

Getting the building blocks right

Infrastructure priorities
for a green recovery

**“green
alliance...”**



Getting the building blocks right

Infrastructure priorities for a green recovery

By Caterina Brandmayr and Joanna Furtado

We are grateful to the Kenneth Miller Trust for supporting this work.

Green Alliance

Green Alliance is an independent think tank and charity focused on ambitious leadership for the environment. Since 1979, we have been working with the most influential leaders in business, NGOs and politics to accelerate political action and create transformative policy for a green and prosperous UK.

Green Alliance
11 Belgrave Road,
London, SW1V 1RB
020 7233 7433

ga@green-alliance.org.uk
www.green-alliance.org.uk
blog: greenallianceblog.org.uk
twitter: @GreenAllianceUK

The Green Alliance Trust
Registered charity no. 1045395
Company limited by guarantee
(England and Wales) no. 3037633
Registered at the above address

Published by Green Alliance,
November 2020

ISBN 978-1-912393-44-2

Designed by Howdy

© Green Alliance, 2020

Green Alliance's work is licensed under a Creative Commons Attribution-Noncommercial-No derivative works 3.0 unported licence. This does not replace copyright but gives certain rights without having to ask Green Alliance for permission.

Under this licence, our work may be shared freely. This provides the freedom to copy, distribute and transmit this work on to others, provided Green Alliance is credited as the author and text is unaltered. This work must not be resold or used for commercial purposes. These conditions can be waived under certain circumstances with the written permission of Green Alliance. For more information about this licence go to <http://creativecommons.org/licenses/by-nc-nd/3.0/>



cc creative commons

Please note: our Creative Commons licence does not cover the use of any photographic images featured in this report which are subject to separate copyright and must not be shared or copied without permission.

Summary

From low carbon transport to clean energy, and from efficient buildings to better land management for flood protection, having the right infrastructure in place will be vital to achieve the UK's net zero emissions target and make the country rich in nature again.

Investing now in this type of infrastructure is also the best way to promote economic recovery from the impacts of Covid-19. It is fundamental to the long term plan to promote growth and productivity, and getting on with building it will meet short term aims to boost demand, support new jobs and raise investment across the economy. In October 2020, the prime minister set out his aspiration for a “green industrial revolution that in the next ten years will create hundreds of thousands if not millions of jobs”. Any plan to achieve this should start by creating the building blocks to get the country on course towards a net zero carbon economy.¹

However, current policy risks undermining the prime minister's ambitions. Not only is public investment still falling short of what is needed to scale up infrastructure for net zero, but the absence of a clear infrastructure plan post-Covid and post-Brexit is also limiting private sector investment.

While the government has taken welcome steps since the start of 2020, including committing new funding to retrofitting buildings and walking and cycling, we estimate there is an £11.4 billion gap in investment for net zero infrastructure across transport, buildings, natural infrastructure and the circular economy in the year 2020-21 alone. This gap will grow in 2021-22 and in subsequent years to reach £13.5 billion per year, holding back delivery of vital infrastructure.

Delay in a number of key government policies, such as the National Infrastructure Strategy and the Energy White Paper, has not helped the situation. Inadequate tracking of existing infrastructure for a circular economy, as well as natural infrastructure like urban green spaces, makes it hard to assess future requirements and support investment in those sectors.

What is more, decisions are still being made which are locking in high carbon activity for the long term. For example, the government plans to spend at least £14 billion for new roads and expand the capacity of existing roads, which will increase traffic. This is despite evidence that achieving net zero emissions requires a reduction in car use and ownership, even with an ambitious 2030 phase out date for petrol and diesel cars.

The government also wants to boost home building, including £12 billion for affordable homes over five years, from 2021 to 2026. Yet, unless it commits to earlier implementation of the Future Homes Standard, currently to be introduced by 2025, the majority of these homes will not meet it, leading to higher than necessary energy bills and incurring future costs to address poor energy performance.

Finally, investment in ‘energy from waste’ infrastructure risks locking the country into generating enough waste material to feed it, rather than making the best use of resources. This would hamper the UK’s ability to decarbonise and to create hundreds of thousands of jobs in new circular economy industries.

A new comprehensive approach to infrastructure, centred on achieving the nation’s climate and environmental goals, would address the current shortfalls, create a coherent, long term framework to drive economic recovery and support the prime minister’s ambition for a green industrial revolution.

This new approach should:

Put net zero at the heart of all infrastructure decisions. As part of the current review of the Green Book, the government should ensure all public spending and policy decisions align with the net zero goal, by setting a ‘net zero test’ for infrastructure proposals, ahead of assessment of the business case and ensuring compatibility with a net zero pathway at the programme level. Environmental principles and natural capital should also be embedded into the policy appraisal process. Furthermore, the government should revisit the infrastructure planning system, to ensure that

privately funded infrastructure complies with net zero and that it also delivers net environmental gain by 2050 at the latest.

Close the investment gap in key sectors. In the forthcoming spending review, the government should allocate at least £13.5 billion a year from 2021 to 2025 to scale up delivery of net zero infrastructure, targeting the transport, buildings, natural infrastructure and circular economy sectors. The government should also set out clear plans to allocate funding already committed, such as that for electric vehicle charging infrastructure, and ensure that existing funding, such as that allocated to flood mitigation, maximises climate and nature solutions.

Boost private investment. As emphasised by James Heath, chief executive of the National Infrastructure Commission “in these exceptional times, the most precious commodity is confidence”.² To stimulate private investment, the National Infrastructure Strategy, alongside other national strategies that will shape infrastructure delivery, should outline a clear set of priorities and pathways to support the net zero target. They should promote the rapid uptake of solutions that can immediately create jobs and cut emissions, as well as the better use of data and digital systems, which can improve planning and management of infrastructure.

