

Transport Investment: The Zero Carbon Challenge



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Preface

Declaring ‘net zero’ targets, but failing to change infrastructure spending accordingly is a form of climate denial that must be overcome.

Setting – and meeting – targets to rapidly phase out coal, oil and gas extraction is crucial but insufficient. We must also rapidly stop burning those fuels. That means we must end the denial that we can somehow keep expanding the scale of built infrastructure whilst at the same time dealing with climate change. We cannot.

Yet investment continues to drive national and global increases in transport infrastructure which are blocking efforts to decarbonise communities and countries.

A climate emergency economy will be fundamentally different from our current economy. We need to reduce the scale of our consumption of energy and materials – nationally and globally. Only by shifting our investment priorities in these terms will it be possible to meet the target of keeping global warming within the 1.5°C.

This report explores UK and EU transport infrastructure investment in this context and make three recommendations:

- Introduce strong carbon reduction targets for the transport sector.
- Shift investment from capacity growth to decarbonising existing transport
- Redefine transport investment decision-making

This report is part of the Climate Emergency Economy project, a three-year project led by the Green European Foundation involving Green House Think Tank in the UK and foundations across Europe. The project has developed a Zero Carbon Policy Toolkit, identifying blockers and enablers to clarify what must change for our economy to transition to zero carbon.

Blockers perpetuating unjust business-as-usual



Enablers of a zero carbon sustainable future



Previous reports published by the project looked at the infrastructure, trade and investment, and social and environmental requirements of a climate emergency economy. (Download these reports at [GEF project](https://gefproject.org) and greenhousethinktank.org/cee)

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Introduction

It often appears that there are two parallel discussions being conducted. On the one hand there is talk of investment that grows the economy, often through investing in infrastructure. On the other, we hear about national targets to reduce carbon emissions that are sufficiently ambitious to meet the Paris Agreement, which commits all its signatories to align their development pathways to staying within a target of 1.5°C global average temperature increase. How do these two aims link up?

This report explores the extent to which the UK's and EU's declared political commitments to reduce their carbon emissions are jeopardised by their continued investments in expanding transport infrastructure.

Transport Is Still Driving Up Carbon Emissions

Transport represents a persistent climate problem:

- In the UK: whilst territorial emissions fell by 43% from 1990 to 2018,¹ the UK's overall emissions from transport rose 11%, driven by increases in road freight (25%) and aviation (124%).²
- In Europe: international aviation and shipping emissions are increasing faster than all other areas of the economy. In 2021 they accounted for 6.6% of greenhouse gas emissions across the EU.³ International aviation and shipping are still completely excluded from international climate agreements, as well as from trade agreements. So even though many nations now have legally binding carbon reduction targets, freight transport (trade) continues to underpin global supply chains that fail to constrain carbon emissions globally.

These numbers reflect a crucial, often untold, challenge to achieving zero carbon: it is increasingly difficult to meet stronger carbon reduction targets whilst driving up and locking-in hard-to-decarbonise transport-related carbon emissions.

Infrastructure Investment and Climate Change

Government infrastructure investments have shifted to respond to the climate challenge. There is much investment in new energy infrastructure (e.g. large-scale offshore wind farms around the UK), which is decarbonising energy supply. However, increasing overall energy demand, including by expanding transport infrastructure, makes it harder for renewable energy to displace rather than sit alongside continued burning of fossil fuels. This argument is well made elsewhere – for example, Professor Julian Allwood of the University of Cambridge Energy Transitions research team sets out that we need to halve overall energy demand to fit in with the likely scale of future energy supply.⁴

1 The reduction is much less if the carbon footprint of international transport and imports are included --- Department for Business, Energy & Industrial Strategy (BEIS) (2020). '[Final UK greenhouse gas emissions national statistics: 1990 to 2018](#)', Data Tables, Tables 3 and 8.

2 Essex, J and Sims, P (2020) '[Infrastructure Requirements for Zero Carbon: Why we can't build our way out of the climate emergency](#)'.

3 European Parliament (2021) '[Emissions from planes and ships: facts and figures \(infographic\)](#)'. (Accessed Jul 2021)

4 Allwood, J (2019) '[Absolute Zero](#)'. UK FIRES.

The UK government plans to increase investment in infrastructure alongside its now strengthened commitment to reduce its carbon emissions to net zero by 2050.⁵ Similarly the EU has longstanding plans to create trans-European transport networks which cater for demand for long-distance travel and freight by creating more capacity whilst claiming to lead ambition in addressing climate change with its European Green Deal.⁶ This report focuses on spending on new infrastructure, and contrasts the impacts of this with those of spending on maintaining existing infrastructure (e.g. resurfacing roads, repairing rail networks). It focuses on the investment in the infrastructure itself (roads, airports, rail network, etc.) as opposed to the wider shifts in capital spending in zero carbon vehicles (e.g. cars, buses, trains, heavy goods vehicles, ships and aeroplanes). Whilst the majority of infrastructure is driven by public investment, some comes from the private sector (notably airports and sea ports), but government involvement is still required to plan and facilitate such projects.

This report first explores UK infrastructure investments (section 1) before exploring those by the European Commission within the EU (section 2). Brief recommendations then follow.

Section 1. UK Transport Infrastructure Investment

Overall Transport Infrastructure Investment

Transport has dominated UK infrastructure spending in recent years. The latest figures from the UK's Office of National Statistics highlight that this is consistently around 85% of government infrastructure investment, and this increased by 90% to £16 billion/year in the ten years until 2016.⁷ And transport infrastructure spending is dominated by new infrastructure: the increased spending on new infrastructure outstrips the increase in repair and maintenance of existing infrastructure (46% against 29%).⁸ Government spending on new transport infrastructure is primarily on road and rail. As shown in Figure 1, capital investment in rail has more than doubled in the last decade whilst investment in roads has increased by 42%.

The UK's latest investment plans set out in the National Infrastructure Strategy in November 2020 show this is set to continue.^{9,10} This includes planned investment of:

- £27 billion strategic road investment in England for 2020–2025
- £17.5 billion to renew and upgrade the railway system
- £9 billion for aerospace and the aviation sector through the Bank of England's Corporate Financing Facility
- £200 million for the Port Infrastructure Fund
- £8 billion to support local light rail, bus networks and cycling infrastructure.

