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Environmentally friendly urban development: changes in decision-makers' attitudes, problem perceptions and policy preferences over three decades

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This paper investigates changes in decision-makers' attitudes toward environmentally sustainable urban development in selected Norwegian urban settlements between 1991 and 2020. Changes in general environmental attitudes, problem perceptions and policy preferences concerning urban development are analyzed based on a survey conducted three decades apart in the same case areas among similar samples of decision-makers. The results show a general picture of some mainstreaming of environmental concern, environmentally friendly attitudes and positive attitudes toward measures supporting nature and climate friendly urban development. At the same time, there has been an increased divide between the political left and the political right in their attitudes toward environmental issues in general, as well as toward environmentally sustainable urban development. The results point to a widening gap between environmental attitudes and problem perceptions on the one hand, and the physical reality of escalating crises in the natural world.

Keywords: environmental attitudes; environmental problem perceptions; sustainable urban development; local environmental governance; local land-use strategies; ideas

1. Introduction

While we increasingly realize the importance and urgency of preserving nature and reducing atmospheric concentrations of greenhouse gas (GHG) emissions, we keep degrading nature and increasing GHG emissions as we grow our cities and our economy (IPBES 2019; IPCC 2014). Urban areas, being sites of production and consumption, are important arenas for addressing global challenges such as nature and climate crises. Current forms of urban development can hardly be labeled environmentally sustainable when thinking of transport infrastructure, building stock, energy consumption, land consumption, etc. (Brody 2013; Naess, Saglie, and Richardson 2020). The definition of sustainable development underpinning the research presented in this paper, is a development path that stays below the thresholds of biophysical limits and satisfies human needs and justice – a path where the economic system functions as a *sub-system* serving social needs within planetary boundaries (Dearing *et al.* 2014; Rockström *et al.* 2009). Inspired by previous work in the area, I define environmentally friendly

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urban development as a development characterized by reduced energy use and transport emissions, land-use efficient housing types, densified and concentrated development patterns, reduced land-use for transport (roads, parking, etc.), and that conserves urban nature (Beatley and Wheeler 2014; Hanssen, Hofstad, and Saglie 2015; Keeler *et al.* 2019; Naess, Saglie, and Richardson 2020).

Previous research has pointed to significant barriers to environmentally friendly urban development, including hegemonic values and the framework conditions for public planning (Naess 1993). While there has been much research on environmental attitudes and political orientation of public opinion, little attention is devoted to the environmental ideas of decision-makers. The importance of this group should not be overlooked, since their ideas about problems and solutions contribute to shaping policy outcomes (Howlett, Ramesh, and Perl 2009).

To contribute toward addressing this gap, I investigate whether decision-making actors' attitudes toward urban development, environmental problems, and measures for sustainable land use in urban development have changed between 1990 and 2020. This period is of particular interest, since drastic changes have taken place in terms of the escalation of nature and climate crises (IPBES 2019; IPCC 2014). In addition, the start of the period also marks the introduction of sustainable development into national and international political rhetoric, with the Brundtland commission report *Our Common Future* released shortly before, in 1987, followed by the Local Agenda 21, resulting from the Rio Conference in 1992. In this paper I ask: have decision-makers' ideas about environmentally friendly urban development changed since the early 1990s? If yes, how? To address the research question, I compare the results of almost identical surveys carried out in 1991 and 2020 among local politicians and local, regional, and national bureaucrats in Norway, focusing on stated environmental attitudes, problem perceptions and attitudes toward measures in urban development. I use attitudes as a proxy for broader, paradigmatic ideas about the environment.

2. Ideas and attitudes in urban environmental governance

2.1. Theoretical approach

A central assumption motivating this research is that decision-makers' problem perceptions and attitudes matter for how society is shaped and how it develops by influencing notions of feasibility of different courses of action (Meltzer 1972; Webber 1986). Policy outcomes are shaped by the ideas held by policy actors, and the institutional structures within which the actors operate (Howlett, Ramesh, and Perl 2009). As Hay (2002, 211) puts it, "policy-makers typically conceptualize the policy-making environment through the lens of a particular policy paradigm." Overarching sets of ideas impact policy by making up a context that recognizes some issues and interests as more important and legitimate than others, and some types of policies to address these as more appropriate (Hall 1993).

There is no definition of the concept 'idea' that fits all purposes. For the purposes of this paper, the concept of an idea is understood as "a web of related elements of meaning" serving as "socially constructed heuristics and interpretive filters that can reduce societal complexity to a level that enables [individuals] to act" (Carstensen 2011, 600). Campbell (1998) developed a taxonomic and analytical typology of how different types of ideas affect policymaking. At the conceptual level, he makes two distinctions: ideas as 'background' assumptions and foreground ideas contested in policy debates;

and cognitive and normative ideas. The former elucidates cause-and-effect relationships, whereas the latter consists of values and attitudes. Based on those structural distinctions, Campbell (1998) identifies four types of ideas: *paradigms* (background assumptions limiting the cognitive range of alternatives imagined); *public sentiments* (background assumptions about public sentiments limiting the normative range of alternatives deemed legitimate); *programs* (foreground cognitive concepts in policy prescriptions as courses of action); and *frames* (foreground normative concepts framing policy solutions as legitimate according to public sentiments). In policy studies, there has been a tendency to study ideas revealed from adopted policies (foreground ideas in Campbell's taxonomy), rather than the actual ideas of policy actors (Daigneault 2014).

Since paradigmatic ideas shape how actors understand and explain the world, the study of decision-makers' actual ideas about environmental problems and urban development measures are of interest, as their decisions shape the direction and characteristics of urban development. Specific attitudes in environmental and urban development questions can be used as a proxy for broader paradigmatic ideas and worldviews. While one can enquire directly about underlying beliefs or paradigmatic ideas, in many studies attitudes are found to have a congruent or biasing effect on broader beliefs (see Marsh and Wallace 2005 for a review). Making the enquiries as close to actors' attitudes as possible and deriving the underlying broader worldviews from the expressed attitudes, therefore seems a reasonable approach to the study of the environmental ideas of decision-makers.

In public policy, one finds clear policy legacies understood as institutional routines and procedures that direct decision-making and affect future policymaking. Through iterations in policy cycles, dominant ideas form institutional obstacles to taking new directions, with actors, institutions, instruments and dominant ideas persisting for extended periods of time shaping "a policy sector with both consistent content and a set of typical policy processes or procedures." Only when such a 'policy monopoly' is broken up by exogenous or endogenous forces, is a substantial policy change likely to occur (Howlett, Ramesh, and Perl 2009, 201, 203).