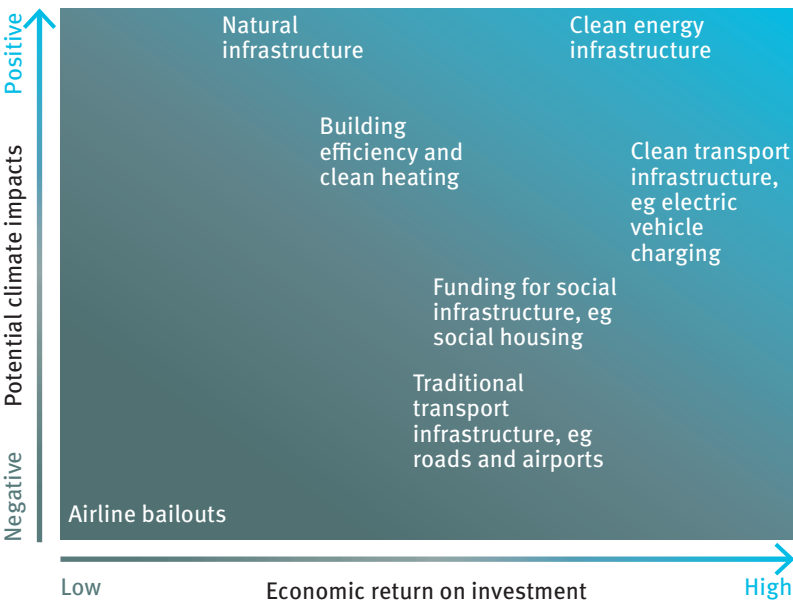
Empower agencies and regulators. The remits of the National Infrastructure Commission and the Infrastructure Projects Authority should be expanded to ensure assessment of net zero priorities and requirements across all types of infrastructure, including circular economy and natural infrastructure. They should conduct a stocktake of what already exists, and identify gaps and future needs. Regulators should also be given new powers to promote investment that helps to meet the UK’s net zero carbon by 2050 target.

Infrastructure underpins our economy and how we live our lives

Infrastructure governs all of our choices, including how green we can be. Given our carbon intensive economy and long investment cycles, it is vital that the right type of infrastructure is in place to support the green economic recovery promised by the government.

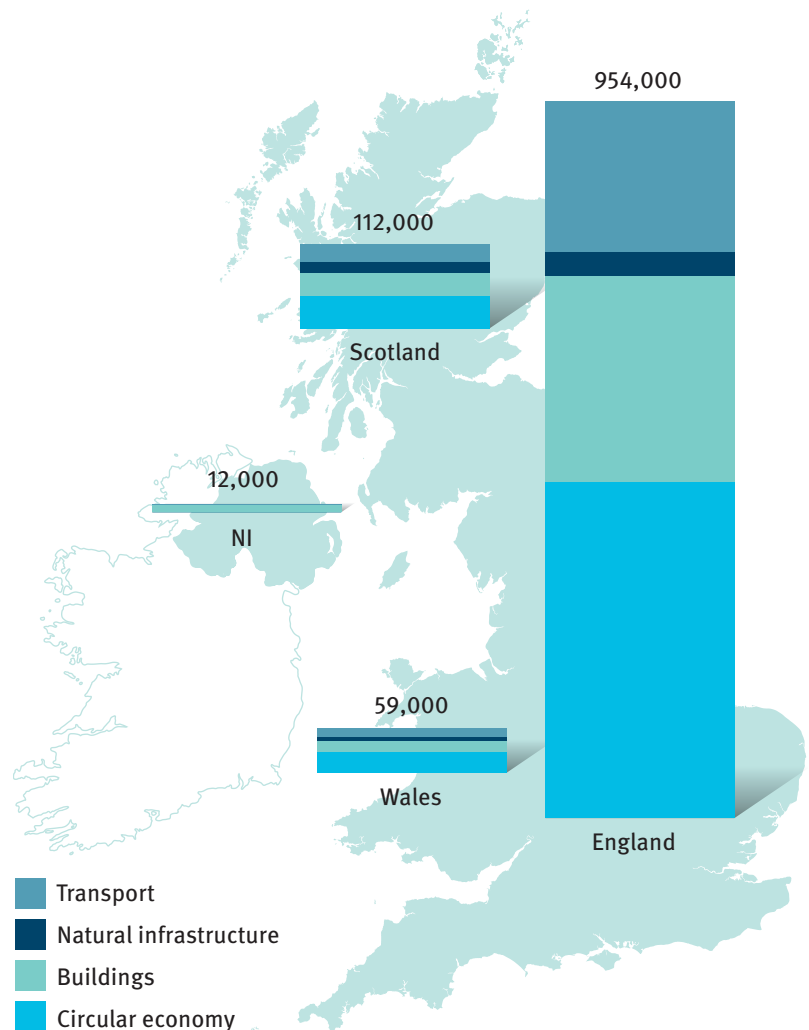
Over the next ten years, rapid scale up is required of the infrastructure needed to achieve the UK's net zero carbon by 2050 goal. This means significant expansion of public transport, walking and cycling to reduce car travel, and up to 60,000 new rapid public electric vehicle charging points across the country. Millions of homes will have to be insulated and fitted with low carbon heat technology, as we move away from fossil fuels. Renewable energy should be ramped up to provide two thirds of Britain's electricity. Rates of tree planting will need to more than triple, alongside a drastic increase in peatland restoration and expanding green urban spaces to improve water management, support nature and store more carbon from the atmosphere. And, in the move to a circular economy, dozens more high quality recycling plants will have to be built to reprocess valuable materials from consumer products, such as plastics, textiles and electronics, alongside new infrastructure that enables products to be taken back for repair and remanufacturing.³

Net zero aligned infrastructure benefits both the environment and the economy⁴



Decisions about infrastructure not ly dictate our ability to cut carbon and care for the environment. Investing now in the right infrastructure will also help to drive a robust long term economic recovery from the coronavirus pandemic. As highlighted opposite, it is clear across all sectors that building net zero compatible infrastructure is an economically wise route to boosting demand in the short term, supporting employment and higher spending across the economy, and promoting growth and productivity in the long term. By comparison, other measures, like airline bailouts or investment in high carbon transport infrastructure, perform less well than their low carbon counterparts.