5 BEIS, et al. (2021) '[Press Release: UK enshrines new target in law to slash emissions by 78% by 2035](#)'. (Accessed Jul 2021)

6 European Commission (2019) '[The European Green Deal](#)', COM(2019) 640 final.

7 Office of National Statistics (2018) '[Developing new statistics of infrastructure: August 2018](#)'. (Accessed Mar 2021)

8 Ibid.

9 HM Treasury (2020) '[National Infrastructure Strategy](#)'. (Accessed Mar 2021)

10 The recent UK Transport Decarbonisation Plan does not significantly change these investment plans – DfT (2021) '[Transport Decarbonisation Plan](#)'.

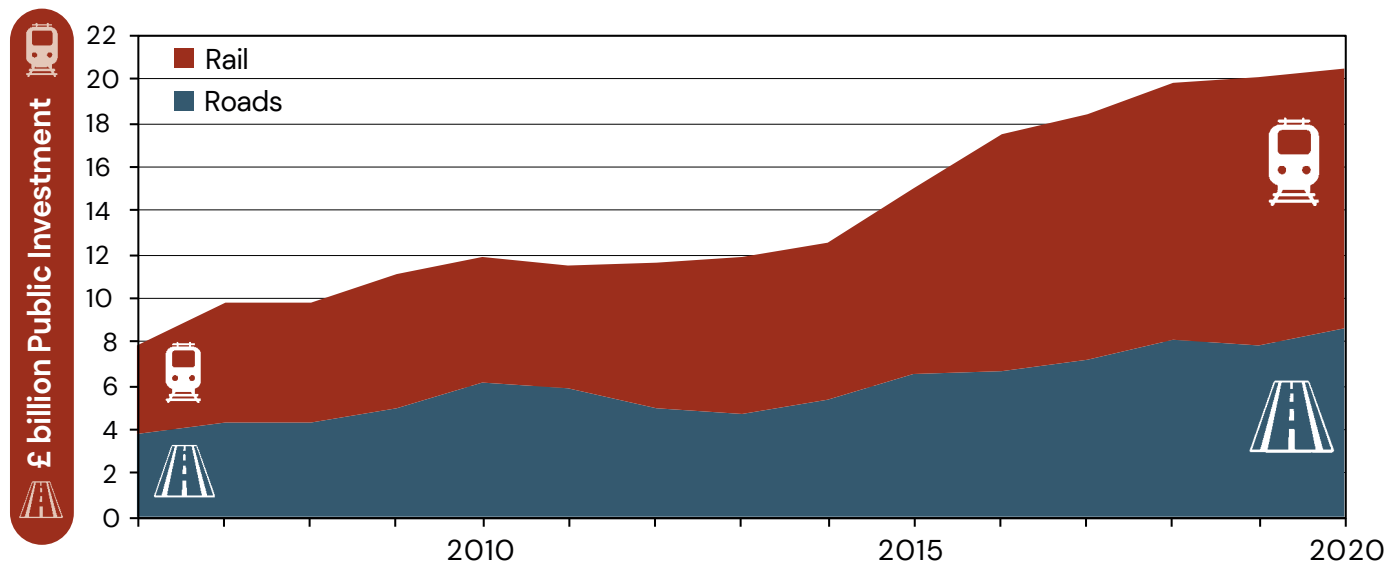


Figure 1. UK Public Capital Investment in Road and Rail Infrastructure

Source: Department for Transport (2020) '[TSGB1303: Public Expenditure on Transport by Function](#)'.

Road Transport Investment

Funding on new road projects has substantially increased in recent years. In 2019 alone, capital spending on new roads was £8.7 billion: four times that spent on road maintenance.¹¹ The UK government has tried to pass off this growth as apolitical by creating a National Infrastructure Commission in 2015. The Commission's 2020–25 strategy, announced in November 2019, included a record £27.4 billion five-year investment plan for England's Strategic Road Network. This includes £14 billion for new schemes, plus road projects to support new housing schemes, as set out in Box 1 below.

The devolved nations are not proposing similar transport network growth: both the £1.85 billion planned for transport expenditure in Scotland¹² and the Welsh government's transport strategy¹³ have a greater focus on sustainable transport schemes. Plans for transport infrastructure investment in Northern Ireland still include significant road investment based on the ten-year plan published in 2015.¹⁴

11 In 2019 capital spending was £8.7 billion compared with £2.2 billion in road maintenance. This has changed from £6.1 billion and £4.0 billion in 2009–10: Department for Transport (DfT) (2020) '[TSGB1303: Public Expenditure on Transport by Function](#)'.

12 Under the list of major projects that total £1.85 billion, only one project, worth £50 million, comprises expansion of roads. The other projects are concerned with improving public transport, decarbonising railways and investing in low-emission buses: Stafford, A, et al. (2021) '[A National Mission with Local Impact: Infrastructure Investment Plan for Scotland from 2021–22 to 2025–26](#)'. Scottish Government.

13 Welsh Government (2021) '[Llwybr Newydd: the Wales Transport Strategy 2021](#)'. (Accessed Jun 2021)

14 Department for Regional Development (2015) '[Investment Delivery Plan \(IDP\) for Roads](#)'.

BOX 1. £14+ BILLION TO EXPAND ROAD CAPACITY

The 2020–2025 spending plan on England’s Strategic Road Network includes 69 ‘road enhancement schemes’. These include:

- £1 billion to widen the A66 to dual carriageway between the A1(M) and M6
- £6 billion to finance a Lower Thames Crossing.
- Upgrading the A303 and A358 between the M3 and M5, including construction of a tunnel to pass under the ancient monument Stonehenge¹⁵
- Create additional motorway capacity through ‘smart motorways’

Overall this is more than 100 junctions, 4,000 miles of road, and improving connections to more than 20 ports and airports.¹⁶ Just the construction of these schemes will result in an estimated carbon footprint of 6.4 million tonnes CO₂e.¹⁷ A further 30 schemes have also been identified for future funding before 2030.¹⁸

In addition, the Housing Infrastructure Fund is investing a further £4 billion to facilitate house building from 2018/19 to 2023/24,¹⁹ often on greenfield and Green Belt sites. Analysis suggests the majority is for transport infrastructure schemes. For example, £42 million is earmarked to increase transport on the A320, to enable around 3,000 homes to be built in the Surrey countryside.

