

TRANSPORT IN SCOTLAND



The road to net zero

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ABOUT ADDLESHAW GODDARD

IMAGINATIVE SOLUTIONS TO PIVOTAL BUSINESS PROBLEMS

Good business depends on good advice. Which, ultimately, comes down to four words. Yes. No. Stop. Go. Many of the world’s most recognised and respected businesses – including 43 FTSE100 clients in the last two years – come to Addleshaw Goddard to deliver just that kind of simple answer. They rely on our lawyers around the world to find imaginative solutions to their pivotal business problems, and to get things done.

WORKING ACROSS THE TRANSPORT SECTOR

The Addleshaw Goddard Transport practice is widely regarded as among the leading practices in the UK and we are proud of the breadth of expertise.

We have a large, expanding team of sector specialist lawyers working regularly on a wide range of matters, and have indepth and current knowledge of the regulatory, contractual, operational and commercial aspects of the industry.

Our clients include many of the primary industry stakeholders, across both the public and private sector, and our work covers major projects across the transport sector.

AREAS OF EXPERTISE

Rail



Shipping



Light rail



Transport Logistics



Airports



Bus



Aviation



Tram



Ports

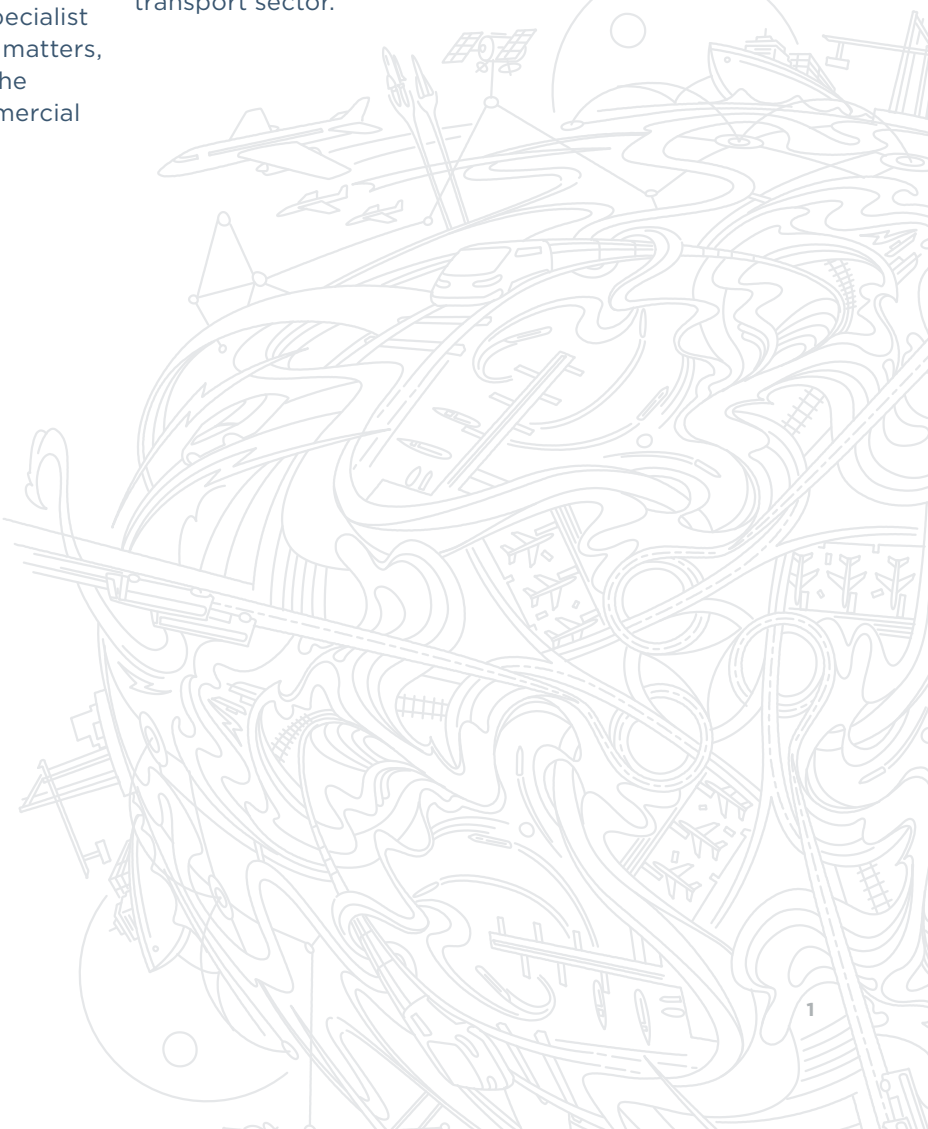


Electric Vehicles



THANK YOU TO OUR CONTRIBUTORS:

AGS Airports	Glasgow Chamber of Commerce	Scottish Enterprise
CMAL	Glasgow City Council	South East of Scotland Transport Partnership
Committee for Climate Change	Hitachi Rail	Stagecoach
Edinburgh Airport	HIAL	Strathclyde Partnership for Transport
Edinburgh City Council	Loganair	Transport Scotland
Eversholt Rail	Midlothian Council	
Forth Ports	Network Rail	
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FOREWORD



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The Committee on Climate Change progress report to the Scottish Government, published in December 2019, called setting a net zero greenhouse gas emissions target for 2045 ‘a step change in ambition for Scotland’. It also noted the need for ‘urgent action’ if the country is to meet this target, and ahead of it, the ‘extremely challenging’ 75 per cent reduction target by 2030, a deadline that is now under 10 years away.