Scaling up infrastructure for net zero could support over a million jobs across the country over the next decade (number of direct jobs created)⁵



Current policy isn't delivering the right infrastructure

Infrastructure decisions are shaped by policy, regulation and public investment. For example, the last multi-year summary the government compiled of planned infrastructure spending, known as the National Infrastructure and Construction Pipeline (NICP), shows that most of the investment in transport infrastructure since 2018 came from public funding. This was also the case for social infrastructure, such as schools and hospitals.

The government supports private investment through mechanisms such as Contracts for Difference in energy procurement, which stimulate significant business infrastructure spending. But policy and regulation also play an important role, whether through setting standards around the type of infrastructure needed, or providing incentives and setting expectations for future development, strengthening the business case for investment.

The prime minister has set out the aspiration for a “green industrial revolution that in the next ten years will create hundreds of thousands if not millions of jobs”. This is welcome at a time when the UK should be investing in solutions to promote recovery towards a more resilient economy in future.⁶

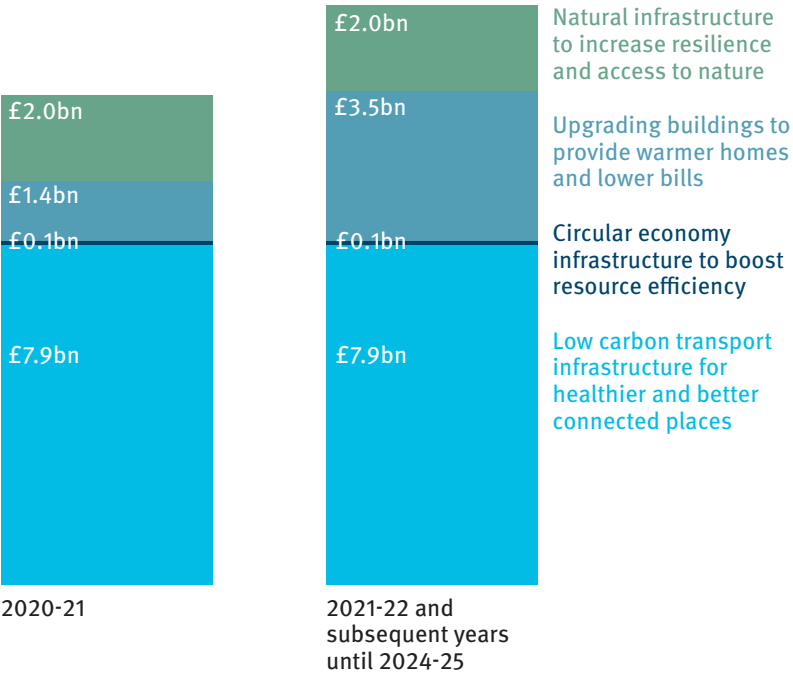
However, current infrastructure policy will not be able to support the government's ambition. Not only is public investment still falling short to scale up infrastructure for net zero carbon, but absence of a clear plan for the infrastructure necessary for a more resilient and competitive economy post-Covid and post-Brexit is also limiting private sector investment. What is more, decisions are still being made which are locking in high carbon activity for the long term.

Underinvestment is holding up progress

The government is the main source of infrastructure investment for the transport sector, which is currently the biggest source of carbon emissions in the UK. Therefore, delivering the right type of infrastructure for rapid decarbonisation (such as low carbon public transport, infrastructure for walking and cycling, and charging infrastructure for electric vehicles) will depend heavily on public funding in the coming years. In other areas, such as building energy efficiency, there is ample evidence that more public investment is necessary to leverage private sector spending and that demand for retrofits will continue to be very limited in the absence of such incentives.⁷

The government has taken some welcome steps since the start of 2020, including committing £5 billion to bus and cycling infrastructure over the next five years, and £2 billion for domestic energy efficiency over the rest of this financial year. But, even with this, we estimate there is an £11.4 billion gap in investment for net zero infrastructure across transport, buildings, natural infrastructure and the circular economy in 2020-21 alone. This will grow in 2021-22 and the years after that, reaching £13.5 billion per year.⁸

Additional annual government investment needed to scale up net zero infrastructure



Policy gaps and poor visibility

Delivery of net zero infrastructure has also been undermined by delays in a number of government policies, which is holding back private investment. The National Infrastructure Strategy (NIS), which the government should have published in response to the National Infrastructure Commission's assessment in 2018, has been repeatedly delayed.⁹ The Energy White Paper has suffered a similar fate, and so have a number of other policies, including those aimed at promoting building energy efficiency and the update to the Waste Prevention Plan.¹⁰ And a lot rests on the heat and buildings strategy and the transport decarbonisation plan, both of which are planned for the end of 2020, but are running the risk of further delays.

In the absence of these strategies, businesses and the finance sector lack clarity over the way forward, which affects their confidence to invest. This is problematic, given that significant parts of national infrastructure, such as that needed for energy production and distribution, digital communication and water, are privately owned and funded, and that private investment is expected to play an important role in being able to expand the infrastructure needed for housing energy efficiency, the circular economy and nature restoration.