In questions of environmental sustainability, we can broadly distinguish between two opposing 'paradigms' of sustainability. The presence of two opposing paradigms of environmental sustainability has been pointed to by researchers across social science disciplines. The distinction is essentially made between weak and strong sustainability (Neumayer 2013; Pearce, Markandya, and Barbier 1989), or eco-modernisation and limits to growth (Hajer 1995; Høyer and Naess 2001; Naess, Saglie, and Richardson 2020). The essential difference between the opposing paradigms centers around beliefs about technological progress and the substitutability of natural resources. The paradigm of weak sustainability or eco-modernisation builds on a belief that there is no conflict between economic and material growth and environmental preservation. This is because human ingenuity and technological progress can decouple growth from negative environmental consequences, rendering natural resources substitutable. The paradigm of strong sustainability, or limits to growth, builds on a belief that the link between growth and environmental issues cannot be broken in absolute terms, that there are limits to technological progress, and that nature is inherently valuable, and non-substitutable. Sufficient action to address the nature and climate crises has, to date, been absent. There is an increasingly broad academic consensus that having a chance of reaching the Paris Agreement goal of limiting the global average temperature increase to below 1.5 °C, and halting the loss of nature and biodiversity requires

radical and strong near-term action that fundamentally changes our energy supply and consumption, mobility patterns and volumes, land-use and encroachments on nature (IPBES 2019; IPCC 2018).

2.2. *Earlier empirical studies*

Substantial empirical research exists surveying environmental attitudes and political orientation of public opinion at different population scales, ranging from the global level (Franzen and Vogl 2013; Leiserowitz, Kates, and Parris 2006) to smaller scale levels such as regions, countries or cities (Drews, Antal, and van den Bergh 2018; Fowler 2016; Goren 2005; Guber 2001, 2013; Inglehart 2008; Inglehart and Abramson 1994; Kilbourne and Pickett 2008; Liu, Wang, and Wang 2018; Melis, Elliot, and Shryane 2014; Mildenerger and Leiserowitz 2017; Milfont 2012; Skogen, Helland, and Kaltenborn 2018; Sundström and McCright 2014; Tomaselli *et al.* 2019), student populations (Gigliotti 1992; Kilbourne *et al.* 2001; Milfont and Gouveia 2006; Prati, Albanesi, and Pietrantoni 2017; Shephard *et al.* 2015) and adolescents (Wray-Lake, Flanagan, and Osgood 2010). To my knowledge, few studies focus on environmental attitudes among civil servants and politicians, with a few exceptions in the case of politicians (Lönnqvist, Ilmarinen, and Sortheix 2020; Sundström and McCright 2014).

The studies investigating factors influencing environmental attitudes find that these attitudes are associated with a range of factors, including partisan belonging and ideological conviction (Goren 2005; Lönnqvist, Ilmarinen, and Sortheix 2020); world views (Skogen, Helland, and Kaltenborn 2018); beliefs about environmental pressures (Fowler 2016; Kilbourne and Pickett 2008; Wray-Lake, Flanagan, and Osgood 2010) and technological progress (Kilbourne *et al.* 2001; Wray-Lake, Flanagan, and Osgood 2010); demographic characteristics (Fowler 2016; Sundström and McCright 2014); social identity and group belonging (Prati, Albanesi, and Pietrantoni 2017); social ideals (Cotgrove and Duff 1981), individual core values and time perspective (Milfont and Gouveia 2006); and the environmental orientation of the institutional context (Liu, Wang, and Wang 2018; Prati, Albanesi, and Pietrantoni 2017; Wray-Lake, Flanagan, and Osgood 2010).

A common finding in studies on the relationship between environmental attitudes and behavior is a significant gap between environmental attitudes and values on one hand and acting in environmentally friendly ways (Blake 1999; Davies, Fahy, and Taylor 2005; Kollmuss and Agyeman 2002; Leiserowitz, Kates, and Parris 2006; Prati, Albanesi, and Pietrantoni 2017). While personal values and attitudes are some of the factors that influence behavior, behavior is also influenced by social, cultural, institutional, and structural factors (Blake 1999; Davies, Fahy, and Taylor 2005; Kollmuss and Agyeman 2002). Many studies on environmental attitudes have failed to capture tradeoffs between environmental conservation and the personal sacrifices that might be necessary for environmental conservation (Gigliotti 1992). In failing to capture these tradeoffs, the high reporting of environmental attitudes might give a flawed picture of how willing people are to prioritize the environment over, say, their personal freedom to live in a large single house, drive a fossil-fuel car without sanctions, or unlimited travel by airplane. Furthermore, those believing in technological fixes and that economic growth is not in conflict with environmental concerns are found to be less willing to take conservation action, whereas those skeptical of technological fixes and the sustainability of continued economic growth are more willing to accept personal sacrifices and consumption changes (Drews, Antal, and van den Bergh 2018; Gigliotti

1992; Tomaselli *et al.* 2019; Wray-Lake, Flanagan, and Osgood 2010). The majority of US and EU publics believe that economic growth and environmental protection are compatible (Drews, Antal, and van den Bergh 2018; Tomaselli *et al.* 2019).

Previous work has looked at environmental attitudes through time across various periods (Bardi *et al.* 2009; Berry 2018; Franzen and Vogl 2013; Gigliotti 1992; Guber 2013; Inglehart 1995, 2008; Inglehart and Abramson 1994; Lönnqvist, Ilmarinen, and Sortheix 2020; Melis, Elliot, and Shryane 2014; Prati, Albanesi, and Pietrantonio 2017; Shephard *et al.* 2015). Interestingly, several of these studies show a decline in environmental attitudes since the 1990s (Franzen and Vogl 2013; Guber 2013; Wray-Lake, Flanagan, and Osgood 2010). These findings challenge Inglehart's (1995, 2008) post-material cultural value shift theory that generations having grown up with less economic hardship and insecurity shift their value orientations toward less emphasis on economic growth and more emphasis on environmental conservation. Indeed, Kilbourne and Pickett (2008) and Wray-Lake, Flanagan, and Osgood (2010) found that increases in materialism negatively affect environmental beliefs and attitudes toward conservation.

To the best of my knowledge, no previous studies cover both politicians' and civil servants' environmental attitudes through time, indicating the novelty of the empirical material presented in this article. This paper addresses this gap by studying the attitudes of policy actors in urban governance between the early 1990s and the present. I analyze stability and changes in environmental problem perceptions, general environmental attitudes, and attitudes to various urban development measures and, importantly, whether these have changed toward sets of ideas capable of addressing the challenge at hand; namely ideas of strong sustainability and material degrowth. The focus in this paper is, as such, mainly on what Campbell (1998) refers to as paradigmatic ideas, using attitudes as a proxy for these ideas.

3. Methods

Below follows a brief account of the methods used for the collection and analysis of the empirical material presented in this paper. For an elaborate account of the research design and data analysis, see Appendix 1 (online [supplementary material](#)). This research has been carried out as part of the research project SURROUND,¹ which studies changes in small and medium-sized Norwegian urban settlements over the last three decades by focusing on the same geographical case areas as the NAMIT² project (conducted from 1988 to 1992). The empirical material presented here originates from two questionnaire surveys among selected samples of decision-makers related to the four case-study municipalities of NAMIT and SURROUND: Trondheim, Malvik, Horten and Sogndal. In addition to local politicians and bureaucrats at different levels of governance, the samples include local organizations with an assumed particular interest in the study subject and assumed to have relevant knowledge of urban spatial development. The data underpinning the research were collected in 1991 (Naess 1993; Naess and Engesaeter 1992) and in 2020.