The scale of the challenge is underlined by the fact that surface transport emissions have risen for the fourth consecutive year and have increased by 9 per cent since 2012. When including aviation and shipping, transport is the highest emitting sector in Scotland, at 37 per cent of total carbon emissions.

Across the rail, road, shipping and aviation sectors, all contributors to this report agreed there is an urgent need for a co-ordinated policy framework that considers not only the decarbonisation of each sector individually, but also reviews how transport provision interacts today and how these interrelationships should be improved to provide a more efficient integrated transport system.

Much of the challenge must be about agreeing what modal shifts are desirable as well as what blend of technology and access to transport is suited to local social and economic needs.

With the Scottish Government calling climate change a ‘national emergency’ there seems to have been a very tangible shift in both corporate and public sector mindsets recently when it comes to setting all strategy for the future. During the evidence gathering for this report, one person went so far as to say: ‘Since the climate emergency was declared, all policy is seen through the prism of how we reduce carbon emissions. That is very new.’

Whilst the political and social will is now largely there to drive the change needed to hit net zero targets, it was noted by several contributors to this report, that the Scottish elections are set for 2021 and another referendum on independence remains firmly in the SNP’s plans. The will to make socially unpopular legislative changes may therefore be dampened in the immediate future at the very point at which tough choices need to be made to deliver the radical changes required to deliver the net zero promises.

On the flipside, there is also huge optimism among those in senior positions in Scotland’s transport industry and a will to recognise the enormous economic opportunity that net zero offers. Several people interviewed raised opportunities to reskill existing workforces, to promote international investment into carbon reduction technology and infrastructure in Scotland, to redeploy Scotland’s already significant experience in engineering, onshore and offshore fuel extraction and renewables into the development of new clean fuels, mass hydrogen production and the development of battery storage technology.

In this report, we considered just four of the many facets of change and focus that will be needed if we are to meet Scotland’s net zero targets: technology, investment, public policy and social change. We spoke to a wide range of experts with various perspectives on the transport sector and public sector supporting the road to net zero. We are thankful for their considered and insightful input.

COP26, the United Nations climate change negotiation conference, is being held in Glasgow on the River Clyde in November this year. This is a very real and imminent opportunity to showcase what Scottish policy makers have done, and are committed to doing, to support real action to decarbonise the transport sector.



EXECUTIVE SUMMARY

Set out below is a summary of the key insights and proposals arising from our discussions with a panel of industry experts.

- Interconnectivity between different modes of transport is critical
- A politically independent and international body is needed with sufficient powers to push through radical change – akin to the World Bank
- There is still some hesitation among private companies to commit sufficient investment into the development of new technologies, fuel sources etc at the scale required and fast enough
- Hindering this investment is a lack of clarity on specific infrastructure plans including questions such as the extent to which the railways can be electrified, the extent to which electric vehicle charging points will be installed and how the grid is to be upgraded sufficiently to support the transition of air, shipping, rail and road vehicles to battery power for example
- There has to be a balance of incentives to change behaviour and penalties for failing to comply: these include the introduction of low emissions zones, workplace parking charges, potentially banning private car use from congested areas, taxing road use more aggressively and introducing better interconnectivity of ticketing for all forms of public transport to make journeys easier and potentially cheaper
- A review is needed of the taxation regimes across all modes of transport; currently and historically tax has encouraged certain modes – principally private car use. This must change to create a bias towards public transport and active modes of transport including walking and cycling
- Net zero offers a huge economic development opportunity
- Scotland should develop a skills centre to upskill its existing workforce to deliver the change needed
- Environmental visas akin to Tier One Investor visas could be introduced to encourage international investment into businesses and technology that helps to deliver net zero
- Much more data is needed to support business cases to invest: Government must work with academia and business to model forward how different strategic approaches and technology will impact society, the economy and the environment
- Britain's flight paths are outdated and unfit for delivering more carbon efficient travel. This must be reviewed and flight paths changed urgently using bold legislation to overcome local objections
- Councils and regional partnerships will need to work together much more closely than has previously been the case to co-ordinate connections across the country
- All sectors would welcome better cross-sector communication and data sharing



TECHNOLOGY



There is a real need to promote and possibly mandate data sharing across all logistics platforms.

Electric vehicles, hydrogen trains and buses, battery-powered planes and ferries are all technologies that exist today. Nearly everyone interviewed was optimistic about the rollout of clean transport across Scotland and the UK, with various pilot projects already underway to build test cases.

Edinburgh and Glasgow airports have made leaps forward to reduce surface emissions by replacing combustion engine vehicles with EVs on site. Surface access connections remain an issue for aviation – how people travel to and from the airport. In Edinburgh there is the tram link; in Glasgow there is no alternative to access by road. Plans to extend the rail link were marked as fundamental to the airport's ability to reduce carbon emissions.

All contributors raised offsetting as a possible problem area. Easyjet recently announced it will offset carbon emissions from the fuel used on all of its flights, making it the first major airline to operate net-zero carbon emission flights across its fleet.

The technology to support purely battery-powered aircraft on any but the shortest haul flights does not yet exist. Commercial short-haul flights between Orkney Islands are planned by 2022 with an eight-seater battery-powered plane currently in production and testing planned for 2021. Charging of this plane using entirely renewable sources is also intended, though due to battery and weight constraints, currently this type of aircraft can fly only very short hops of 12 to 18 minutes.