In addition to absent policy, investment has been made more difficult by a lack of information about some types of existing infrastructure. This is a challenge when it comes to assessing future requirements. For example, the Waste Infrastructure Delivery Programme tracks incinerators, Energy from Waste (EfW) plants and landfills. Yet, there is no equivalent comprehensive list for the infrastructure required to support a circular economy, such as facilities for recycling, repair, remanufacturing and reuse, and this is also not included in the UK's infrastructure and construction pipeline.¹¹

Similarly, poor information affects natural infrastructure, delivery of which is also held back by poor data. As in the case of the circular economy, this type of infrastructure is not tracked by the Infrastructure Projects Authority and there is no comprehensive assessment of the UK's natural assets. Outside of the network of protected nature sites, there's no obligation on the government to monitor environmental conditions, so data is very patchy. And, even where government has a duty to monitor site conditions, analysis published in 2018 revealed that it had failed to do so over the past six years for nearly half of England's sites of special scientific interest.¹²

Even where infrastructure is tracked by the Infrastructure Projects Authority, limited visibility about forward investments makes it harder for industry to gear up. While earlier releases of the UK's infrastructure pipeline used to show five years of future investment, the version published in November 2018 provided project specific information only up to 2021, with 40 per cent of investment beyond this date unallocated.¹³ The new procurement pipeline, released in June 2020, only has project information for a year ahead.

As a result of these failings, delivery of net zero compatible infrastructure is falling far short of what is needed (for more detail, please see the annex to this report at www.green-alliance.org.uk/resources/Getting_the_building_blocks_right_annex.pdf). Rates of insulation measures being installed are under ten per cent of what they should be; over 3,000 bus routes have been reduced or withdrawn in England and Wales in the past eight years due to funding cuts; infrastructure for a circular economy is largely absent, with only limited capacity for high quality recycling; and infrastructure investment in nature-based solutions to problems like persistent flood risk is very low, with priority given to hard infrastructure solutions.



Public funding is perpetuating high carbon activity

While delivery of net zero infrastructure is falling short, the government is still directing investment towards infrastructure that undermines progress towards meeting its climate targets and realising the ambitions set out in its 25 year environment plan, for instance in its policies on roads, housing and waste treatment.

Roads

Analysis of the last multi-year National Infrastructure and Construction Pipeline (NICP), published in 2018, estimates that the government has spent almost £9 billion on new high carbon transport infrastructure over the last three years.¹⁴ In the March 2020 budget the government reiterated that it would be spending £27.4 billion between 2020 and 2025 as part of its Road Investment Strategy, of which £14.1 billion was allocated for building new roads and increasing the capacity of existing roads.¹⁵ Other funding might also support new road capacity, including the Housing Infrastructure Fund and the National Roads Fund.¹⁶

Road expansion raises emissions, through carbon emissions embedded in the materials and construction process, the likelihood of greater road capacity promoting higher average speeds and the resulting increase in traffic. Evidence from previous road building programmes shows they have increased traffic by an average of 47 per cent above background trends.¹⁷ It is argued that this will not matter because of the switch to electric vehicles. However, current government policy dictates a late phase out of petrol and diesel vehicles, such that, even under its most ambitious scenario, the impact of road expansion would effectively negate 80 per cent of the emission savings gained from zero emission vehicles between now and 2032.¹⁸ Analysis shows that only a 2030 ban on polluting cars, combined with a trend towards lower car use and ownership, would ensure that cumulative emissions from cars and vans between now and 2050 are in line with Paris Agreement targets.¹⁹ The Committee on Climate Change has similarly emphasised the “urgent need for stronger policies to reduce growth in demand for travel” and pointed to the dangers of relying on technical solutions.²⁰

The negative impacts of new roads are not just related to climate change. Road building leads to more congestion, promotes car dependent housing development, increases air pollution and uses up valuable land and resources.²¹

Road expansion: what are the impacts on traffic, landscape and emissions?²²



47% average long term increase in traffic



80% of previous road schemes in England had an adverse impact on the landscape



20MtCO₂e is the expected increase in emissions until 2032 from the government's new Road Investment Strategy

Housing

The NICP shows that, since 2017, the government has spent £9 billion supporting new housing projects through a range of funding programmes.²³ While many of the projects are still underway, the scrapping of the Zero Carbon Homes standard in 2016 is likely to result in only few of these new homes being net zero compatible.²⁴ For example, data from the Ministry of Housing, Communities and Local Government (MHCLG) reveals that, between 2017 to 2019, only 1.2 per cent of all new homes in England achieved the highest Energy Performance Certificate level.²⁵ This is despite the fact that more efficient homes are not that much more expensive to build. Instead, achieving higher standards via retrofitting measures costs up to five times more than building a home to those standards in the first place.²⁶ Effectively, by not making net zero standards mandatory for housing supported by public funding, government investment is locking in future costs for homeowners and landlords, including higher running costs.

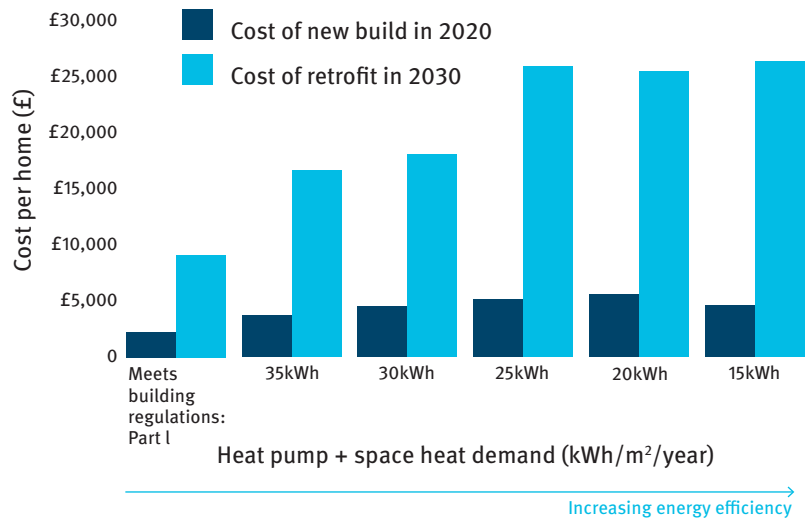
We estimate that ending the Zero Carbon Homes standard has led to higher than necessary energy bills, costing new homeowners across England around £145 million between 2017 and 2019.²⁷ In addition to poor building standards, evidence from various studies shows that new housing developments are frequently locking residents in to car dependency.²⁸