The 1991 questionnaire survey was paper-based and distributed by post (Naess and Engesaeter 1992). The 2020 questionnaire survey was web-based, distributed using SurveyMonkey. A concern with web-based surveys in comparison to paper-based surveys is the risk of the survey bouncing back due to faulty e-mail addresses or spam filters. Since the survey was sent to public officials, most of these had up-to-date professional e-mail clients. By checking for systematic non-responses in certain

departments using Survey-Monkey's response overview functions, I could capture such faults and solve them by making phone contact and obtaining assistance in sending the invitations out to the sample. Norwegian government offices are highly digitalized, so 'digital divide' biases in response rates were not considered to harm the comparability of the paper-based and the web-based surveys. A general trend in declining survey response rates during the period (Hellevik 2016) was a bigger concern than the changed survey medium. To compensate for this decline, and secure an acceptable response rate and data units, I invited whole party groups and administrative sections to respond in 2020, rather than limiting the sample to those in leading positions, as in 1991. In my view, these changes do not compromise the comparability of the two surveys. Rather, inviting whole party groups and administrative sections may be a correction of a potential bias in the 1991 sample if the respondents in leading positions are closer to the politicians with the final decision-making authority, than lower ranked respondents. In total, 1,739 invitations were sent out to the 2020 sample to compensate for reduced trends in survey response rates in Norway. The 2020 survey resulted in 362 recipients opening the questionnaire and responding in part or to the entire survey. See Appendix 1 (online [supplementary material](#)) for a more detailed elaboration of the sampling process and the differences between the 1991 and 2020 samples.

The results presented here are not, nor do they strive to be, statistically generalizable. The aim was to collect data that identify changes or stability in attitudes/environmental discourses within specific, comparable groups of selected respondents. The questionnaire included questions on general environmental attitudes (for example: "Statements expressing various perceptions of climate- and environmental problems are presented below. To what extent would you personally agree with these statements?"), perceptions of environmental problems (for example: "To what extent do you perceive the issues listed below as small or large problems in your municipality?") and attitudes toward different types of measures in urban development (for example: "What is your personal attitude toward the principles and measures listed below for land use, spatial development and transport in cities and urban areas?"). The data were analyzed using SPSS software, employing simple statistical techniques to make sense of trends in the data material, such as showing the responses by different respondent groups, constructing index variables and correlation analyses to look for patterns in the data. For a detailed description of the data analysis, see Appendix 1 (online [supplementary material](#)).

4. Results

4.1. *Changes in attitudes to climate and environmental issues*

Attitudes to climate and environmental issues have remained relatively stable between 1991 and 2020, with some interesting exceptions. [Figure 1](#) shows the share of respondents agreeing with 13 general statements about environmental conservation. The shares agreeing with statements that our level of consumption is high enough, consumption levels must be fair, willingness to make personal sacrifices and pay environmental taxes remain high. More than 80% agree with these statements, and the strong support for these statements in our data material is relatively stable. The most striking exception is a rather significant decline in the share of respondents who agree that mobilizing the individual's sense of responsibility to act is more important than new public regulations and restrictions. The shares agreeing that environmental policies are too

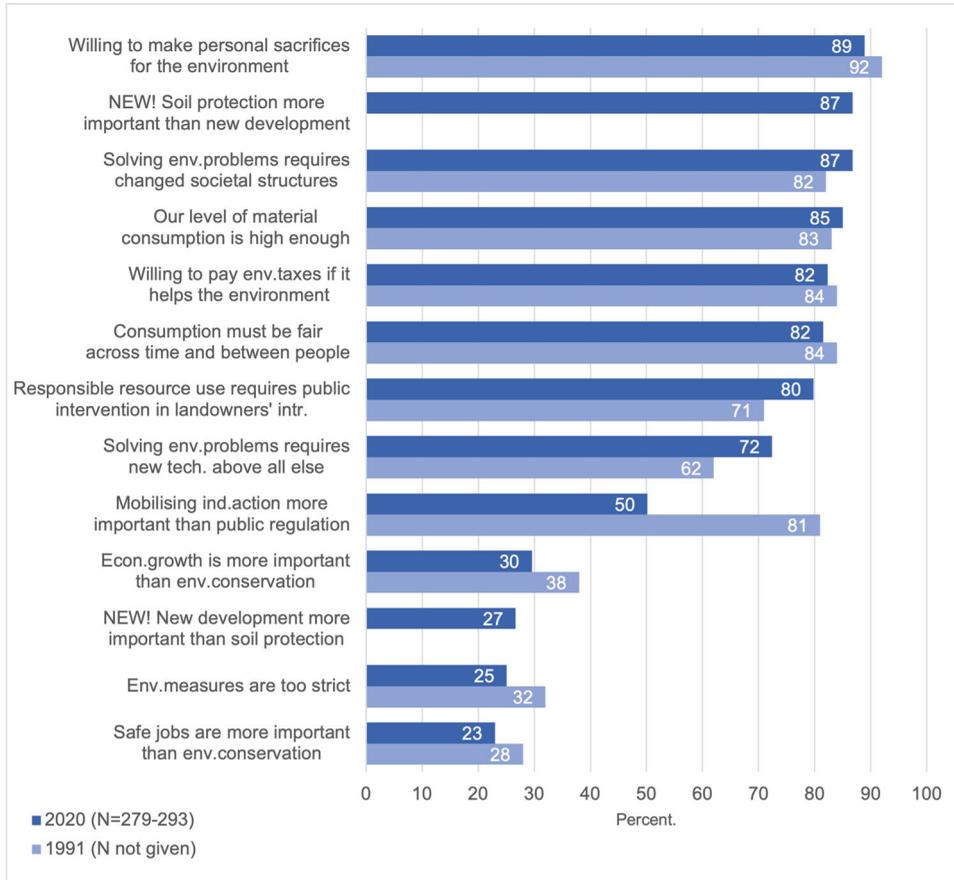


Figure 1. Share of respondents who 'mostly' or 'strongly' agree with statements about environmental conservation.

strict, and that growing the economy is a necessity, even if growth conflicts with environmental concerns, have also declined. The share agreeing that solving our planetary crisis requires, first and foremost, development of new technology has increased, indicating an increase in technological optimism. A significant majority of our 2020 respondents believe that farmland preservation is more important than new development. This statement was not included in the 1991 survey.

Based on the statements above about environmental conservation, I have recreated three attitude indexes from the NAMIT survey results: one on general environmental attitudes, and two contentious attitude dimensions in environmental and climate politics: regulation vs. freedom, and conservation vs. growth (Naess 1993; Naess and Engesaeter 1992). For further elaboration of how these dimensions were constructed, see Appendix 1 (online [supplementary material](#)). These attitude indexes have been used to compare the attitudes of different respondent groups, and changes in these between 1991 and 2020.

