

Full Length Article

The role of funding in the ‘performative decarbonisation’ of transport in England

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A B S T R A C T

The scale of the decarbonisation challenge and the short timeframes over which action is required demand urgent action. This paper is set within the surface transport sector, now the largest sector of emissions with the slowest pace of change in many advanced liberal economies. It focuses on the strategies and actions of local government which is recognised to be a central player in catalysing change. Our evidence is derived from the actions of two UK local areas which claim to be at the forefront of the decarbonisation challenge.

The paper focuses on the role of funding and financial mechanisms in addressing the climate crisis. In the face of an established pattern of austerity and hollowing out of local government we explore how deep transformation is being envisaged. We find a recursive set of issues which derive from a dependence on funding from outwith. This dependence means that despite comprehensive overarching strategies and goals the funding available is the core of the strategy. This means that the nature of the funds, such as the requirement for experimentation, innovation or private sector leverage, defines direction. In turn, and to maintain success in attracting funds, there is an emphasis on presenting ‘premium spaces of ambition’ with little evidence of attention to broader systemic change. This duality is openly recognised. This paper advances a wider point that greater emphasis should be placed on the ‘financialisation’ of climate policy and the reality rather than the rhetoric of change.

1. Introduction

Deadlines for climate targets are approaching. With transport remaining one of the harder sectors to decarbonise across ‘advanced liberal democracies’,¹ academia and policymaking are increasingly concerned with its governance. A rapid transformation of mobility systems on a scale not seen previously is required, and local governments are increasingly positioned as a central player to catalyse this change (Broto & Bulkeley, 2013; Eckersley, 2018; Marsden et al., 2014).

Achieving national and local transport climate goals by 2050 necessitates a complex mesh of investment in different types of infrastructure, new energy systems, service subsidies, new mobility options and service models. Existing studies have particularly focused on the challenge of what should be done and, to some degree, who should be responsible for those changes (Gota et al., 2019; Hopkins & Higham, 2016), but much less about how those changes should be implemented, including where the money should come from. Surprisingly, and despite the long persistence of the climate challenge for the sector and increasing urgency of demands to act, little attention has been paid to

the different financial mechanisms enabling or blocking transport decarbonisation.

Financial mechanisms – i.e., the processes of obtaining money or capital for a designed intervention – in the UK transport sector, and for climate action more generally, have been transformed deeply in the last two decades. Traditionally centred on state funding and grants,² they have progressively come to include novel forms of securing capital, including bidding for non-governmental grants or involving private capital financial investments (Negreiros et al., 2021; Peterson, 2018; Sullivan, 2011; Sullivan et al., 2013). The extent to which the set-up of old and new funding mechanisms affects the efficacy of decarbonisation strategies or produces unintended consequences for other policy sectors remains under-investigated (Keenan et al., 2019).

Similarly, not much weight has been given to austerity and attendant processes of ‘financialisation’ – i.e., the growing influence and presence of financial markets, financial actors, and financial motives in the operation of economy and government (Epstein, 2005; O’Brien et al., 2019; O’Neill, 2013; Pike & Pollard, 2010) – in local transport planning, despite their strong influence on urban life and governance (Harvey,

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1989; O'Brien & Pike, 2019). Over the last twenty years, austerity and financialisation have become strongly intertwined with governance processes, including state restructuring, new public management and private-public relations, at all levels in Europe (González et al., 2018; Peck, 2012), profoundly affecting the possibility for sharp and coordinated climate mitigation action in transport and other sectors. This is particularly true of England, where the case studies underpinning this paper are drawn from.

Concerns relate particularly to the strong multiscale interdependencies where local actors are held responsible for a global challenge (Peterson, 2018). Evidence suggests that reduced funding and complex financing processes constitute critical bottlenecks for innovation processes (Turnheim & Geels, 2019), particularly where they are led by 'incumbent actors' such as Local Authorities (LAs) (Schwanen, 2015). However, the few available studies on the efficacy of new financial arrangements for decarbonisation at the urban level have a predominant USA focus and prioritise a business perspective on adaptation to low-carbon goals (Robin, 2022). Little attention has been given to local actors' strategies and institutional restructuring in the face of funding scarcity and climate challenge, to the point that these remain largely unknown. In response, this paper starts from the premise that understanding the extent to which carbon commitments for the transport sector are attainable by local government requires careful consideration of the mechanisms that regulate access to monetary resources to deliver change. This is to say, the potential for rapid transport decarbonisation at the local level cannot be adequately analysed if the multiscale nature of its financial mechanisms is overlooked as a fundamental constituent of transport governance. Certainly, financialisation is not the only, or even the most important, barrier that complicates attempts to decarbonising local transport in England. However, it is one that has material effects and that has not received much discussion in the literature so far.

With these premises, our study summarises an in-depth analysis of the complex financial processes and related governance changes underpinning the delivery of transport decarbonisation and their implications for the promised acceleration of transport decarbonisation. It does so by engaging with two England-based 'critical case studies' (Flyvbjerg, 2011), Oxford and Nottingham.³ As two LAs that have built a national reputation as front runners in the decarbonisation challenge, they represent exemplary contexts to examine what LAs can realistically achieve in terms of decarbonising transport and how. Through the analysis of policy documents and elite interviews, we elaborate how in the two cities financial mechanisms have become the central concern and premise for any actor committed to decarbonising transport, and the motivating factor for the emergence of new institutional pathways and policies. At the same time, the centrality of financial mechanisms means that much of each LA's decarbonisation potential is expended in tactics aimed at 'performing decarbonisation' to attract competitive funding, rather than implementing the direct interventions in travel demand that are required to achieve substantial reductions in greenhouse gas (GHG) emissions. The paper contributes to the growing literature on the governance of transport decarbonisation by reflecting on how, austerity, financialisation, new public management and increased reliance on public-private partnerships are reconfiguring transport planning and governance around the goal of securing scarce funding. It suggests that intertwined processes of neoliberalisation of governance and financialisation have generated a wave of 'performative decarbonisation' as a substitute for deep cuts in emissions from local transport.

Despite its focus on two English case study cities, the paper analyses phenomena that are profoundly affecting transport decarbonisation and climate governance in the UK and other advanced liberal democracies, as highlighted elsewhere (Bulkeley & Kern, 2006; Negreiros et al., 2021; Robin, 2022; Sullivan et al., 2013). Although substantially

underpowered compared to others, English LAs are certainly not alone in facing a context of mounting popular concern about the climate crisis, austerity politics, economic recession, and resource scarcity. Across advanced liberal democracies and beyond, cities are increasingly presented as key loci for decarbonisation actions (C40 Cities, 2022), in connection with a longer transition towards entrepreneurial governance and financialisation (Anguelov et al., 2018). Alliances with the private sector – and emerging new players therein – are becoming key to decarbonisation actions widely beyond England and the UK (Keenan et al., 2019; Negreiros et al., 2021) with still unknown outcomes with regard to their ability to deliver transport decarbonisation targets.