The government has announced plans to boost home building, including £12 billion for affordable homes over five years, from 2021 to 2026. While 'improving energy efficiency' is listed as one of the strategic objectives of this funding, it is unclear whether this will require new developments to meet the Future Homes Standard, currently set to be introduced by 2025. Unless the government commits to an earlier implementation of the standard, or makes it mandatory for housing that receives public funding support, the majority of new homes built before then will not meet it.²⁹ The Business, Energy and Industrial Strategy parliamentary committee has also emphasised that "designing efficient

homes from the outset is a one-time opportunity” and expressed its disappointment that “we may have to wait until 2025 for homes to be built with world leading levels of efficiency when the UK’s two largest housebuilders confirmed they do not require a long lead in time to deliver higher standards”.³⁰

Furthermore, the proposed reforms to the planning system, combined with pressure on local authorities to prioritise speed of building over environmental considerations, increases the likelihood of more high carbon development. Despite references to achieving net zero ready buildings by 2050, and enacting the Future Homes Standard, there is no comprehensive recognition of the planning system’s role in supporting progress towards the net zero carbon target. In particular, there are serious concerns around the extent to which the proposed changes will ensure housing with good access to public transport. Pressure on local authorities to meet housing targets could lead to more greenfield development and car dependence. Concerns have also been raised about the negative impact on nature.³¹

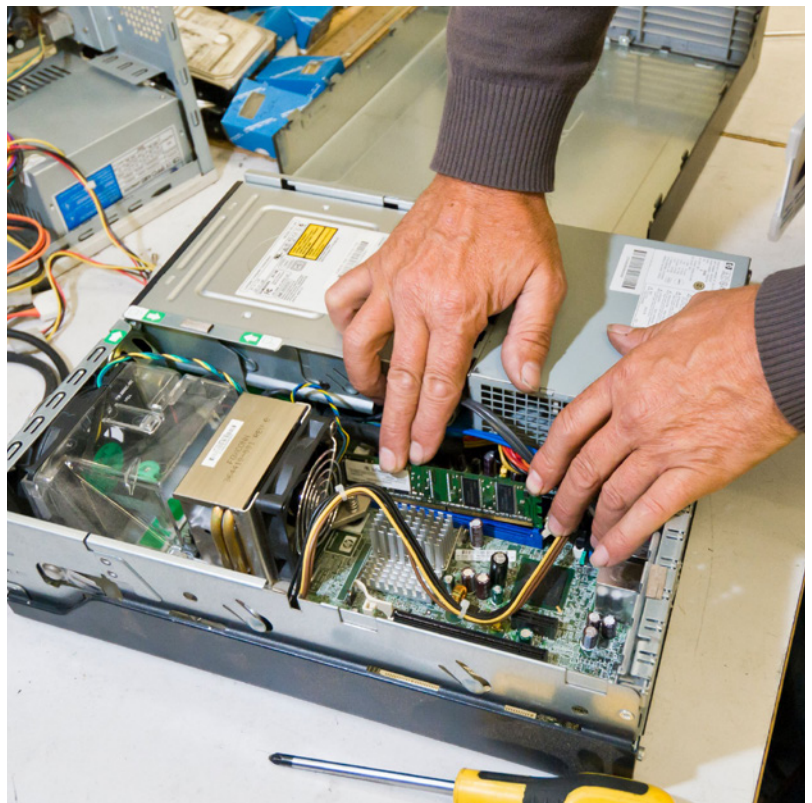
Installing heat pumps and retrofitting homes for greater energy efficiency costs up to five times more than building them to low carbon standards³²



Waste treatment

So far, government investment in waste treatment infrastructure has been heavily skewed towards energy from waste (EfW). The Waste Infrastructure Delivery Programme, which is the Department for Environment, Food and Rural Affairs' (Defra's) main infrastructure investment fund in this area (through which £3 billion has been committed by government and industry to 2042) is dedicated to residual waste treatment, predominately EfW. Nearly all waste and resource investments from the Green Investment Bank, when it was state owned, went to EfW, and all its investment since it became the private Green Investment Group has gone to large scale EfW.³³

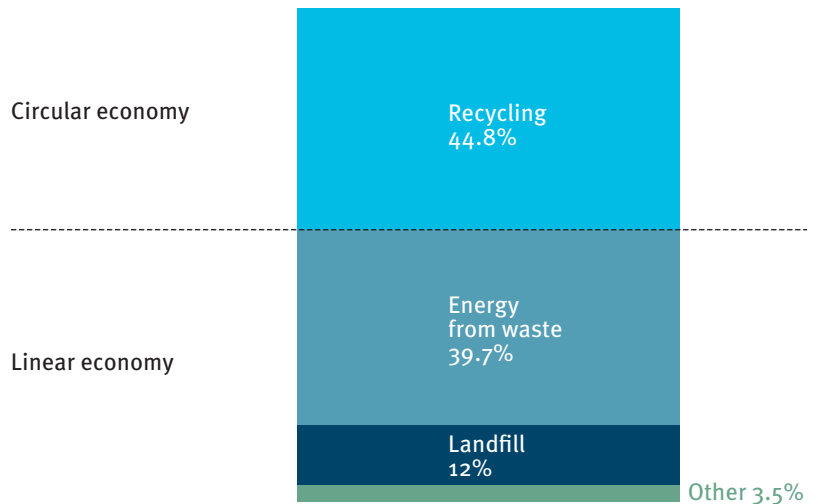
This direction of investment is, in part, due to the fact that most analysis assumes that waste from households and commercial and industrial sectors will keep on rising, at least in line with population growth and frequently above it. But this trend is not inevitable, and nor should it be if climate and environmental objectives are to be met. Policy should instead seek to dramatically reduce residual waste and support better product design, reuse, remanufacturing and high value recycling. Yet, over investment in EfW infrastructure risks locking the country into producing enough material to feed it, as has already happened in Scandinavian countries.³⁴



Already, failure to direct investment towards infrastructure for a circular economy has resulted in English recycling rates plateauing. With only 45 per cent of household waste going to recycling, England is well below its 50 per cent target for 2020.³⁵

Poor resource efficiency holds back the country's ability to decarbonise, misses the chance to create jobs in new circular economy industries across the country and prevents manufacturers benefiting from savings. For every thousand tonnes of material there are two jobs in recycling as opposed to 0.1 job in waste treatment and disposal. And many more jobs could be created by promoting greater reuse and remanufacturing.³⁶

Less than half of household waste in England is collected for recycling³⁷



Getting infrastructure right for the future

Getting infrastructure right for the future should be at the heart of the government's plans for recovery from coronavirus, to create a strong, resilient economy and realise the prime minister's ambition of a green industrial revolution.