Last year saw British Airways and Shell plan Europe's first commercial waste to jet fuel plant, a further step towards transitioning to cleaner fuel, yet contributors highlighted concern that without significant public funding and incentives, the cost of this fuel is prohibitively high and production scale too low. One person spoken to suggested incentives should be offered to reskill many of those working in the petrochemical industry to develop bio-fuels in Scotland, with this type of technology fundamental to decarbonising aviation long term. He also confirmed that without scale investment in this, offsetting would dominate the drive to net zero in this sector.

In shipping, contributors reported a shift away from heavy fuel oil in new build vessels to liquid natural gas. Battery technology for passenger ferries is also possible, though range remains an issue. One contributor also indicated that the lack of financial incentives to ports to invest in the 'massive' charging infrastructure needed to support the recharging of electric vessels, including cruise ships with up to 4,000 passenger capacity, conflicts with environmental targets. That said, Scotland does have a number of hybrid vessels already in operation, reliant on both battery technology and engines that can burn both liquid natural gas and diesel.

Two projects are currently running looking at the feasibility of using hydrogen-powered vessels in the Orkney Isles and Western Isles.

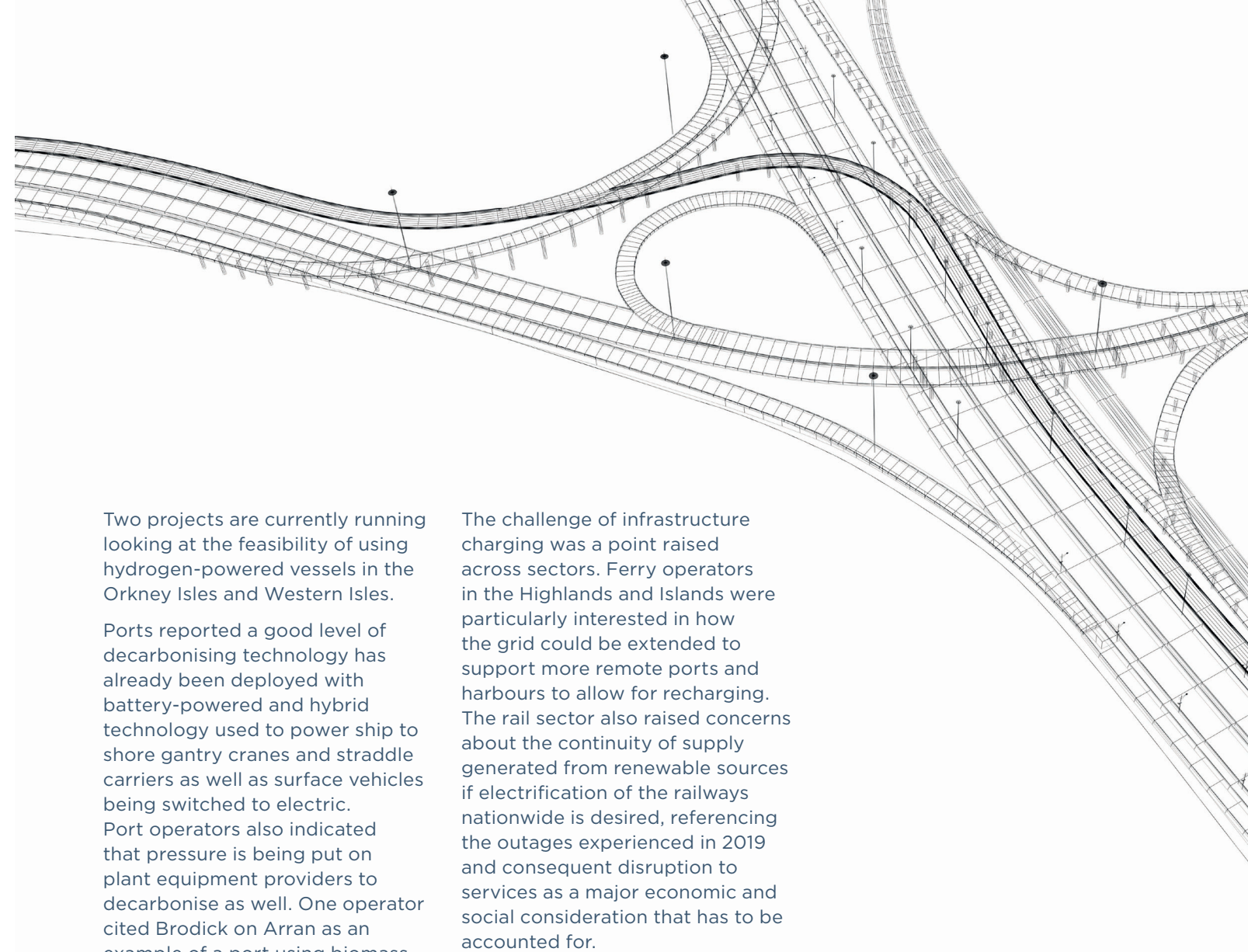
Ports reported a good level of decarbonising technology has already been deployed with battery-powered and hybrid technology used to power ship to shore gantry cranes and straddle carriers as well as surface vehicles being switched to electric. Port operators also indicated that pressure is being put on plant equipment providers to decarbonise as well. One operator cited Brodick on Arran as an example of a port using biomass heating and solar panels, but said most port infrastructure needs major improvement. The long-term lifespan of vessels was also cited as a challenge to upgrading sufficiently quickly.

One key discussion around the bus sector pointed to the massive investment already made by bus companies in Scotland to upgrade buses to Euro 6 'clean diesel', which reduces emissions by 90 per cent compared to Euro 3 standards. One major transport operator, which has the biggest fleet of electric buses in the UK, has already invested £1billion in switching to cleaner technology over the past 10 years, indicated a desire to move its fleet to electric eventually, but raised the massive challenge of ensuring there is a sufficient charging infrastructure in place to support this transition.