This agenda is being challenged by campaigners. The group Transport Action Network is taking Highways England to court on climate change and air quality grounds.²⁰

Rail Network Investment

The UK rail network is strongly focused around commuting to London and major cities and recent investment has led to increasing commuting distances. In 2019, rail passenger journeys in the UK hit an all-time high of 66.7 billion passenger km/year.²¹ Rail has an important role to play in a climate emergency economy – but to fulfil that role it needs to serve local travel needs and not just long-distance commuters, and rail lines need to be electrified.

In the current investment period, 2019–23, the UK government plans to spend £42 billion and Transport Scotland £5 billion on rail.²² Network Rail estimate that decarbonising the UK rail network would cost £18–26 billion at 2020 prices.²³ This funding has yet to be allocated.

15 Current estimates are between £5.3 billion and £6.8 billion: NEC (2020) ‘[Highways England rolls out NEC4 for £7bn Thames tunnel](#)’. (Accessed Jul 2021)

16 Department for Transport and the Rt Hon Grant Shapps MP (2020) ‘[Written Statement to Parliament: Strategic Roads update: smart motorways evidence stocktake](#)’. (Accessed Jul 2021)

17 Buddii, N (2021) ‘Conquering Carbon’. New Civil Engineer magazine. August 2021.

18 Highways England (2020) ‘[Strategic business plan: 2020–2025](#)’.

19 UK Government (2021) ‘[Housing Infrastructure Fund](#)’.

20 Transport Action Network (no date) ‘[Legal challenges](#)’. (Accessed Jul 2021)

21 DfT and Office for Rail and Road (2020) ‘[Length of national railway route at year end, and passenger travel by national railway and London Underground, annual from 1900](#)’. (Accessed Mar 2021)

22 Network Rail (2019) ‘[Our Delivery Plan for 2019–2024](#)’ (Accessed May 2021); Rail Engineer (2019) ‘[Network Rail announces CP6 spending plans of £42 billion](#)’ (Accessed May 2021)

23 Network Rail (2020) ‘[Traction Decarbonisation Network Strategy](#)’. (Accessed May 2021)

HS2 (£72–98 billion) and Crossrail (£18.7 billion) are separately funded on top of this.²⁴ The money committed to these two projects alone could decarbonise the whole UK rail network five times over.

A shift in approach is needed to align rail investment to the climate emergency, rather than fund big new projects, just as is the case for the road network. Rail must be fully decarbonised as a matter of urgency. The rail network should also be better utilised to facilitate a modal shift of passengers and freight from road to rail. Professor Julian Allwood recently highlighted the possibility for also improving the utilisation of trains, noting that many off-peak passenger trains average 25% occupancy so could be used to carry freight.²⁵

Airport Investment

Aviation, as the most carbon intensive form of transport, presents the strongest contrast between climate commitments and infrastructure investment plans. The UK has the third highest aviation climate emissions after the US and China.²⁶

Before the COVID-19 pandemic, UK passengers travelled 385 billion km to and from the UK by air in 2019 (see Figure 2).²⁷ But aviation was one of the sectors affected most by the COVID-19 pandemic (see Box 2).

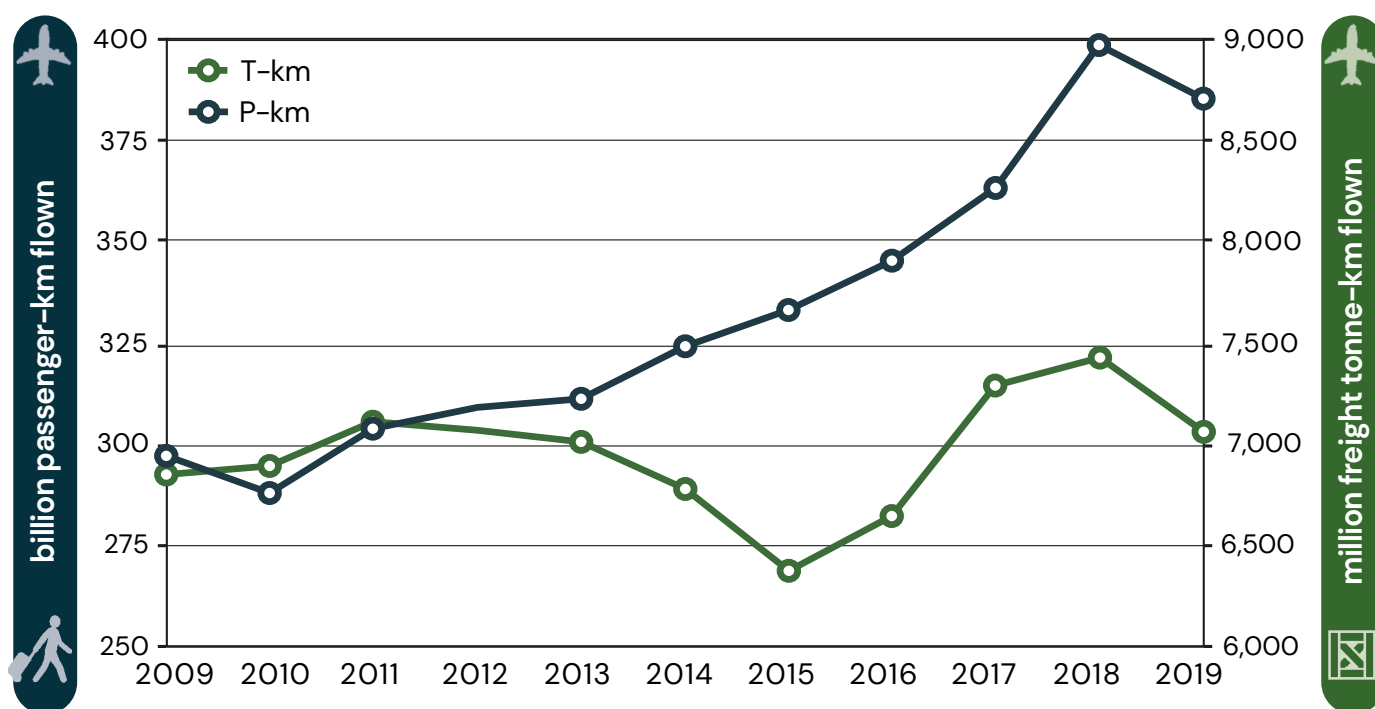


Figure 2. UK Aviation Over the Decade to 2019

Source: Department for Transport (2020) '[TSGB0210 \(AVI0201\): Main outputs for UK airlines by type of service: UK airlines](#)'.