The government should adopt a new comprehensive approach, centred on achieving the nation's climate and environmental goals, and on benefiting the economy in all parts of the country. This approach should:

1. Put net zero at the heart of all infrastructure decisions

Alignment with the net zero goal should be required of all infrastructure decisions. As part of the current review of the Treasury's Green Book, announced in the 2020 Budget, the government should update how departments evaluate policy and spending decisions to ensure these are aligned with net zero.³⁸ This could be done by applying an upfront 'net zero test' for infrastructure proposals, to ensure compatibility with a decarbonisation pathway, ahead of assessment of the business case, and ensuring compatibility is assured at the project as well as programme level, taking into account the cumulative impact of infrastructure decisions. This will avoid public investment that locks in high carbon emissions and, combined with revisions to the Green Book to support the 'levelling up' agenda, it should promote net zero aligned infrastructure investment in all parts of the country.

Furthermore, the review of the Green Book should ensure that the environmental principles, which will underpin the UK's environmental governance post-Brexit, are embedded in policy making. This will support the government in fulfilling its stated pledge to "create a world-leading system for environmental governance" and to put "the protection and improvement of the environment [...] at the heart of this new system".³⁹

The government should also address recommendations set out by the Natural Capital Committee and the findings of the Dasgupta Review, to embed natural capital into the policy appraisal process and ensure the Green Book is compatible with environmental goals set out by the government in its 25 year environment plan.⁴⁰

It should also revisit the infrastructure planning system to align all decisions with net zero. This should include updating the National Policy Statements, which set out the need and government policies for nationally significant infrastructure.⁴¹ An overall legal duty for the proposed new planning regime should comply with the UK's climate targets, backed by policy and support for local authorities to translate this duty into action.⁴²

There should be an aim to go further than the net biodiversity gain required by the Environment Bill, including major infrastructure within

these provisions and an objective of net environmental gain (ie expanding net biodiversity gain approaches to include wider natural capital benefits) by 2050 at the latest.⁴³

2. Close the investment gap

To scale up the building of net zero infrastructure and create the hundreds of thousands of new jobs associated with it, the government should close the investment gap in key sectors in its forthcoming spending review. Our assessment of the requirements for the transport, buildings, natural infrastructure and circular economy sectors are outlined in the table opposite. Multi-year capital spending in these sectors should be set out in the spending review and form part of a wider set of investments to stimulate a resilient recovery.⁴⁴ Shovel ready projects (examples of which are discussed for each sector in the annex to this report, available online) could be prioritised in the near term to facilitate rapid scaling up. And by setting a year on year investment programme for net zero compatible infrastructure, the government will avoid boom and bust cycles and provide visibility over the longer term to motivate industry investment in the skills, products and services needed.⁴⁵



Additional public investment in net zero infrastructure should be at least £13.5 billion a year from 2021 to 2025

Sector	Investment gap (£bn per year)	Investment needs
Transport	7.9	£2.7 billion per year additional investment in buses, trams, walking and cycling infrastructure. £5.2 billion additional funding per year to enhance the UK's railways.
Circular economy	0.10	£400 million (over four years), for a circular economy starter fund, to support a resource efficiency investments along manufacturing value chains.
Buildings	3.5	£1.95 billion and £1.45 billion of additional public capital per year for energy efficiency and heat pump roll-out, respectively. Additional investment of £250 million in deep energy efficiency innovations, like Energiesprong and Passivhaus.
Natural infrastructure	2.0	At least £1 billion investment to enhance natural infrastructure in towns and cities. £1 billion annual investment to restore and expand terrestrial and aquatic habitats. A one-off investment of £150 million in better environmental information and data, to underpin strategic land use decision making.
Total	13.5	

The government should also set out clear plans on how it will allocate funding already committed. This includes, for example, a clear timeline for Contracts for Difference auctions in the energy sector over the course of this parliament, so the private sector is able to plan new renewables investments and support the government in meeting its ambition to quadruple offshore wind capacity by 2030. Similarly, although much of the investment for accelerating electric vehicle charging infrastructure is now in place, the £500 million pledged by the government needs to be allocated to speed up the roll-out and focus on job creation.

Existing funding should also be directed at maximising climate and nature solutions. For example, a much bigger share of the £5.2 billion planned to tackle the risks of flooding and coastal erosion should be invested in sustainable drainage systems and nature-based solutions, in addition to the £200 million already allocated for this.⁴⁶

3. Stimulate private investment

A clear and coherent policy framework is needed for investors and industry to build the infrastructure the UK urgently needs for the future. The National Infrastructure Strategy (NIS) should outline priorities and pathways to support the net zero target. Other strategies, such as the Transport Decarbonisation Plan, the Energy White Paper, the Heat and Building Strategy, the Waste Prevention Plan and the industrial strategy, should also be aligned with the net zero goal and the NIS.⁴⁷

To support economic recovery, these strategies should promote “no regrets moves on proven technologies and delivery mechanisms”, as emphasised by James Heath, chief executive of the National Infrastructure Commission. Strategies should rapidly scale up solutions that have the immediate impact of creating jobs and cutting emissions, such as nationwide programmes on building efficiency, heat pump installation, electric vehicle charging and circular economy infrastructure.⁴⁸ And they should also support deep decarbonisation technologies that are still at an early development stage, such as hydrogen and carbon capture and storage. Greater emphasis should be placed on new types of infrastructure, such as data and digital systems, which can improve the use of existing infrastructure, reduce emissions and costs, and support innovation in goods and services for a green economy.⁴⁹

Finally, to enable industry to gear up for the transition, the Infrastructure and Projects Authority should publish a revised pipeline of infrastructure projects aligned with net zero to give investors visibility of planned procurements, at least for the duration of the current parliament.