2. Literature context

2.1. State restructuring and localism in the UK: the changing nature of local government

The changing and increasingly central role of local governments in climate mitigation and adaptation has been examined widely in the governance literature (Bulkeley, 2010; Eckersley, 2018), and increasingly in transport research (Marsden et al., 2014; Walker et al., 2015; Yuille et al., 2021). Given the place-based nature of transport emissions, local government action is key to achieving climate targets. Such action is shaped and conditioned by broader processes of state restructuring and localism, as well as hollowing out and neoliberalisation, which have changed UK governance over the last few decades (Brenner, 2004; Clarke & Cochrane, 2013; Gillard et al., 2017; Walker et al., 2015), and must be considered when assessing decarbonisation in transport and other areas.

Since the Thatcher era, the UK has witnessed a series of changes to its institutional landscape and welfare structure provision under which "the local state has simultaneously been the site and target of sweeping programmes of institutional restructuring aimed at catalysing supposedly latent potentialities for economic growth" (Ward et al., 2015, p. 444). As Ward et al. (2015) emphasize, such restructuring and hollowing out of UK local governments under austerity are part of a global neoliberalisation of governance and search for continuous spatial fixes, particularly in order to resolve the generalised economic crisis. Increased demands on local governments and reduced capacity have forced local actors to adopt increasingly entrepreneurial forms of governance (Harvey, 1989; O'Brien & Pike, 2019). Similarly, in an effort to compete for scarce funding, local government entrepreneurialism has focused on new local 'arrangements' – i.e., partnerships with private, voluntary and knowledge sectors (Eckersley, 2018) to attract alternative funding (Christophers, 2019; Gillard et al., 2017; Pike et al., 2018) – and real estate speculation (Lowndes & Pratchett, 2012; Meegan et al., 2014; O'Brien et al., 2019; Veeneman et al., 2015; Winter & Le, 2020). This process is clearly evident in the way the UK Government has transitioned to a more decentralised system where local actors are increasingly demanded to take actions independently, or in coordination amongst themselves, to accommodate opportunities for economic development and mitigate the effects of economic crisis (Clarke & Cochrane, 2013; HM Government, 2011; O'Brien & Pike, 2019; Ward et al., 2015).

Decentralisation has strongly re-shaped local transport planning, with some changes to responsibilities and major alteration to its funding mechanisms. The 2008 Local Transport Act, later amended with the 2016 Cities and Local Government Devolution Act, devolved more regulatory and authority powers to all LAs, inviting stronger local leadership on transport provision and regulation, including furthering LAs' ability to easily implement road pricing schemes (UK Parliament, 2008; Walker et al., 2015). Overall, expectations about LA leadership in promoting improvement in local transport systems have risen. For example, the Bus Services Act 2017 allowed councils to form partnerships with bus operators to improve services, building on powers devolved under the Localism Act 2011. Similarly, there are now higher expectations of LAs leading in the promotion of behavioural change and

³ Since transport is a devolved matter throughout the UK, we focus on governance settings specific to the England context.

other measures to reduce air pollution (Adcock & Smith, 2020) and GHG emissions from transport, as reported by the Climate Change Commission and the 2019 Transport Decarbonisation Plan (National Audit Office, 2021; UK100, 2021).

However, new responsibilities have not been accompanied so much by new resources and capabilities as by greater emphasis on competition for scarce resources as part of austerity politics. Overall, central government has maintained most of its managerial and regulatory powers, with the Treasury playing a key role in controlling income and expenditures (Ehnert et al., 2018), whereas local government have faced “significant budget cuts [...] imposed on government departments (notably DECC and DEFRA) and on local governments (HM Treasury, 2015), which had a negative impact on climate policy-making” (Gillard et al., 2017, p. 177). Christophers (2019, p. 577) has argued that, as part of austerity measures, LAs have witnessed “savage cuts to councils’ principal income stream: grants from central government”. Cuts have affected all areas of spending, including budgets for local roads and public transport (Clarke & Cochrane, 2013; Veeneman et al., 2015). As an illustration of these trends, Fig. 1 shows a stark decline in central government support to local public transport, following decisions taken from 2009 onwards to cut public spending across government departments. In real terms, by 2019 local authorities’ central government cash allocation for local public transport was just over half of what was available on an annual basis a decade earlier. The Covid-19 crisis very substantially altered this picture, given that significant government investment would be required to maintain service continuity at a level of service which had become commonplace after a decade of austerity.

Initiatives to create new ‘local-arrangements’ in the form of second-tier institutions and partnership platforms have also been central to implementation of the localism agenda. Partially an attempt to replace the abolished regional authorities, these new institutional arrangements are perhaps best understood as attempts to bolster LAs’ strategic and bidding capabilities to deliver on increased expectations with reduced public resources, often by directly enrolling the private sector. The Coalition Government’s Localism Act in 2011 and, most crucially, the Cities and Local Government Devolution Act in 2016 lay a firm statutory foundation for the creation of the City Deals on the back of the financial crisis⁴, and the establishment of ten directly elected mayoral Combined Authorities with devolved powers over transport and other policy areas. Similarly, after the abolition of regional development agencies, LAs were invited to create Local Enterprise Partnerships, voluntary partnerships with businesses aimed at strengthening local economies, particularly by enhancing opportunities for coordinated bidding to government or other funding. Nonetheless, these LEPs have been criticised for further enhancing regional disparities since their early inception (Marlow, 2019; Pike et al., 2013). Finally, as part of the 2016 Cities and Local Government Devolution Act, seven sub-national transport bodies emerged, as ad hoc transport governance organisations, most of which are non-statutory, again attempting to providing advice on strategic transport decisions and priority for a group of coordinated local authorities, including “support[ing] more effective economic development” (Local Government Association, 2019, p. 7). As we will discuss, these and similar new actors, have played key roles in attempting to deliver decarbonisation by securing much needed funding, creating and entrenching processes of financialisation.

⁴ Initially introduced in 2011 and subsequently given a firmer statutory foundation with the 2016 Cities and Local Government Devolution Act, City Deals “are a new form of urban governance involving infrastructure investments based upon negotiated agreements between central and local governments on decentralised powers, responsibilities and resources” (O’Brien & Pike, 2019, p. 1450).

⁵ Data from Statista (2023), which collates data from HM Treasury’s Public Expenditure Statistical Analyses, various years (see: HM Treasury, 2023). Adjusted for inflation by authors, using the Treasury’s GDP deflators.

