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LOCAL INVESTMENT NEED
FOR A DECADE OF RENEWAL

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RECLAIMING OUR REGIONAL ECONOMIES

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EXECUTIVE SUMMARY

The physical infrastructure of everyday life in England is broken. Millions in the country have unmet housing need, our homes are not well insulated, we are burning gas for electricity and large swathes of the country have grossly inadequate public transport systems. There is a geography to England’s neglect – four of the five worst bus services are all in the north, and so, on average, are the least energy-efficient homes. Across the country, the material foundations of a good life are in dire need of renewal. The urgency of this task is underscored by the twin climate and nature emergencies. We are in a race against time to decarbonise our electricity supply, retrofit the building stock, and expand public transport to hit our carbon targets.

For too long, public investment has been too low with scarring effects on our economy. However, announcements trailed ahead of the government’s first Budget suggest that Labour plans to reverse this trend.¹ This investment must deliver meaningful change to people’s lives, and this requires place to be a key consideration in any investment strategy. Indeed, as more powers are devolved from the national government, the task of renewal after years of neglect and of addressing the state of our essential infrastructure will increasingly reside with local leaders.

Over the coming months, as mayors and local councils negotiate the terms of devolution deals and finance settlements, they will need to be able to argue for adequate funding to meet the specific challenges and opportunities in their areas. In this context, this report presents local estimates of the size of the public capital investment need in England across four critical areas that provide the foundation of a good life, and which fall in the purview of devolved and local authorities – new housing, retrofit, transport, and local energy. These estimates cover the decade from 2025 to 2034 and draw on a combination of our new modelling first presented here and, in some areas, existing, well-regarded work by others.

- **Housing: £11.8bn** of public investment outside London is needed annually to deliver 92,000 new social rented homes required to meet the housing need, in addition to housing cross-subsidy from a full and consistent application of planning obligations.
- **Retrofit: £3.4bn** of public investment across England is needed annually (£2.9bn of which is outside London) to retrofit the homes of all 3.18m fuel-poor households, including improving fabric efficiency to EPC rating C and installing low-carbon heating systems.
- **Local energy: £1.4bn** of public investment across England in municipal and community energy projects is needed annually between 2025 and 2029 (£1.2bn outside London) to meet the UK’s renewable energy commitments and £0.7bn annually (£0.6bn outside London) between 2030 and 2034.
- **Transport: £15.6bn** of public investment outside London is needed annually to invest in rail, buses, light rail, road maintenance, and walking, wheeling, and cycling infrastructure to drive the significant shift to sustainable modes of transport required for net zero.

The guiding principle underpinning our estimates is to enable everyone to live well while meeting the net zero challenge. Our estimates are informed by need: every individual’s need for solid foundations and our societal need to avert the worst of the unfolding climate and nature crises. These are the pillars of human flourishing, as well as the bedrock of a productive and resilient economy.

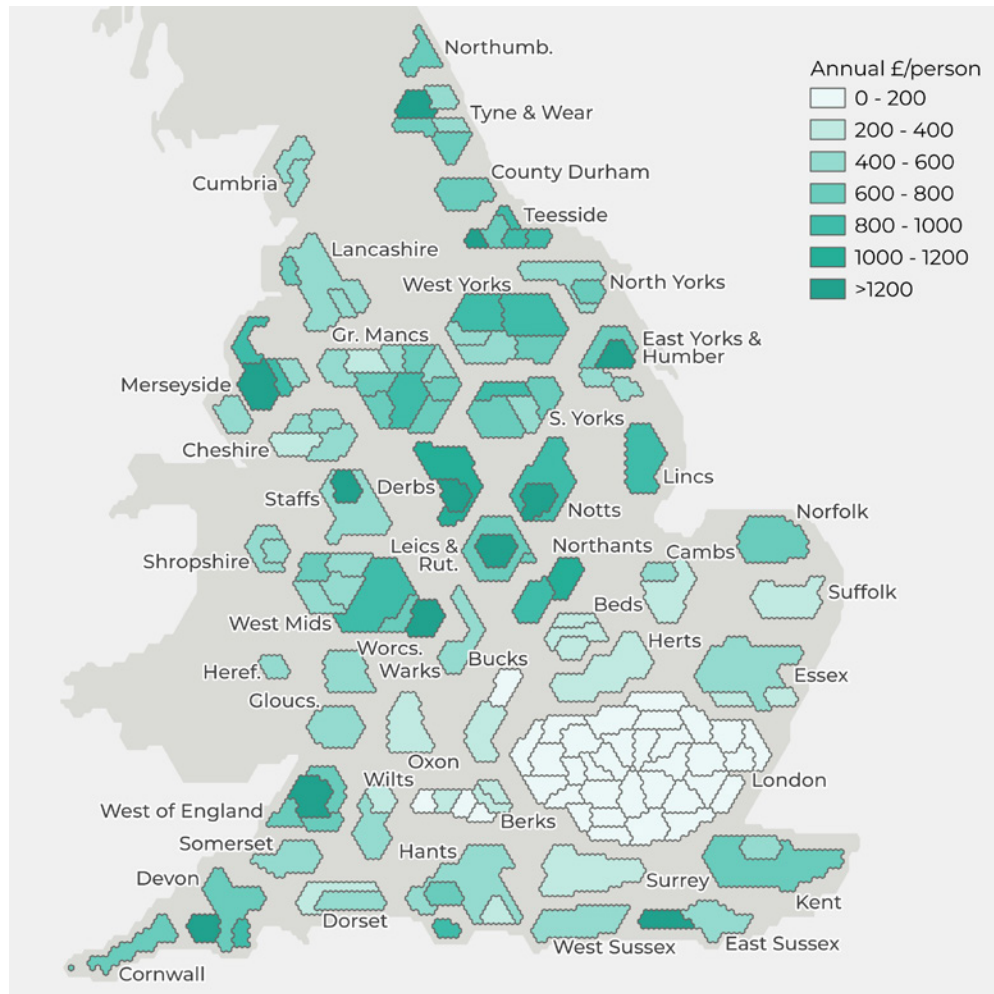
Correspondingly, our approach translates into a clear geographical pattern of investment need (Figure 1), with the largest per capita allocations going to areas outside London and the south-east. This is in contrast to current capital investment allocation, which has – despite all the talk of levelling up – favoured London and other economically strong performing areas.

Our estimates focus on four key sectors, but needless to say, other areas of investment need fall outside the scope of this report. For example, we do not include public infrastructure best delivered other than at the local scale (eg the national power transmission grid), or areas where we see less of a clear role for significant public investment (eg high-street retail). The estimates of housing investment

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FIGURE 1: PUBLIC LOCAL CAPITAL INVESTMENT REQUIREMENT IN HOUSING, RETROFIT, LOCAL ENERGY, AND TRANSPORT FOR COUNTIES AND UNITARY AUTHORITIES, PER RESIDENT PER YEAR (2025–2029)



Data: NEF modelling and other sources as per sections 3.1-3.4 of this report. *Note: Across this report, we use non-contiguous (exploded) cartograms of the UK.²⁰⁴ These cartograms show upper-tier local authorities (counties and unitary authorities) resized based on their population, and so provide a more accurate visual representation of our per capita estimates compared to a standard map.*

requirements only cover the delivery of new homes, but we also urgently need to invest in existing social housing stock – not just to retrofit it, but also to address fire safety or damp and mould issues. Some relevant areas, such as climate change adaptation or green infrastructure, are not covered because we lack reliable data. Finally, we consider these estimates as separate from a local industrial strategy – but also believe that local industrial strategy should be informed by them and aim to create good jobs in related sectors.

The investment need is as large as the challenges we are facing. Acting on it requires more than doubling the recent transport investment outside London and increasing newbuild housing investment outside London by 4.5 times. These estimates also highlight the sheer inadequacy of recent levelling up programmes, which added up to £1.89bn per annum – and as such even if fully allocated and

spent would only fund three weeks of the annual investment we estimate is needed.

The size of the gap is a result of decades of public under-investment and the extent to which the little public investment there has been being concentrated in London. Yet, the required level of investment is not completely out of reach – it is comparable in scale to the annual investments made to close the gap between East and West Germany, and part of the shortfall could come from a better allocation of existing expenditure.

Still, the scale of the shortfall calls for a rethinking of how we manage public finances at both the national and local levels, from changing our approach to investment and reforming fiscal rules to advancing fiscal devolution. We outline some key principles for fiscal reforms in the final chapter of this report.

1. LOCAL INVESTMENT AND INFRASTRUCTURE FOR A GOOD LIFE

Decades of government neglect have undermined the very foundations of a good life. Essential infrastructure, once taken for granted, is crumbling in front of our eyes after years of disregard,² yet public investment continues to be low and short-term.³ All the while, millions in the UK have unmet housing need.⁴ Our cold and damp homes make us poor and ill.⁵ We still burn gas for heat and electricity, while ever-worsening public transport⁶ and unsafe car-dominated roads⁷ leave no significant alternative to driving.

The physical infrastructure of everyday life has been underinvested in and is in dire need of renewal. The urgency of the task is underscored by the twin climate and nature emergencies we are facing, as some of our infrastructure was built with the 19th- and 20th- rather than 21st-century challenges in mind.⁸ Meeting the needs of all while achieving net zero requires a major update to essential infrastructure including rapidly decarbonising our electricity supply, retrofitting the building stock, and expanding public transport provision.

There are clear geographical disparities in the quality of local provision. For example, four of the five worst bus services according to passenger surveys are all in the north.⁹ There are also stark differences in the quality of the housing stock: London and the south-east have both the highest proportions of dwellings in the top three energy efficiency bands¹⁰ and the lowest proportion of homes failing the Decent Homes Standard¹¹ of all English regions, while Yorkshire and the Humber scores poorly on both measures.

At the same time – and in contrast to the rhetoric of levelling up – we have seen public investment concentrated in London, which receives more than twice as much in total public capital expenditure -per resident than the East Midlands, Yorkshire and

the Humber, and the south-west.¹² This is driven by London's disproportionate share of transport investment,¹³ doubling down on the pattern of uneven development inherent to an economic policy that has consistently favoured major cities and emphasised agglomeration economies as engines of growth.¹⁴

Amid a sustained push for greater devolution, the task of addressing the state of our essential infrastructure in England will be increasingly with local leaders. To various degrees, local and combined authorities already have substantial responsibilities across housing and transport, and these are set to expand under Labour's plans for English devolution.¹⁵ The decentralisation of power is necessary and valuable,¹⁶ but it also carries a risk. As we have seen since 2010, local government is an easy target for central government cuts. Even though the mood around local government has changed with devolution rising on the political agenda, council funding was never restored to an adequate level. And so, as mayors and local councils negotiate the terms of devolution deals and finance settlements, they will need to be able to make the case for adequate funding to match their mandates.

In this context, this report brings together localised estimates of the size of the capital investment requirement for England across four critical areas that provide the foundation of a good life and either already fall or should fall in the purview of local government – housing, retrofit, transport, and local energy. This is not an exhaustive list, but it corresponds to the areas with substantial need for public capital investment that could be covered by long-term integrated funding settlements according to the plans presented by Labour.¹⁷

- **Housing:** We use Professor Glen Bramley's detailed local estimates of the total public subsidy requirement¹⁸ needed to deliver 335,000 new homes per year across England, including 92,000 social rented homes, a target based on Bramley's well-regarded assessment of housing supply and need.¹⁹
- **Retrofit:** We model the public grants needed to enable retrofitting the homes of all 3.18 fuel-poor households with fabric efficiency improvements to EPC rating C and low-carbon heating, over the decade from 2025 to 2034 using data from the *English Housing Survey*²⁰ and DESNZ.²¹

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- **Local energy:** Drawing on existing work by EMBER²² and Innovate UK,²³ we provide estimates of the total public investment towards smaller-scale local energy projects consistent with a path that meets current government renewable energy commitments, including reaching 70 GW of solar by 2035.
- **Transport:** Drawing on recent research and modelling from Transport for Quality of Life,²⁴ IPPR,²⁵ and the Asphalt Industry Alliance,²⁶ we model the additional investment needed in England (excluding London) to expand rail, bus, and light rail services sufficiently to drive the modal shift needed for net zero, to raise investment in the active travel infrastructure (walking, wheeling, and cycling) to a world-class level in line with international peers, and to close the annual shortfall in road maintenance for locally managed roads.

Our retrofit and local energy estimates are original contributions, presented here for the first time. In transport, we have localised existing investment need estimates. For housing, we are using local estimates kindly provided by Professor Glen Bramley, which have not previously been made public.

Throughout the report, we focus on capital expenditure. However, the estimates need to be seen in the context of the crisis of local government finances and severe gaps in local government revenue funding.²⁷ The hollowing out of local government has resulted in a severe loss of capacity, which limits the ability of local councils to effectively deliver capital investment projects and administer grants. The planning system, which is an indispensable enabler²⁸ across all areas of investment covered in this report, is on its knees having suffered the most severe funding cuts of all local government services²⁹ under austerity. This lack of local capacity has been one of the drivers of the spectacular failure of the previous government's levelling up schemes,³⁰ providing a cautionary tale for future local investment projects.

Excluded from our analysis are those foundational systems that are best delivered at a national scale (eg broadband, gas, or the national electricity distribution network) or another specific geography (eg river basin for water and sewage), as well as systems where there is parallel administrative

geography which is fit for purpose, or where there is little appetite for change (eg NHS Integrated Care Boards). The estimates of the housing investment requirement only cover the delivery of new homes, but we also urgently need to invest in existing social housing stock³¹ – not just to retrofit it, but also to address fire safety or damp and mould issues. We also excluded some important areas where we found the evidence base was too limited or we did not feel able to provide reliable estimates, including climate change adaptation or green and blue infrastructure, as well as services where existing gaps come predominantly in the form of day-to-day spending as opposed to capital expenditure, or where there is less of a clear role for significant public sector capital investment (eg high-street retail).

We do not include high street, town centre, or estate regeneration schemes as a separate category despite their prominence in recent levelling up funding (Chapter 2). In part, this is due to our scepticism about the degree to which many such schemes address local needs,³² and concerns about their negative effects, notably the displacement of local businesses and communities.³³ To the extent that regeneration schemes respond to a genuine need, they can be considered a subset of our other estimates, including those of investment need in active travel and housing.