Looking at changes in general environmental attitudes broken down by different respondent groups, I found few changes between politicians and bureaucrats, between

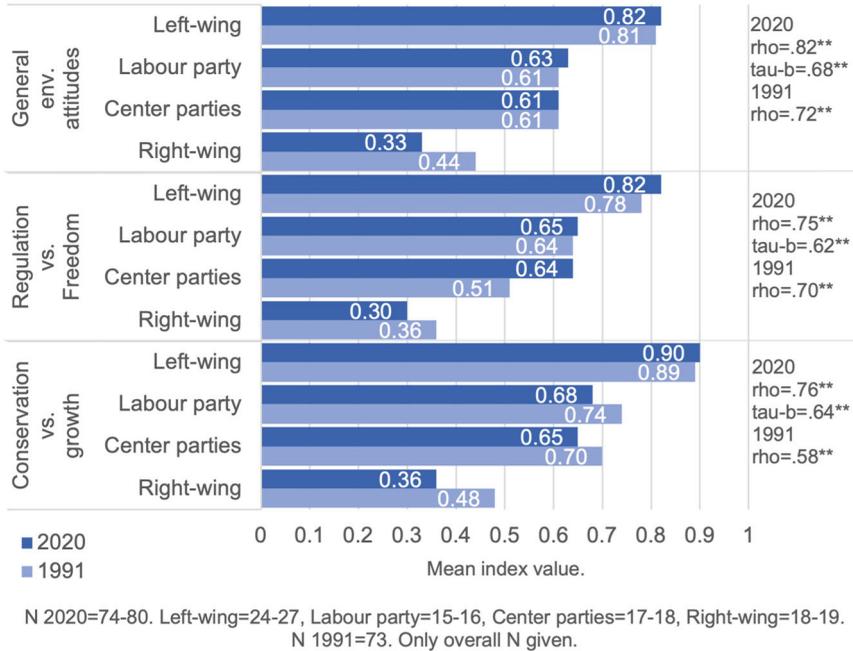


Figure 2. Mean degree of environmental concern expressed in the environmental attitudes of political party blocks. Lowest value indicates no environmental concern, highest value indicates strong environmental concern. Two asterisks after the correlation coefficient imply significance at the 0.01 level.

different bureaucrat sectors and by bureaucrats at different levels of governance (see Appendix 2 [online [supplementary material](#)]). However, among politicians, left-wing parties appear to have become *more* environmentally oriented, whereas the right-wing parties seem to have become *less* environmentally oriented (Figure 2). This indicates an increasing gap in environmental attitudes. On the regulation vs. freedom dimension, the Labor Party's mean index score remains stable, while the center-block parties' mean score has increased significantly, expressing more environmental-oriented attitudes. However, both these political groups show a modest decline in scores on the conservation vs. growth dimension, indicating lower priority given to environmental conservation, and higher priority to growth. I also find stronger correlation between political axis membership and the degree of priority given to the environment – especially so on the conservation vs. growth dimension.

Comparing the 1991 and 2020 surveys reveals big changes in respondents' perceptions of environmental problems (Figure 3). The biggest changes are in land-consumption related environmental problems, where substantial increases have occurred in the shares believing that loss of farmland, reduced landscape qualities and reduced biodiversity due to development processes are problems. I also found some changes in perceptions of traffic-related environmental problems. While increasing shares of respondents consider GHG emissions from and energy consumption of local transport to be problematic, the share finding road traffic accidents to be a problem, has reduced drastically since 1991. The number one traffic-related environmental problem is still noise and air pollution from local traffic. Another noteworthy change in problem perceptions is the big decline in shares considering other environmental problems of local

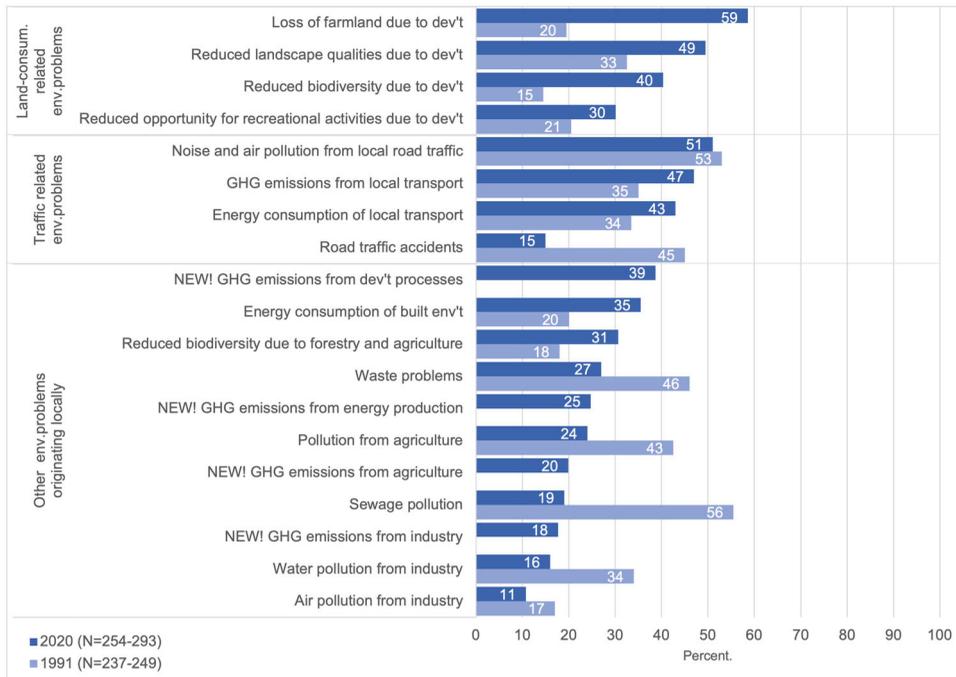


Figure 3. Share of respondents who perceive the different environmental problems as 'somewhat' or 'very big' in their municipality of residence.

origin that were big in 1991 as important. These problems include waste and pollution from agriculture, sewage, and industry. The shares considering building energy consumption and reduced biodiversity due to forestry and agricultural activity to be significant environmental problems have increased.

A correlation analysis of the link between environmental attitudes and perceptions of environmental problems shows that there is still a significant correlation between environmental attitudes and concern for environmental problems related to land-consumption and traffic (Table A2.1 in Appendix 2 [online [supplementary material](#)]). The correlations remain relatively unchanged, with minor exceptions.