2.2. Financialisation and climate governance

State restructuring has been accompanied by progressive changes in financial mechanisms towards competitive funding and growing reliance on projects and partnerships for climate governance (Negreiros et al., 2021). Many of these processes go under the umbrella term of ‘financialisation’ – i.e., the growing influence and presence of financial markets, financial actors and motives in the operation of economy and government (Epstein, 2005; O’Brien et al., 2019; O’Neill, 2013; Pike & Pollard, 2010). Drawing on this literature, and specifically on works on financialisation and local government (Christophers, 2019; Dagdeviren & Karwowski, 2022; Lake, 2015; Pike, 2023), in this paper we consider financialisation as a historical process through which increasingly private sector-led financial mechanisms have evolved to become a central concern and premise for policy and planning, including the motivating factor for the emergence of new institutional forms and policy innovations. This is to say, one manifestation of financialisation entails a process of financial innovation that requires intertwined innovations in governance and planning.

The entry of financialisation as key motive in planning and policy is to be understood as an effect of numerous factors, with an ongoing debate on the true direction of causality, including regarding its relation to neoliberalism (Copley, 2021; Davis & Walsh, 2017; Sawyer, 2013). Factors include: national governments’ attempts to mitigate damage linked to the 2008 financial crisis (Copley, 2021); the New Public Management approach emphasising evidence-based policy and a business-like management of state affairs; and international political and financial pressures, including the increasing availability of international funds and investments for local government (Godenhjelm et al., 2015). In this paper, we follow Davis and Walsh (2017)’s analysis and consider financialisation in the UK as a historic socio-economic process complementary and overlapping with neoliberalism, but grounded on different epistemological and cultural foundations, centred on “an ‘ideal’ understanding of ‘the economy’ centred on finance” (Davis and Walsh, 2017, p. 46) promoted by key state institutions.

Case studies from the UK and beyond have shown that, in the context of austerity, political actors have encouraged infrastructure financialisation to gain competitive advantage over other urban areas and provide social and economic infrastructures (Hall & Jonas, 2014; O’Brien & Pike, 2019; Peck & Whiteside, 2016; Pike et al., 2019). Examples include an increasing reliance on Private Finance Initiatives to ensure road maintenance programmes or deliver public transport services (Marsden & Docherty, 2019), the sale and subsequent leasing back of rolling stock, and sustained borrowing from private finance for various purposes, including against future ticket revenue (Local Government Association, 2022).

Whilst the benefits of these different approaches remain contested, a chorus of actors in the UK and abroad has stressed the limitations of business-as-usual funding mechanisms in tackling climate change, urging instead for exceptional and innovative actions backed by multiscalar investments and a realistic climate finance programme (National Audit Office, 2021; Robins, 2020). In support of this process, international alliances have developed a narrative of private finance as a means to deliver climate goals (Negreiros et al., 2021; Robin, 2022; Sullivan, 2011). This has manifested itself in the UK through measures such as the Green Investment Bank and the UK Green Finance Strategy. Particularly, the Green Investment Bank (UK Government, n.d.) has been supporting local government and residents in attracting private investments to fund energy efficiency schemes (Sullivan, 2011). Specific directions introduced as part of the UK Green Finance strategy have also invited further private investment and borrowing mechanisms to deliver the UK’s net zero emissions targets and provided opportunities for LAs to seek further borrowing opportunities, for example by using Local Climate Bonds (Local Government Association, 2022) as “a simple, proven, and cost-effective financing mechanism to raise and deploy private finance for local decarbonisation projects” (Green Finance Institute, 2023, n.p.).

The substantial entry of the private financial sector in the design, financing and delivery of urban infrastructures and assets for climate

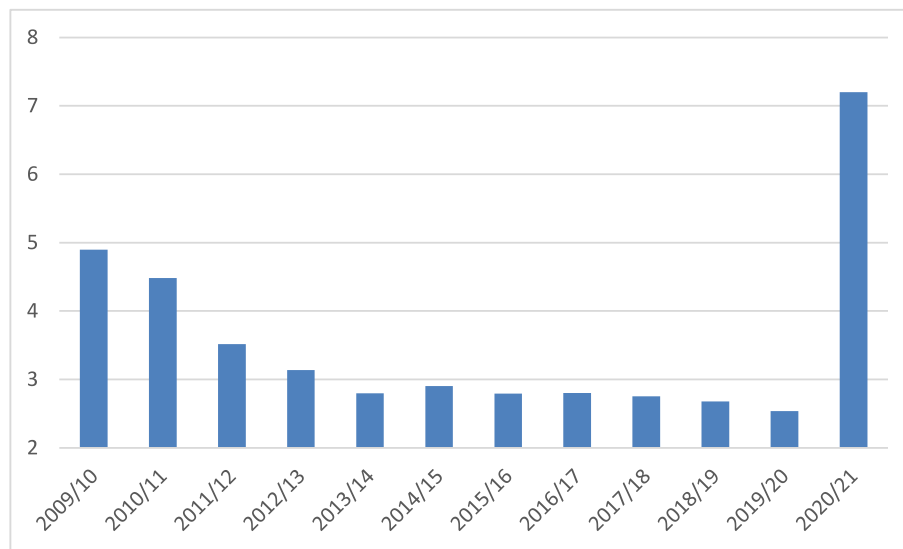


Fig. 1. Public sector expenditure on local public transport in the United Kingdom from 2009/10 to 2022/23 (in billion GBP, inflation-adjusted).⁵

governance and more broadly has, however, coexisted with a form of “enduring and mutating managerialism” (O’Brien & Pike, 2019, p. 1456) where the state, often in the form of local government, has retained regulatory powers, planning responsibility, and most importantly, project risks (Sullivan et al., 2013). For example, Ashton et al. (2020, n.p.) observes the effects of privatisation of urban infrastructure and services in Chicago, concluding that “infrastructure asset deals have altered the nature of policy-making in some fundamental (and detrimental) ways”. This included heightened risk of financial failure for local and national government as consequence of “its ‘entanglement’ with investment banks” (Ashton et al., 2020, p. 3). Another example of the limitations of private finance for transportation investments in the UK is the debate around rail franchising programs. After a series of failed private franchises, the East Coast train franchise returned under government control in 2009, exemplifying the mismatch between private profits and state-assumed risks (McCartney & Stittle, 2011). Local government has likewise been transformed and weakened by the increasing use of partnerships and outsourcing of capacity to deliver policy programmes, resulting in “uneven institutional capacities and place-based variation in the abilities of local councils to meet citizen needs” (Ward et al., 2015, p. 446).

Decentralisation and new financing mechanisms, as well as processes of financialisation, although poorly investigated, have re-shaped much of the provision of transport services in the UK and abroad, and are becoming central to the net-zero agenda (Local Government Association, 2022). Despite some authors’ assertions (Gillard et al., 2017; Walker et al., 2015) that financialisation and austerity measures have negatively impacted climate policymaking, the mechanisms by which austerity and financialisation shape transport decarbonisation remain unclear and need further investigation, given the urgency of climate change. It is for this reason that the current paper focuses on better understanding their unfolding in two English case studies.

