Tackling Bus Patronage Decline
Net-Zero  Infrastructure and Services
National Planning Framework 4
Connected and Autonomous Vehicles

# Contents

## There May Be a Crisis but Let's Celebrate Our Achievements

### STSG Chair John Yellowlees reflects on 2022

There is a lot of history being made at present. When we look back on 2022 we may remember shortages and strikes, and fluctuations in petrol and diesel prices, and not least ferry failings, with island communities increasingly cut off by worsening reliability among CalMac's ageing fleet and delays and cost overruns on new ferries. However there has also been a lot of good news and positive work in progress.

Changes to the Highway Code favoured pedestrians and cyclists, and Edinburgh's cycle network expanded. The Scottish Futures Trust allocated a budget to local authorities for development of their Electric Vehicle charging strategies. Low Emission Zones came into existence. Glasgow has a new City Centre Transport Plan promoting walking and cycling over car use.

Buses benefited from free travel for under-22s but bore the continuing impact of driver shortages. Passenger numbers were still not back to pre-Covid levels, however cuts in services beckoned as pandemic support was running out. McGill's took over FirstGroup's operations in the East of Scotland.

ScotRail returned to public ownership, but was soon afflicted by drivers not working overtime, resulting in an emergency timetable. Lumo showed the potential for modal shift from air to rail, but HS2's benefit for Scotland was reduced by cancellation of the Golborne Link connecting HS2 to the West Coast Main Line. New stations opened at Reston and Inverness Airport. Scotland's hydrogen train began operation at Bo'ness, and work commenced on electrification of the line linking Edinburgh with the Forth Bridge.

A bid for Prestwick Airport was rejected by Scottish Government. Loganair and FlyBe expansion plans chase similar routes but FlyBe once again collapsed in January 2023. Scotland was impacted by Heathrow Airport cutting flights owing to soaring demand and staff shortages.

Already in 2023 a new station at Inverness Airport has been opened serving also a business park and the Tornagrain new settlement, and providing additional capacity railway between Inverness and Nairn. Cross Forth autonomous bus has commenced trials, and tram-testing will start soon on the extension to Newhaven.

We cannot cover all of the changes in STR but we cover the key issues and choices being faced developing the the future of Scottish transport.

# Reform of Transport Taxes Needed

In January 2023 think tank the Green Alliance published a report showing that transport is not paying its fair share of emissions taxes. There is no connection between the emissions of different modes of transport and the tax revenue they raise.

Taxes on transport raised £44 billion for the Exchequer in the 2019-20 fiscal year, the most recent year largely unaffected by the Covid pandemic. Of this, £40 billion came from road vehicle and fuel taxes, and £4 billion was from air passenger duty.

Transport is changing rapidly in the race to reach net zero carbon emissions by 2050. Without tax reform, the move to electric vehicles will reduce fuel duty revenue by up to £28 billion a year, as receipts diminish. By 2035, road transport will be a long way ahead of aviation and shipping on its path to net zero, with the fiscal black hole widening by the year as a result.

Transport taxes have developed piecemeal over time, so they lack uniformity and consistency across modes. Transport emits more greenhouse gases than any other sector in the UK. It is responsible for a third of all UK emissions annually and this remained relatively unchanged until the Covid pandemic. Road transport is the largest contributor, with cars and vans the source of half of the sector's emissions; international aviation is responsible for a further 25 per cent.

To plan the approach now to align the tax system with the decarbonisation of transport, the government should:

- Start an honest conversation with the public about the need to reform transport taxes;
- Develop initial options, for public discussion, around how the transport tax sys-

> There is no connection between the emissions of different modes of transport and the tax revenue they raise

tem should be updated;

- Create an independent commission to evaluate options and consider how they might be implemented;
- Ensure initial options for updating transport taxation fit with broader tax policy to support the net zero transition.

## The effective price paid in taxes and charges for each transport mode in 2019



Effective carbon price, 2019

Per tonne of $CO_2e$

Rail transport 2 $MtCO_2e$ — £350

Government carbon value in 2022, £248 per $tCO_2e$

Road transport 111 $MtCO_2e$

Air transport 39 $MtCO_2e$

# What Public Transport Should Be Free at the Point of Delivery?

There is no doubt that free public services are popular and that public transport needs to become much more popular for Scotland's climate change aspirations to be achieved. Who should pay for public transport?

Germany introduced a 9-euro-a-month travel pass, Austria's 3-euro-a-day pass, Ireland slashed fares, Italy provided a 60-euro subsidy per person, Spain has offered free train travel for a trial period, and in England bus tickets are capped at £2 from the start of 2023.