4.2. Changes in acceptance of policy measures for different types of urban development

Comparing attitudes toward measures for different types of urban development, Figure 4 shows the shares of respondents who consider different types of spatial development measures to be 'somewhat' or 'very' positive. The measures can be divided into two main categories: those that are environmentally friendly and those that may have a negative impact on the environment. Few changes have taken place since 1991 in terms of top-ranking environmentally friendly measures. Above 90 percent of survey respondents still express support for improved public transport, continuous greenways and increased density in industrial areas. There is a small increase in support for other popular measures such as concentrated development patterns, density increase in housing areas, and traffic calming measures. Two measures – favoring undetached houses

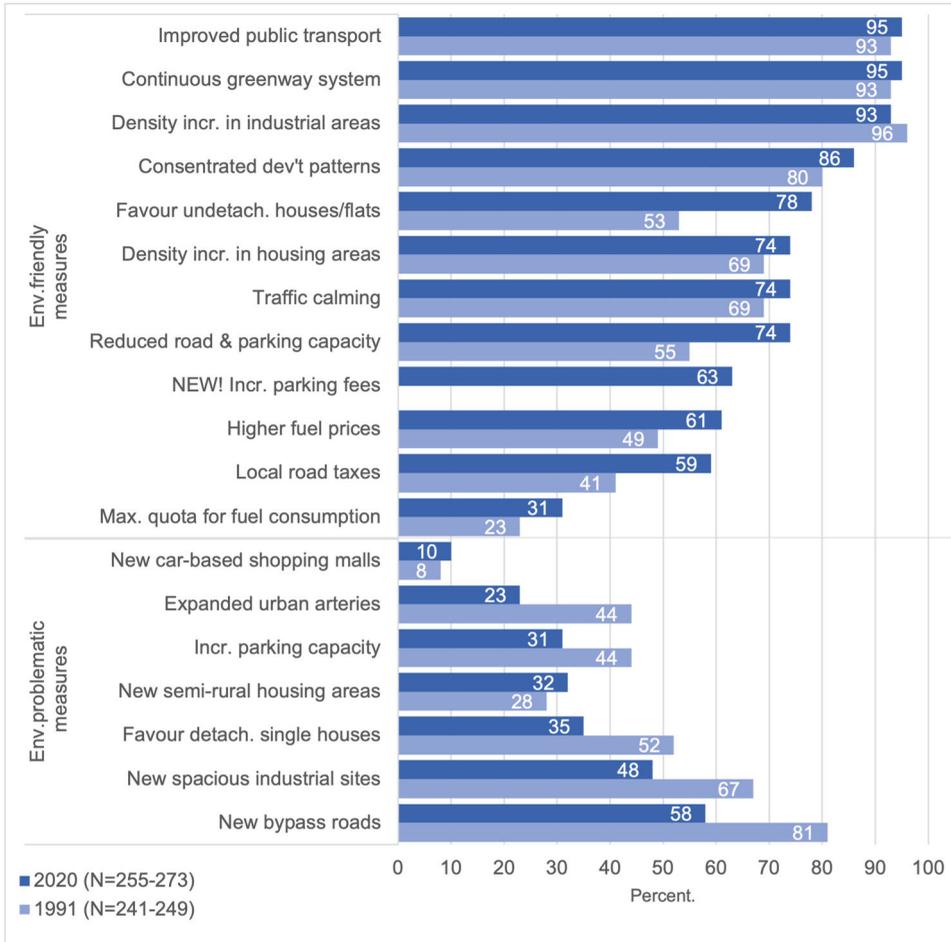


Figure 4. Share of respondents considering different measures in spatial development as 'somewhat' or 'very' positive.

and flats, and reduced road and parking capacity – that were ranked as positive by about 50 percent in 1991 have increased drastically to 70 percent listing them as positive in 2020. While higher fuel prices, local road taxes and maximum quotas for fuel consumption are still at the bottom of the 'popularity ladder', their support has increased among 2020 respondents by respectively 12, 18 and 8 percentage points. While all the environmentally friendly measures have grown more positive in respondents' opinion, all but two environmentally problematic measures have decreased in popularity since 1991. The two exceptions are car-based shopping malls and new semi-rural housing areas, both increasing modestly in shares ranking them as positive. Expanding urban arteries, increasing parking capacity, favoring detached single houses, new spacious industrial sites, and new bypass roads have all decreased drastically in 'acceptability'. The latter two measures are still ranked as positive by about half of the 2020 respondents.

Based on the spatial development measures with an environmental impact shown in Figure 4, I have recreated five NAMIT measure indexes: concentrated development,

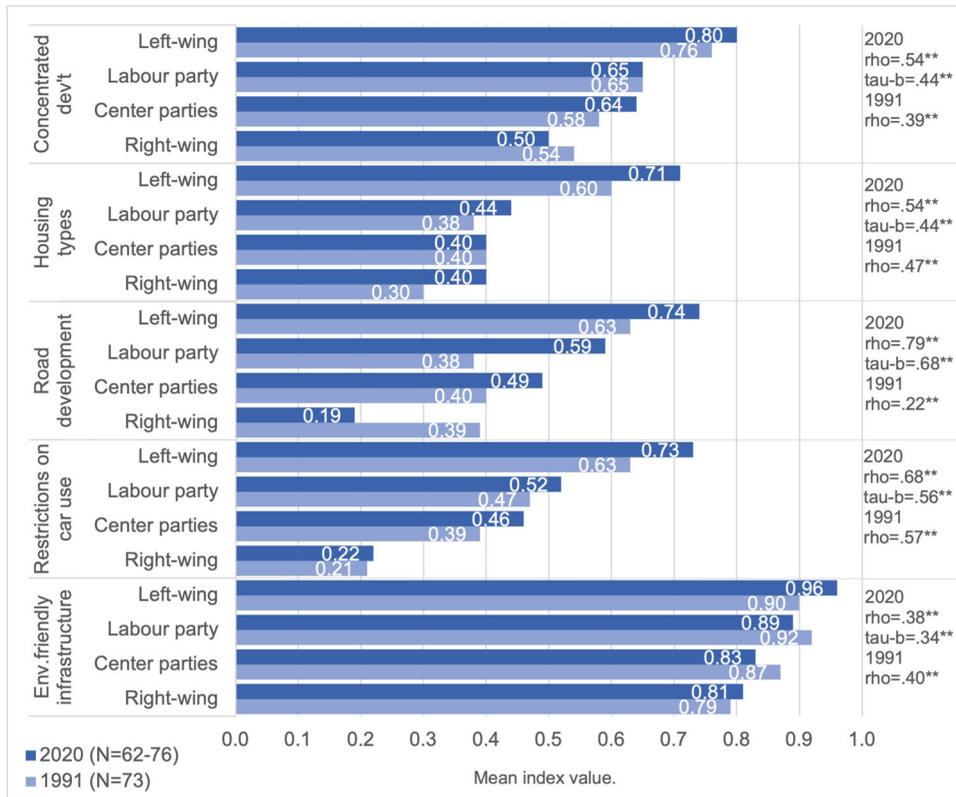


Figure 5. Mean degree of support for environmentally friendly spatial development measures by political party blocks. Lowest value indicates low environmental friendliness of measures seen as positive, highest value indicates strong environmental friendliness of measures seen as positive. Two asterisks after the correlation coefficient implies significance at the 0.01 level.

housing types, road development, restrictions on car use, and environmentally friendly infrastructure (Naess 1993; Naess and Engesaeter 1992). For an elaboration of how these were created, see Appendix 1 (online [supplementary material](#)).