3. Methodology

To better understand the financing mechanisms of transport decarbonisation, their evolution over time and the way they intertwine with the delivery of transport decarbonisation, we have selected two case studies that have built a reputation as UK front runners in the decarbonisation challenge: Oxford and Nottingham. These two LAs have set ambitious climate targets and stated bold decarbonisation ambitions, with Nottingham and Oxford aiming at achieving net-zero as early as, respectively, 2028 and 2030. It is noticeable that Nottingham’s target is

the earliest across all of the UK’s LAs. Understanding whether these authorities can reasonably lay claim to be front runners on the basis of empirical data is more difficult. The principal UK data set which compares local authority carbon emissions is territorial and so only counts movement in and across an area. Nottingham and Oxford are relatively compact cities with broader spatial economic geographies and so this assessment limits meaningful comparisons (Marsden & Anable, 2021). With those important caveats in mind, both appear in the lowest 20% of local authorities in terms of per capita transport emissions for the last reported period prior to the pandemic in 2019 (Department for Energy Security & Net Zero, 2023).

For each case study we conducted an in-depth review of grey literature produced in the last decade, including LAs’ websites and publications, Local Transport and Connectivity Plans (LTCP), declarations on climate strategy and actions by local and regional stakeholders, and the like. We also reviewed national policy documents and reports discussing the UK decarbonisation strategy from the Climate Change Act in 2008 till the latest Transport Decarbonisation Plan (Department for Transport, 2021). We then conducted four pilot interviews with academics working on related themes in the two case study areas. The findings of the literature review and pilot interviews have been used to guide the questions for 18 semi-structured interviews with key local actors in each case study. These were selected amongst local policy makers, political leaders, and local campaigners involved in key aspects of transport decarbonisation. For example, for each LA we interviewed officers involved in the LTCPs in various functions connected to decarbonisation, members of Local Enterprise Partnerships, transport operators, campaigners for active travel and climate activists.

The aim of the literature review and interviews has been to identify changes, in the way the LA has framed, problematised and acted upon transport decarbonisation as well as exploring the actors, actions and processes involved in delivering transport decarbonisation. We used a genealogical approach and asked interviewees to trace back the emergence of transport decarbonisation as a goal in policy making since the 2008 Climate Act and reflect on the actors and actions crucial to its evolution.⁶ Given that the theme of funding availability emerged as a key concern since these pilot interviews, a specific set of questions was dedicated to investigating financial mechanisms used to deliver

⁶ To do so, our opening question in most interviews has been: “When would you say reducing carbon emissions from transport appeared as a theme in your LA?”

decarbonisation and scalar relations between local, regional and national government. The questions invited participants to consider existing actions and funds for decarbonisation and focused on the potential ways in which the decarbonisation agenda has changed the way that LAs operate, including their relationship with national government and other stakeholders, and on their perceptions on the achievability of decarbonisation at the local level.

Interviews have been thematically analysed with NVIVO, using both inductive and deductive coding and a process of co-coding to ensure coherence. The coding framework paid particular attention to: 1) processes and techniques of transport decarbonisation governance; 2) actors' involvement and responsibility; 3) financial and human resources for decarbonisation.

4. Case studies

Our case studies have a very different administrative set-up and a complex ecology of actors involved in transport decarbonisation (Fig. 2). In both, a complex relationship exists between LA institutional boundaries, the functional structure of their transport systems, and the remit of their decarbonisation actions, which are further complicated by their different tier systems.

The city of Oxford is governed by a two-tier LA, with a County Council, Oxfordshire, in charge of strategic services, including transport, and five District Councils, including Oxford City Council, in charge of service like planning, leisure and waste collection. In line with what was discussed in the literature review, Oxfordshire has seen the emergence of many new local government arrangements involved in strategic or funding aspects of transport planning. The Oxfordshire LEP, under the supervision of a coordinating body called Future Oxfordshire Partnership⁷, has been heavily involved in transport projects whilst the relevant sub-national transport body, the England Economic Heartland, is emerging as a new public-private actor at the regional level, with the aim of setting strategic pathways for growth, including a sub-national transport strategy.

Nottingham City Council is instead a unitary authority, retaining responsibility for transport and other strategic services and covering a smaller area than Oxfordshire. Nottingham City Council is surrounded by Nottinghamshire, a two-tier LA supervising seven boroughs and District Councils. Nottingham and Nottinghamshire maintain a separate approach to transport decarbonisation but have been collaborating in new local arrangements and partnerships, including the D2N2,⁸ a strong leading regional Local Enterprise Partnership, on a series of decarbonisation actions.

Due to specific path dependencies and ambitions, Oxford and Nottingham have approached decarbonisation very differently. While Nottingham has a national record for public transport use and development, with its tram network being renowned across the UK (Dale et al., 2019; Disney et al., 2018), Oxford has a long-term vision to become a cycling city, while also placing a strong focus on electric vehicle (EV) innovation (Hampton et al., 2021; Schwanen, 2015). Such ambitions have strongly shaped their decarbonisation pathways. Since 2021 Oxford has gained popularity – or notoriety, depending on one's views – for its contested programme of Low Traffic Neighbourhoods (Dudley et al., 2022) but the controversies around these played out mostly after our interviews had been undertaken.

As seen at the national level (National Audit Office, 2021), interviewees in both LAs expressed concerns about their reliance on an uncertain and mutable funding landscape to deliver decarbonisation

⁷ This is a non-statutory joint committee of Oxfordshire's six councils, together with key strategic partners such as the Oxfordshire LEP, university representatives and others (Future Oxfordshire Partnership, 2021; OxLEP, 2024).

⁸ Including Derby, Derbyshire, Nottingham, and Nottinghamshire.

strategy. As a result, the two LAs have chosen two very different pathways for achieving their targets. By analysing these different pathways, we can better understand how local government is changing under time pressure and funding constraints during decarbonisation. As we will show, a shift has occurred from a strategic attempt to deliver decarbonisation towards an opportunistic pursuit of performative actions that could be more easily branded and, therefore, potentially funded.

4.1. Capitalising on innovation: Oxford's decarbonisation pathway

The city of Oxford has a long history of promoting 'sustainable transport'. Since the climate strikes and the Citizen Assembly held in 2019, which resulted in the declaration of a new 2040 net-zero target for the city, the climate emergency has become increasingly important in local decision-making. Following the target, Oxford has taken the lead in creating new local arrangements and established a Zero Carbon Partnership and published bold transport goals, focusing on electrification and streamlining the fleet, with a goal to "replace or remove 1 out of every 4 current car trips in Oxfordshire" by 2030, and "an additional 1 out of 3" by 2040 (Oxfordshire County Council, 2022, p. 7). Further targets for walking and cycling aim to achieve a 67% growth in cycling by 2030 (Oxfordshire County Council, 2022).