24 Department for Transport, et al (2021) '[HS2 6-monthly report to Parliament: March 2021](#)'. Written statement to Parliament [Accessed Jul 2021]; Topham, G (2020) '[Crossrail delayed again until 2022 and another £450m over budget](#)'. 21 August 2020, The Guardian.

25 Comments made at webinar: '[Reaching Zero Carbon Transport: What will it take?](#)', 12 July 2021. Green House Think Tank.

26 Barrett, T (2020) '[Revealed: every UK airport has plans to expand](#)'. Air Quality News. (Accessed Jul 2021)

27 DfT and Civil Aviation Authority (CAA) (2020) '[AVI0201: Main Outputs for UK registered airlines by type of service 2009–2019](#)'. (Accessed Mar 2021)

UK Aviation Over the Decade to 2019



		2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
P-km	billions	297	288	304	309	311	324	333	345	363	398	385
T-km	millions	6,851	6,892	7,106	7,066	7,008	6,779	6,379	6,646	7,287	7,424	7,057

BOX 2. THE IMPACT OF COVID-19 ON UK AVIATION

Travel restrictions due to the COVID-19 pandemic caused passenger numbers to drop by as much as 97% in 2020.²⁸ And airfreight volumes fell by 19% in March 2020 due to a sharp reduction in passenger flights (which carry freight as belly cargo).²⁹ This led to some companies repurposing passenger aircraft for cargo, and the International Financial Corporation predicted an increase in dedicated air cargo capacity in future. There is some evidence that global airfreight is already recovering.³⁰ However many travel restrictions remain in place at the time of writing, so the impact on air passenger numbers may be sustained far longer.

Neither the pandemic and the resulting shift to hybrid working for many businesses, nor the UK government's climate commitments have so far made a dent in the growth ambition of UK airports.

In December 2020 the UK Supreme Court overruled an earlier decision, which blocked expansion of Heathrow airport on climate grounds.³¹ So Heathrow, which is responsible for around half of the UK's aviation emissions, is now able to proceed with its plans for a third runway. In May 2021, a planning inspector granted an appeal for permission to expand Stansted airport.³² This came just a month after the UK government committed to strengthen its carbon reduction pathway to net zero: new targets set in April 2021 not only committed to a 78% reduction in emissions by 2035, but included the UK's share of international aviation and shipping in the UK's carbon budget for the first time.³³ It is not just these two airports that have been given the green light to expand. This report has uncovered the scale of the plans being drawn up to expand every airport in the UK – to accommodate substantial increases in both passenger numbers and freight volumes. Our research has identified over £20 billion of private sector infrastructure investment plans (see Figure 3). Although these plans are dominated by Heathrow Airport, plans across all the other airports increase the total capacity by a further 50%.

28 MPs on the House of Commons Transport Select Committee (2020) '[Coronavirus has reduced air travel by 97% this year](#)'. House of Commons Committees. (Accessed Jul 2021)

29 International Financial Corporation (2021) '[The Impact of COVID-19 on Logistics](#)'. (Accessed Jun 2021)

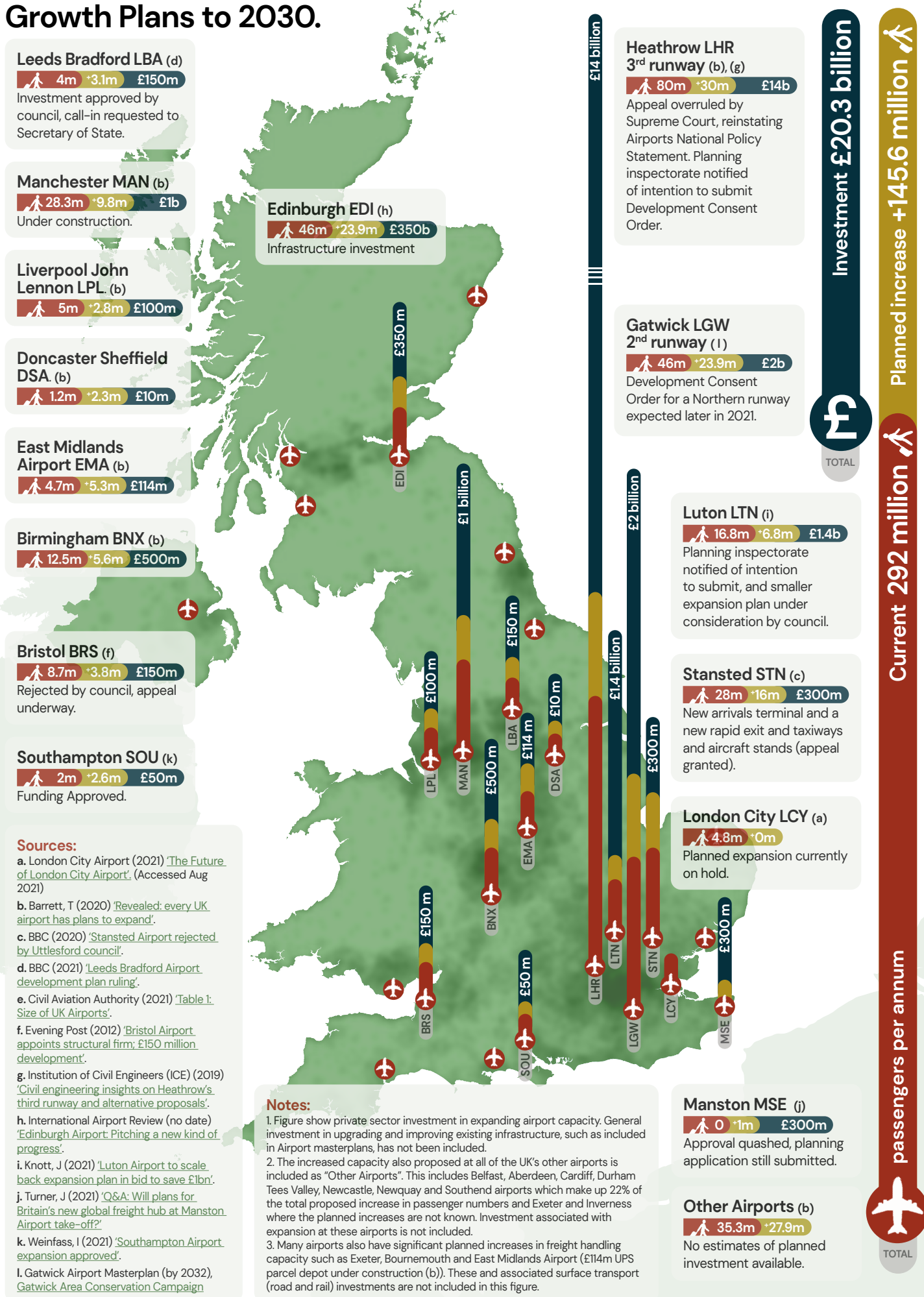
30 Waters, W (2021) '[Air freight ends 2020 on a "relative high"](#)'. Lloyd's Loading List.