The challenge of infrastructure charging was a point raised across sectors. Ferry operators in the Highlands and Islands were particularly interested in how the grid could be extended to support more remote ports and harbours to allow for recharging. The rail sector also raised concerns about the continuity of supply generated from renewable sources if electrification of the railways nationwide is desired, referencing the outages experienced in 2019 and consequent disruption to services as a major economic and social consideration that has to be accounted for.

The cost of electric technology has also been prohibitive for private companies looking at switching fleets of buses, ferries or trains over. Currently too little practical financial support has been given to public funding that would subsidise this transition and rebalance the economics of that decision to align with environmental priorities.

This also applies to individuals: according to the Committee for Climate Change, the typical cost for a home charge point and installation is approximately £1,000 but this is expected to fall by 2030. The Scottish Government is already supporting the roll-out of private charging points through the Energy Saving Trust, which provides grants of up to £300 through its EV Homecharge scheme on top of funding from the UK Office for Low Emission Vehicles (OLEV), and almost 90 per cent of EV owners in Scotland also have home charging points.



TECHNOLOGY

In October 2019, Scotland had over 3,600 public charging points, around 50 of which were ultra-rapid chargers. By 2030, 4240 fast chargers (22 kW), 2800 rapid chargers (43 kW), 900 ultra-rapid chargers at 150 kW and 55 ultra-rapid chargers at 350 kW will be required for public charging across Scotland.

One contributor raised the potential for unintended consequences by encouraging homes to have private charge points, however, arguing that public transport transition had to be the priority. Public charge points at work and the supermarket, for example, were also given credence as a better strategy than encouraging home-based charging. This could also alleviate spikes in demand on the grid.

HYDROGEN

The other major technology in development is hydrogen, with some buses in Aberdeen already running on this new fuel. Germany runs several hydrogen trains and more than one contributor to this report expressed real excitement about investing in hydrogen trains for Scotland, something that is likely in the imminent future.

The advantage of hydrogen is that it has the potential to replace petrol and diesel in more remote areas of Scotland where electrification is prohibitively expensive or unfeasible. This is true of both rail and ferries and has the potential to open up the Highlands and Islands.

It is also a more practical fuel for HGVs and heavy vehicles, at least until battery technology has been developed sufficiently to produce smaller, lighter batteries with higher capacity.

If this is to occur however, there needs to be significant investment in the clean production of hydrogen fuel and its distribution and availability around the UK is imperative and presents another major area of infrastructure investment and development.

DATA SHARING

More than one of our experts raised the importance of sharing data between all transport sectors, arguing there is a real need to promote and possibly mandate data sharing across all logistics platforms including HGV, vans, rail, shipping and aviation in order to understand how distribution can be streamlined and decarbonised most cost-effectively.

Rail network operators and service operators also raised the need to share data nationally much more effectively and indicated that legislation is required to enforce a wholesale move to cleaner rolling stock, as well as understanding how the rail network interconnects with roads and where upgrades should be focused to deliver the maximum efficiencies possible.

ELECTRIFICATION OF RAIL

The Scottish Government has a rolling programme of electrification which forms part of a wider £5billion investment package for Scotland's railway infrastructure. Of the 2,776 km of rail track in Scotland, approximately one quarter is electrified. The Scottish Government has pledged to fully decarbonise all passenger rail by 2035.

All rail sector interviewees agreed that this programme of electrification should continue at pace as the fastest and most cost effective means to reduce carbon emissions from rail in the immediate future.

COMPLETED ELECTRIFICATION PROJECTS



Airdrie to Bathgate Railway



Cumbernauld electrification project



Edinburgh to Glasgow via Falkirk line



£12 million Paisley Canal electrification project



Stirling, Alloa, Dunblane lines



Shotts line between Holytown Junction and Midcalder Junction

INVESTMENT



More tangible understanding of how to balance the country's economic with its environment needs is urgently required.

The overwhelming reaction from all contributors to this report was that billions of pounds would be needed to deliver net zero by the targets set by both the Scottish and the UK Governments. The public sector argued that private companies would need to 'put their hands in their pockets' while the private sector argued that much more public funding was needed.

All agree a combination of both private and public money would be fundamental to delivering net zero, but almost all raised genuine concern as to whether there is enough available to support the scale of investment required.

Several people raised the lack of practical academic and financial modelling and analysis that had been undertaken to assess the economic impact of delivering net zero. The cost of regulation, supervision, practical delivery costs, the infrastructure required, reskilling the workforce among many other considerations must be looked at.

One area of economic concern raised, for example, was the impact of discouraging international flights in Scotland on the Scottish economy. This comes down not just to passenger traffic but also Scottish airports' hubbing potential and international freight distribution. Assessing the economic impact of discouraging this type of transport must also consider what other countries are doing so as to account for Scotland's competitiveness in the UK, European and global economies.

This, they argued, must be done immediately with Government urged to commission this work from independent sources. A more tangible understanding of how to balance the country's economic with its environment needs is urgently required.

In terms of practical investment, areas of priority included upgrading the grid as number one, to support the massive rise in demand for electricity that would result in a wholesale move to electric trains, planes, ferries, buses, cars, vans, heavy goods vehicles and bikes.

Another call that many repeated was public support to make the commercial case for investing in cleaner technology more aligned with the environmental case. Electric buses and trains are currently far more expensive than diesel, hybrid aircraft and clean sustainable fuel production for planes are disproportionately expensive compared to diesel. Older cars and petrol and diesel are cheaper than a brand new electric car.