Given Oxford's two-tier system, transport changes cannot be understood through a sole focus on the City Council's remit. Though geographically concentrated in the city, most of the proposed actions for decarbonisation are necessarily led by the County Council as the Highways Authority, which has a 2050 target and has certainly been less proactive. Most importantly, the strategic actions proposed, including road charging schemes (a Workplace Parking Levy (WPL) and a Zero Emission Zone (ZEM)), and improvements to walking and cycling provision, have been in progress for many years as part of Oxford's commitment to reduce congestion and air pollution. Such potential interventions are now 'rebranded' towards climate goals, especially as part of renewed political commitment achieved after the stronger alignment of the political orientations of the County and City administrations after the 2021 local elections.

In reality, Oxford's transport choices have been primarily shaped by the availability (and continuity) of funding and a complex two-tier system. With the statutory responsibility and funding for transport in the hand of the County Council, the city's ambitions for modal shift, facilitated by its already high walking and cycling rates, are hampered by slower progress in rural districts within the county, which are substantially more car-dependent. Lack of funding has repeatedly hindered the implementation of local transport plans, as stated by the County Council itself (Oxfordshire County Council, 2022). Due to the delay in implementation of the WPL and LEZ (only a partial trial ZEM has been introduced so far), the expected revenue to systematically fund walking and cycling interventions has been missing, and short-term interventions have been restricted. Only recently has Oxford started to explicitly reduce car use with a number of highly contested street-reallocation interventions in residential areas around the city centre, led by ambitious officers and councillors at both city and county levels (Dudley et al., 2022).

Securing funding to deliver the projects that comprise Oxford's decarbonisation strategy is a key challenge for officers and a major demand on their limited time, as summarised in the interviews:

"It's not a given that we're going to be able to [...] get the funding to deliver [transport decarbonisation], but you know without the funding we won't be able to do anything. [...] That's something we're doing, we're working on actively, is how to fund this and how to deliver it as soon as possible as well because of the current climate emergency and the challenges we have now we want to get this moving as soon as possible" (Officer Oxfordshire).

Most funding that Oxfordshire has so far acquired is linked to the punctual availability of new government grants. Similarly, Oxford has

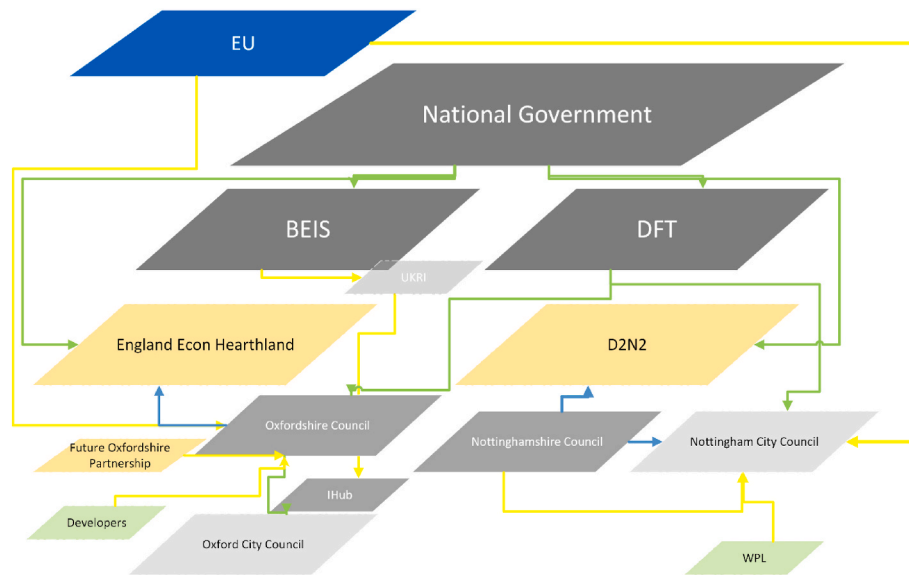


Fig. 2. Relationships between different actors involved in transport decarbonisations in Oxford and Nottingham. Blue arrows represent regulatory relations; yellow funding streams; green both relations together. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

applied in partnership with local bus operators for DfT funding aimed at improving and electrifying the local bus fleets (Bus Service Improvement Plan or the Zero Emission Bus Regional Area). These grants often come unexpectedly⁹ and are “quite short-term in nature” (Officer Oxford).

As a result of uncertain grant outcomes, in a clear example of local government entrepreneurialism, Oxfordshire has also explored alternative funding options, by capitalising not only on local real-estate investments, but also and more fundamentally, on new collaborations and partnerships. For example, many interviewees reported the key role of developers’ contributions – a binding part of their legal planning obligations (Section 106) to mitigate the development’s impact via the use of a Community Infrastructure Levy (CIL) (UK Government, 2016) – to fund active travel projects and road networks improvements. The LEP has also been key in securing central government funds for a series of infrastructural improvements and feasibility studies in Oxford City and other Districts, mostly devoted to partially reallocating road space to walking and cycling.¹⁰ Similarly, the LA has developed non-statutory partnerships to engage stakeholders in co-production exercises, for example by linking local policy and cycling campaigners in exercises of co-design of street reallocation interventions. Most fundamentally, Oxfordshire has embraced a pathway of ‘projectification’ of transport planning. Elements of transport plans are broken down into smaller interventions, packaged to be suitable for newly available funding streams or more attractive to co-applicants and bidding partners (Graham, 2000, p. 187; Torrens & von Wirth, 2021).

A significant part of this projectification can be understood as an attempt to capitalise on the city’s and region’s vibrant enterprise, business and knowledge sectors and to secure diversified funding opportunities via the creation of innovation-oriented collaborations. Examples include the projects Go Ultra Low Oxford, Park & Charge, Vehicle to Go Oxford, Project LEO and the Energy Superhub Oxford,

⁹ A public officer quote exemplifies: “we’re looking at a strategy for the longer-term but actually we don’t really know what the government funding streams might be available within that because often the government funding streams are quite sort of short-term in nature”.

¹⁰ By bidding to central government and coordinating with local councils, the LEP helped ‘unlock’ a total of £54,312,000 invested in infrastructure projects in Oxford as part of the Housing & Growth Deal (Future Oxfordshire Partnership, n.d.).

based in and focused on Oxford city as well as other areas in the county. Partnerships with local stakeholders, including the University of Oxford, and extensive collaboration with businesses across the county often strengthened by the previous LEP’s involvement in transport activities, have been used extensively to successfully bid for further government funding and develop innovation projects. This has had evident benefits, as highlighted by an interviewee: “I have absolutely seen the benefit of having the university involved in terms of getting money, making the case, getting people’s buy-in all that stuff. Absolutely” (Ex-officer Oxford City Council).