31 Clarke, M, and Wackwitz, G (2021) '[Supreme Court overturns block on Heathrow's expansion](#)'.

32 BBC (2021) '[Stansted Airport wins planning appeal over expansion plans](#)'. (Accessed Jul 2021)

33 BEIS, et al. (2021) '[Press Release: UK enshrines new target in law to slash emissions by 78% by 2035](#)'. (Accessed Jul 2021)

Figure 3. UK Airport Infrastructure Investment and Capacity Growth Plans to 2030.



Sources:

- a. London City Airport (2021) 'The Future of London City Airport'. (Accessed Aug 2021)
- b. Barrett, T (2020) 'Revealed: every UK airport has plans to expand'.
- c. BBC (2020) 'Stansted Airport rejected by Uttlesford council'.
- d. BBC (2021) 'Leeds Bradford Airport development plan ruling'.
- e. Civil Aviation Authority (2021) 'Table 1: Size of UK Airports'.
- f. Evening Post (2012) 'Bristol Airport appoints structural firm; £150 million development'.
- g. Institution of Civil Engineers (ICE) (2019) 'Civil engineering insights on Heathrow's third runway and alternative proposals'.
- h. International Airport Review (no date) 'Edinburgh Airport: Pitching a new kind of progress'.
- i. Knott, J (2021) 'Luton Airport to scale back expansion plan in bid to save £1bn'.
- j. Turner, J (2021) 'Q&A: Will plans for Britain's new global freight hub at Manston Airport take-off?'.
- k. Weinfass, I (2021) 'Southampton Airport expansion approved'.
- l. Gatwick Airport Masterplan (by 2032), Gatwick Area Conservation Campaign

The Aviation Environment Federation (AEF) and fifteen community campaign groups have challenged these plans, calling on the UK government to introduce an immediate moratorium on all UK airport expansion and produce the promised National Airport Strategy – and ensure it reflects the UK’s now binding climate targets.³⁴ The AEF reviewed the industry’s Sustainable Aviation roadmap, published in February 2020, which forecasts that the combined growth plans of UK airports would result in a 70% increase in passenger numbers: three times the 25% growth allowed for in the UK Committee on Climate Change’s net zero modelling. The AEF calculate that if all airport expansions are allowed to continue this could increase UK aviation emissions by 9 million tonnes of carbon dioxide (MtCO₂) a year by 2050.

BOX 3. INVESTMENT DECISION-MAKING RULES

Research by the New Economics Foundation found that the economic case for expansion of seven UK airports failed to account for \$2.2–13.4 billion in future carbon emission costs, thereby overstating the economic case for expansion. The report highlighted that such analysis should reflect recommendations made by the government on how to better account for the future economic impacts of environmental aspects, including carbon emissions.³⁵

Ports Investment

Both the current scale of the UK’s ports and their expansion plans are also staggering.

The UK’s largest port, Felixstowe, currently receives 3,000 ships and handles more than 4 million shipping containers (TEUs) each year.³⁶ Plans to expand Felixstowe and neighbouring Harwich would double this to 8 million TEUs by 2030. This would involve accommodating mega-vessels over 430m long. A £40 million rail terminal capable of handling 1 million TEUs a year is also proposed. In short, the UK’s largest port plans to double its capacity by 2030.³⁷

The Port of Southampton is also expanding, with a £150 million container terminal quay and £50 million vehicle export facilities being built in 2014, and £3 million of improvements to Avenue Terminal in 2016.

Future plans include development of the recently purchased 41-acre Eling Wharf. The port’s masterplan sets out the need to expand on its 500 acre land reserve before 2035.³⁸

In March 2021, the UK granted Freeport status to seven ports, including the five biggest (Felixstowe, Southampton, London, Immingham and Liverpool). This creates tax advantages that will incentivise increased imports and exports and sets a trade focused precedent for the UK’s transport infrastructure, as discussed in Box 4.

34 AEF (2021) ‘[Open Letter: Call on Government to Introduce Immediate Moratorium on UK Airport Expansions](#)’. (Accessed Jun 2021)

35 Chapman, A, and Postle, M (2021) ‘[Turbulence Expected: The Climate Cost of Airport Expansion](#)’. The New Economics Foundation.

36 Port of Felixstowe (2021) ‘[The Bigger Picture](#)’. (Accessed Jul 2021)

37 Port of Felixstowe (2017) ‘[Expansion Plans at the Port of Felixstowe](#)’. (Accessed: Jun 2021)

38 Associated British Ports (ABP) (2015) ‘[Port of Southampton Port Master Plan 2016–2035 – Consultation Draft](#)’. (Accessed Jun 2021); Transport for the South East (2019) ‘[Freight Logistics and Gateway Review](#)’. (Accessed Jun 2021)

BOX 4. TRANSPORT INVESTMENT TO FACILITATE GLOBAL TRADE

Either the UK chooses to structure its economy and therefore its transport infrastructure around local and regional supply chains, or around global supply chains. Currently the choice is clearly for centralised transport infrastructure, oriented around global supply chains.