4. Empower agencies and regulators

The National Infrastructure Commission and the Infrastructure and Projects Authority, the two main agencies working on infrastructure, should assess net zero priorities and requirements. To ensure effective assessment across all sectors, their remit, which has so far been limited to economic infrastructure, should be expanded to explicitly address the policy and investment required for vital net zero infrastructure which has been overlooked, such as circular economy and natural infrastructure.

These agencies should urgently conduct a stocktake of existing circular economy and natural infrastructure, and identify any gaps and future needs. They should be properly resourced to fulfil this task and work jointly with Defra, the Department of Business, Energy and Industrial Strategy, the Office for National Statistics and the Environment Agency. The Infrastructure and Projects Authority should track delivery of this infrastructure as part of its updated pipeline and the National Infrastructure Commission should make recommendations to government on these sectors as part of its next National Infrastructure Assessment.

Utility regulators, like Ofgem and Ofwat, also have an important role to play. While some have started giving greater consideration to decarbonisation, as exemplified by Ofgem's Decarbonisation Action Plan, published at the start of 2020, it has not been systematically prioritised and the net zero goal is not implicit in the remits of regulators. They need new powers to promote investment that helps to meet the net zero target, as recommended by the National Infrastructure Commission.⁵⁰



Endnotes

For more detail on the topics and recommendations discussed in this report, see the annex at www.green-alliance.org.uk/resources/Getting_the_building_blocks_right_annex.pdf

- ¹ Prime Minister's Office, 6 October 2020, press release, 'New plans to make UK world leader in green energy'
- ² National Infrastructure Commission (NIC), 30 September 2020, 'James Heath speech to Infrastructure Forum Annual Policy Summit'
- ³ For an overview of the infrastructure needed by 2030 to be on track for net zero, please see the annex at the link given above.
- ⁴ Graphic adapted from: C Hepburn, B O'Callaghan, N Stern, J Stiglitz and D Zenghelis, 2020, 'Will COVID-19 fiscal recovery packages accelerate or retard progress on climate change?', Smith School Working Paper 20-02, figure 1: 'Preliminary survey results from G20 finance and central bank officials'
- ⁵ Direct jobs created over the next decade. Data from: Green Alliance, 2015, *Employment and the circular economy: job creation in a more resource efficient Britain*; IPPR, 2020, *Transforming the economy after Covid-19*. Job categories by sector: circular economy (recycling, remanufacturing, servitisation, repair, bioeconomy), buildings (energy efficient retrofits, heat pumps, heat networks), natural infrastructure (peatland restoration, afforestation, flood defences), transport (integrated urban transport, rail expansion, manufacture of electric trains, electric buses, electric vehicle supply and infrastructure). Note that circular economy jobs estimates are only available for England, Scotland and Wales.
- ⁶ Prime Minister's Office, 6 October 2020, op cit
- ⁷ Infrastructure and Projects Authority (IPA), 2018, *Analysis of the national infrastructure and construction pipeline*, p14; Energy Efficiency Infrastructure Group, 2020, *Turning stimulus into recovery: from the Green Homes Grant towards a resilient net zero economy*; Verco and Cambridge Econometrics, 2014, *Building the future: economic and fiscal impacts of making homes energy efficient*
- ⁸ Note that additional funding per year, beyond that outlined above for infrastructure, would be needed to tackle the climate and nature emergency. Green Alliance estimates that the total scale of investment needed is £24 billion.
- ⁹ J Armit, 3 October 2020, 'A clear infrastructure policy is more vital than ever', *Sunday Telegraph*
- ¹⁰ The Committee on Climate Change (CCC), 2020, *Reducing UK emissions: progress report to parliament*
- ¹¹ See, for example: Defra, May 2018, 'Digest of waste and resource statistics – 2018 edition'; Green Alliance, 2019, *Building a circular economy*
- ¹² E Howard, 7 September 2018, 'Nearly half of England's 'most important wildlife sites' at risk after not being monitored for years', *Unearthed*. Wildlife and Countryside Link have also pointed out the limited up to date information there is on the condition of natural assets, despite its role in supporting natural infrastructure delivery and wider planning, see Wildlife and Countryside Link, 22 July 2020, 'Wildlife and Countryside Link calls for 'project speed' to take a different direction'.
- ¹³ G Plimmer, 13 February 2019, 'UK government's infrastructure pipeline criticised as a 'wishlist'', *Financial Times*
- ¹⁴ Green Alliance analysis. IPA, 2018, 'National Infrastructure and Construction Pipeline, public funding between 2017/18 to 2019/20'
- ¹⁵ Highways England, 2020, *Strategic business plan 2020-2025*, p47; 'road enhancements' refers to building new roads and increasing the capacity of existing roads.
- ¹⁶ L Sloman and L Hopkinson, 2020, *The carbon impact of the national roads programme*
- ¹⁷ L Sloman, L Hopkinson and I Taylor, 2017, *The impacts of road projects in England*. Report for CPRE
- ¹⁸ L Sloman and L Hopkinson, 2020, op cit
- ¹⁹ C Brand and J Anable, 2020, 'DfT consultation – ending the sale of new petrol, diesel and hybrid cars and vans', consultation response