Nonetheless, the availability of exceptional collaborations in a context of insufficient structural funding has been harnessed in particular by the County Council, which has pushed innovation within its internal structures and set up new local arrangements and organisational forms that are highly conducive to exchanges with the private sector. One key example is the Innovation Hub (iHub), an independent sub-unit of the County Council, explicitly designed to, in the words of one of the officers, “make it easier [...] to link in with people in academia and, of course, businesses”. A specific reason for this setup lay in the creation of new streams of funding released by the national funding agency for research and innovation, the UKRI, whose innovation agency ‘Innovate UK’ is directed at businesses growth via marketisation and technology development. Funding success ensued; in 2018–2019 only, the iHub secured “more than £6 m of income to the County Council” (Oxfordshire County Council, 2022, p. 116). Many of the funds released by bodies like Innovate UK require a strict partnership between business and local government, as the interviewee continues:

“An Innovate [UK] project is actually primarily there to assist the business, to grow its ideas and its business. It’s just that [...] in the space that we’re working, unless you get the cooperation of the LA, you can’t really try those ideas or anything like a scale that makes that meaningful. Which is why there is this happy symbiosis of need, because we also need to understand what are the technologies that work, how do they fit in with the way we as a council do business? And how, I’m planning for and how do we need to think differently and have different ways of doing business for the future to take account of these changes that are coming at us” (Officer Oxfordshire).

With a trial and test, business-oriented mind-set, the iHub has been leading a variety of EV charging and mobility-innovation projects

(Oxfordshire County Council, n.d.), aimed at testing different market solutions to EV charging or vehicle automation, ensuring businesses and investors relatively safe returns on future widespread investments. In line with our definition of financialisation, the iHub constitutes a prominent example of how funding scarcity and funding motives more generally are becoming central concerns that drive local government reforms of its internal structures. Oxfordshire Council has done so by adopting a strongly entrepreneurial approach in the name of innovation (McGuirk et al., 2022), opening increasingly new avenues for the private sector within elected institutions. As another interviewee suggested, “the government LA is not going to have the budget to do all of that work, it needs the private sector to come in”. The iHub constitutes another form of partnership platform, a new institutional space where opportunities for marketisation of public assets and services can be tested under the guidance of the local council, substantially reducing risks for the private sector. This has certainly worked in building a reputation for the city of Oxford, where projects are concentrated, as a success story where the EV market is now mature enough for the private sector to lead without further governmental support.

However, innovation funding brings, alongside learning benefits, the risks of being decoupled from normal decision-making processes, bypassing traditional accountability mechanisms, and not having any long-term ownership or transition path (Oldbury et al., 2022). A symbiosis of needs between private investors and local government requires a bending of local government objectives and priorities to accommodate businesses’ demands. Hence, a strong reliance on private actors for funding applications and implementation of decarbonisation interventions requires further adjustments in planning processes. For example, as stressed by one interviewee, businesses expect returns within 18 months or less, meaning projects must deliver increasingly faster so to keep private sector actors interested in investment, further limiting LAs’ ability to strategically plan its decarbonisation pathway. As a result, attention must be focused on ‘innovation’ and short-term returns, with technological improvements, including vehicle electrification, becoming the few areas where resources are easily available and around which it is possible to ‘perform decarbonisation’. As such, despite what a local citizen assembly and campaigners have advocated, and what has been stated in strategy documents, electrification has become central to Oxfordshire’s decarbonisation strategy.

Although the city of Oxford is becoming a successful investment opportunity for EV technologies and increasingly focusing on road reallocations away from vehicular transport in selected non-central areas, this is probably insufficient to address the challenge ahead. Because of the timescales to renew the vehicle fleet, at a national scale, electrification is only expected to cut transport emissions by around one third by 2030 (Marsden, 2023) and so action on the scale implied by Oxford would require a transformational degree of modal shift. Modal shift, in turn, requires long-term planning and a wider geographical scope. For many of our interviewees, the projectification pathway adopted restricts the LA’s potential to act strategically, especially for the county beyond the specific and unusual city of Oxford. What is needed instead is a clear funding strategy, for many of the elements that comprise the Oxfordshire decarbonisation strategy, including the successful adoption of new technologies. Furthermore, the project-bounded funding to cover staff costs reduces the flexibility of the LA quite dramatically, with both the City and County Councils facing a generalised lack of skilled personnel and high turnover rate, with subsequent loss of institutional memory and delays in the design and implementation of new schemes.

4.2. Capitalising on an ambitious local success story: Nottingham’s decarbonisation pathway

As a unitary LA, Nottingham has taken transport decarbonisation in a very different direction. If ‘innovation’ is Oxfordshire’s key ingredient to decarbonisation, Nottingham’s is rather focused on the ideas of

‘ambition’ and ‘success’. These themes recurred widely in the interviews and framed participants’ confidence in Nottingham’s ability to achieve decarbonisation. Central to their claims of success, along with a recognition of the key role of a sustained political commitment ensured by a stable local government under the same party since 1991, are a number of financial innovations that the city has pioneered in the past decade, including its renowned Workplace Parking Levy (WPL). The WPL is an annual charge for any employer that provides in-situ parking for employees that was introduced in 2012 and initially designed to reduce traffic congestion. Crucially, the WPL provides an additional revenue stream against which the Council can borrow funds for public transport improvements at relatively low set-up costs compared to other measures such as congestion charges (Nottingham City Council, n.d.; Dale et al., 2017).

Interviewees depicted the WPL as a statement of bold ambition and success that became “the catalyst for the overall city’s improvement” (Officer Nottingham). As “a compelling tale to tell”, it provided a strong business case for funding applications across different policy areas and increasing city attractiveness to business and investors (Dale et al., 2017). By pursuing a WPL, the LA has also secured a sustained income stream. New funds are accessed directly – via revenue – and indirectly – by enabling success in other bids, including through the ability to match fund from borrowing against ticket revenue. This has allowed Nottingham to approach transport decarbonisation strategically. For example, the city has been able to maintain a strong team of officers with high retention rates, in contrast to what Oxford and many other LAs reported (National Audit Office, 2021). More importantly, Nottingham’s strong local authority capacity has also enabled it to be an early mover in the EV adoption space, again accessing national funding pots. As with Oxford, it is dependent on national funding to deliver on its local walking and cycling plans.