UK granted Freeport status to seven ports and East Midlands Airport in March 2021. This incentivised increased imports and exports for the second biggest handler of airfreight in the UK.³⁹ East Midlands Airport, which is located in the ‘Golden Triangle’ of logistics and distribution depots, is able to reach 98% of the UK population within four hours by road freight.⁴⁰ This area is well connected to UK’s biggest Port (Felixstowe), which delivers around 70% of container imports to this area.

There is a self-reinforcing cycle between centralised distribution centre expansion, transport infrastructure expansion (particularly road, ports and airports) and global trade. This is further embedding a system of global supply chains that are locking-in increased aircraft and shipping capacity and reinforcing patterns of long-distance road freight. In 2019 the transport carbon footprint of the UK’s international trade was calculated at a staggering 36 MtCO₂e.⁴¹ Transport investment focused on global trade blocks decarbonisation.

Heathrow Airport, the UK’s largest airfreight hub, is a good example of a reinforcing cycle at work.⁴² The extra surface transport capacity and connectivity associated with a third runway at Heathrow was estimated to cost £5 billion by the UK government’s Airports Commission and as much as £18.6 billion by Transport for London.^{43, 44} This latter estimate dwarfs the UK-wide promised spending of £2 billion for a ‘new era of walking and cycling’ and £3 billion to deliver a ‘bus revolution’.⁴⁵

Summary

The transport sector dominates public investment in infrastructure in the UK. Planned significant increases in the road and rail networks, ports, and airports supports, and to some extent will drive, further increases in passenger and freight movements, making decarbonisation of both transport and the rest of the economy more difficult.

There is a striking mismatch between investment in expanding the scale of transport infrastructure and investment in decarbonising existing transport (Intervention: #Government Setting Direction). Funding for decarbonisation competes with the funding for capacity increases, and much of the funding needed for decarbonisation

39 Webb, D, and Jozepa, I (2021) ‘UK Government policy on freeports’. House of Commons Library, UK.

40 Lichfields (in association with Royal Haskoning DHV) (2018) ‘Port of Felixstowe Growth and Development Needs Study: Final Report’.


41 Sims, P, and Essex, J (2020) ‘Trade and Investment Requirements for Zero Carbon’. Green House Think Tank and Green European Foundation.


42 The Strategic Road Network in England connected to the UK’s main ports and airports, handles 68% of HGV miles.

43 Topham, G (2016) ‘Heathrow third runway: public bill up to £10bn hidden, says Tory MP’. The Guardian.

44 Mayor of London (2016) ‘Landing the Right Airport: Why we must do better than Heathrow’. Transport for London, p.6.

45 Prime Minister’s Office, et al. (2020) ‘Press release: Major boost for bus services as PM outlines new vision for local transport’.

remains either uncommitted or parked in the future (Intervention:  **Public Money for Public Goods**).

Finally, economic decision-making fails to properly account for climate costs (Intervention:  **Asking the Wrong Questions**). It appears that for mainstream government and private sector operators alike, the climate emergency remains somewhere on, or over, the horizon.

Section 2. EU transport Infrastructure Investment

Introduction

European transport sector emissions are now over a billion tonnes a year (1,096 MtCO₂e in 2019).⁴⁶ All transport, including road, rail, aviation and shipping, now accounts for a quarter of European greenhouse gas emissions. The European Commission predicts that the EU's transport emissions will still be 13% higher than 1990 levels by 2030 and still 10% higher by 2050.⁴⁷ This excludes shipping and international aviation, which are both expected to increase.

Whilst climate change is reflected in policy statements such as the European Green Deal,⁴⁸ the European Strategy for Low-Emission Mobility⁴⁹ and the 2030 Climate Target Plan (2020),⁵⁰ the EU's sustainable transport agenda aim for transport to fully account for its climate impact has not yet been reached.⁵¹

The Trans-European Transport Network (TEN-T)

The Trans-European Transport Network (TEN-T), a huge programme of transport investment, is an example of the focus on new trade-related infrastructure.

TEN-T aims to develop a European multimodal and interoperable transport network of roads, rail, inland waterways and maritime routes linked to urban nodes, ports, airports and other terminals. The programme aims to improve cross-border connections, remove bottlenecks and complete missing transport links to facilitate both the movement of people and goods around Europe.

This policy was introduced in 1996 and has been periodically updated. Around 1,200 projects have been completed since 2013 (costing €110 billion) and around 3,000 projects remain to be completed by 2030.

EU member states plan to invest a further €500 million into the TEN-T core network from 2021 to 2030. This figure does not include any decarbonisation, urban transport or maintenance of transport infrastructure.

46 Unify Project (2021) '[Bringing European Transport Policies on the Climate Neutrality Track: Assessment of and Recommendation on Member States and EU Transport Policies](#)'.

47 European Commission (2018) '[Impact Assessment accompanying Proposal for a Regulation of the European Parliament and of the Council on streamlining measures for advancing the realization of the trans-European transport network](#)'. SWD(2018) 178 final. p36

48 European Commission (2019) '[The European Green Deal](#)', COM(2019) 640 final.

49 European Commission (2016) '[A European Strategy for Low-Emission Mobility](#)', (COM)2016 501 final.

50 European Commission (2020) '[Stepping up Europe's 2030 climate ambition](#)', COM(2020) 562 final.

51 Unify Project (2021) '[Bringing European Transport Policies on the Climate Neutrality Track: Assessment of and Recommendation on Member States and EU Transport Policies](#)'.

Table 1. Scale of TEN-T core network upgrading and new construction, in km (2013–2030)

	Total length	Existing infrastructure to be upgraded or capacity increased	'Missing links' in core network
Rail	63,100	22,000 (35% of total)	8,300 (13% of total)
Road	47,800	10,800 (23% of total)	2,300 (5% of total)
Inland Waterway	15,800	900 (6% of total)	900 (6% of total)

Source: Adapted from European Commission (2021) [Evaluation of the Regulation \(EU\) N° 1315/2013 on Union Guidelines for the development of a trans-European transport network](#).