Finally, we do not consider public investment in the tradeable economy that could be part of a place-based industrial strategy. There is a clear role for industrial strategy in England and across the UK,³⁴ which is beyond the scope of this report, including spatially targeted public investment to support clusters of economic activity. While we do not dispute the need for a localised industrial strategy, our focus on essential infrastructure provides an antidote to the current tunnel vision focus on gross value added (GVA) or aggregate personal income growth as a measure of success in local economic development. Such approaches often fail to appreciate the distributional consequences of economic policy and disregard the important contribution to quality of life from the collective enjoyment of well-functioning infrastructure, public services, or the natural and built environment.³⁵ By contrast, our approach is that meaningful local development needs to be a much broader endeavour guided by the objective of enabling everyone to live well within net zero boundaries.

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The estimates provided in this report are large, reflecting the dire state of the foundational provision in England after decades of neglect and the severity of regional disparities, as well as the fast pace of the transformation required to adequately respond to the urgent climate and nature crises we are facing. The size of the investment requirement presents two key challenges: public finances and supply chains. As far as public finances are concerned, the scale of public investment needed warrants reform of the UK's arbitrary fiscal rules³⁶ and other fiscal reforms. Regarding supply chains, the scale of the investment presents a huge opportunity to develop local supply chains, use conditionalities to create high-quality employment, and grow the worker-owned economy. However, it also means that the investment would likely need to be ramped up over several years, particularly considering the serious skills shortages in key sectors such as construction. In this report, we focus on quantifying the overall investment requirement and provide averaged annual estimates, but we recognise that in some areas this might be difficult to achieve in the first few years.

The rest of the report is structured as follows:

- Chapter 2 briefly outlines some of the main problems with the UK's overly centralised and restrictive model of public investment funding.
- Chapter 3 presents estimates of the total funding requirement in each of the four key sectors, alongside proposed spatial allocations.
- Chapter 4 explores the main principles and considerations for the reform of public finances at the national and local levels.
- Appendix 1 shows the full methodology and assumptions for our estimates.
- Appendix 2 contains the estimated public investment need in the four key areas for each county and unitary authority in England.

2. PROBLEMS WITH EXISTING FUNDING STRUCTURES

The current systems of government and public investment in key foundational sectors of the English economy are unusually centralised compared with similar countries, and this is reflected in the associated funding structures. This chapter gives a brief overview of the problems with these funding structures, which provide too little money and too little control to local areas and prevent the subnational government from pursuing better alternative forms of investment.

While we take a closer look at the scale of the funding gaps in Chapter 3, it is clear in general that the scale of public capital investment in these sectors is insufficient. Despite substantial need, the construction of social rented homes by local authorities has collapsed,³⁷ falling from more than 1m new builds in the 1970s to 30,000 in the 1990s, only 2,000 in the 2000s, and 17,000 in the 2010s.³⁸ On retrofit, previous governments have failed to provide adequate funding to decarbonise home energy use, including in fuel-poor homes, and failed to answer the question of who pays

the upfront capital costs of this transition.³⁹ Public investment in walking, wheeling, and cycling in English regions other than London is just £10 per person per year, far below the equivalent in places leading the way in active travel investment like Flanders (£39), Copenhagen (£35), and Ireland (£31).⁴⁰ Overall public capital investment in the UK has lagged behind the levels seen in most other G7 economies over the past 25 years.⁴¹

Where significant amounts of funding are provided to local areas, they often come with conditions set by the central government, on how they can be spent. This limits the autonomy of locally elected representatives to decide on what to invest in and imposes a particular conception of local economic development on places, in many cases focused on regeneration through private property development. For example, more than half of the £4.8bn Levelling Up Fund has been spent on regeneration projects (Table 1). Similarly, the £2.2bn Towns Fund was restricted to regeneration, skills and enterprise, transport, and digital connectivity,⁴² while the £1.0bn Future High Streets Fund had to be spent on property, land, transport, or technology-related investments.^{43,44} Much of the housing funding for combined authorities has come via brownfield release funds, which are heavily conditional. These public funds have to be spent on land remediation (in developments that are otherwise not viable enough to give a private developer sufficient profits) and result in a transfer of publicly owned land to private developers for the construction of for-profit housing developments.^{45,46}

TABLE 1: FUNDING AWARDED UNDER THE LEVELLING UP FUND BY THEME

All figures in £m	Round 1	Round 2	Round 3	Total	% of total
Regeneration and town centres	£796	£760	£825	£2,381	50.1%
Transport	£456	£644	£150	£1,250	26.3%
Cultural investment	£441	£548		£989	20.8%
Regeneration and cultural (combination)		£81		£81	1.7%
Regeneration and transport (combination)		£39		£39	0.8%
Transport and cultural (combination)		£15		£15	0.3%

Data: National Audit Office (2023)⁴⁷ and DLUHC (2023).⁴⁸

Funding is also subject to **economic evaluation** methods that determine what it can be spent on by defining what counts in terms of the impact of an investment. A 2020 review of the government's standard *Green Book* appraisal methods found that insufficient attention was given to the strategic contribution of each project to overarching goals such as levelling up or net zero.⁴⁹ It also identified an excessive reliance on cost-benefit analysis (CBA), which tended to focus on the benefits that are easiest to put a monetary value on rather than the full spectrum of social value, and found that equality impacts were too frequently considered an afterthought. How economic benefits are measured in a CBA also shapes what receives investment. For example, transport appraisal has tended to value business travellers' time savings at a rate several times higher than commuters' time.⁵⁰ Land value uplift, which is typically captured privately by landowners,⁵¹ forms a major component of the economic benefits appraised for many place-based public investments,⁵² in a way that confuses private returns with social value and tends to prioritise the former over the latter.⁵³ A focus on land value in appraisal has also been cited as a reason for under-invested parts of the north of England, where land values are lower, receiving an undersized share of public housing funds.⁵⁴

The allocation of funding via **competitive bidding** in many important sectors has created issues with local government capacity and affected which places receive vital funding. Between 2016 and 2019, 82% of short-term funding to local government was distributed via competitive bidding.⁵⁵ Competitive allocation has been applied inappropriately to categories of investment that are needed by all places, including social housing construction and retrofit and the provision of enabling infrastructure for new housing developments, rather than in sectors where local innovation or improved cost-effectiveness are more achievable.⁵⁶ The bidding process creates huge amounts of waste, with individual bids using up £20,000–£30,000 of council resources and in some cases hundreds of days' work for local government officers.⁵⁷ Across the three rounds of the Levelling Up Fund, 583 unsuccessful bids were submitted,^{58,59} equivalent to 68% of all bids and representing a vast waste of resources across the UK. Additionally, competitive allocation tends to disadvantage

smaller local authorities with fewer resources for bid-writing⁶⁰ and creates uncertainty over long-term funding availability that makes it harder to plan ahead.^{61,62}

Public capital investment is **unevenly distributed** across England, partly due to the factors outlined. Throughout the 2010s, London received 50%–70% more capital spending per person each year than the English average and far more than any other region,⁶³ driven in large part by much higher investment per capita in rail transport in London. The uneven distribution is reinforced by regional differences in residents' income and local economic activity, which affect the ability of local government to raise revenue via council tax and business rates.^{64,65}

More generally, the subnational government lacks **powers over taxation** compared with similar countries, even those without a more federal system of government. The share of UK tax revenue collected outside the central government is below 10% and the second lowest in the OECD.⁶⁶ England has no local income or sales taxes, and the structure of existing local taxes like council tax and business rates is largely determined by the central government.⁶⁷ The current levers for recouping value from property development, Section 106 and the Community Infrastructure Levy, fall far short of the proper system of land value capture used by subnational governments in many other countries in Europe and East Asia.⁶⁸

The share of **local borrowing** in the UK is also unusually low. Although municipal bonds were used more regularly up to the 1970s, they have since had a reduced role and tighter central government controls.⁶⁹ The local borrowing that does occur has typically been via the HM-Treasury-controlled Public Works Loan Board, whereas local and regional government bodies in the UK do not typically borrow on bond markets in the way that their peers in other countries do.⁷⁰ A local government funding agency, the UK Municipal Bonds Agency, was established in 2016 to provide finance at a lower cost compared to the Public Works Loan Board. However, it has so far only issued two bonds, both to Lancashire County Council.⁷¹

3. INVESTMENT NEED ESTIMATES FOR KEY SECTORS

This chapter turns to each of the four areas one by one to provide an estimate of the overall public investment requirement over the next decade, alongside a proposed spatial allocation. Our estimates draw on existing work as cited, as well as new modelling. The full methodology is provided in Appendix 1. Appendix 2 shows the proposed annual totals for each county and unitary authority. All estimates are in 2024 prices.

3.1 HOUSING

Affordable and secure housing enables people to lay down roots from where they can build their lives. It is essential for improving education and health outcomes, tackling poverty and homelessness, and boosting jobs and employment. Yet millions in the UK currently have unmet housing need and our housing system is a source of insecurity and hardship. At the heart of our housing crisis is the collapse of social housing provision over recent decades, something that can only be addressed with a new generation of social homes.⁷² Our estimate of the public investment required to deliver the new social homes that we need comes from the work of Professor Glen Bramley, which is widely recognised and quoted across the housing sector, including by the National Housing Federation⁷³ and the Housing, Communities and Local Government House of Commons select committee.⁷⁴

The estimate is based on a scenario of delivering roughly 335,000 additional dwellings annually across England, 92,000 of which would be at social rented and an additional 46,000 at intermediate rent (including 'affordable') and shared ownership. This scenario draws on an assessment of housing supply adequacy in individual housing market areas across England against a range of criteria including housing affordability and poverty, after housing cost. More detail on the housing supply scenarios

can be found in a recent article in UK Housing Review⁷⁵ and a more detailed technical report.⁷⁶

Based on a recent update of Bramley's influential work, the net public subsidy requirement to deliver this scenario is **£117.7bn** over a 10-year period (or £206 per person per year). This is calculated using a subregional development viability model with local characteristics for 102 housing market areas in England and up-to-date industry-supplied assumptions.⁷⁷ Note that the figure only covers the delivery of new housing, not much-needed investment in the existing housing stock. Bramley's calculation also reflects that an important delivery mechanism of social housing is cross-subsidy with market-rate housing⁷⁸ via Section 106 (S106) planning obligations. The net subsidy estimate only represents the additional grant funding required on top of housing cross-subsidy from a full and consistent application of planning obligations.

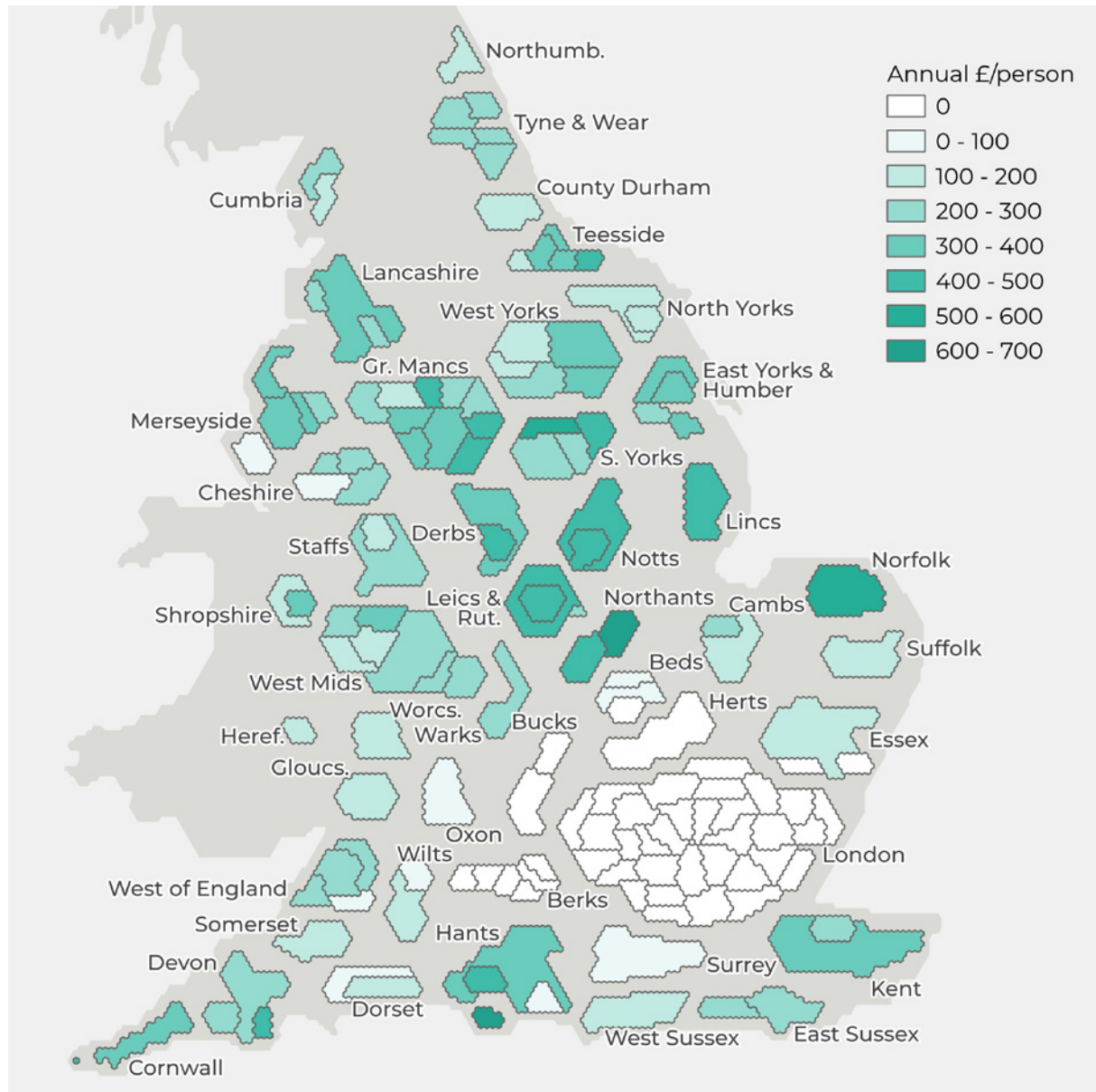
There is a considerable geographical variation in the per capita housing subsidy requirement between different regions and local areas. Figure 2 shows Bramley's apportionment of the net public subsidy to local authority districts, shared for the first time here, aggregated to upper-tier local authorities and adjusted to a per capita basis. By region, the highest proposed subsidy – £456 per person per year – goes to East Midlands. Alongside Derby, Nottingham and Nottinghamshire, Leicester, and Leicestershire in East Midlands, some other upper-tier local authorities with high per capita subsidies include Northamptonshire, Barnsley, and Norfolk.