Modes of transport and their cost is another area that several contributors raised as key. Driving is the cheapest mode of transport for long distances. How freight distribution is taxed is not equal in shipping, road, rail and air. The whole structure of how fiscal policy affects private sector choices in modes of transport needs major review with a joined up approach across the entire transport sector in order to encourage the behavioural change needed to deliver net zero. The Government's priority must be to redress this balance using all of the tools at its disposal.

EXISTING FUNDING

- Scotland already has launched calls to bid for a £3billion green investment portfolio
- Scotland's 'Growth Accelerator' programme has been extended to a 'Green Growth Accelerator' that allows local authorities to invest in low-carbon infrastructure
- A £500million fund to improve bus services across Scotland has been confirmed
- £17million available for zero interest loans to support the purchase of ultra-low emission vehicles
- £7.5million of private and public funding for expanding public charging infrastructure and electricity networks
- Two significant decarbonisation funds for capital expenditure were announced in the past year: the £315million Industrial Energy Transformation Fund (IETF) and the £170million Industrial Decarbonisation programme delivered through the Industrial Strategy Challenge Fund (ISCF)



POLICY FRAMEWORK



Since the climate emergency was declared, all policy is seen through the prism of how we reduce carbon emissions. That is very new.

Scottish Government has set itself a series of highly ambitious targets, from ending the sale of petrol and diesel cars and vans in the next 12 years to decarbonising all passenger rail services by 2035 and flights within Scotland between two Scottish airports by 2040.

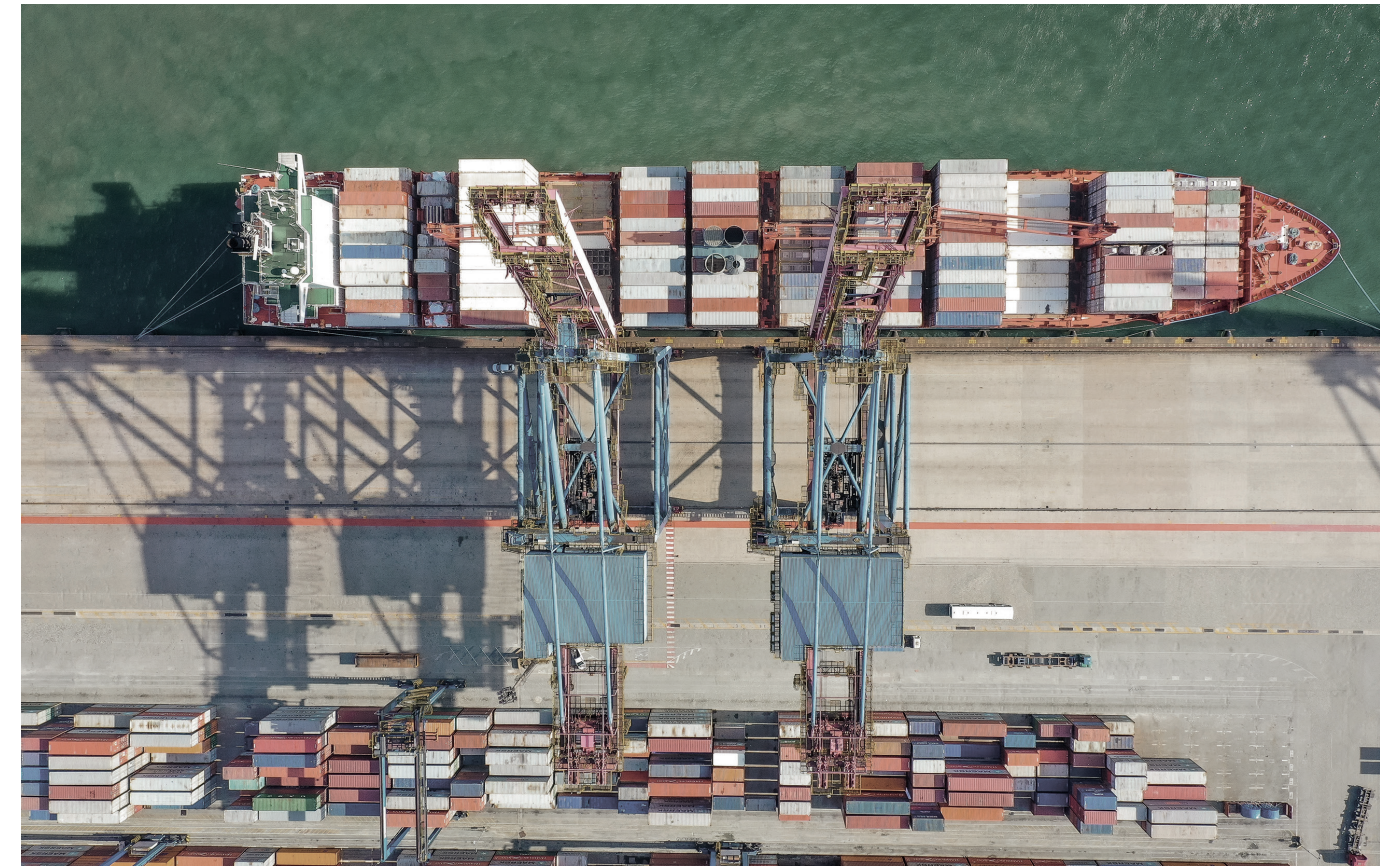
Contributors to this report raised the potential challenge for the Scottish Government of achieving this given its lack of control over fiscal levers including vehicle and fuel taxation, excise duty and company car tax. However, it is likely to use congestion charging, workplace parking levies, public transport and EV priority on the roads to influence behaviour. Penalties imposed on companies that fail to upgrade fleets should also be considered.