The WPL offers Nottingham stronger financing opportunities compared to those pursued by other councils. By 2019, it had ensured an extra revenue of over £60 m to the council, which in turn enabled the council to “lever in hundreds of millions of pounds of external funding for projects” (Hallam, n.d., p. 2), including the extension of the tram line and bus network, and the redevelopment of the train station. These in turns provided “positive movement of inward investments” in the city (Dale et al., 2017, p. 1). The WPL has enabled the council to navigate easily in a challenging environment of competitive bidding, thanks to being “a ready-made kind of flow of guaranteed funds effectively coming into the authority that’s ring fenced that allows you to be a lot bolder in your business case because it’s not uncertain, it’s not reliant upon potential Section 106 agreements from developers or parking kind of provision, it’s kind of there and it’s certain” (Planner Nottingham). At the same time, although parking is and has to fund transport provision, it has also enabled Nottingham to be creative with other income streams. In such sense, the financialisation of transport has not been just about transport.

The WPL nonetheless exists by virtue of its entanglement with the financialisation of public transport development and the construction of the new tram line Tramlink 2 via the establishment of what officers called a Public Finance Initiative (PFI). The PFI has not only reduced the up-front costs of provision for Nottingham City Council and the Treasury but also guaranteed political support for the scheme, especially among local businesses. The initial opposition to the WPL was mitigated by introducing the prospect of having, in one interviewee’s words, “a new tramline right outside your front door”.

Our interviewees depicted the WPL, which significantly pre-dates climate commitments, as an unquestionable achievement for the city’s performance around its decarbonisation agenda and clear statement of commitment to sustainable transport. However, the levy hides a wider range of issues. Firstly, as in the Oxford case, the claims of success are, in part, enhanced by the fairly narrow geographical boundary of Nottingham, with a high share of GHG emissions from commuting in and from Nottinghamshire and the wider area not being included in the city’s carbon account. Secondly, the revenues generated from the WPL are

essentially hypothecated for ongoing charge payments to the Tramlink consortium or required to show the ability to match fund other infrastructural projects. These payments are higher than if Nottingham City Council had been able to borrow directly from the national government. The revenue is not, therefore, available for the LA to invest in other types of transport intervention for decarbonisation actions. As an officer in Nottingham suggested, despite the narrative of success, “*whilst we may have the biggest [decarbonisation] ambition of any other cities we have no extra money to do anything*”. Further creativity in financing remains crucial to achieving decarbonisation, with the council reaching out to the business community and exploring new financialisation options like the Infrastructure Bank, Green Bonds, or even crowd funding and consultancy for other councils (Hallam, 2021).

More importantly, in the context of ongoing austerity, there is unlikely to be extra funding available to the council to keep up its charge payments to Tramlink. This means that the LA remains dependent on maintaining a certain (high) level of private parking to meet its financial obligations. Evidence is already emerging of how lower workplace parking revenues during the Covid-19 pandemic, alongside lower tram usage, are posing problems for the funding settlement (Jarram, 2022; Jarram & Turner, 2022). As in the case of Chicago’s parking meters (Farmer, 2014), the specific financialised public-private entanglement built around the WPL and Tramlink requires, for its sustainability, the very survival of car dependency. With financialisation becoming standard practice to progress transport infrastructure, and financial mechanisms such as a WPL or curb-side parking charging becoming necessary practices to fund transport decarbonisation, the reduced demand for parking space due to modal shift away from personal car use poses risk to revenue levels, and therefore to key LA services. One of the interviewees articulated the contradictory importance of local parking income to the LA budget by noting how parking income “*goes to support other areas of the council where money previously from central government in grant has stopped so we have to generate that locally. If you were to say right, we’re going to ban cars from the city centre straightaway you’ve lost seven million pounds worth of revenue that is propping up children’s services, social services, education*” (Officer Nottingham).

5. Discussion: innovation and ambition as performance

After decades of austerity and neoliberal governance, under-resourced LAs in England are lacking the necessary financial resources to fulfil the bold transport decarbonisation strategies outlined in response to civic society pressure and growing emphasis on place-based solutions. They face a situation in which block funding has been replaced by competition for time-limited and money-limited funds from central government, in a process through which government funding for public spending by public bodies has been itself financialised with the creation of a quasi-markets for government investment between public bodies.

In such an environment, LAs competing for scarce funds turn towards neoliberal forms of governance, with intertwined processes of projectification and further financialisation, as the most feasible path to decarbonisation. In a classic urban entrepreneurialist approach (Harvey, 1989), LAs concentrate efforts on generating opportunities to perform success and thereby outcompete rival players. This implies a shift towards a world in which local government is no longer asking the question “*how do we fund our strategy?*” but instead stating “*what can we fund, this is our strategy*”. This entails a shift from strategic planning to a piecemeal and opportunistic delivery of disconnected actions prioritised according to their ability to appeal to funders (e.g., focusing on electrification, as in the Oxford case). In this sense, the re-making of transport governance is directed by the way funding opportunities are structured, often privileging partnership platforms and collaborations with private actors. It constitutes a form of ‘muddling through’ (Lindblom, 1959) where progress is defined project by project in an incrementalist manner but with important constraints imposed by the nature

of the funding. With LAs forced to compete for scarce and piecemeal government funding or ideating investments opportunities for the private sector, transport decarbonisation becomes framed around a broad narrative of *innovation, ambition and competitiveness*. In Oxford this has been achieved thanks to the ability to innovate, in Nottingham on the back of the ambitious WPL initiative.

In this context climate targets, and especially highly ambitious ones such as Nottingham’s 2028 target, become part of a broader repertoire of strategies used to *perform decarbonisation* discursively. Climate targets offer and enable a helpful narrative to attract grants and investments, which seldom reflects the reality of actions undertaken, at least in transport. Although claiming otherwise, local governments in Oxford and Nottingham have limited efficacy in delivering substantial GHG emission reductions in transport, as evidenced by the size of the mismatch between where the national government expects the transition pathway to be and that of the local authorities coupled with their inability to substantively act outside of the new funding described here. The ‘performativity’ of the targets is further underlined by a lack of any clear accounting mechanism locally to show that adopted measures put LAs ‘on track’ towards realising their lofty ambitions for transport decarbonisation. Whilst official documents and grant applications depict an ambitious series of bold actions, our interviews highlight a reality of limited achievements on the back of those stated ambitions. Although Oxford and Nottingham have certainly brought climate mitigation to the centre of the agenda, there is still an evident gap between what has and can be achieved by continuing their chosen pathways and what is required to actually achieving climate reduction targets.

Nonetheless, discursively performing decarbonisation is openly recognised as necessary to enable the authorities to compete for funding and reinforce partnerships with strategic co-bidding partners. This is to say, certainly performative action is better than no action at all, but not enough in light of the legal requirements the UK is under to cut its emissions drastically to net zero by 2050. At the same time, a narrative of ambition responds to public opposition and public guilt, which is expected to rise as the effects of climate change become increasingly visible to the general public.