By contrast, London and some other areas in the south-east receive no subsidy despite high social housing need, as the underlying model suggests that a large number of social homes in these areas could be fully funded through a consistent application of developer obligations.⁷⁹ In reality, this is unlikely to be viable and we consider this a limitation. The building of social housing in London and other areas in the south-east continues to rely on significant grant funding despite efforts by local authorities to use the land value capture mechanisms at their disposal. In part, this is a reflection of difficult housing market conditions in recent years, but it also demonstrates the shortcomings of over-reliance on market solutions, and specifically S106 planning obligations, without building more capacity in local authorities and strengthening their powers.⁸⁰

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FIGURE 2: PUBLIC CAPITAL INVESTMENT REQUIREMENT IN NEWBUILD SOCIAL HOUSING FOR COUNTIES AND UNITARY AUTHORITIES, PER RESIDENT PER YEAR



Data: Bramley, G. (2024, local estimates shared here for the first time), ONS mid-22 population estimates,⁸¹ and other data (Appendix 1). Using House of Commons geographical templates for non-contiguous cartograms of the UK (upper-tier local authorities resized based on their population).

3.2 RETROFIT

Retrofitting homes for improved energy efficiency and low-carbon heating systems has the potential to deliver a fourfold benefit, by significantly reducing the carbon emissions created by home energy use, making people's homes more comfortable and cheaper to heat, and creating jobs in the process. Our estimate of investment need in this sector looks at the cost of public grants to retrofit all fuel-poor homes in England as of the 2022 baseline data. These grants would cover

100% of the cost for fuel-poor owner-occupiers, whereas they would cover part of the cost for fuel-poor private and social renters (50% and 41%, respectively, in line with current government schemes). We assume the remaining part of the cost will be covered by private and social landlords. We estimate the number of fuel-poor homes by tenure in each local area based on DESNZ data and assumptions as outlined in Appendix 1.

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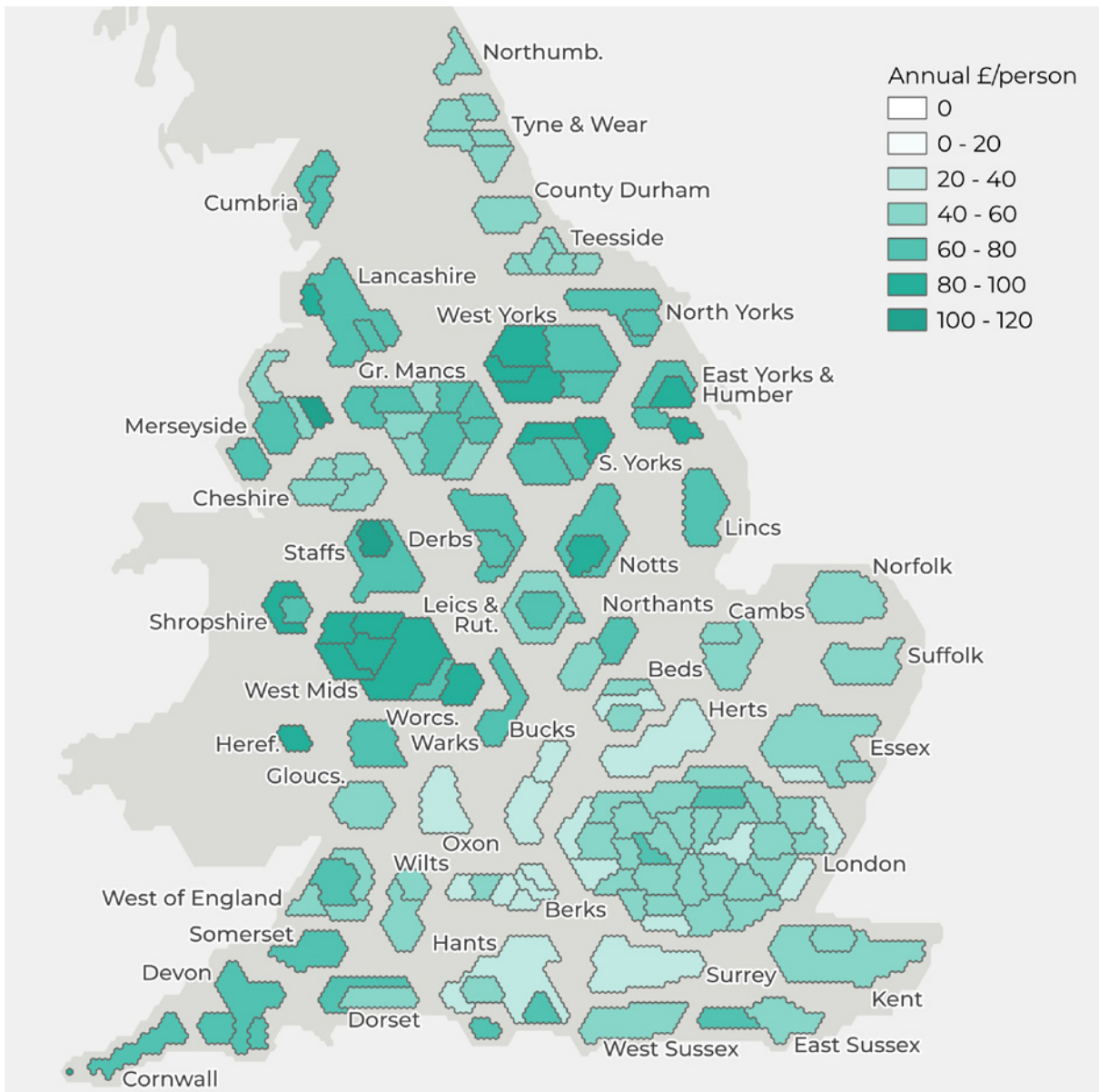
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We find that the total investment needed for retrofit across England is **£33.5bn** for the period 2025 to 2034, equivalent to £59 per person per year. Among this total investment need, £21.9bn relates to owner-occupiers (65%), with a further £8.6bn for private rented homes (26%), and £3.0bn for social rented homes (9.0%).

There is significant variation in the investment need per person per year for retrofits between regions, with the highest region at double the level of relative investment need of the lowest

region (Figure 3). This reflects the distribution of fuel poverty rates between regions, predominantly driven by differences in income and the energy efficiency of housing.⁸² The lowest investment needs per person per year are found in the south-east (£43), the east of England (£44), and London (£46), whereas the highest are in the West Midlands (£87) and Yorkshire and the Humber (£78). The regional allocations are closely correlated with differences in the share of properties in low EPC ratings.⁸³

FIGURE 3: REGIONAL PUBLIC CAPITAL INVESTMENT REQUIREMENT IN RETROFIT PER RESIDENT PER YEAR

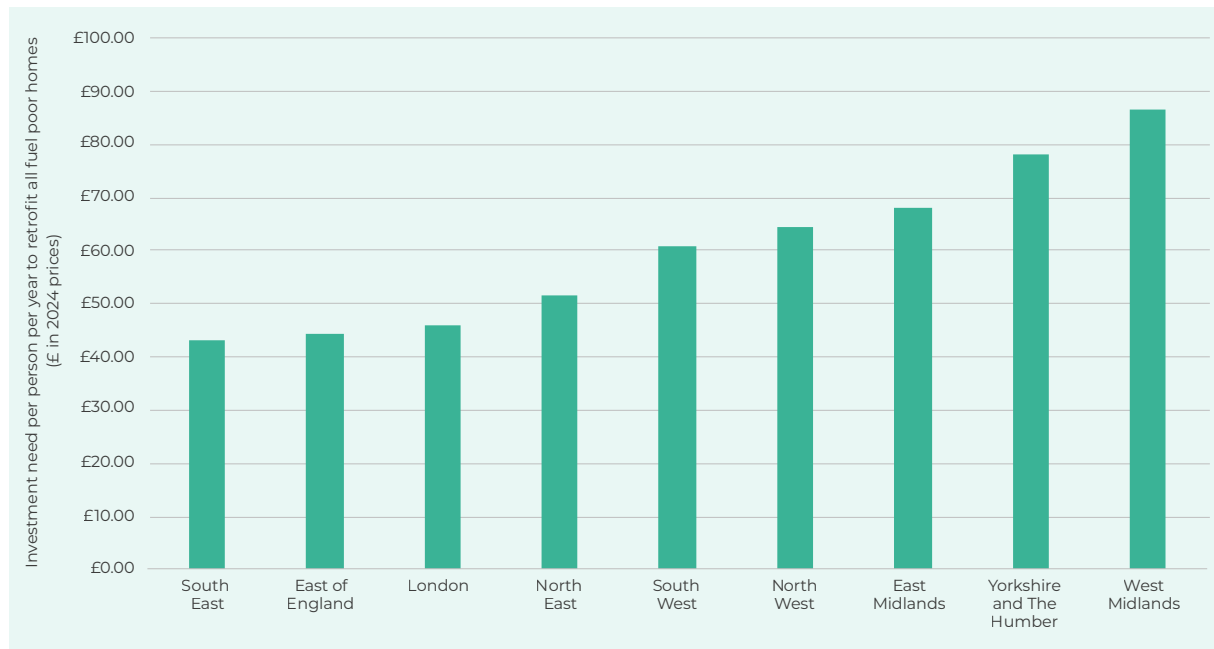


Data: NEF calculation based on English Housing Survey 2021/22,⁸⁴ DESNZ (2024),⁸⁵ ONS mid-22 population estimates,⁸⁶ and other data (Appendix 1).

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FIGURE 4: PUBLIC CAPITAL INVESTMENT REQUIREMENT IN RETROFIT FOR COUNTIES AND UNITARY AUTHORITIES, PER RESIDENT PER YEAR



Data: NEF calculation based on English Housing Survey 2021/22,⁸⁷ DESNZ (2024),⁸⁸ ONS mid-22 population estimates,⁸⁹ and other data (Appendix 1). Using House of Commons geographical templates for non-contiguous cartograms of the UK (upper-tier local authorities resized based on their population).

Looking at the more local level of counties and unitary authorities, there is further variation in investment need that is driven by fuel poverty levels (Figure 4). Areas where fuel poverty and investment need are particularly high include the local authorities that form part of the West Midlands Combined Authority, Staffordshire, West Yorkshire, Humberside, Lancashire, and South Yorkshire. Areas within London and in the surrounding counties exhibit the opposite trend.

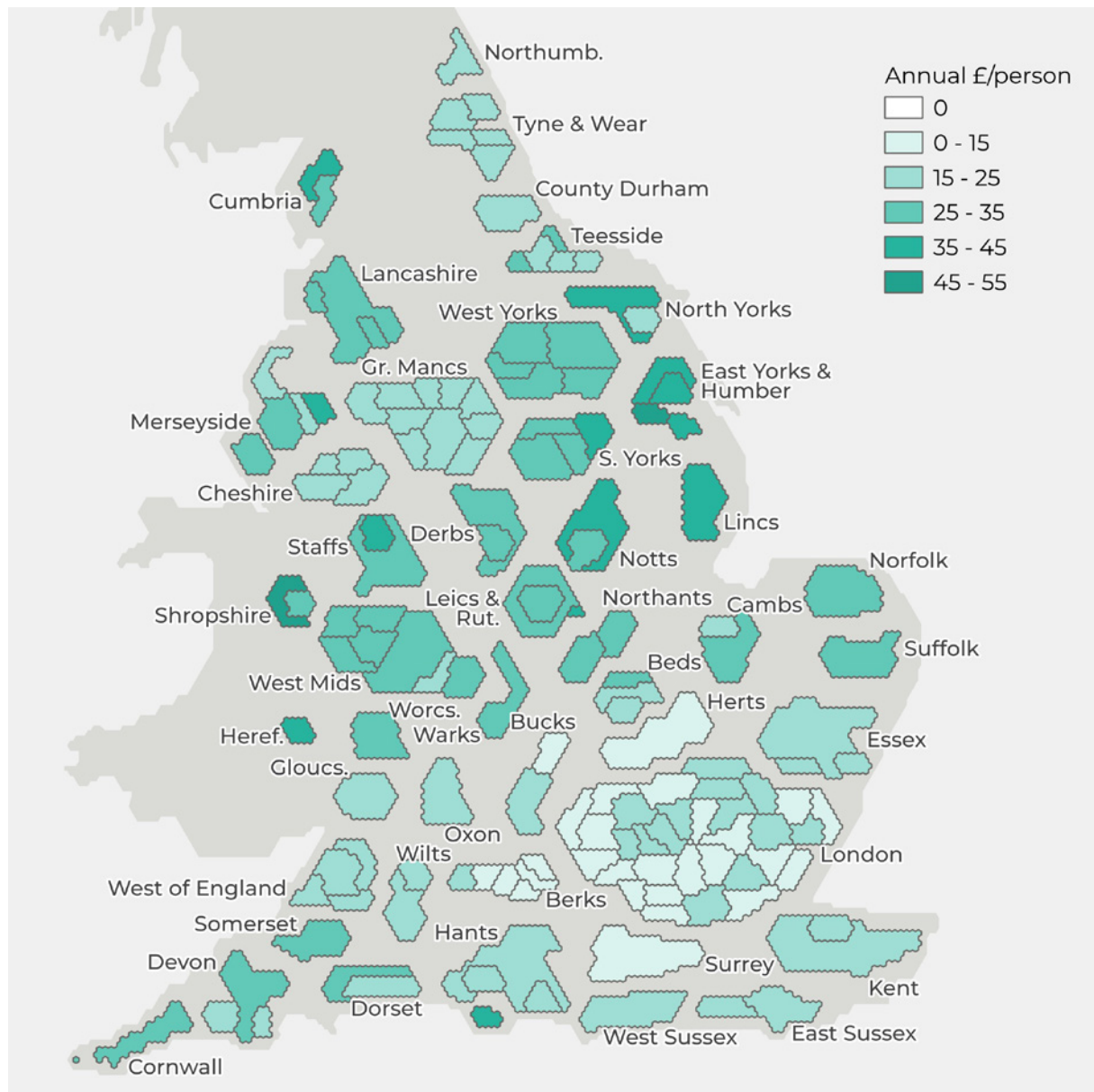
3.3 LOCAL ENERGY

Local renewable energy is an important part of our energy mix, contributing to the urgent effort to decarbonise our increasingly decentralised⁹⁰ energy system. It is also an opportunity to build community resilience and wealth by bringing down energy bills, or even helping to fund local social and community infrastructure. Many councils are already involved in municipal and community energy initiatives⁹¹ with remarkable social and economic benefits⁹² or have also embarked on creating detailed local area energy plans.⁹³ The important role of the local government and local energy communities is also clearly reflected in Labour's Local Power Plan.⁹⁴ We estimate that to meet existing commitments, the government

needs to invest **£10.1bn** in local energy projects in England between 2025 and 2034, predominantly in small-scale solar and local battery storage. Given the slow progress on renewable energy in the past few years,⁹⁵ a larger part of the investment needs to happen in the first five years to enable a significant step up in delivery. Our estimate therefore amounts to £24 per person every year between 2025 and 2029, and £11 per person per year between 2030 and 2034.

