with several frames, there are differences between the documents (Figure 4). In the articles related to two earlier policy documents (PD1 and PD2), climate change was most often framed as a question of "economic development and competitiveness". That was the case in nearly half of the articles. The frame was used to a lesser extent in the most recent PD5 and PD6, where the shares were 18% and 14%. The "social progress" frame was used in articles related to all the policy documents except PD3, but more often the three recent policy documents, with shares ranging from 20% to 40%. The "public accountability and governance" frame was used in articles on the majority of the policy documents, with shares ranging from 21% to 60%. The "conflict and strategy" frame was used in PD3 and in articles related to the two most recent policy documents, with shares of 36% for PD5 and 14% for PD6. The articles from 2019 and 2020 focused on portraying conflicting views of different actors, the government and opposition, or the government and critical stakeholders, and analysing who were the "winners and losers" of climate action. The personal voice of journalists was typically strong in articles using the "conflict and strategy frame", and even stronger in articles using the "middle way/alternative path" frame. In the latter article group, the focus was on critical analysis of the speeches and deeds of the policymakers, often given in commentaries. Also, the "middle way/alternative path" frame was used in articles related to the two most recent policy documents, with shares of 18% (PD5) and 21% (PD6). The "changing lifestyles and living standards" frame was used in PD1, PD2 and PD6 with shares ranging from 7% to 14%. Lifestyle-centred articles covered the impacts of car use, fuel prices and electric vehicles on lifestyles. The articles using the "scientific and technical uncertainty" frame and the "Pandora's box" frame were included in PD2.

The "transformation" scenario archetype stood out in articles related to the two earlier policy documents (PD1 and PD2) where the shares of the narrative were 71% and 82% of the articles (Figure 5). It was also present as a dominant narrative in the

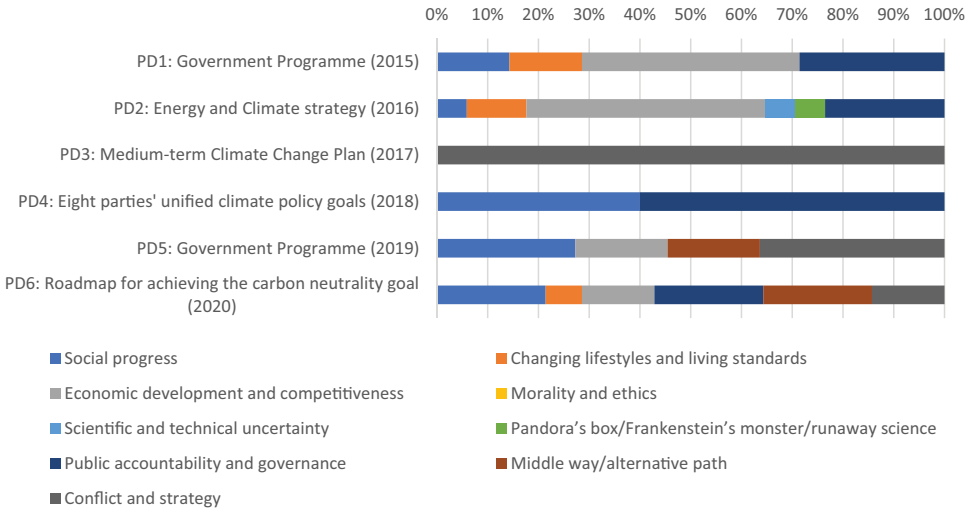

Figure 4. Frames in articles focusing on the climate policy documents.