It is also within the Scottish Government's gift to offer scrappage schemes and other forms of financial support to those wishing to switch to electric vehicles. One such scheme is already in place with interest-free loans of up to £35,000 currently offered by Transport Scotland and the Energy Savings Trust, on top of grants from OLEV.

Transport Scotland also currently provides funding for housing associations to provide electric vehicles as part of a car club, widening access to the benefits of driving electric vehicles.

One discussion explored 'mobility as a service' as a successful model to encourage households to give up private vehicle ownership altogether. Pilots are already being run - however this should be extended nationwide to allow for practical usage by individuals needing to travel longer distances by car.

How regional partnerships are awarded status to make decisions about how and where to invest in local infrastructure is also a hotchpotch currently. This needs urgent review to award local public sector bodies the ability to make decisions and take action to deliver on their own net zero targets.



The Committee on Climate Change warned in its December report that there is limited power at Scottish Government level in aviation. However, there are significant challenges that must be met to reduce carbon emissions from air travel. According to one expert in this area, Britain's flight paths are outdated and unfit for delivering more carbon efficient travel. Existing flight paths were designed in the 1960s for aircraft designed 60 years ago using ground-based beacons to navigate. This results in congestion, aircraft having to remain in the air longer than needed and has not evolved to reflect satellite navigation and the efficiencies that offers.

While the UK government has committed to addressing this, hard decisions must be taken, even where new flight paths over residential areas create obstruction. A balance must be struck between environmental priorities and social ones.

We found there was a distinct call for support from the government to upscale the development and production of sustainable aviation fuels, airspace modernisation and infrastructure support for surface access.

Bus lane priority was also raised as a key driver of behaviour change. Transponders that prioritise buses, enabling faster more efficient journeys are already in use in Perth city centre and must be rolled out on a national basis, argued one contributor. Broadening out bus lanes was also encouraged, though one person labelled the policy debate around this 'all a bit ad hoc' and warned that not enough thought had gone into how bus lanes would affect local business deliveries for example.

Several public sector contributors indicated that road prioritisation would change significantly with cyclists given top priority, pavements widened to promote walking, more investment in trams and metro systems and bus lane extensions.

SOCIAL CHANGE



The public must be engaged in the challenge and policy should be designed to put people at the heart of it.

The Scottish Household Survey 2018 confirmed that people in Scotland are more concerned by climate change than ever before but research from online investment platform Charles Stanley Direct recently suggested that just 5 per cent of UK adults have changed their day-to-day behaviour as a result of the global climate strike campaign led by Greta Thunberg.

However, the move towards flight-shaming, spearheaded by Greta Thunberg has already impacted on usage in her home country. The number of passengers flying through Swedish airports dropped 4 per cent in 2019, according to Swedish state-owned airport operator Swedavia, led by a decline in domestic traffic.

Britain, an island nation, has no land link and just one rail link to the continent and therefore has fewer options when it comes to international travel.

The point was raised during one of the discussions on this sector: *'People are questioning the merits of flying ethically but we in the aviation industry feel we have been on top of reducing our environmental impact for a while. £15 billion has been invested by airlines and the aerospace industry a year and aviation now accounts for just 2 per cent of global carbon emissions.'*

We were pointed to figures that showed passenger numbers rising 25 per cent between 2010 and 2016, while aviation emissions rose just 5 per cent over the same period. *'We are getting much more efficient, aircraft are using much cleaner, greener technology and fuels and surface emissions have come down significantly. We haven't been great at communicating this as an industry though.'*

The Committee on Climate Change progress report to the Scottish Government, published in December 2019, advised that 'the public must be engaged in the challenge and policy should be designed to put people at the heart of it'. The shift in lifestyles that will be needed if we are to hit net zero are enormous. How we travel is just as important a consideration in this transition as what we travel in.

Currently, the public consensus sees a shift from privately owned cars with combustion engines towards privately owned electric vehicles. But who pays for this remains a tricky subject. At the moment individuals are largely footing the bill but it was felt that there needs to be a debate about whether or not a form of scrappage scheme should be introduced and funded publicly in order to encourage individuals to switch to cleaner cars.

The financial impact of forcing change using low emissions zones on households is still poorly understood, though it seems logical that poorer households will be disproportionately hit where Government does not devise grant schemes to support the technological upgrades that are required to millions of homes and cars across the country. In Scotland, and its major cities particularly, these schemes and incentives must be considered, agreed and delivered very quickly if they are to filter into a manageable rate of changeover.

There is broad agreement amongst the sector that dependence on the road network in Scotland should be reduced, with priority on the roads given to public modes of transport including both buses and trams.