Figure 5 shows our proposed allocation of the annual public grant for the years 2025–2029 to upper-tier local authorities, on a per capita basis. The allocation reflects differences in regional energy potential for different technologies,⁹⁶ alongside the number of households in fuel poverty which we use as a joint proxy for local need and limited access to capital. By region, the highest per capita public investment under our allocation would go to the East Midlands, West Midlands, and Yorkshire (£34, £33, and £31 per person per year, respectively), but London would still receive substantial investment for urban energy projects (£15 per person per year). Some of the upper-tier local authorities with the highest per capita allocations include North Lincolnshire, North East Lincolnshire, and Lincolnshire, or Shropshire and Herefordshire.

FIGURE 5: PUBLIC CAPITAL INVESTMENT REQUIREMENT IN LOCAL ENERGY FOR COUNTIES AND UNITARY AUTHORITIES, PER RESIDENT PER YEAR



Data: NEF calculation based on DESNZ (2023),⁹⁷ EMBER (2023),⁹⁸ Future Energy Scenarios (2023),⁹⁹ Innovate UK (2023),¹⁰⁰ Regional Renewable Statistics,¹⁰¹ Renewable Energy Planning Database,¹⁰² ONS mid-22 population estimates,¹⁰³ and other data (Appendix 1). Using House of Commons geographical templates for non-contiguous cartograms of the UK (upper-tier local authorities resized based on their population).

Our estimates are based on EMBER’s Delivering commitments scenario¹⁰⁴ consistent with the UK meeting current government renewable energy targets and National Grid’s Leading the way pathway. Alongside the rapid expansion of offshore wind, the scenario assumes reaching 50 GW solar across the UK by 2030 and 70 GW by 2035, a limited increase in onshore wind capacity, and a very large expansion of battery storage capacity.

Of the additional generation and storage capacity needed by 2030 and 2035, we assume a different share for each technology will come from local small- or medium-scale assets that fall within the purview of the local rather than the national government. The local shares assumptions are based on recent trends and existing research and form the basis of our investment requirement calculation. We also use existing estimates of the share of investment for each technology that will

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need to come from the public sector, published by Innovate UK,¹⁰⁵ and unit costs published by the Department for Energy Security and Net Zero.¹⁰⁶ The full list of assumptions, sources and model inputs is provided in Appendix 1.

3.4 TRANSPORT

Transport is a key foundation for a successful economy, an important part of people’s daily experience of spatial inequality and a sector that will require major investment and transformation to adequately face up to the climate emergency and close the gaps in living standards and opportunity across England. In this section, we estimated the public capital investment needed in transport across several modes, including rail, buses, light rail (eg trams), active travel (walking, wheeling, and cycling), and local road maintenance. The investment gaps we quantify are indicative of what is needed to drive the kind of substantial modal shift away from private car journeys and towards public transport and active travel that will be needed for net zero.

The methodology we use to derive these estimates differs slightly for each transport mode. For rail, bus, and light rail, we use local data to geographically allocate existing estimates from Transport for Quality of Life.¹⁰⁷ The starting point for our active travel estimates is a recent study by IPPR,¹⁰⁸ and the local road maintenance estimates draw on a report by the Asphalt Industry Alliance.¹⁰⁹ For full details on the costing methodology for each transport mode, see Appendix 1.

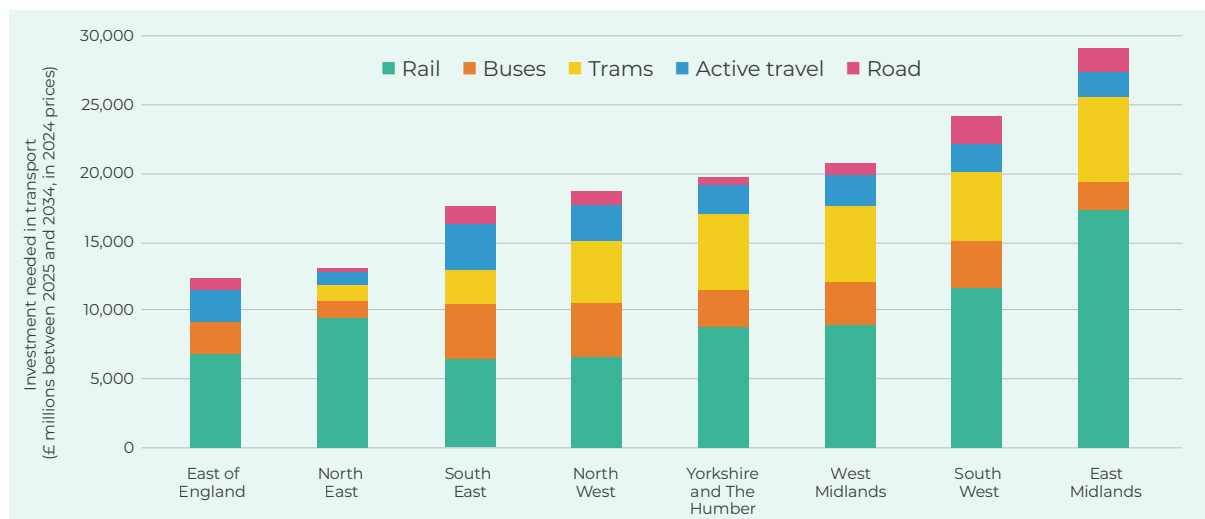
We estimate a total investment in transport of **£155.7bn** will be needed between 2025 and 2034 in English regions outside London, equivalent to £323 per person per year. The largest single mode among this investment total is rail, which at £76.4bn over the decade accounts for 49% of the total, followed by light rail at £30.6bn (20%), buses at £22.6bn (15%), active travel at £17.4bn (11%), and road maintenance at £8.7bn (6%).

Rail and light rail investment are the largest drivers of variation in total investment need by region (Figure 6).

The total investment required is highest in the East Midlands at £29.1bn, which receives by far the largest quantity of rail investment (£17.4bn). On the other hand, the east of England has the lowest investment total of the regions modelled, due to a relatively low total investment need for rail and buses compared with other regions and the absence of any existing tram networks or cities large enough to be included in our proposed new tram networks.

When converted to the investment needed per person per year, the regional variation changes somewhat (Figure 7). While having the smallest regional population, the northeast has among the highest investment needs per person, driven in particular by rail investment need. Investment need per person per year in the south-east are the lowest of the regions covered.

FIGURE 6: REGIONAL INVESTMENT NEEDED IN TRANSPORT 2025-34 (£ MILLION, IN 2024 PRICES)

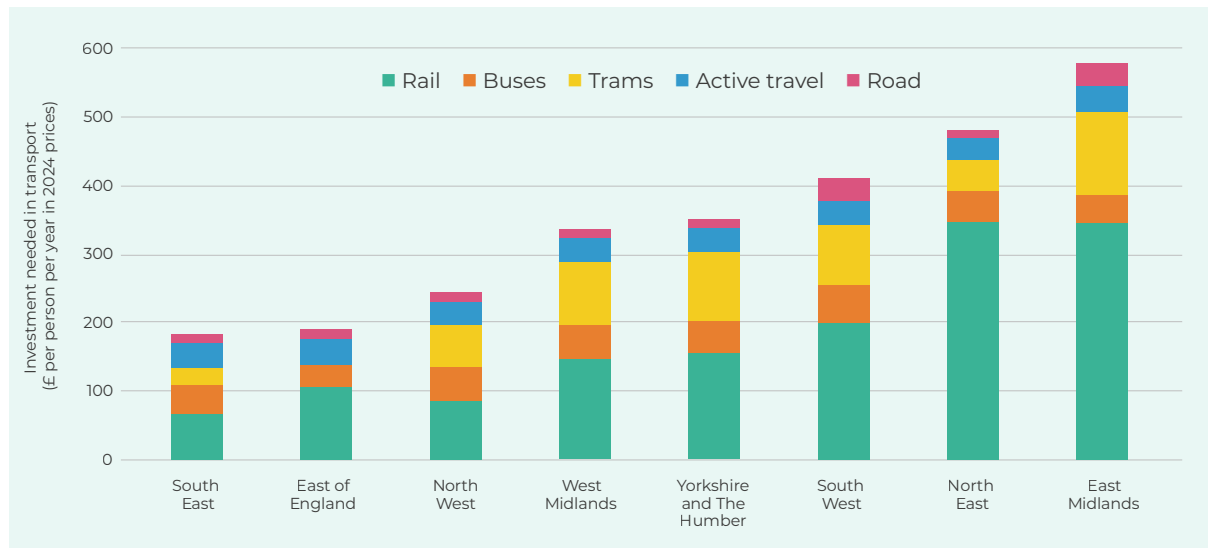


Data: NEF calculation based on TUC (2023),¹¹⁰ IPPR (2024),¹¹¹ Asphalt Industry Alliance (2024),¹¹² and other data (Appendix 1).

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FIGURE 7: REGIONAL INVESTMENT NEEDED IN TRANSPORT 2025-34 (£ PER PERSON PER YEAR, IN 2024 PRICES)

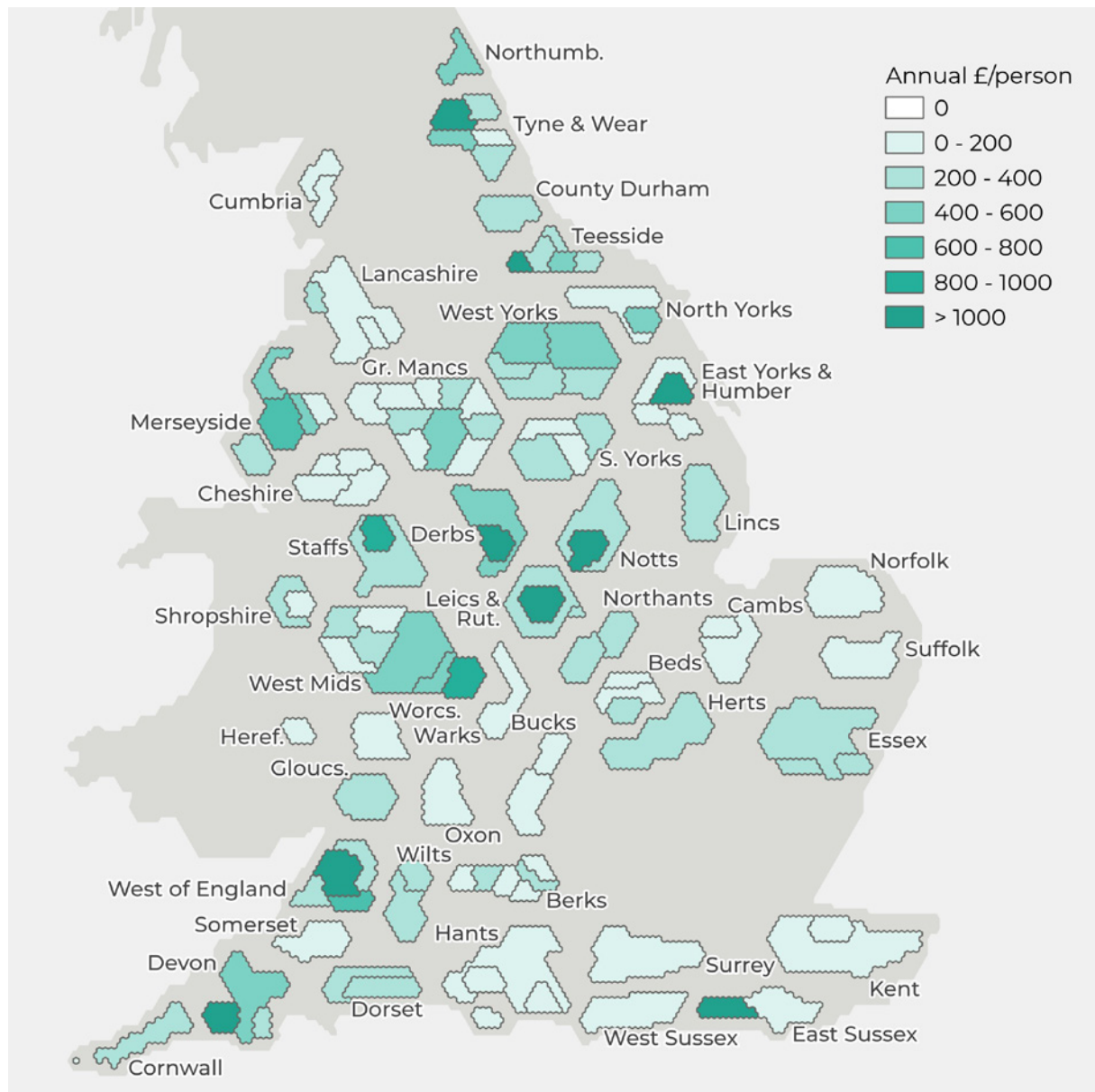


Data: NEF calculation based on TUC (2023),¹¹³ IPPR (2024),¹¹⁴ Asphalt Industry Alliance (2024),¹¹⁵ and other data (Appendix 1).

The variation in transport investment need among counties and unitary authorities (Figure 8) to some extent reflects the regional picture, with many local areas of the south-east and the east of England having below average investment need per person per year (below £200). The ten cities proposed for new light rail networks are visible as hotspots of high investment need (in many cases more than £1,000 per person per year) as are the areas with especially high rail investment per capita: Newcastle upon Tyne, Darlington, and Nottingham. Bus investment need per capita is highest in the major cities and the south-west, but notably low in the east of England.

There are several important related policy choices that are not covered by our outline investment package but will be important considerations in achieving the kind of modal shift and decarbonisation we envisage. These include the potential to reallocate existing funding from unsustainable projects such as highway expansion to fund part of the investment need, decisions over the public or private ownership of transport and how services are managed and operated, other policies to encourage modal shift such as local traffic-reduction measures or taxation levers, and the role of planning and the location of new housing in facilitating or preventing low-carbon travel patterns.

FIGURE 8: PUBLIC CAPITAL INVESTMENT REQUIREMENT IN TRANSPORT FOR COUNTIES AND UNITARY AUTHORITIES, PER RESIDENT PER YEAR



Data: NEF calculation based on TUC (2023),¹¹⁶ IPPR (2024),¹¹⁷ Asphalt Industry Alliance (2024),¹¹⁸ and other data (Appendix 1). Using House of Commons geographical templates for non-contiguous cartograms of the UK (upper-tier local authorities resized based on their population).