TEN-T Investments and Climate Commitments

A recent evaluation of the TEN-T programme concluded that the objective 'sustainability' is not specific or targeted enough to meet the European Green Deal targets of reducing transport emissions by 90% by 2050.⁵² However, the review failed to really grapple with the inherent contradiction between facilitating more transportation (by expanding capacity) and decarbonising existing transportation. It is not good enough to note the failure of current plans to meet climate targets and state the need for additional finance to decarbonise transport networks and assume that both of these can sit comfortably alongside continuing to expand the scale and capacity of transport infrastructure across Europe.

The review does recognise need for investment to 'strengthen provisions to accelerate decarbonisation in transport', and it calls for the roll-out of charging and refuelling infrastructure for zero- and low-emission vehicles, aircraft and vessels. But it is unclear when the anticipated zero-/low-emission aeroplanes and ships are expected to materialise. And the review does not even consider that TEN-T investments must shift from prioritising transport infrastructure upgrades and expansion to decarbonising and repurposing existing transport infrastructure capacity instead.

Road Investment

The most recent performance report for the TEN-T's road corridors highlights the current state of Europe's main road network (24,500km of 71,000km total).⁵³ This shows traffic increased at around 1% a year last decade, and freight demand has not risen over the past decade (heavy goods vehicles making up 29.6% of the traffic on the core network). Despite this, increased capacity is planned by national governments on around 30% of these road sections, rising to 46% in Germany. This is justified on the basis of predicted growth of 27% and 17% from 2015–2030 in road freight and passengers respectively.⁵⁴

52 European Commission (2021) '[TEN-T Review](#)'. (Accessed Jul 2021); this evaluation was carried out mid-way between the last substantial revision of the TEN-T policy and the target for completion of the core TEN-T network in 2030. The evaluation looked at the time period of 2013 onwards.

53 Pettersson, J, et al. (2019) '[Trans-European Road Network, TEN-T \(Roads\): 2019 Performance Report](#)'. CEDR.

54 European Commission (2018) '[Proposal for a Regulation of the European Parliament and of the Council on streamlining measures for advancing the realisation of the trans-European transport network](#)', COM/2018/277 final – 2018/0138(COD).

Rail Investment

The TEN-T evaluations projections showed that the completion of rail and inland waterways could stimulate a modal shift and lead to significant CO₂ reduction from 2015 to 2030.⁵⁵ There is potential for a 25% increase in railway freight using existing infrastructure.⁵⁶ Night trains are another way of utilising unused railway capacity, but current expansion plans will not be able to displace more than a small percentage of Europe's current short-haul flights.⁵⁷

Aviation Investment

Just as in the UK, there are plans to expand ports and airports across the EU.

European airlines have sought to shield themselves from COVID-19 impacts through requests for at least €37.8 billion in bailouts since the start of the crisis.⁵⁸

There are now moves to restrict domestic flights across Europe in favour of high-speed trains. For example, French lawmakers recently voted to ban flights where the train journey can be made in less than 2.5 hours.⁵⁹

However, this might have only limited impact on carbon emissions as in 2018 just 20% of emissions from aviation were due to domestic flights, and 60% of were for flights over 1,000km in length.⁶⁰ This suggests that whilst some modal shift to trains is possible (for some shorter journeys) aviation emissions can only fall substantially if we fly less.

Ports Investment

The TEN-T network recognises ports as 'engines for growth' and connects to a total of 329 ports, with all nine of the core TEN-T road/rail corridors starting and ending at ports. The European Sea Ports Association estimates that EU ports need €48 billion over ten years, including for connections through rail and road links.⁶¹ This is expected to include European Commission funding through the Connecting Europe Facility budget.

Summary

Despite the EU's transport carbon footprint exceeding 1 billion tonnes CO₂e a year, current transport investment plans are aligned to neither the European Green Deal nor the EU's 2030 Climate Target Plan. Whilst decarbonising transport is now being discussed, the core narrative of filling 'infrastructure gaps' and associated patterns of

55 Ibid.

56 Murphy, A (2021) '[Climate Neutrality and the Transport Sector – The Road to Zero](#)', workshop, 23 Feb 2021. (Accessed Jul 2021)

57 Hardingham, T (2021) '["Hotels on rails": Plans for new network of European sleeper trains unveiled](#)'. (Accessed Jul 2021)

58 Keim, M, and Cerny, P (Eds.) (2021) '[European Mobility Atlas: Facts and figures about transport and mobility in Europe, 2nd Edition](#)'. Green European Foundation and Heinrich-Böll Stiftung, Belgium.

59 BBC (2021) '[France moves to ban short-haul domestic flights](#)'. (Accessed Jul 2021)

60 Unify Project (2021) '[Bringing European Transport Policies on the Climate Neutrality Track: Assessment of and Recommendation on Member States and EU Transport Policies](#)'.

61 de Langen, P, et al. (2018) '[The infrastructure investment needs and financing challenge of European ports](#)'. European Sea Ports Organisation.

investment remains largely unchanged. The plan is to carry on with business-as-usual expansion, and then try to fit decarbonisation in with that, at some point in the future.

The EU is still pursuing transport infrastructure growth instead of prioritising decarbonisation (Intervention: ✘ **Asking the Wrong Questions**). There is a need for a focused review of the current TEN-T ambitions against the climate ambition set out in the European Green Deal (Intervention: ✚ **Government Setting Direction**). This should be used to guide investment across the sector (Intervention: ✚ **Public Money for Public Goods**). Unless there is a massive shift in spending plans by the EU and member states, transport will not come close to meeting the EU's carbon reduction targets, let alone making a fair contribution to limiting global temperature rise to 1.5°C.⁶²

BOX 5. STRANDED INFRASTRUCTURE ASSETS

The International Energy Agency admitted in May 2021 that limiting global temperature rise to 1.5° means we cannot invest in any new fossil fuel infrastructure.⁶³ The global call for a Fossil Fuel Non-Proliferation Treaty takes this a step further by showing that to limit climate change to 1.5°C, existing coal, oil and gas extraction infrastructure needs to be wound down before the end of its planned life.⁶⁴ However, many governments and most fossil fuel companies are yet to shift their strategies or investments. New fossil fuel reserves are still being explored, new mines opened, new oil and gas licenses issued. Our governments and our economy are not just lagging behind, but are still actively walking in the opposite direction.