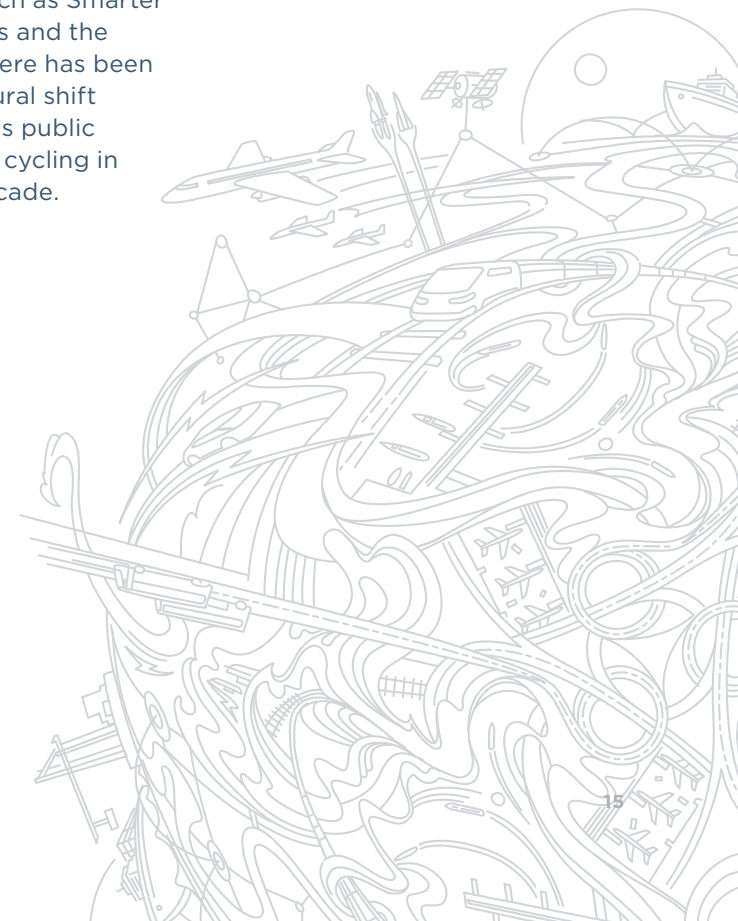
Bill Reeve, of Transport Scotland, told us that a priority for them is now *'how to persuade passengers out of their cars and freight customers out of HGVs and onto railways'* indicating that policy already supports this shift. He also suggested that the management of Network Rail in Scotland needs to be devolved to the Scottish Government to facilitate the upgrades needed.

How easy using public transport is for individuals is going to be critical. Schemes to introduce single fare passes and charging structures that allow passengers to move seamlessly from one operator to another without the need for separate tickets are needed. They have been trialled in some parts of the country, but there is a need to roll this out on a co-ordinated national scale, which will require centralised administration by an independent party. Transport Scotland is cognisant of this and seems minded to support integrated ticketing.

Active travel – walking and cycling – need to become more commonplace as do electric bikes. But despite policies such as Smarter Choices Smarter Places and the Cycling Action Plan, there has been no significant behavioural shift away from cars towards public transport, walking and cycling in Scotland in the last decade.



We are getting much more efficient, aircraft are using much cleaner, greener technology and fuels and surface emissions have come down significantly. We haven't been great at communicating this as an industry though.



CONCLUSION



Concerted, coordinated and well-funded action is required now.

Contributors to the report were on balance, hugely optimistic about committing to decarbonising Scotland's transport sector.

Delivering the required reduction in carbon emissions in the desired timeframe elicited a more mixed response. Dependent on sector, there was a varying degree of pessimism that the level of investment in infrastructure would be sufficient to meet targets.

'The money just isn't there,' said one executive.

Broadly speaking, those operating bus companies and ferry operators were most positive about their ability to meet targets.

Rail operators had more mixed views – some rolling stock providers displayed real excitement to invest privately into developing battery operated trains, hybrid trains powered by a mix of battery and hydrogen and pure hydrogen-powered trains. Government contracts, rolling stock lifespans and renewal timeframes require review however if operators are to be incentivised or forced to replace entire fleets quickly enough. There will be a commercial cost to be borne: whether government provides scrappage schemes or simply legislates will have an effect on the cost of rail travel ultimately passed to passengers.

Experts in the aviation sector felt broadly that they had already invested heavily in carbon reduction technologies and strategies but had failed to communicate their successes to the public. Flight paths to improve fuel consumption and efficiency, was singled out as a priority for governments.

The question of offsetting emissions was raised frequently, pointing out that while the majority of industry's focus must be on carbon emission reduction, true zero emissions are further off than 2045 in Scotland. There needs to be some agreement on acceptable levels of offsetting / phased reduction in offsetting allowances.

Time was the biggest concern for all parties, with the consensus being that ambitious deadlines were needed to create impetus for action but scepticism expressed on how realistic delivery would be in practice. Concerted, coordinated and well-funded action is required now.



CURRENT EMISSIONS

Surface transport emissions increased by **3 per cent** in 2017, the fourth consecutive annual increase, to 10.5 MtCO₂e

Emissions from surface transport in Scotland were **12 per cent higher** in 2017 than in 1990, and were just 1 per cent lower than the peak in 2007

Cars, vans and heavy goods vehicles (HGVs) account for **65 per cent** of total transport emissions in Scotland

The total distance travelled by road vehicles in Scotland has increased steadily since 2011 at an average rate of **1.7 per cent** per year

Car traffic has increased by **5 per cent** since 2007, broadly in line with the increase seen in car travel for the UK as a whole

Vehicle ownership in the Highlands and Islands Transport Partnership region is **18 per cent** higher, and average distances travelled by road are estimated to be around 20 per cent higher than the Scottish average

The distance travelled by vans has increased by over **30 per cent** in the past ten years

The distance travelled by HGVs fell from 2007 to a low in 2012, though it has since risen at an average of around **1 per cent** per year for the past five years

Aviation emissions grew 6 per cent in 2017 to 2.1 MtCO₂e and are now **56 per cent higher** than 1990 levels largely due to an increase in emissions from international flights

Emissions from domestic flights increased by **2 per cent** to 0.6 MtCO₂e, and were 27 per cent below 1990 levels

Shipping emissions fell by **5 per cent** in 2017 to 2.3 MtCO₂e, following three successive annual increases from 2013 to 2016, and are now 44 per cent below 1990 levels

Domestic shipping was the major source of shipping emissions in Scotland, responsible for more than **five times** the greenhouse gas emissions than from international shipping

THE AMBITION

The Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 (“2019 Act”) introduced new emissions reduction targets for 2020, 2030 and 2040 of 56 per cent, 75 per cent and 90 per cent respectively against 1990 levels.