3.5 THE SPATIAL PATTERN OF OVERALL INVESTMENT NEED

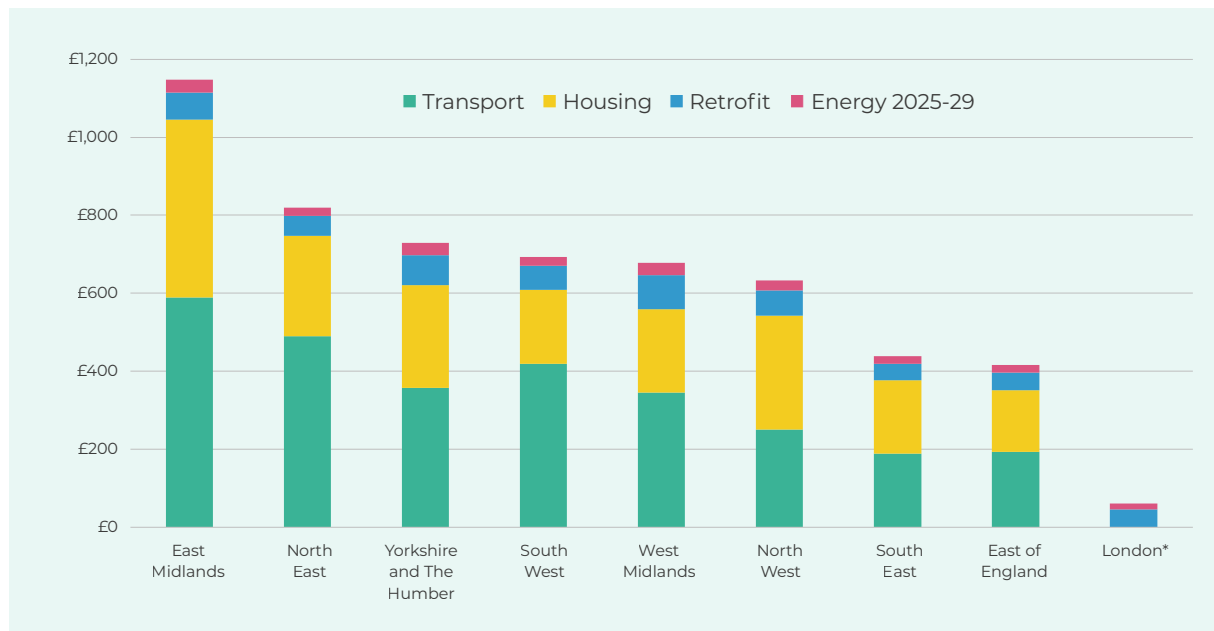
Total combined investment need in the four sectors covered in this chapter vary significantly between English regions outside London (Figure 9). Expressed in terms of additional public investment need per person per year, the East Midlands has by far the highest requirement at £1,148, with

the northeast being the next highest at £820. Investment need per person per year is relatively lower in the south-east and the east of England. While London is shown for completeness, it is not possible to fully compare it with the other regions as we were unable to model its transport investment need.

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FIGURE 9: ESTIMATED ADDITIONAL PUBLIC INVESTMENT NEEDED PER PERSON PER YEAR FROM 2025 TO 2029, BY REGION AND SECTOR



Data: NEF modelling and other sources as per sections 3.1-3.4 of this report.

Our modelling suggests that the investment need in transport and housing are far larger than the investment need in the other two sectors (even when the higher investment levels of the initial five years are used in the local energy sector). As a result, these are the biggest drivers of the total regional figures shown in Figure 9. The East Midlands has the highest investment need per person per year in both transport (£590 compared with £194–£489 in the other regions). The south-west emerges with a high transport investment need but a relatively low housing investment need, while the opposite is found for the northwest in these two sectors.

The pattern of total investment need at the level of counties and unitary authorities reinforces the region-level picture, but there is also substantial intra-regional variation (Figure 10). Transport

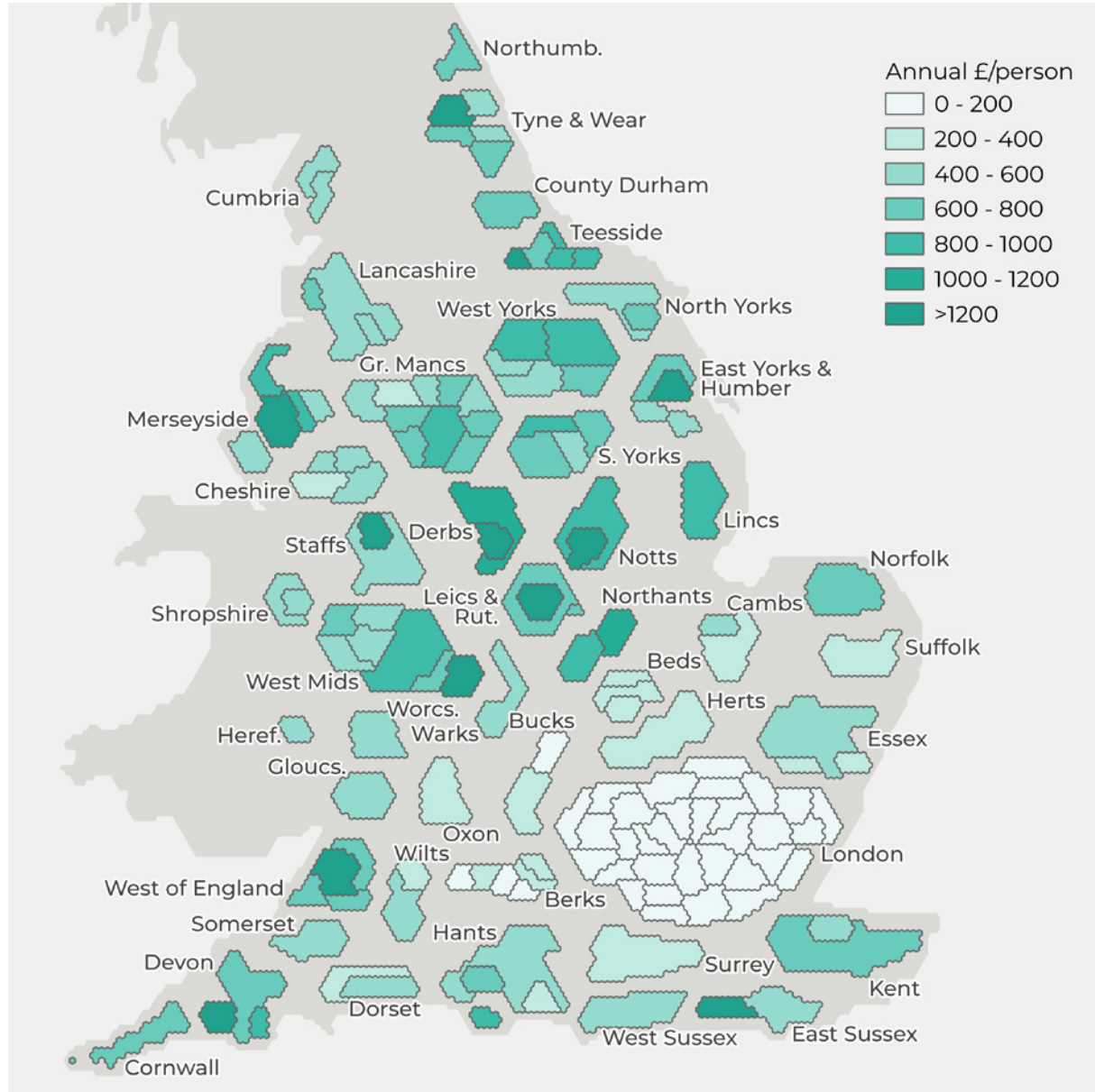
investment need is highly concentrated in larger cities, reflecting their larger share of the existing ridership of rail and buses and our proposal for ten new light rail networks in urban areas. Light rail is a key driver of the high total investment need in places like Hull, Plymouth, Bristol, and Coventry.

Housing investment need is high in nearly all the local areas within the East Midlands, Teesside, and South Yorkshire, as well as Merseyside and parts of Greater Manchester, driving up total investment need in those areas. The few areas of the south-east and east of England with moderate rather than low total investment need are hotspots of high housing investment need within wider regions with low housing public investment need according to the model. These areas include the Isle of Wight, Norfolk, Southampton, and Kent.

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FIGURE 10: PUBLIC CAPITAL INVESTMENT REQUIREMENT IN HOUSING, RETROFIT, LOCAL ENERGY AND TRANSPORT FOR COUNTIES AND UNITARY AUTHORITIES, PER RESIDENT PER YEAR (2025–2029)



Data: NEF modelling and other sources as per sections 3.1-3.4 of this report. Using House of Commons geographical templates for non-contiguous cartograms of the UK (upper-tier local authorities resized based on their population).

3.6 INVESTMENT NEED RELATIVE TO RECENT PUBLIC CAPITAL INVESTMENT OUTTURNS

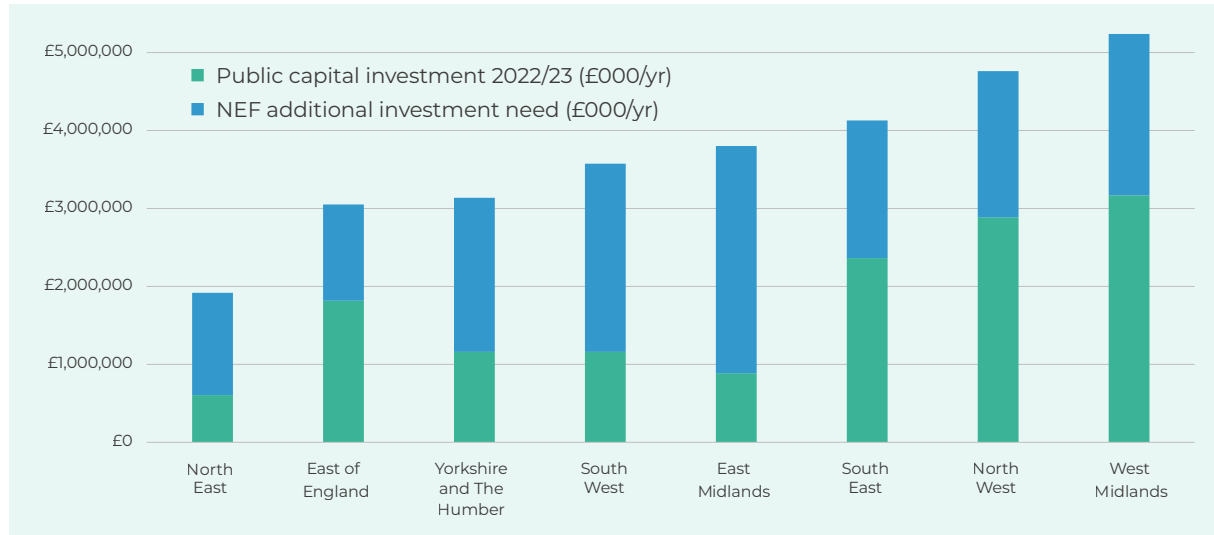
This chapter has estimated the scale of the public investment that would be needed in key sectors to meaningfully take on the wide spatial inequalities across England and achieve what recently was known as levelling up. This would be a monumental challenge and something that would take a generation to see through. The total additional public investment need in our four sectors across England would be £32.0bn

per annum in the initial five years, which is equivalent to 1.2% of 2024 nominal GDP for the UK. Comparing the challenge and the investment needed to German reunification is apt and is supported by our findings. Expenditure on the Aufbau Ost programme to close the gap between East and West Germany totalled approximately €2tn since 1990. The annual investment made by that programme in infrastructure, business support, and financing was equivalent to around £30bn per annum.¹¹⁹

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FIGURE 11: ADDITIONAL TRANSPORT INVESTMENT IN OUR PROPOSED PACKAGE, COMPARED WITH ACTUAL PUBLIC CAPITAL INVESTMENT IN TRANSPORT (EXCLUDING NATIONAL ROADS) BY REGION (£000 PER YEAR, 2024 PRICES)



Source: HM Treasury (2023)²⁰³ and NEF modelling and existing research (Appendix 1).

HM Treasury’s Country and regional analysis data gives us an indication of public capital expenditure in recent years by sector and English region, allowing our new estimates of investment need to be compared with recent outturns.¹²⁰

Total public capital spending in England in 2022–23 was £71.2bn, of which £53.4bn occurred outside London. This represented an increase on other recent non-pandemic years when it totalled between £52bn and £60bn (£40–45bn outside London). A substantial part of this total went to sectors that are outside the scope of this report, such as health (13% of the 2022–23 total), education (12%), science and technology (8%), and enterprise and economic development (5%).

Transport is the largest sector for public capex at £25.4bn in England in 2022–23 (£17.7bn outside London, 2024 prices), or one-third of the total. Figure 11 shows public capital investment in transport, excluding national roads, compared with our estimates of additional public investment need per year (both excluding London). The package of transport investments that we propose, which would cost £15.6bn per annum outside London, would require more than doubling the 2022–23 outturn of £14.0bn invested in the non-London English regions (2024 prices). At the regional level, this implies that investment would need to rise by 65%–75% in the West Midlands, north-west, south-east, and east of England, and to nearly triple in Yorkshire and the Humber. We estimate that the

south-west and north-east would need more than triple their current level of annual public investment in transport, while the equivalent annual public investment in the East Midlands would need to rise to 4.3 times its 2022–23 level.

Housing and community amenities accounted for £10.0bn of public capex in 2022–23 (13% of the English total, 2024 prices), of which £5.7bn was outside London. This made up a much larger share of all public investment in London (23%) than it did in the rest of England (10%). The part specifically invested in housing (albeit this includes a significant housing maintenance component) was £8.3bn in England, of which £4.5bn was outside London (2024 prices). If we treated the required level of grant in Bramley’s modelling – a total of £11.8bn per annum outside London – as additional, this would imply raising the combined public investment in housing outside London 3.6 times its 2022–23 outturn of £4.5bn (Figure 12).