- ²⁰ CCC, 11 October 2018, letter to ministers Chris Grayling and Greg Clark, assessment of the Road to Zero strategy
- ²¹ L Sloman, L Hopkinson and I Taylor, 2017, op cit
- ²² Ibid. New road schemes have shown 47 per cent uplift in traffic for the long run average (8-20 years); based on analysis of more than 80 post-opening project evaluations of road schemes across England, 80 per cent had a negative impact on the landscape, affecting areas of national or local landscape designation, places with heritage designations, nationally or locally designated for their importance to biodiversity and in some cases damaging ancient woodlands; L Sloman and L Hopkinson, 2020, op cit RIS2 schemes could increase cumulative emissions from the strategic road network between 2020 and 2032 by around 19-21 MtCO₂e, as a result of emissions from construction, higher speeds and induced traffic.
- ²³ Green Alliance analysis. IPA, 2018, 'National Infrastructure and Construction Pipeline, public funding between 2017/18 to 2019/20'
- ²⁴ Absence of a net zero mandatory standard means it was not required by default across housing supported through public funding. However, there are few examples of local authorities that have set more ambitious efficiency standards, see for example UKGBC, 2020, *The policy playbook: driving sustainability in new homes - a resource for local authorities*.
- ²⁵ Green Alliance analysis: MHCLG, April 2020, 'NB1 – Number of new dwelling energy performance certificates lodged on the register in England and Wales by energy efficiency rating - in each year/quarter to 31.03.2020'
- ²⁶ CCC, 2019, *Housing fit for the future*, p65; Currie & Brown and AECOM, 2019, *The costs and benefits of tighter standards for new buildings*
- ²⁷ Green Alliance analysis. Additional energy bills per year, average value across flats, terraces and family homes from: Energy and Climate Intelligence Unit, 2019, *Zero carbon homes: how owners of new homes are paying over the odds for energy*; total new build completions for 2017-18 to Q4 of 2019 from: Ministry of Housing, Communities and Local Government (MHCLG), 2020, 'Table 118: Annual net additional dwellings and components, England and the regions, 2000-01 to 2018-19'; and MHCLG, 2020, 'House building; new build dwellings, England: December Quarter 2019'
- ²⁸ M Carmona et al, 2020, *A housing design audit for England*; Transport for New Homes, 2018, *Project summary and recommendations*; Transport for New Homes, 2020, *Garden villages and garden towns: vision and reality*
- ²⁹ Homes England, 2020, 'Guidance: apply for affordable housing funding'. Note that further improvements to the Future Homes Standard are required, including a transition to energy ratings based on performance standards, as well as requirements for whole life carbon assessment and reduction, to address embodied emissions in construction, alongside reducing emissions in use; for more information, see: R Bulleid, 7 November 2019, 'Why are local councils' green building ambitions being held back?', Green Alliance blog 'Inside Track'; and UK Green Building Council, 2020, 'UKGBC Response to MHCLG Consultation on the Future Homes Standard'
- ³⁰ House of Commons BEIS select committee, 2019, *Energy efficiency: building towards net zero*, pp56-57
- ³¹ Transport for New Homes, 2020, 'Transport for New Homes response to Planning for the Future consultation'; R Coxcoon et al, 2020, *Why the planning system needs to be at the heart of delivering the UK's climate change targets*
- ³² Adapted from: Currie & Brown and AECOM, 2019, op cit, figure E.2, p6
- ³³ Green Alliance, 2019, op cit
- ³⁴ L Peake, 20 July 2020, 'Scandinavians call their waste incineration 'crazy', so why copy them?', Green Alliance blog 'Inside Track'
- ³⁵ Defra, 2020, *UK statistics on waste*
- ³⁶ Green Alliance, 2019, op cit; even now, with little government intervention to create a circular economy, the number of people employed in repair, remanufacturing and leasing in the UK dwarfs those employed in dealing with waste and recycling. Employment figures suggest there are already four times as many people employed on these activities, in large part due to the repairing and leasing of vehicles and industrial machinery.
- ³⁷ Ibid. Data for England for 2017-18
- ³⁸ HM Treasury, 2020, 'Budget 2020: delivering on our promises to the British people'
- ³⁹ Defra, 30 January 2020, Environment Bill 2020 policy statement; Greener UK, 19 October 2020, 'Environmental governance in a time of transition'
- ⁴⁰ Natural Capital Committee, 2020, *The Green Book guidance: embedding natural capital into public policy appraisal*; HM Treasury, 2019, 'Independent review on the economics of biodiversity: terms of reference'
- ⁴¹ J Bessell, 30 July 2020, 'Saving the nationally significant infrastructure planning regime', Pinsent Masons analysis
- ⁴² R Coxcoon et al, 2020, op cit
- ⁴³ Green Alliance, 2020b, *Blueprint for a resilient economy*, 'Invest in net zero infrastructure' briefing
- ⁴⁴ Green Alliance, 2020a, op cit
- ⁴⁵ Energy Efficiency Infrastructure Group, 2020, op cit
- ⁴⁶ J Elliott, 17 July 2020, 'The government keeps throwing money at flooding but isn't tackling the causes', Green Alliance blog 'Inside Track'
- ⁴⁷ For more information, see the annex to this report
- ⁴⁸ NIC, 30 September 2020, op cit
- ⁴⁹ For more information on how the government should use new digital technologies to accelerate the transition to net zero, see Green Alliance, 2020c, *Smart and green: joining up digital and environmental priorities to drive the UK's economic recovery*
- ⁵⁰ NIC, 2019, *Strategic investment and public confidence*

Green Alliance
11 Belgrave Road,
London, SW1V 1RB
020 7233 7433

ga@green-alliance.org.uk
www.green-alliance.org.uk
[blog: greenallianceblog.org.uk](http://blog.greenallianceblog.org.uk)
twitter: @GreenAllianceUK

The Green Alliance Trust
Registered charity no. 1045395
Company limited by guarantee
(England and Wales) no. 3037633
Registered at the above address