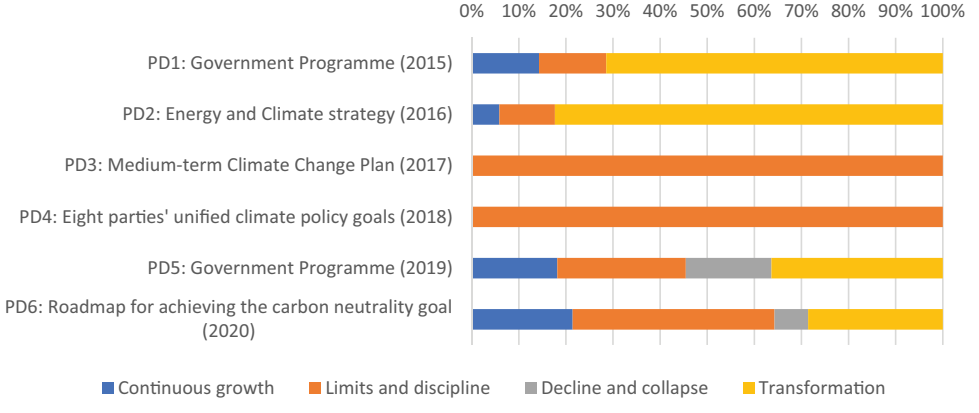

Figure 5. Scenario archetypes in articles focusing on the climate policy documents.

articles related to the two most recent documents (PD5 and PD6), with shares of 29–36%. The "limits and discipline" frame was the only narrative used in articles on all policy documents and it was used in all the articles included in PD4 and PD3. The shares in PD1 and PD2 were 12–14% and in PD5 and PD6 they were 27–43%. The shares of the use of "continuation" scenario were 6–14% in PD1 and PD2 and 18–21% in PD5 and PD6. In this article group, the articles reported outputs that categorically opposed climate policies and their implementation, focused on the political game and parties' power relations, or reviewed other megatrends without integrating them with climate change. The "decline and collapse" frame was used in articles related to the two most recent documents, with shares of 18% for PD5 and 7% for PD6. These articles emphasized that declining economic conditions and a lack of money restrain climate change mitigation actions.

4. Discussion

Several high-profile scientific assessments emphasizing the urgency of more stringent climate policies have been published since the late 2010s (e.g. IPCC 2021). This accumulating scientific evidence influences policy-making via multiple routes, including media representations affecting the formation of the public agenda. Given the increasing pressures facing commercial news media (Temple 2018) the public broadcasters are in many countries in a key position to foster science-based climate debate. In Finland, public broadcaster aims to support democracy and provide comprehensive and reliable information, as stipulated by the law and operationalized by the strategy of the broadcast company Yle (Yle 2020). However, successful climate mitigation and adaptation call for more than high quality environmental media coverage: if climate issues are framed as isolated environmental issues, profound economic, political and cultural implications are likely to remain unnoticed (Lyytimäki 2011).

Our analysis shows some encouraging general-level signals. First, our sample supports earlier studies (Ylä-Anttila et al. 2018; Lyytimäki et al. 2020) indicating that the mainstream media, including public broadcaster Yle, gives considerable space to climate issues. However, public attention is not guaranteed. Climate change is a long-term, global and non-tangible policy issue and national climate strategies are a challenging news topic, and therefore some decisions or documents with high relevance for climate change mitigation and adaptation can be left with relatively little media attention. Second, the sample shows that in the mainstream media discussion related to Finnish climate policy documents, the juxtaposition of climate denialism and alarmism or statements on scientific uncertainties do not seem to be very accentuated (see e.g. Cann and Raymond 2018). This does not indicate a societal agreement on the most appropriate framings of climate action and related futures. Instead, it indicates a maturation of climate policy as a news genre. A public broadcaster can legitimately report about climate policy issues without a need for "balanced reporting" giving a voice to the climate sceptic actors (Boykoff 2011). However, this does not mean a complete absence of sceptical voices that can still be found in online comments of the news.

The results show a high diversity of framings and division of future projections related to climate policies. More extensive integration of climate change and policies into long-term social progress and systemic change in the news reports could advance the integration of just transition thematic and therefore forestall polarization around the topic (Brüggemann et al. 2020; Pearson et al. 2021). In some countries, the public-service media has already taken a bigger role in providing an arena for future-oriented societal-level discussion. In Britain, the BBC has a "Future" section on its website completely dedicated to envisaging societal transition in the face of climate change (among other drivers). The Swedish national broadcaster SVT launched a climate newsletter in 2021. As of July 2021, the only Nordic public broadcaster to have a special section on its webpage for climate change is Denmark's DR, which falls under the section "Knowledge" on its site. Yle, on the other hand, is the only Nordic public broadcaster to dedicate a section to "Nature", often featuring news on the impacts of changing climate on the Arctic nature.