A more rigorous approach would be to look at newbuild investment only and to acknowledge the existing grant funding. According to John Perry’s overview,¹²¹ between 2021–21 and 2024–25 the government committed on average £2.3bn per year in grants to delivering new housing at social and ‘affordable’ rent or low-cost homeownership, and an additional £1.7bn in support to housebuilding in the private market via schemes such as the Brownfield Land Release Fund. While we do

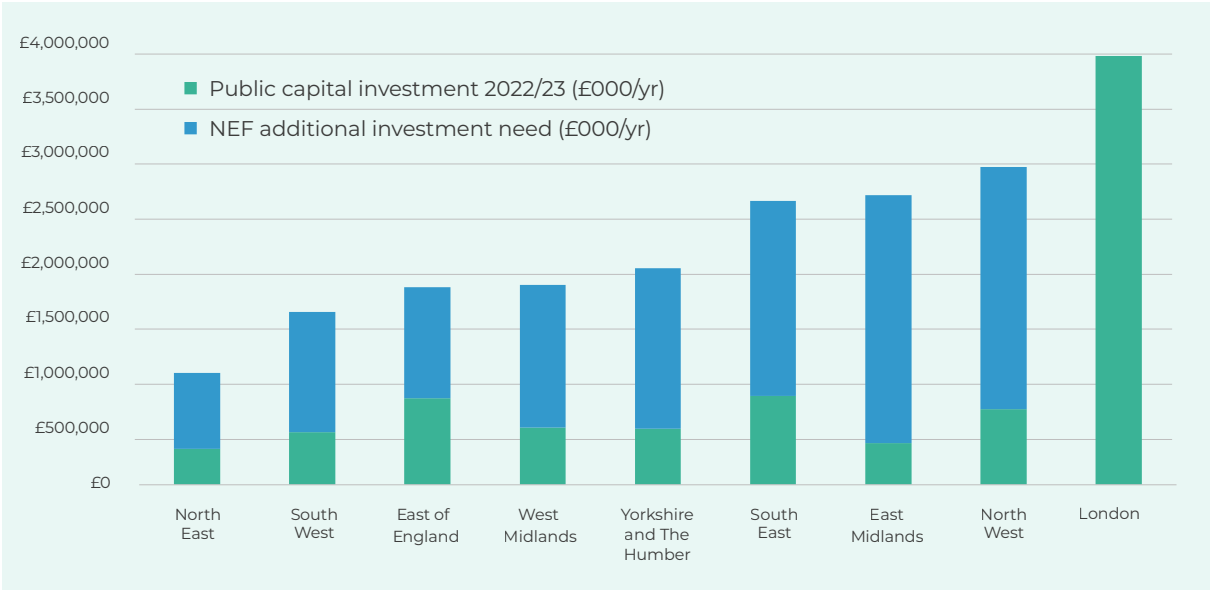
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not have comprehensive data on the regional allocations of all government schemes, we know that 35.1% of the single largest fund, the Affordable Homes Programme 2021–26, was allocated to London and administered by the Greater London Authority (GLA).¹²² If we assume the same split between London and the rest of England for all housing funds, this would suggest that the current annual public grant allocated to newbuild housing (affordable and private) outside London is in the region of roughly £2.6bn. To get to the required £11.8bn per annum would therefore imply rising committed newbuild investment outside London 4.5 times.

The size of the transport and housing investment gaps highlights the inadequate scale of recent

government initiatives aimed at closing regional inequalities. The three key funds supporting levelling up – the Towns Fund, the Levelling Up Fund, and the UK Shared Prosperity Fund – provided just £11.3bn and spanned six years,¹²³ equivalent to a sum of £1.89bn per annum in 2024 prices. This would not be sufficient to cover any of the sectors that we have modelled other than local energy and would fund only three weeks of the annual investment under the transformative, four-sector investment package that we have proposed. This highlights that the level of funding and ambition applied to the Levelling Up programme of 2019 to 2026 was never sufficient to meaningfully transform local economies and improve people’s opportunities in life across England.

FIGURE 12: ADDITIONAL SOCIAL HOUSING INVESTMENT IN OUR PROPOSED PACKAGE, COMPARED WITH ACTUAL PUBLIC CAPITAL INVESTMENT IN HOUSING DEVELOPMENT BY REGION (£000 PER YEAR, 2024 PRICES)



Source: HM Treasury (2023)¹²⁴ and NEF modelling and existing research (Appendix 1).

4. KEY CONSIDERATIONS FOR FISCAL REFORM

After years of underinvestment, England is running on borrowed time. New investment in foundational infrastructure is long overdue, and much of it will fall within the purview of local and regional governments. However, the UK is an international outlier¹²⁵ with one of the lowest shares (28%)¹²⁶ of public investment accounted for by local government,¹²⁷ fourth lowest in the OECD after Chile, Türkiye, and Hungary. If the government is serious about devolution, this will change – but there is little clarity on what the new fiscal arrangement will look like. In this report, we have mostly focused on the size of the investment gap, but how this gap should be filled is of fundamental importance. We now briefly set out some of the main considerations for a better-designed system.

Public and private investment: In our public investment requirement modelling, we assume a slightly different role for private investment in each area – for example, we assume considerable private investment in local energy (especially larger projects), largely reflecting current industry expectations. In other areas like transport, private investment might seem a tempting option in the context of perceived public finances scarcity, but there are at least two reasons to caution against excessive reliance on private investment:

- First, reliance on private investment will reinforce current inequalities in provision and concentrate in London and large agglomerations¹²⁸ where the highest profits can be realised due to the strength of demand (transport) or high property values (retrofit). Public investment will be needed to unlock the significant positive externalities from investing in foundational infrastructure outside London and other big cities.

- Second, foundational infrastructure requires long-term planing and patient investment. Cautionary tales, like those of the UK's rail or water infrastructure,¹²⁹ clearly demonstrate some of the risks of extractive and short-term logic of private finance in the context of public services.

Funding a national investment programme:

Public investment in the UK has been persistently low by international standards. Since 1990, the UK would need to have invested £1.9tn more¹³⁰ to match the OECD average rate of public investment. To fund the significant public investment that the UK desperately needs will require some rethinking of public finances. There is a strong case for raising more revenue through progressive taxation, but part of the public investment could also be responsibly funded by public borrowing. The case for borrowing-funded investment is particularly strong in areas like retrofit and energy, which have particularly high and long-lasting multiplier effects.¹³¹ This would require a review of the government's self-imposed fiscal rules, for example by moving to a system of fiscal referees,¹³² or, as a bare minimum, exempting public investment¹³³ from the rules.

Design of government capital funds:

A significant proportion of public capital investment in England comes in the form of central government grants awarded to local and combined authorities. Recent experiences with the various levelling up funding schemes brought to attention common design flaws¹³⁴ – capital grants have tended to be awarded on a competitive basis, which wastes local government capacity and can result in a misallocation of funds compared to need. Grants have tended to be one-off and often need to be spent quickly, with little space for long-term strategic planning. Often, grants have been awarded by the central government for specific projects or are linked to prescriptive outcomes and evaluation principles, giving local authorities little discretion over local development priorities. In response, sectoral organisations are calling for a single pot of capital funding¹³⁵ awarded to local and combined authorities as part of cross-departmental, multi-annual, placed-based funding settlements.¹³⁶

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Enabling funding: Local government capacity has been eroded over many years, starting with the diminished role of local authorities in housing and housing delivery since the 1980s.¹³⁷ The past 14 years of austerity have disproportionately affected local authority budgets and resulted in the hollowing out of essential local government capacities including economic development and planning.¹³⁸ To avoid the repetition of recent failures, including the various levelling-up schemes, capital investment needs to come hand in hand with re-building local government capacity and substantial enabling revenue funding.

Responsiveness to need: Throughout this report, we have illustrated that the current capital funding allocation has often reinforced rather than alleviated regional inequalities and have made the case for a more spatially progressive allocation. A longer-term consideration is the responsiveness of capital funding to changes in need. Both capital and revenue funding mechanisms face a trade-off between responsiveness to changes in local need and stability and predictability over time. A prominent feature of local government funding changes over the past two decades has been the removal of regular needs assessment, which has over time contributed to the misallocation of resources with regard to need¹³⁹ and worked against levelling up. Looking forward, a need-responsive design of the main capital and revenue funding streams could make a better contribution to regional development than the attempts to compensate for the misallocation of main funding sources by ad hoc regional development programmes such as those we have seen recently. In addition, however, it will also be important to complement need-responsive funding with a coherent, longer-term, spatially targeted industrial strategy to provide certainty over the long-term economic future of regions.

Fiscal devolution: By international standards, the UK is extremely fiscally centralised compared to other unitary states,¹⁴⁰ with very low levels of local and regional government revenue, expenditure, and investment. Giving local and regional governments greater powers and discretion over local taxation and the retention of locally raised revenue, as well as expenditure, has obvious merits in expanding the scope of local democracy. A common economic argument for the retention of local revenues has

been that of giving local councils stronger financial incentives to grow local economies and thus expand the tax base. This argument has been well rehearsed as part of the business rates retention discussion,¹⁴¹ but there is limited empirical evidence about the impact this has had in practice.¹⁴² Nonetheless, there is a strong argument for fiscal devolution specifically concerning funding local investment, as greater discretion over local taxation allows local councils to borrow against future revenue streams. This would considerably expand local councils' ability to raise funds for investment, either from the Public Works Loan Board and municipal bonds or via tax increment financing.¹⁴³

However, implementing such an investment programme requires addressing the structural challenges that have constrained public investment in recent years and decades. This report outlines some of the main issues with the current funding structures (Chapter 2) and provides key considerations and principles for the necessary fiscal reform (Chapter 4).

The methodology and assumptions behind our estimates are laid out in Appendix 1. Appendix 2 contains the annual totals for county and unitary authority.

Fiscal equalisation: A greater degree of fiscal devolution needs to be accompanied by a stronger redistribution mechanism to balance the differential revenue-raising abilities in different parts of the country. Strong fiscal equalisation mechanisms are a common feature of many more devolved fiscal systems,¹⁴⁴ often taking the form of central government grants or horizontal transfers that top up tax revenues in the parts of the country with structurally smaller tax bases. At present, however, the UK has a weak redistributive system by international standards,¹⁴⁵ and this would need to change with more advanced fiscal devolution.

5. CONCLUSION

To tackle geographical disparities in the quality of everyday infrastructure and to address the climate and nature emergencies, we need a significant increase in public investment. With English devolution high on the political agenda, the responsibility for reversing the decades of underinvestment that have brought us to this point will increasingly fall to local leaders.

In this context, this report provides localised estimates of the required public capital investment across England in four critical areas that form the foundation of a good life and fall within the purview of devolved and local authorities: housing, retrofit, transport, and local energy (Chapter 3). These estimates are based on both new research presented here for the first time and, in some areas, existing, well-regarded studies.

Across these four sectors, our estimated investment need totals £32.0bn per annum, with the East Midlands, the north-east, and Yorkshire and the Humber receiving the largest per capita boost. This level of investment would be transformative, and while ambitious, it is comparable in scale to the annual investments made to close the gap between East and West Germany.

APPENDIX 1: METHODOLOGY FOR INVESTMENT NEED ESTIMATES

HOUSING

For the methodology and assumptions behind the housing subsidy requirement estimates, see Professor Glen Bramley's recent article in the UK Housing Review¹⁴⁶ and a more detailed technical report.¹⁴⁷ The estimates are based on calculations for 102 housing market areas which have been further apportioned to local authority areas for this report.

RETROFIT

Our estimate of the investment required to retrofit all fuel-poor homes is based on original modelling by NEF, drawing on high-quality publicly available input data. The model is categorised into three tenures: owner-occupied homes, private rented sector homes, and social homes.

We first estimate the cost per home of a retrofit, which includes fabric upgrades to achieve EPC rating C and the installation of a low-carbon heat system. For fabric upgrade costs, we apply the average cost of upgrading a home to EPC C by tenure from the English Housing Survey 2021/22,¹⁴⁸ uprated to 2024 prices using consumer price index (CPI) inflation.¹⁴⁹ To estimate the cost for social homes, we use the average cost for council homes and housing association homes. For low-carbon heating, we apply the average government contribution value towards low-carbon heating systems (including heat pumps, biomass boilers, solar thermal, electric storage heating, and district heating systems) from Home Upgrade Grant 2 data (July 2023 to April 2024, uprated to 2024 prices) as an estimate of cost in 2025.¹⁵⁰ We then assume that the cost per home of installing a low-carbon heat system falls to achieve parity with the cost of a gas boiler by 2030 (£3,252 per home in 2030 prices) to meet the ambition of cost parity between boilers

and heat pumps outlined in the UK Heat and Buildings Strategy.¹⁵¹ This is a bold assumption, but not beyond the realm of possibility.¹⁵²

The total retrofit cost per home is estimated for each tenure and in each calendar year between 2025 and 2034. Public grants would cover 100% of the cost for fuel-poor owner-occupiers, whereas they would cover part of the cost for private renters (50%) and social renters (41%):

- As of September 2023, the credit ratings agency Moody's estimated that public funding allocated to date under Waves 1 and 2 of the Social Housing Decarbonisation Fund (SHDF) covered 41% of the cost of retrofitting the 110,000 homes in question, with the remaining costs expected to be met by social landlords, including by increasing their borrowing.¹⁵³ Similarly, the successful bids under Wave 2.1 of the SHDF received public grants of £778m in total, with £1.1bn of match funding, so the public funds were 41% of the total.¹⁵⁴ Based on this outturn in social housing retrofits already funded, we assume that public grants equivalent to 41% of the total retrofit cost are needed for the social housing tenure.
- Our assumption on the subsidy level for private renters is derived from the design of the recent Local Authority Delivery (LAD) phase 3 funding scheme.¹⁵⁵ Under this scheme, the average retrofit cost per property should not exceed £10,000, while the maximum average subsidy for landlords with private-rented accommodation should not exceed £5,000. We therefore assume that public grants are needed for 50% of the cost in the private rented sector, with the landlord providing the remaining funding.
- For fuel-poor owner-occupiers, we assume that they are unable to afford any of the costs of retrofit, meaning that 100% of the costs need to be covered with a public grant.

We assume that all fuel-poor homes, as of 2022 (latest local data), in each local area are retrofitted during those ten years, with an equal number of homes retrofitted in each calendar year, as a simple illustration of the total cost without consideration of the speed of deployment. We assume that new homes added over this decade will be 'future ready' and will not require retrofitting. To estimate fuel poverty rates in our three tenure categories in each

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local area, we take the total number of fuel-poor households of all tenures in that area¹⁵⁶ and then assume that the tenure split within this group is the same as for fuel-poor households across England as a whole.¹⁵⁷ This means assuming that of the fuel-poor homes in each area, 45% are owner-occupied, 36% are private rented, and 19% are social rented. We considered this to be the least inaccurate route to estimating fuel poverty by tenure within local areas, given the lack of more local data, as it gives an accurate total fuel poverty rate in each area and the investment need per person among the local population is closely correlated to the fuel poverty rate in each area.