Looking at changes in attitudes toward measure group indexes broken down by different respondent groups, I found few noteworthy changes between politicians and bureaucrats, and between bureaucrats at different levels of governance (see Appendix 2 [online [supplementary material](#)]). I did find interesting changes in mean index scores by local politician groups on a left-right axis (Figure 5). The gap between the political left and right has increased for three of the measure indexes: concentration, road development, and car restrictions; with the political left having adopted increasing support for environmentally friendly measures, and the political right either remaining at the 1991 level or decreasing. The most marked increased gap is found on the road development index. The housing type index is the only index where the right-wing has moved in a direction of more environmentally friendly support, signaling that more spatially efficient housing types are gaining broader political support. The left-wing has moved toward a higher mean score across all five indexes, indicating an overall increase in environmentally friendly orientation. The Labor party and center parties have both either remained at close to the same mean score as in 1991 or increased

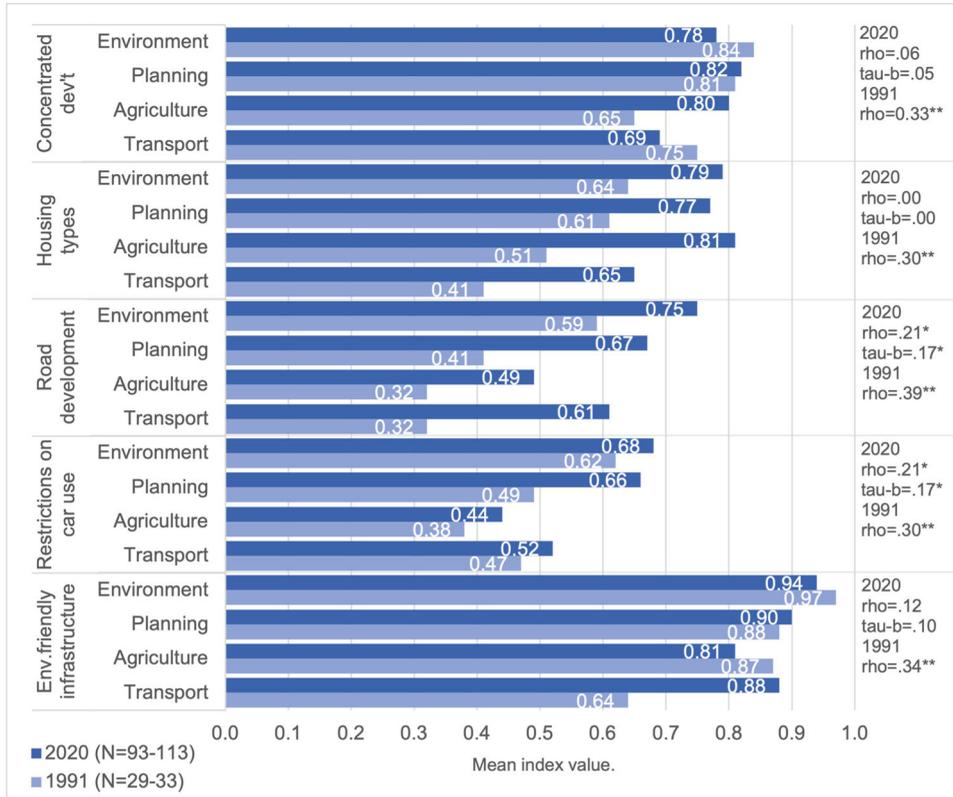


Figure 6. Mean degree of support for environmentally friendly spatial development measures by bureaucrat sector. Lowest value indicates low environmental friendliness of measures seen as positive, highest value indicates strong environmental friendliness of measures seen as positive. One asterisk after the correlation coefficient implies significance at the 0.05 level. Two asterisks after the correlation coefficient implies significance at the 0.01 level.

slightly. A correlation analysis of these results shows that all coefficients have strengthened, indicating that the relationship between attitudes toward different measure groups and political axis group membership are stronger in the 2020 data.

Interesting changes have also taken place in terms of how the bureaucrat sectors of environment, planning, agriculture, and transport express support for spatial development measures. In 1991, there were significant correlations between the assumed environmental orientation of the bureaucratic sector and expressions of support for environmentally friendly measures, as Figure 6 shows. Not surprisingly, the environmental sector expressed strong support for environmentally friendly measures, and the transport and agricultural sectors expressing lower support. The picture has changed in 2020, and the strong correlations between measures and the bureaucrat sector have weakened significantly. Small changes have taken place since 1991 in terms of increased and decreased support for concentrated development, restrictions on cars and environmentally friendly infrastructure. The only exceptions are that the index scores have increased substantially among bureaucrats in agriculture regarding concentration measures, in planning regarding restrictive measures on cars, and in transport regarding environmentally friendly infrastructure measures. For all four sectors, the mean scores

have increased radically for housing types and road development, meaning all bureaucrat sectors in 2020 express increasing support for environmentally friendly housing types and reducing road development.

A correlation analysis of the relationship between environmental attitudes and the level of support for different groups of measures (Table 1) shows that the relationship between the variables has generally grown stronger for all but a few variables. Most of the Spearman's rho coefficients also score above 0.5, indicating strong relationships between the variables. The only weakened relationships found are between environmentally friendly infrastructure and the attitude dimensions conservation vs. growth and regulation vs. freedom. This could be due to the infrastructure measures having become more mainstream and generally supported. For the other measures, the strengthened correlations indicate that the level of support for measures and the degree of environmentally friendly orientation of general attitudes strongly covary.

A correlation analysis of the relationship between problem perceptions and different measure groups is more varied (Table A2.2, Appendix 2 [online [supplementary material](#)]). All relationships are still significant, most remaining below 0.5 in coefficient scores, with a few exceptions. The correlation between attitudes to environmentally problematic measures and both land consumption and traffic-related problems has strengthened significantly, which could point toward an increasing consistency between expressed environmental concern and the measures perceived as positive.

5. Discussion

The results presented above point to several ways in which decision-makers' ideas about environmentally friendly urban development have changed since the early 1990s. The attitudes expressed toward urban development, the environment, and environmental problems serve as proxies for the discussion of how the broader, paradigmatic ideas have changed. This section points to an increased gap between opposing worldviews on environmental sustainability. The subscribers to notions of eco-modernism or weak sustainability have increased among those with decision-making power. This could help to explain why there is an increasing gap between attitudes to environmentally friendly urban development and the physical reality of increased degradation of nature. The section concludes by discussing the implications for the political feasibility of environmentally friendly urban development.

5.1. Increased gap between opposing worldviews

The results presented above could be seen as a manifestation of two opposing paradigms with differing prescriptions for how environmental sustainability might be achieved in urban development, and perhaps even an increasing gap between those paradigms. While general environmental attitudes have remained relatively stable overall, with some exceptions, I noted some changes when looking at attitude dimension changes by different political groups (Figure 2). The increased gap between left- and right-wing politicians in index scores are not necessarily best understood as respondent groups, with declining scores being less occupied with environmental issues than those groups with higher scores. Perhaps a better explanation for the increased gap in expressed environmental friendliness could be to see these results as a manifestation of two opposing paradigms of sustainability in terms of what constitutes a viable and

Table 1. Correlation between attitudes toward groups of urban development measures and general attitudes to environmental conservation.