As this report illustrates, this is as true when it comes to transport investment as it is for fossil fuels. If we continue to invest in extending transport infrastructure, we are investing in assets that will not be required in or even compatible with our zero carbon future. In addition to locking-in dangerous climate change, there is a substantial risk that continued investment in transport will result in stranded assets.

62 Essex, J, and Sims, P (2021) '[The Social and Environmental Requirements of a Climate Emergency Economy](#)', p.13.

63 IEA (2021) '[Net Zero by 2050](#)'.

64 Teske, S, and Niklas, S (2021) '[Fossil Fuel Exit Strategy: An orderly wind down of coal, oil and gas to meet the Paris Agreement](#)'.

Conclusion and Recommendations

UK and European transport policies and strategies are failing to align to carbon reduction targets. They are still trying to serve two competing objectives:

- To continue the current mainstream development pathway of expanding infrastructure capacity, addressing infrastructure ‘capacity gaps’ to drive growth
- To address climate change by decarbonising existing transportation

At best, strategies fail to recognise the conflicts between these two competing aims, which leads to funding being allocated to both at the same time. At worst, ‘growth’ trumps decarbonisation, which does not get assigned the required urgency or funding. This contradiction must be resolved.

Continuing to finance massive infrastructure expansion plans – both state-funded road and rail, and private sector investment in airports, ports and associated distribution hubs – is not only increasing transport’s carbon footprint in the short-term but will make long-term decarbonising more difficult. For transport’s emissions to fall in line with what is being achieved in other sectors clear policy direction is required, as it is for investment in infrastructure growth to be limited to exceptional, zero carbon cases. This means putting decarbonisation first and accepting that existing transport infrastructure will need to be utilised differently rather than be enlarged.

To meet climate targets, investment priorities must shift:

Recommendation 1. Transport needs sector strong carbon reduction targets.

Transport sector carbon reduction targets must be at least in line with other sectors. The exclusion of international transport from trade and climate agreements, and lower/later targets for national carbon reduction must end.

Recommendation 2. Shift investment from capacity growth to decarbonising existing transport.

Investment decisions must prioritise a rapid shift to zero carbon (both of transport use, and transport infrastructure operation and maintenance). Strategies and investment must shift to decarbonising existing transport assets by reducing the need for travel, shifting mode and improving infrastructure, primarily through electrification. Reallocation of infrastructure capacity must prioritise accessibility for all.

Recommendation 3. Redefine transport investment decision-making.

Investment decisions must reflect how transport infrastructure drives up energy use and carbon emissions. The carbon price used for strategic investment planning must be high enough to reduce transport demand sufficiently to transform the nature of infrastructure investment and transport use.

The recommendations reflect Green House’s Zero Carbon Policy Toolkit, as highlighted in Box 6.

BOX 6. ENABLERS AND BLOCKERS FOR ZERO CARBON TRANSPORT INVESTMENT

The Climate Emergency Economy project has also proposed a **Zero Carbon Policy Toolkit**. This toolkit outlines a set policy interventions, ten **✗ Blockers** which perpetuate business as usual, and ten **✚ Enablers** of a zero carbon sustainable future. Below these economy wide policy interventions (highlight in bold) are linked to transport investment, and the recommendations of this report.

Transport strategies and investments in the UK and across Europe continue to **✗ Locking in Harm**, **✗ Sponsor Harm** and facilitate **✗ Pointless Trade**.

Strengthening transport's carbon reduction targets means prioritising action on climate over growth. This requires governments to stop **✗ Asking the Wrong Questions** and start **✚ Government Setting (different) Direction** instead of relying on **✗ False Horizons**.

Shifting investment from capacity growth to decarbonising existing transport. Transport investment must shift to from **✗ Choosing the Wrong Scale** (by building additional infrastructure) to **✚ Investing in what we Already Have** (decarbonising existing infrastructure).

Changing decision-making by internalising climate, environmental and social consideration. This requires **✚ Taxing Harm** and genuinely putting **✚ Public Money for Public Goods**. Like the first recommendation, it also requires that appraisal processes for infrastructure projects internalise the full costs of demand growth rather than **✗ Asking the Wrong Questions**.

To find out more about the toolkit go to: greenhousethinktank.org/toolkit

Find out more by visiting:

 www.greenhousethinktank.org

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 www.gef.eu

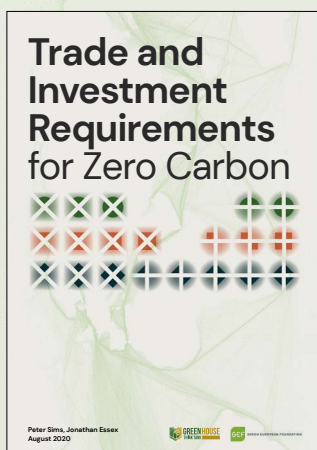
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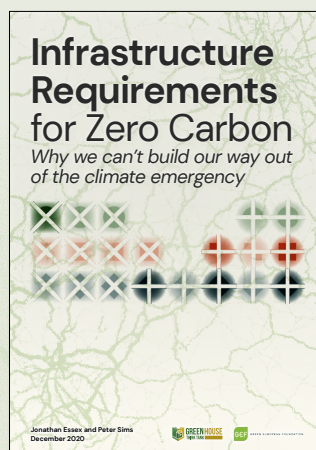
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Currently transport investment is focused on expanding infrastructure rather than decarbonising existing infrastructure. The continued increase in the scale of transportation makes reducing transport emissions to zero even harder if not impossible. This report explores the investment driving this expansion, and the interventions needed.

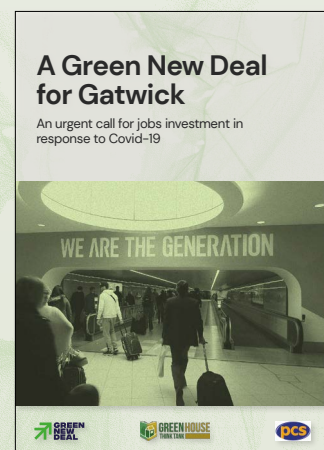
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