Finally, we combine our estimated number of fuel-poor owner-occupied, private-rented, and social-rented homes in each local area with the cost per retrofit in each tenure and each year to generate a total investment need to retrofit all fuel-poor homes in each area over a decade.

LOCAL ENERGY

The estimates of public investment requirements in local energy projects are calculated separately for onshore wind, battery storage, and solar energy assets in different capacity bands using the following formula:

The assumptions and model inputs are detailed in Tables A1 to A3 and are drawn from a wide range of sources, as indicated.

Current capacity: The estimates of current solar capacity are taken from DESNZ Solar photovoltaics deployment¹⁵⁸ and DESNZ Regional Renewable Statistics¹⁵⁹ accredited official statistics. The current capacity estimates for onshore wind are taken from Regional Renewable Statistics and for battery storage from DESNZ Renewable Energy Planning Database.¹⁶⁰ Both Regional Renewable Statistics and the Renewable Energy Planning Database provide data at the local authority level.

2030 targets: 2030 capacity targets correspond to EMBER's Delivering commitments scenario.¹⁶¹ The regional split is available from EMBER's open data¹⁶² and corresponds to the National Grid's regional assumptions in Future Energy Scenarios.¹⁶³ Note that the 2030 targets include very limited expansion of onshore wind, including no new onshore wind in east of England, London, the

south-east and the south-west. This is a legacy of a policy context that has not favoured onshore wind development, and the targets might change in the future. This would result in a greater share of renewable energy from onshore wind and subsequent reallocation of some of the investment requirements.

2035 targets: The 2035 target for solar is the current government commitment in the British energy security strategy.¹⁶⁴ Onshore wind and battery capacity 2035 targets assume the National Grid Future Energy Scenarios' Leading the way growth rates on 2030 targets. The 2035 targets maintain the 2030 regional shares.

Shares considered local: Local shares for onshore wind and battery storage are directly taken from a study published in 2023 by Innovate UK.¹⁶⁵ For solar energy, we match the Innovate UK assumptions to different capacity classes of assets (Table A2).

Shares of public investment: The shares of investment for each technology that will need to come from the public sector are taken directly from the 2023 Innovate UK¹⁶⁶ study, which in turn draws on a survey of 20 sector professionals from government, academia, and consultancies. We assume that these shares apply equally to projects in all parts of the country.

Unit costs: Costs per kW for photovoltaics and onshore wind are based on the technical and cost assumptions from the Department for Energy Security and Net Zero's electricity generation costs 2023¹⁶⁷ and include pre-development, construction, and connecting infrastructure costs. The cost per kW for battery storage is not published by DESNZ and is taken directly from the Innovate UK study. All costs are uprated to 2024 prices using CPI inflation.¹⁶⁸

Localisation

- **Solar:** The total public investment requirement for local solar projects is allocated to countries based on the share of additional capacity, and within England to upper-tier local authorities proportionately to the number of fuel-poor households. The number of fuel-poor households is used as a joint proxy for local need and limited access to capital.

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- Onshore wind:** The total public investment requirement for local onshore wind projects is allocated to regions in proportion to the regional increase in capacity, and to upper-tier local authorities within regions based on current capacity. Because the total investment is limited, we assume that this will mostly include the expansion of existing sites.
- Battery storage:** The total public investment requirement for local battery storage projects is allocated to regions in proportion to the regional increase in capacity, and to upper-tier local authorities within regions based on the current distribution of solar generation capacity. This corresponds to the underlying assumptions about battery storage in the EMBER model.¹⁶⁹

TABLE A1: CAPACITY ASSUMPTIONS BY TECHNOLOGY FOR ENGLAND AND THE UK

Technology	Current Capacity (MW)	2030 Target (MW)	2035 Target (MW)
Solar (total)	12,494 England 14,597 UK	41,747 England 50,000 UK	58,446 England 70,000 UK
Solar 0 to ≤ 4 kW	2,915 England 3,405 UK	9,739 England 11,665 UK	13,635 England 16,330 UK
Solar 4 to ≤ 10 kW	702 England 820 UK	2,344 England 2,807 UK	3,281 England 3,930 UK
Solar 10 to ≤ 50 kW	1,014 England 1,184 UK	3,387 England 4,057 UK	4,742 England 5,680 UK
Solar 50 kW to ≤ 5 MW	2,951 England 3,448 UK	9,862 England 11,811 UK	13,807 England 16,536 UK
Solar 5 to ≤ 25 MW	3,503 England 4,092 UK	11,704 England 14,018 UK	16,386 England 19,625 UK
Solar > 25 MW	1,410 England 1,647 UK	4,711 England 5,642 UK	6,595 England 7,899 UK
Onshore wind	3,074 England 14,804 UK	3,196 England 31,830 UK	3,742 England 37,272 UK
Battery storage	1,774 England 2,279 UK	18,486 England 22,140 UK	21,883 England 26,209 UK

Source: NEF assumptions based on DESNZ Solar photovoltaics deployment,¹⁷⁰ DESNZ Regional Renewable Statistics,¹⁷¹ DESNZ Renewable Energy Planning Database,¹⁷² EMBER 2024,¹⁷³ National Grid Future Energy Scenarios 2023.¹⁷⁴

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TABLE A2: INVESTMENT CHARACTERISTICS AND UNIT COSTS BY TECHNOLOGY.

Technology	Share local	Share public	Unit cost (£/kW)	
			2025-2029	2030-2034
Solar 0 to ≤ 4 kW	100%	29%	1,675	1,675
Solar 4 to ≤ 10 kW	100%	29%	1,316	1,316
Solar 10 to ≤ 50 kW	100%	29%	1,077	1,077
Solar 50 kW to ≤ 5 MW	33%	24%	502	383
Solar 5 to ≤ 25 MW	33%	24%	502	383
Solar > 25 MW	0%	24%	502	383
Onshore wind	25%	19%	1,560	1,560
Battery storage	33%	24%	1,124	1,124
Other technologies	0%	N/A	N/A	N/A

Source: NEF assumptions based on Innovate UK (2023)¹⁷⁵ and DESNZ electricity generation costs 2023.¹⁷⁶

TABLE A3: TARGET INSTALLED CAPACITY SHARE BY TECHNOLOGY FOR UK COUNTRIES AND REGIONS.

Region	Solar	Battery	Onshore Wind
North-east	4%	4%	2%
North-west	9%	9%	2%
Yorkshire	9%	9%	3%
East Midlands	15%	15%	3%
West Midlands	8%	8%	0%
East	13%	13%	0%
London	1%	1%	0%
South-east	14%	14%	0%
South-west	12%	12%	0%
Wales	9%	9%	10%
Scotland	5%	5%	70%
Northern Ireland	3%	3%	10%
UK	100%	100%	100%

Source: EMBER (2024).¹⁷⁷

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TRANSPORT

Our modelling of investment need in the transport sector covers a range of sustainable modes, including trains, buses, light rail, and active travel (walking, wheeling, and cycling). In assessing what is needed, we broadly assume that a significant shift in journeys from private car use to these modes will be needed to achieve net zero and meet the challenges of the climate emergency, in line with Climate Change Committee (CCC) advice. We also include the investment needed to maintain locally managed roads to a good standard, as an important way to improve people's everyday experience of the transport system and keep the current system moving. We do not include major road projects, which tend to increase private car journeys and would contradict the aforementioned net zero mode share ambitions.

For rail, buses, and light rail, our modelling reapplies some of the detailed analysis produced in 2023 by Transport for Quality of Life (TfQoL) on behalf of the Trades Union Congress (TUC),¹⁷⁸ which estimates the number of journeys that will need to shift from cars to different modes of public transport in each non-London region of England to address the climate emergency, and then costs the capital and operational spending that will be needed to provide these journeys. This implicitly assumes that the existing ownership and operation structures remain – for example, private provision of local buses – and for this report, we leave these assumptions unchanged.

For rail investment, we take TfQoL's regional investment totals, which are based in turn on estimates from Oxford Economics and the Rail Industry Association, as a starting point.¹⁷⁹ We assume that the total investment projected for 2023–35 in those sources is delivered in our ten-year period from 2025 to 2034 and uprate the totals to 2024 prices using CPI.¹⁸⁰ We then allocate these investment totals from the regional level to the local level using data from the Office of Rail and Road on rail journeys by local authority between April 2022 and March 2023.¹⁸¹ For each local area, we sum the journeys originating there and the journeys ending there and then use this sum to estimate the relative share of rail journeys that each local authority accounts for, within their wider region. In Cumbria, where boundaries changed in 2023, we split rail

journeys between the two new subareas using the number of people commuting by train in each place in the 2021 Census.¹⁸²

For bus investment, we start from TfQoL's regional estimates, which cover public investment in additional buses and electrification, as well as additional bus priority measures. We assume that the total investment projected for 2023–35 in those sources is delivered in our ten-year period from 2025 to 2034 and uprate the totals to 2024 prices using CPI.¹⁸³ We allocate the spending on additional buses and electrification to local areas using Department for Transport (DfT) data on the kilometres travelled by bus in each area,¹⁸⁴ which is an input to the original TfQoL model. For city-regions which have Integrated Transport Authorities (ITAs), we further split the data on bus kilometres travelled to the local level in line with the number of people commuting by bus in those local areas in the 2021 Census.¹⁸⁵ This adjustment applies to ITAs in Greater Manchester, Merseyside, Tyne and Wear, South Yorkshire, West Yorkshire, and the West Midlands. We similarly split the data using Census bus commutes in areas where recent boundary changes are not reflected in the DfT data: Cumbria, North Yorkshire, and Somerset. For the other component of bus investment, bus priority infrastructure, we split the regional TfQoL totals to the local level based on the length of urban 'A' and 'B' roads in each local area.¹⁸⁶

For existing light rail networks, we model the cost of extending the six existing networks in non-London cities based on the TfQoL investment need estimates by region. We assume that the total investment projected for 2023–35 by TfQoL is delivered in our ten-year period from 2025 to 2034 and uprate the totals to 2024 prices using CPI.¹⁸⁷ We split the total for the north-west – the only region with two existing light rail networks – between Greater Manchester (89.4%) and Blackpool (10.6%) in line with their 2018–19 passenger numbers.¹⁸⁸ We allocate this investment to local areas in each case as follows:

- Greater Manchester: Based on options that are being scoped during the period 2021–26,¹⁸⁹ we allocated the investment need in the following shares: Salford (30%); Manchester and Rochdale (20% each); and Tameside, Trafford, and Oldham (10% each).

i For this calculation, we include Trunk Urban 'A', Principal Urban 'A' and Urban 'B' roads.

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- Tyne and Wear: Based on the proposals for extensions covering the Washington Loop and the short extension serving Cobalt and Silverlink,¹⁹⁰ we split this between Gateshead (40%), Sunderland (40%), and North Tyneside (20%).
- Sheffield: Based on opportunities mentioned recently by the South Yorkshire mayor,¹⁹¹ such as extensions within Sheffield and to Chesterfield, we allocate the investment between Sheffield (75%) and Derbyshire (25%).
- Blackpool: In line with the current distribution of tram stops, we split the investment evenly in half between Blackpool and Lancashire.
- Nottingham: There was a lack of clear information on extension plans for this network, but based on proposals discussed several years ago such as extensions to Gedling, Kimberly, and Eastwood,¹⁹² we allocate this to Nottingham (50%) and Nottinghamshire (50%).
- West Midlands: There was a lack of clear information on extension plans for this network other than those already under construction. We split the investment evenly between the six local areas of Birmingham, Dudley, Sandwell, Solihull,

Walsall, and Wolverhampton (16.7% each).

For new light rail networks to be constructed in the coming decade, we assume that all built-up areas in England outside London with a population of 250,000 or more in Census 2021 data will receive a new light rail network if they do not already have one. This implies ten new light rail networks, for which we estimate a cost of £2.5bn per network. This is based on a cost of £50m per km of network, which is increased from the TfQoL assumption of £40m/km to avoid underestimation and to align approximately with the recent West Yorkshire CA cost estimate for a Leeds-Bradford network (£51.3m/km).¹⁹³ We assume new networks are 50km in length, to align approximately with the average length of the six existing networks mentioned (47.75km).¹⁹⁴ This overall package aligns quite closely with the assumption used by TfQoL in their modelling of new light rail investment, that England outside London should aim to have a total length of light rail networks on par with France.¹⁹⁵ Non-London English regions would have 787km of light rail networks after our investment package, compared with the current French total of 827km.¹⁹⁶ Based on existing light rail proposals, administrative boundaries, and settlement density patterns, we allocate the investment in the new tram networks to counties and unitary authorities as per Table A4.

TABLE A4: LOCAL AREA SHARES OF NEW LIGHT RAIL INVESTMENT

New light rail network	Local areas' share of public investment
Merseyside	Liverpool (60%), Knowsley (20%), Sefton (20%)
Hull	City of Kingston upon Hull (100%)
Leeds-Bradford	Bradford (50%), Leeds (50%)
Derby	Derby (100%)
Leicester	Leicester (100%)
Stoke-on-Trent	Stoke-on-Trent (50%), Staffordshire (50%)
Coventry	Coventry (100%)
Brighton and Hove	Brighton and Hove (100%)
Plymouth	Plymouth (100%)
Bristol	City of Bristol (100%)

Source: NEF assumptions based on existing light rail proposals, administrative boundaries, and settlement density patterns.

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For active travel, we reapply an approach used recently by IPPR, who assessed 12 Local Cycling and Walking Investment Plans and the level of spending in the most ambitious other countries, to conclude that a capital investment of £35 per person per year will be needed to deliver a substantial shift in favour of walking, wheeling, and cycling.¹⁹⁷ To model this at a local level, we take the mid-2022 local population estimates as a baseline¹⁹⁸ and then apply annual population growth rates from the spring 2020 subnational forecasts¹⁹⁹ to generate a population level for each place in each year. We then calculate the investment needed to achieve £35 per capita in each place and each year from 2025 to 2034.

To estimate the investment needed in road maintenance, we re-applied estimates from the Asphalt Industry Alliance's Annual Local Authority Road Maintenance Survey Report 2024. This piece of research surveyed local authorities and estimated an annual budget shortfall of £867.1m as of March 2024 in areas of England outside London, compared with the investment they would need to make to keep their locally managed roads from deteriorating further.²⁰⁰ We reapply this annual investment need to each year from 2025 to 2034 to estimate a total investment need of £8.67bn over the decade. To split this between local areas, we estimate the length of locally maintained roads in poor condition in each place. We do this by combining the total length of locally managed roadsⁱⁱ in each area²⁰¹ with the latest available data in each place for the percentage of 'B' and 'C' roads that are in poor condition ('red' rating). We then split the total investment for England (excluding London) based on each local area's share of the total length of roads in poor condition.ⁱⁱⁱ²⁰²

ii We include all road types except for trunk motorways and trunk 'A' roads.

iii Due to gaps in the data, we take the most recent available data in each place, which varies between 2019 and 2023. In the Isles of Scilly, where no data was available during this period, we have applied the England average of 6%.