Somewhat speculatively – and therefore in need of critical examination in future studies – we posit two risks of selectivity in decarbonisation resulting from the coalescence of fierce competition for funding, private sector leadership and discursive performance of transport decarbonisation. Firstly, despite the clear potential for decarbonisation through active travel (Brand et al., 2021), interventions aimed at making walking and cycling more convenient, enjoyable and safe, face the risk of going below the radar and happen in a very incrementalist manner. Particularly, they might fail to catch the same level of attention that technologically focused multi-stakeholders projects do because they tend to rely less on innovation and provide fewer opportunities for new capital fixes. In this context, it is worthwhile noticing that in interviews with local government officials and private sector actors in Oxford and Nottingham walking and cycling were rarely mentioned as potential transport decarbonisation strategies undertaken or considered.¹¹ A similar risk exists for measures which reduce travel demand where the ‘market’ for such solutions is more difficult to develop relative to opportunities such as new EV charging infrastructure.

Secondly, in addition to modal selectivity, there may also be spatial selectivity across geographical scales, with the creation and consolidation of *premium spaces of innovation and ambition*¹² in relation to transport decarbonisation a likely prospect. Not only are investments and actions (more) likely to be disproportionately concentrated in core and

¹¹ This is even more surprising as the interviews were undertaken just before the wave of road reallocation programmes that made Oxford appear in the national news repeated times.

¹² The term is inspired by the work on urban competitiveness and uneven development by Graham (2000) and Graham and Marvin (2001).

entrepreneurial cities such as Oxford and Nottingham with a solid network of bidding partners, rather than spread more evenly across the counties to which they give their name, they are also likely to land in centres and/or knowledge districts – e.g., in or around university locations or close to major retail and leisure complexes – within those core cities where they will be most visible to residents and visitors. As those premium cities implement ZEZs, charging hubs and new mobility services in those premium spaces, the global and displaced nature of GHG emissions remains largely unchallenged. Our key point is that the benefits of financialisation cannot only be understood by looking at the outcomes in these premium spaces but, rather, there is a need to understand the implications of not investing in the places that miss out or do not even enter the funding contests.

What we see in the UK is reflective of a particular pathway of national-local scalar relations and form of financialisation (Davis & Walsh, 2017; Sawyer, 2013). As there are very different distributions of powers and funding of local governments across different settings, there would be significant value in understanding the extent to which financialisation is steering, supporting or limiting climate strategies in other political geographies. However, as local government is increasingly positioned as a key actor in decarbonisation in other advanced liberal democracies, we can expect similar pathways of performative decarbonisation concentrated in premium spaces to emerge internationally, especially in those countries where, as in the UK, popular concerns about the climate crisis, as well as austerity, economic recession and resource scarcity are rising.

6. Conclusion

This paper has sought to respond to a systematic lack of attention to issues around funding for transport decarbonisation by providing an in-depth analysis of the strong role financial mechanisms play in determining feasible decarbonisation pathways in Oxford and Nottingham, two English LAs that lead in sustainable transport policy. Through the analysis of the variety of strategies adopted by these two cities to reduce transport GHG emissions in a context of scarce resources, we have demonstrated the influence of financial rationales and motives in decarbonisation governance, resulting in the projectification and financialisation of transport policy and planning.

We have shown how Oxford, facing a complex institutional set-up as a two-tier LA, has focused on rebranding its strategy around innovation in an attempt to secure state and private funding linked to technology development and marketisation opportunities. This strategy has enabled significant progress in the roll-out of EV infrastructure, but also tied decarbonisation to piecemeal technological projects, with an unclear pathway for addressing modal shift beyond the city of Oxford. Differently, Nottingham's decarbonisation pathway became entangled with a narrative of ambition and success linked to the implementation, in 2012, of a sophisticated financial instrument, the WPL. This measure created a strong business case that has underpinned many bidding successes, but also locks the LA to an economy based on substantial levels of car dependency. Whilst it has enabled development of tram infrastructure, it has not resolved the financial challenges for other decarbonisation actions.

Although issues of funding scarcity in transport system change have been discussed in recent years (Parkhurst & Flower, 2022; Schwanen, 2015; Walker et al., 2015), their implications should still be carefully considered to better understand the role of local governments in decarbonizing transportation in advanced liberal democracies. Our analysis shows a problematic picture in geographies where a story of innovation or success exists – i.e., Oxford and Nottingham with significantly greater opportunities to decarbonise transport than in most other LAs in the UK. As Flyvbjerg (2011: 304) suggested for critical case studies, “*if the thesis could be proved false in the favourable case, then it would most likely be false for intermediate cases*”. With Oxford and Nottingham unable to achieve their transport decarbonisation targets, the

situation is likely to be worse in other intermediary cities in the UK and beyond, where opportunities to secure financial resources may have diminished significantly due to austerity politics, the COVID-19 pandemic and other crises.

Our analysis serves as a reminder that scholars should carefully consider processes of financialisation, and the related changes in funding opportunities, as prime drivers of institutional restructuring and policy choices relate to transport decarbonisation. Specifically, we have shown how processes of neoliberal governance, grounded in urban competitiveness and entrepreneurialism, projectification and financialisation, typical of advanced liberal democracies (Bulkeley & Kern, 2006; Eckersley, 2018), make the delivery of transport decarbonisation at the local level very challenging, even where political commitment exists to implement decarbonisation initiatives. Our analysis makes us believe that a combination of increasing competition for funding at local level and the expectation of a proactive private sector in local action entice local governments to spend significant resource in discursively performing decarbonisation in the hope of winning bids and generating revenue. Similarly, we have highlighted the risk of the creation of premium spaces of innovation and ambition that are also likely to intensify uneven development (Graham, 2000). Path dependencies may result in already successful LAs attracting further investments, which will exacerbate existing local and regional disparities in the ability to achieve transport decarbonisation at the local level. A profound rethinking of transport climate governance in advanced liberal democracies is required. This will have to include a holistic assessment of the implications that adopted or promoted funding mechanisms have for climate governance.

CRediT authorship contribution statement

Ersilia Verlinghieri: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Visualization, Writing – original draft, Writing – review & editing. **Thomas Haines-Doran:** Conceptualization, Data curation, Investigation, Writing – review & editing, Formal analysis, Visualization, Methodology. **Greg Marsden:** Conceptualization, Funding acquisition, Methodology, Supervision, Writing – review & editing. **Tim Schwanen:** Conceptualization, Funding acquisition, Methodology, Supervision, Writing – review & editing.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: All authors reports financial support was provided by UK Research and Innovation.

Data availability

The datasets generated during and analysed during the current study are available at the UK Data Service repository, <https://reshare.ukdataservice.ac.uk/855843/>

[Interviews with actors concerned with local transport decarbonisation in the UK, 2018-2023 \(Original data\)](#) (UK Data Service repository)

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