Measure group	Correlation coefficients	General env. attitudes		Conservation vs. growth		Regulation vs. freedom	
		2020	1991	2020	1991	2020	1991
Env. friendly measures	Spearman's rho	0.74	0.65	0.65	0.54	0.70	0.61
	Kendall's tau-b	0.57		0.50		0.54	
Env. problematic measures	Spearman's rho	-0.69	-0.59	-0.65	-0.56	-0.61	-0.45
	Kendall's tau-b	-0.53		-0.51		-0.47	
Concentrated development	Spearman's rho	0.58	0.47	0.54	0.38	0.51	0.43
	Kendall's tau-b	0.44		0.41		0.39	
Housing types	Spearman's rho	0.53	0.37	0.40	0.32	0.50	0.35
	Kendall's tau-b	0.41		0.31		0.40	
Road development	Spearman's rho	0.60	0.53	0.56	0.50	0.54	0.39
	Kendall's tau-b	0.45		0.43		0.42	
Restrictions on car use	Spearman's rho	0.74	0.65	0.64	0.54	0.70	0.61
	Kendall's tau-b	0.57		0.50		0.54	
Env.friendly infrastructure	Spearman's rho	0.36	0.44	0.35	0.41	0.29	0.33
	Kendall's tau-b	0.29		0.29		0.24	

Note: All correlations in the table are significant at the 0.01 level. One-sided tests of significance have been used. The correlations were calculated on the basis of additive indexes both for the environmental attitudes, and for attitudes to different types of environmental problems in urban development.

appropriate ‘solution’ to the environmental problem and, in effect, an increased politicization of the sustainability concept. One of these paradigms subscribes to rather different definitions of environmentally friendly development than the definition at the foundation of this paper. Above, I distinguished between weak and strong sustainability (Neumayer 2013; Pearce, Markandya, and Barbier 1989), or eco-modernisation and limits to the growth-concept of sustainability (Hajer 1995; Høyer and Naess 2001; Naess, Saglie, and Richardson 2020). The essential difference between the two paradigms centers around beliefs about technological progress, the substitutability of natural resources, and limits to growth.

The observed decline in ‘environmentally friendly’ index scores among some groups of the respondents could, as such, be seen as a manifestation of a weak or eco-modernist concept of sustainability strengthening its political subscriber foundation. It is perhaps not so surprising then, that I found an increase in the level of technological optimism when looking at the respondents as a whole. While it was already high in 1991, the belief that solving the planetary crisis first and foremost requires new technological innovations has further increased in the 2020 results (Figure 1). Other studies have found that majorities believe that growth and environmental protection are compatible (Drews, Antal, and van den Bergh 2018; Tomaselli *et al.* 2019). While technological change, such as, for example, energy efficiency and new technologies, can help to address environmental issues, a general belief that technological progress alone holds the key to solving the climate and nature crises is an assumption entailing significant risk of failing to do just that, given its empirical unfoundedness (Høyer and Naess 2001; Kollmuss and Agyeman 2002; Neumayer 2013). An unfounded belief in technology fixes also risks locking society deeper into path-dependent techno-institutional complexes (Unruh 2000). Such complexes and trajectories will exacerbate the climate and nature crises, should the technological fixes not materialize as anticipated before hitting so-called points of no return in terms of biodiversity loss, climate system thresholds, and the like. For environmental problems related to land consumption, the potential of technological fixes is furthermore limited due to the finite character of land as a resource. This leaves more efficient use of the land resources in addition to sheer built-environment volume reduction as the environmentally least risky development strategies.

5.2. *Post-material ideas in a material world?*

In 2020, fewer respondents believed economic growth should trump environmental concerns. This attitude is in stark contradiction to the global trend that environmental concerns, such as preserving biodiversity and ecosystem services, tend to lose out to, among other factors, economic interests (IPBES 2019). This could be seen as a manifestation of Inglehart’s (1995, 2008) post-material cultural value shift theory. While material satisfaction and affluence might be necessary preconditions for adopting post-material attitudes, other factors have also been shown to be of critical importance for environmental priority, including one’s sense of group identity (Cohen 2003; Cotgrove and Duff 1981), ideological conviction (Lönnqvist, Ilmarinen, and Sortheix 2020), beliefs about environmental problems and technological progress (Fowler 2016), and the environmental orientation of the institutional context (Prati, Albanesi, and Pietrantoni 2017).

Political attitudes do not necessarily translate into action, which could help to explain the gap between expressed environmental attitudes and physical reality. Rather, actions are shaped by institutional environments: “values are more profitably seen as a function of the political and economic circumstances that different people face. In this reckoning, mass political behavior is generated less by different cultures and much more by different institutional environments” (Jackman and Miller 2004). In an institutional neoliberal environment, such attitudes could be interpreted as a response to the institutional structures in place. This seems plausible when seen in relation to 87% of the 2020 respondents agreeing with the statement that solving environmental problems requires changed societal structures (Figure 1).

While the expressed attitudes may be post-materialist, our physical reality is more than ever permeated with material consumption and conversion of nature. It is therefore interesting to find that little has changed since 1991 regarding the large shares of respondents agreeing with statements that consumption must be just over time and across the earth; that we have reached a high enough level of material consumption, that respondents are willing to make personal sacrifices to safeguard the environment; and that solving planetary problems requires structural changes to society (Figure 1). These attitudes have remained more or less constant throughout the last three decades; meanwhile the level of consumption per capita has doubled since the 1990s in Norway (SSB 2021b). This is consistent with the trend of increased volumes of consumption among the middle classes and the rich across the entire planet, while personal ‘sacrifices’ favorable for the planet are made by low-income groups (Chancel and Piketty 2015). One possible explanation for this gap could lie in the increased technological optimism of the 2020 respondents, since other studies have found such beliefs can dampen willingness for individual sacrifice (Kilbourne *et al.* 2001). This strengthens the point made in the previous section about the results indicating an increased gap between opposing worldviews of environmental sustainability.

In 1991, few respondents perceived reduced biodiversity as a serious problem. In the 2020 survey, there was a major increase in shares perceiving reduction in biodiversity and loss of farmland as big problems, in addition to land-use problems in general. The vast majority of the 2020 survey respondents believe that soil conservation is more important than development projects. This is an attitude that also contradicts physical reality, with farmland in the SURROUND case studies giving way to housing and road development projects (Groven *et al.* 2021). The trend has been an expanding stock of infrastructure with direct negative impacts on biological diversity, natural areas, food-production soil and landscape qualities (IPBES 2019). Our economy is still fueled by fossil energy and development patterns that erode life-supporting natural resources.