APPENDIX 2: INVESTMENT NEED ESTIMATES FOR COUNTIES AND UNITARY AUTHORITIES

TABLE A5: ESTIMATED ANNUAL PUBLIC INVESTMENT NEED FOR COUNTIES AND LOCAL AUTHORITIES.

Name	Energy 2025-29	Energy 2030-34	Housing	Retrofit	Transport
	£/year @2024 prices	£/year @2024 prices	£/year @2024 prices	£/year @2024 prices	£/year @2024 prices
Hartlepool	2,782,000	1,142,000	33,410,000	4,980,000	35,290,000
Middlesbrough	3,090,000	1,540,000	55,740,000	8,363,000	76,620,000
Redcar and Cleveland	3,316,000	1,530,000	58,440,000	7,895,000	51,320,000
Stockton-on-Tees	4,098,000	1,812,000	75,870,000	8,714,000	61,430,000
Darlington	2,874,000	1,246,000	20,920,000	5,909,000	115,300,000
Halton	2,782,000	1,370,000	37,720,000	7,381,000	15,800,000
Warrington	4,454,000	2,008,000	60,120,000	10,300,000	28,290,000
Blackburn with Darwen	4,094,000	2,064,000	40,920,000	11,267,000	20,750,000
Blackpool	4,648,000	2,476,000	40,790,000	13,890,000	34,850,000
Kingston upon Hull, City of	9,738,000	4,772,000	96,590,000	25,679,000	295,330,000
East Riding of Yorkshire	12,160,000	6,142,000	126,820,000	25,130,000	50,890,000
North East Lincolnshire	6,572,000	2,910,000	49,460,000	14,749,000	19,580,000
North Lincolnshire	8,654,000	3,468,000	40,380,000	13,175,000	17,730,000
York	4,894,000	2,380,000	26,720,000	12,758,000	110,130,000
Derby	6,876,000	3,592,000	129,290,000	19,667,000	434,700,000
Leicester	9,552,000	4,984,000	152,960,000	27,582,000	505,630,000
Rutland	1,656,000	604,000	9,800,000	2,565,000	11,820,000
Nottingham	9,348,000	4,804,000	142,510,000	26,379,000	395,200,000
Herefordshire, County of	7,684,000	3,512,000	26,130,000	17,869,000	36,810,000
Telford and Wrekin	5,726,000	2,652,000	59,490,000	13,627,000	27,630,000
Stoke-on-Trent	10,404,000	5,406,000	43,420,000	29,806,000	234,070,000
Bath and North East Somerset	3,808,000	2,080,000	6,120,000	11,552,000	133,430,000

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Name	Energy 2025-29	Energy 2030-34	Housing	Retrofit	Transport
	£/year @2024 prices	£/year @2024 prices	£/year @2024 prices	£/year @2024 prices	£/year @2024 prices
Bristol, City of	9,452,000	5,192,000	127,230,000	29,115,000	498,310,000
North Somerset	4,312,000	2,276,000	62,960,000	11,849,000	61,090,000
South Gloucestershire	4,582,000	2,398,000	76,840,000	12,279,000	83,490,000
Plymouth	6,010,000	3,290,000	70,520,000	18,340,000	320,670,000
Torbay	3,478,000	1,918,000	62,130,000	10,817,000	39,080,000
Swindon	4,642,000	2,296,000	4,310,000	10,387,000	70,260,000
Peterborough	3,596,000	1,764,000	47,490,000	9,223,000	33,990,000
Luton	3,650,000	1,978,000	-	11,113,000	51,570,000
Southend-on-Sea	3,380,000	1,828,000	-	10,259,000	55,370,000
Thurrock	2,690,000	1,300,000	-	6,726,000	47,330,000
Medway	4,964,000	2,568,000	80,930,000	14,005,000	41,100,000
Bracknell Forest	1,210,000	616,000	-	3,321,000	14,670,000
West Berkshire	2,486,000	1,130,000	-	5,556,000	18,170,000
Reading	2,602,000	1,386,000	-	7,716,000	43,760,000
Slough	1,898,000	1,020,000	-	5,713,000	24,720,000
Windsor and Maidenhead	1,872,000	962,000	-	5,222,000	31,550,000
Wokingham	2,084,000	932,000	-	4,505,000	21,860,000
Milton Keynes	4,160,000	1,870,000	-	9,108,000	31,440,000
Brighton and Hove	5,830,000	3,126,000	63,980,000	17,459,000	321,400,000
Portsmouth	4,426,000	2,360,000	16,380,000	13,128,000	31,610,000
Southampton	4,434,000	2,366,000	103,710,000	13,167,000	39,670,000
Isle of Wight	4,958,000	2,110,000	85,520,000	9,728,000	16,710,000
County Durham	12,672,000	6,116,000	105,590,000	29,116,000	183,040,000
Cheshire East	9,842,000	4,260,000	97,110,000	21,300,000	64,860,000
Cheshire West and Chester	8,576,000	3,944,000	33,290,000	19,170,000	60,180,000
Shropshire	16,378,000	6,420,000	56,120,000	28,799,000	79,300,000
Cornwall	17,734,000	8,960,000	204,050,000	42,630,000	182,310,000
Isles of Scilly	62,000	34,000	1,000,000	189,000	170,000
Wiltshire	12,298,000	6,024,000	61,480,000	26,667,000	148,270,000
Bedford	4,954,000	1,932,000	7,990,000	8,036,000	27,220,000
Central Bedfordshire	5,354,000	2,338,000	6,920,000	11,034,000	37,950,000
Northumberland	7,546,000	4,196,000	64,320,000	16,875,000	139,500,000
Bournemouth, Christchurch and Poole	8,150,000	4,352,000	49,970,000	23,196,000	123,000,000
Dorset	9,740,000	4,926,000	13,740,000	23,476,000	95,730,000

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Name	Energy 2025-29	Energy 2030-34	Housing	Retrofit	Transport
	£/year @2024 prices	£/year @2024 prices	£/year @2024 prices	£/year @2024 prices	£/year @2024 prices
Buckinghamshire	9,362,000	4,208,000	-	20,469,000	86,260,000
North Northamptonshire	12,362,000	5,338,000	248,880,000	22,220,000	132,320,000
West Northamptonshire	13,272,000	5,706,000	192,590,000	24,333,000	166,530,000
Cumberland	9,896,000	4,600,000	80,730,000	19,678,000	46,280,000
Westmorland and Furness	7,942,000	3,468,000	33,860,000	16,255,000	40,450,000
North Yorkshire	24,696,000	10,066,000	87,070,000	47,128,000	118,560,000
Somerset	14,928,000	7,606,000	73,480,000	36,869,000	113,820,000
Bolton	7,280,000	3,572,000	35,940,000	19,236,000	43,110,000
Bury	4,026,000	2,078,000	78,440,000	11,472,000	18,360,000
Manchester	13,768,000	7,072,000	198,850,000	38,962,000	249,060,000
Oldham	5,584,000	2,850,000	59,800,000	15,646,000	41,820,000
Rochdale	5,480,000	2,746,000	58,980,000	14,913,000	66,110,000
Salford	5,714,000	2,888,000	97,830,000	15,771,000	95,060,000
Stockport	6,256,000	3,078,000	122,380,000	16,600,000	53,420,000
Tameside	5,774,000	2,796,000	93,650,000	14,948,000	47,970,000
Trafford	4,378,000	2,192,000	94,290,000	11,931,000	43,730,000
Wigan	7,802,000	3,836,000	95,620,000	20,665,000	41,400,000
Knowsley	3,578,000	1,726,000	57,120,000	9,191,000	76,680,000
Liverpool	13,306,000	6,962,000	178,110,000	38,694,000	367,590,000
St. Helens	6,482,000	3,366,000	55,090,000	18,619,000	27,750,000
Sefton	4,382,000	2,248,000	105,560,000	12,032,000	134,500,000
Wirral	8,142,000	4,260,000	28,180,000	23,681,000	80,690,000
Barnsley	7,958,000	3,988,000	138,370,000	20,750,000	43,410,000
Doncaster	10,988,000	5,258,000	125,690,000	26,375,000	67,570,000
Rotherham	7,806,000	3,902,000	57,500,000	20,565,000	32,850,000
Sheffield	15,092,000	7,698,000	122,650,000	42,284,000	221,090,000
Newcastle upon Tyne	5,562,000	2,788,000	69,780,000	15,186,000	410,990,000
North Tyneside	3,736,000	1,760,000	54,190,000	9,271,000	43,860,000
South Tyneside	3,056,000	1,482,000	39,880,000	7,921,000	14,720,000
Sunderland	6,302,000	2,870,000	61,030,000	14,445,000	93,970,000
Birmingham	36,214,000	19,672,000	249,840,000	111,133,000	574,790,000
Coventry	10,752,000	5,798,000	86,450,000	32,628,000	340,310,000
Dudley	9,352,000	5,024,000	59,570,000	28,217,000	57,380,000
Sandwell	10,324,000	5,570,000	56,260,000	31,357,000	87,090,000
Solihull	4,690,000	2,482,000	52,000,000	13,821,000	92,070,000

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Name	Energy 2025-29	Energy 2030-34	Housing	Retrofit	Transport
	£/year @2024 prices	£/year @2024 prices	£/year @2024 prices	£/year @2024 prices	£/year @2024 prices
Walsall	8,472,000	4,572,000	89,930,000	25,745,000	47,210,000
Wolverhampton	8,938,000	4,736,000	65,060,000	26,400,000	70,690,000
Bradford	15,612,000	8,148,000	93,820,000	45,189,000	289,990,000
Calderdale	6,322,000	3,398,000	23,190,000	17,815,000	55,530,000
Kirklees	12,586,000	6,404,000	97,560,000	35,056,000	94,170,000
Leeds	21,398,000	10,878,000	252,030,000	59,349,000	482,830,000
Wakefield	9,970,000	4,846,000	122,820,000	25,945,000	76,340,000
Gateshead	3,692,000	1,822,000	52,430,000	9,840,000	85,760,000
City of London	100,000	54,000	-	296,000	-
Barking and Dagenham	3,622,000	1,998,000	-	11,295,000	-
Barnet	5,360,000	2,962,000	-	16,788,000	-
Bexley	3,174,000	1,746,000	-	9,830,000	-
Brent	5,290,000	2,924,000	-	16,602,000	-
Bromley	4,368,000	2,410,000	-	13,621,000	-
Camden	3,468,000	1,916,000	-	10,880,000	-
Croydon	6,264,000	3,456,000	-	19,549,000	-
Ealing	5,394,000	2,976,000	-	16,830,000	-
Enfield	5,172,000	2,856,000	-	16,184,000	-
Greenwich	4,160,000	2,292,000	-	12,941,000	-
Hackney	4,184,000	2,312,000	-	13,119,000	-
Hammersmith and Fulham	2,992,000	1,658,000	-	9,441,000	-
Haringey	5,026,000	2,784,000	-	15,828,000	-
Harrow	3,468,000	1,916,000	-	10,856,000	-
Havering	3,288,000	1,804,000	-	10,124,000	-
Hillingdon	3,636,000	2,004,000	-	11,312,000	-
Hounslow	3,706,000	2,038,000	-	11,478,000	-
Islington	3,176,000	1,756,000	-	9,958,000	-
Kensington and Chelsea	2,816,000	1,562,000	-	8,902,000	-
Kingston upon Thames	2,174,000	1,198,000	-	6,777,000	-
Lambeth	4,632,000	2,562,000	-	14,556,000	-
Lewisham	4,894,000	2,706,000	-	15,364,000	-
Merton	2,972,000	1,638,000	-	9,249,000	-
Newham	6,198,000	3,430,000	-	19,511,000	-
Redbridge	4,576,000	2,532,000	-	14,384,000	-

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Name	Energy 2025-29	Energy 2030-34	Housing	Retrofit	Transport
	£/year @2024 prices	£/year @2024 prices	£/year @2024 prices	£/year @2024 prices	£/year @2024 prices
Richmond upon Thames	2,584,000	1,426,000	-	8,062,000	-
Southwark	4,212,000	2,326,000	-	13,171,000	-
Sutton	2,582,000	1,422,000	-	8,013,000	-
Tower Hamlets	3,508,000	1,938,000	-	10,984,000	-
Waltham Forest	4,944,000	2,730,000	-	15,462,000	-
Wandsworth	4,194,000	2,320,000	-	13,170,000	-
Westminster	3,456,000	1,912,000	-	10,870,000	-
Cambridgeshire	20,024,000	7,298,000	71,730,000	27,691,000	129,960,000
Derbyshire	26,788,000	12,112,000	313,960,000	60,473,000	437,320,000
Devon	21,290,000	10,970,000	183,710,000	54,454,000	385,610,000
East Sussex	12,592,000	6,118,000	137,020,000	31,812,000	88,040,000
Essex	26,876,000	12,558,000	238,380,000	63,085,000	323,010,000
Gloucestershire	13,674,000	7,210,000	96,850,000	37,492,000	162,480,000
Hampshire	27,000,000	11,418,000	425,130,000	52,366,000	171,360,000
Hertfordshire	15,782,000	8,010,000	-	43,016,000	309,870,000
Kent	34,336,000	16,000,000	610,640,000	80,368,000	260,470,000
Lancashire	35,232,000	16,676,000	416,010,000	82,564,000	178,780,000
Leicestershire	21,792,000	9,004,000	310,210,000	40,397,000	197,200,000
Lincolnshire	32,292,000	13,256,000	365,190,000	55,998,000	306,910,000
Norfolk	27,126,000	11,528,000	497,250,000	52,910,000	125,670,000
Nottinghamshire	32,236,000	12,750,000	386,520,000	56,094,000	321,650,000
Oxfordshire	17,006,000	6,678,000	71,710,000	28,204,000	113,420,000
Staffordshire	27,436,000	13,358,000	209,450,000	70,332,000	202,810,000
Suffolk	20,004,000	8,752,000	138,350,000	41,371,000	96,870,000
Surrey	15,526,000	7,982,000	9,670,000	43,298,000	231,910,000
Warwickshire	19,832,000	8,928,000	144,870,000	44,944,000	114,650,000
West Sussex	17,012,000	7,718,000	163,690,000	37,870,000	173,770,000
Worcestershire	20,344,000	9,252,000	94,440,000	46,885,000	109,340,000

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