The economic framing of climate change seems to most adamantly cling to the status quo frames. It could be argued that, partly as Dator (2009) assumed, "continued growth" and "transformation" in economic terms are seen as the default models for the society's

(climate) future. In previous studies of public media discussion, climate action has been heavily subordinate to economic policy (Ylä-Anttila et al. 2018). A transformation, as presented in the results, is closer to green economic transition with incremental technological development (Söderholm 2020) than a systemic transition to sustainability (Geels 2011). "Creating green jobs" has become a very popular target in economic and societal development, and this is strongly present in the analysed articles. The representations of transformation also include a premise of continued economic growth, in contrast to discussions on degrowth transition (Büchs & Koch, 2019). Overall, the success of the climate policies was mainly discussed against economic criteria in the analysed articles. The opposition parties' representatives, to whom economic rhetoric and critique offer powerful arguments against the government's policy action (Harjuniemi 2021), had a significant share of being the primary actors in the articles. In some cases, climate targets were presented as an entitlement for an economic goal.

Such framings have been identified in similar media studies before. A study on the media coverage of the German Renewable Energy Act from 2000–2017 uncovered such shifts in the media framings (Dehler-Holland et al. 2021). Over the 18-year-period the coverage shifted from positive accounts of the renewable energy industry, often emphasizing the economic gains the renewable technologies bring, towards emphasizing the costs that the act imposes on society, particularly on households, reminiscent of the conservative anti-climate talking points highlighted by Nisbet (2009). The authors fear such a shift in framing, if generalized, may endanger public support for climate action and long-term renewable goals.

Nisbet (2009) notes the economic consequences frame can be used to both oppose and promote climate policy, depending on the actors in question. An analysis of climate change coverage between 1997 and 2013 in the United States, Finland, France, Russia and India (Ylä-Anttila et al. 2018) discovered a shift from emphasizing the negative economic consequences of climate change mitigation to economic growth and environmental protection as mutually supportive rather than competing goals. Our study shows that the economic angle is indeed relevant to many of the actors, from politicians to business owners, from the public sector to the lobbyists.

The media representations of the climate policy documents are more variable over time than between different types of documents. Notably, the only legally binding policy document in the material (Ministry of the Environment 2017) has aroused the least public discussion in the media. Media topics arousing strong conceptions and emotions can take space from potentially more impactful topics (Freedman 2018; Davis 2019). Overall, a more multifaceted treatment of climate policies increased during the study period, especially in terms of frames and scenario archetypes. However, based on the analysis, politicians are frequently referred actors that are allowed to comment on policy documents often without a critical or investigative journalistic angle. This may be explained by the complicated characteristics of climate science and policy, and the unfamiliarity of journalists with climate issues, especially in the articles related to the earlier policy documents. This is not only the case with their comments but also with their frames of climate change and scenario archetypes of social change. Hence, the media articles noticeably reflect the spirit of the prevailing national-level political atmosphere. In the articles related to the latter policy documents more often multiple actors and their

perspectives are included in the same article, which has sometimes led to frames that emphasize conflicting views or a middle way between them.

5. Conclusions

Public broadcasting services provide an important opportunity for science-based climate and energy news production in an age of increasing commercialization, fragmentation and polarization of media and social media debates. Here a sample of online content provided by the Finnish Broadcasting Company Yle was studied. The results show that a more multifaceted coverage of climate action increased during the study period of 2015–2020, especially in terms of frames and future scenario archetypes, and indicate gradually widening awareness of climate risks. Media coverage related to climate and energy policy strategies give relatively little attention to future representations of smooth continuation of business-as-usual or gloom-and-doom representations highlighting decline and uncontrollable collapse. Instead, the future is more often seen through a lens of well-organized energy transformation, or a change process motivated by an increasing understanding of limits to growth. However, the emission reduction potential of system-level changes has been discussed vaguely as the news often emphasizes specific technologies, isolated policy decisions or consumer choices and individualized responsibility. Climate change has been framed as an isolated policy area, and climate change mitigation and adaptation remain framed as subordinate to economic policy targets. The results indicate a maturation of climate policy as a news topic and highlight the need for developing media reporting practices sensitive to consideration of alternative, long-term futures.

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Data availability statement

The authors confirm that the data supporting the findings of this study are available within the supplementary materials of the article.

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