The results presented here also point to most decision-makers supporting stronger and stricter environmental regulations, and more public sector intervention to protect the environment. Interestingly, the problems perceived as serious by large shares of the respondents in 1991 have decreased (apart from local pollution from traffic) in terms of seriousness in the 2020 results. This could be a consequence of the strict regulations and standards put in place since the early 1990s to reduce pollution from industry, water, sewage, waste, and agriculture, effectively reducing many local environmental problems in those areas. While local pollution from traffic has also been under strict regulation during this period, the traffic volume has vastly increased (SSB 2021a). Even though local air quality has improved since 1990 after removing lead

from fuels, the air quality is still negatively affected due to the growth in traffic volume. Some problems might be easier and cheaper to 'clean up' than other problems. For local pollution from traffic, such as soot pollution and microplastics run-off, the only effective measure might be volume reduction.

Actions that do not affect our way of life might be easier to take than actions that pose fundamental challenges to our lifestyles (Blake 1999; Naess 1993; Naess and Engesaeter 1992). This point is further strengthened by the overwhelming popularity of urban development measures that do not challenge current lifestyles, such as improved public transportation, connective greenways and industrial densification (Figure 4). While the results on attitudes and problem perceptions may indicate that the rational next step is action fit to address the problem at hand, in practice, environmental actions are often tokenistic and unrelated to environmental concerns. These environmental attitude-action gaps are repeated at different scales of governance involving different actors (Blake 1999).

The results presented here show an increase, since 1991, in the share of decision-makers supporting more interventionist measures. This finding could be criticized for merely reflecting a social desirability bias in our data (Nederhof 1985) and not reality. However, since the share of respondents supporting environmentally problematic measures has declined during the same time span, the relative internal reliability of the results on increased shares of environmentally friendly attitudes seems trustworthy. The respondents have grown more consistent in expressed attitudes, which could indicate a mentality shift among decision-makers where they are increasingly accepting the need to make individual 'sacrifices' to seriously address environmental problems. Why then, is there such a gap between expressed attitudes and physical reality?

5.3. The political feasibility of sustainable urban development policies

Decision-makers' attitudes toward environmental problems, problem perceptions and world views have important implications for the feasibility of environmentally sustainable urban development, since they fundamentally influence how different measures are viewed. Knowledge of environmental problems and risk perceptions, or concern over these problems, and general environmental beliefs, have been highlighted as important factors that may increase people's willingness to take actions that address environmental problems (O'Connor, Bard, and Fisher 1999). It is not surprising that correlations between attitudes to the dimensions 'conservation vs. growth', 'regulation vs. freedom' and 'general environmental attitudes' on the one hand, and attitudes to measure groups affecting the sustainability of urban development are strong in the data presented here (Table 1).

The more environmentally friendly the general attitudes are, the more positive the respondents are to measures that promote sustainable urban development, and negative to measures likely to result in environmentally negative consequences. The strengthened correlations could be interpreted as the respondents being somewhat more consistent across their answers in terms of attitudes held toward environmental problems and appropriate measures to address them. Thirty years have passed with increasing focus on these problem areas, so 'contradictions' in consistency in environmentally relevant attitudes might have been addressed. Perhaps decision-makers in 2020 have a higher level of 'environmental literacy' compared to 1991, and perhaps a mainstreaming of environmentally friendly attitudes has occurred. Another possibility could be

that the respondents are just more professional when it comes to answering surveys and checking off consistently, as a case of social desirability bias.

Overall, decision-makers' attitudes to measures in urban development in 2020 have become more environmentally friendly compared to 1991. Measures that are critical cornerstones of an environmentally sustainable urban development are more popular, including those that reduce traffic and increase residential and industrial densification. In addition, measures that may lead to unsustainable urban development are less popular (Figure 4). This confirms what previous research has pointed out: there is a high degree of consensus about densification as a central strategy among bureaucrats and politicians (Naess, Naess, and Strand 2011).

However, the findings also point toward an increasing gap between left- and right-wing politicians when it comes to sustainability. For two periods now, Norway has been under a right-wing-center coalition government that has made decisions that increase rates of land conversion and urbanization processes driven by market interests (Skog 2018). In this context, it is notable that the differences in attitudes between sector bureaucrats have decreased. The previously significant covariations between attitudes and bureaucrat sector group have mostly disappeared in 2020, with all sectors expressing more environmentally friendly attitudes, especially toward the measure groups for housing type and road development. This could indicate a mainstreaming of acceptance of environmentally friendly measures across four bureaucratic sectors of key importance to urban development. The overall picture points toward environmentally sustainable notions of urban development gaining support among increasing shares of decision-makers. However, this is not to say that a coherent course of action fit to address the problem is implemented just because increasing shares of decision-makers are convinced of the case for action (Willis 2018). In the end, elected politicians in power make the final decisions.

6. Conclusion

A key conclusion of the analysis of the 1991 survey results was that environmentally friendly urban development required a shift in ruling values from an environmental repair paradigm toward a more ecologically-oriented paradigm in order for environmentally friendly measures to materialize in public policy (Naess 1993). The comparison of the 1991 and 2020 results shows a general picture of some mainstreaming of environmental concern, environmentally friendly attitudes, and positive attitudes toward measures for environmentally friendly urban development.

However, we also find an increasing gap between the political left and the political right regarding the environmental orientation of attitudes. The political right has, in many aspects, become less environmentally friendly in their attitudes. I have argued that this could be explained by the political right adhering to a weak sustainability or eco-modernisation paradigm of environmental sustainability. On the attitude-dimension conservation vs. growth, the center parties and the labor party are increasingly growth-oriented.

The results presented in this paper have shown that Norwegian decision-makers, overall, express more environmentally friendly attitudes in 2020 compared to 1991. While this may bode well in terms of suggesting strengthened political feasibility of sustainable urban development, there is no simple correspondence between environmentally friendly attitudes and pro-environmental behavior: "the attitude-behavior relationship is moderated by two primary sets of variables: the structure of personal attitudes themselves; and

external or situational constraints” (Blake 1999). While little has changed in terms of the large shares of respondents agreeing, in 1991 as well as in 2020, that Norwegians’ level of consumption is high enough, more are willing to make personal sacrifices for the environment, and fewer agree that economic growth is more important than environmental conservation; the physical reality has changed drastically during the same period. Our level of consumption has nearly doubled during the same time span, and environmental concerns often lose out to the prospect of economic growth.

The scope of this paper was limited to exploring one of the two ‘primary variables’; namely the ideas of decision-makers, since they shape how problems are understood and solutions envisioned. Environmentally friendly ideas among the majority of decision-makers are not sufficient on their own, especially not if ruling parties making the final decisions view problems and solutions in a way that may be unfit to address the problem at hand.

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Notes

1. Abbreviation of “Sustainable urbanisation requirements of small and medium-sized urban settlements and their surroundings.”
2. Abbreviation of “Environmentally sound urban development” (English translation of the Norwegian project title).

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Data availability statement

The data underlying this study are available from the author upon reasonable request. The full dataset will be made available after all confidential data of respondents have been deleted and the research project publications have been completed.

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