According to the Committee on Climate Change, emissions will need to fall by an average of 1.8 MtCO₂e each year between now and 2050, equivalent to 3.6 per cent of emissions in 2017

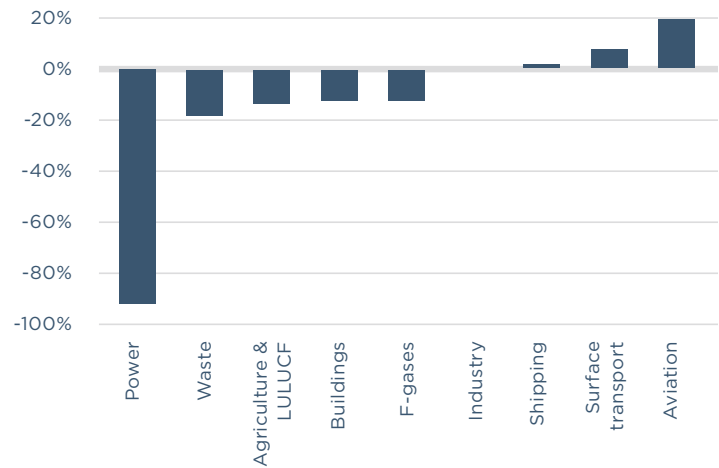
Scottish Government has also pledged to decarbonise passenger rail services by 2035, and all flights between Scottish airports by 2040

Scotland will consult on zero- or ultra-low-emission city centres by 2030, and aims to end the need for new petrol or diesel cars in the public sector fleet by 2025

The cities of Glasgow and Edinburgh have both set themselves even more ambitious targets of reaching net zero carbon emissions by 2030.

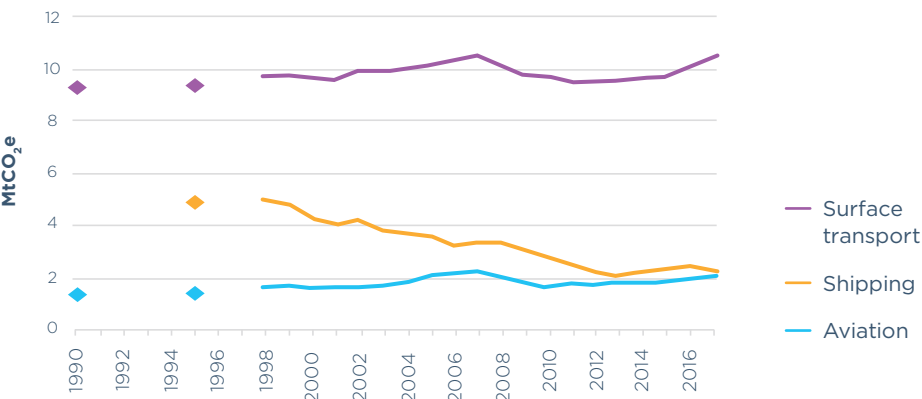


CHANGE IN EMISSIONS



Source: The Committee on Climate Change progress report to the Scottish Government, published in December 2019

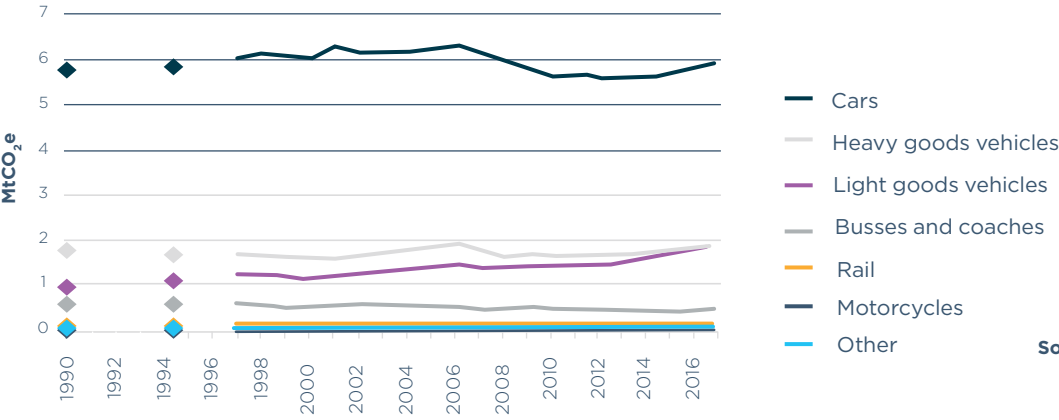
EMISSIONS FROM TRANSPORT IN SCOTLAND (1990-2017)



Source: The Committee on Climate Change progress report to the Scottish Government, published in December 2019

Notes: No emissions data are available for devolved administrations for 1991-1994 or 1996-1997. Includes Scotland's share of emissions from international aviation and shipping

EMISSIONS FROM SURFACE TRANSPORT IN SCOTLAND (1990-2017)



Source: NAEI (2019)

PROBLEMS. POSSIBILITIES.
COMPLEXITY. CLARITY.
OBSTACLES. OPPORTUNITIES.
THE DIFFERENCE IS IMAGINATION.
THE DIFFERENCE IS **AG.**

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