Free fares boost public transport passengers, but not necessarily from drivers. The introduction of free concessionary travel for buses in Scotland found that free transport was more likely to be used by those who had previously been walking or cycling. Even a small fare discourages people from taking the bus for short journeys that could easily be walked, without having a significant impact on the overall affordability of PT.

Free fares also tend to provide the greatest financial benefits for wealthier people, rather than those on low incomes, since people living in wealthier places tend to travel further to work to reach better paid jobs and make greater savings when fares are free.

The case for free public transport is perhaps strongest as part of social signalling. Removing fares says to people that they have a right to get around regardless of their wealth, and that society values the choices of people to use public transport.

However there also needs to be parallel improvements in the capacity and coverage of public transport to cope with the travel demand induced by low or free fares policies. In Spain, the free tickets have disproportionately benefitted the places that already had high capacity frequent services which also tended to be the wealthier locations. Free rail tickets are of little benefit if there is no space on the trains or even no rail service at all.

Free fares also help to reduce the cost of operating ticketing schemes and enforcing fares policies. It has long been the practice of some low use bus operations in the north of Scotland not to collect fares on some subsidised services since the administration cost exceeds the revenue generated. Simpler fares policies also help to speed up boarding times at busy bus stops and rail stations.

> The case for free public transport is perhaps strongest as part of social signalling that society values the choices of people to use public transport
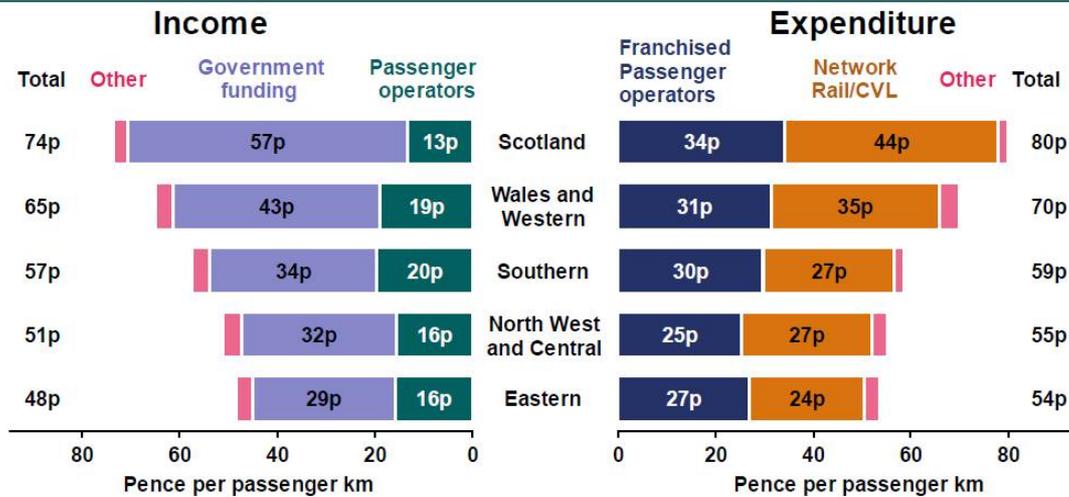
Ultimately someone needs to pay for public transport. Cash strapped transport authorities in Scotland would need to generate new revenue streams if they were to offer attractive public transport fares policies at the same time as expanding capacity and coverage of buses and trains to ensure fairer and more efficient provision. Will these authorities be prepared to charge motorists more for using roads and parking to fund cheaper public transport?

In the wake of the pandemic, fares on buses and trains in Scotland contribute a lower proportion of the cost than they have done in the recent past. Could public authorities go one step further and find the cash to make more public transport free?

STSG will be holding round table discussions in the months ahead to explore the policy options. If you would like to participate please e-mail admin@stsg.org and we will keep you in touch with our plans.

## Office of Road and Rail Regulator – Rail Industry Income and Expenditure April 2021-March 22

### Income

| Total | Other | Government funding | Passenger operators | | |
|---|---|---|---|---|---|
| 74p | | 57p | 13p | Scotland | |
| 65p | | 43p | 19p | Wales and Western | |
| 57p | | 34p | 20p | Southern | |
| 51p | | 32p | 16p | North West and Central | |
| 48p | | 29p | 16p | Eastern | |

Pence per passenger km

### Expenditure

| | Franchised Passenger operators | Network Rail/CVL | Other | Total |
|---|---|---|---|---|
| Scotland | 34p | 44p | | 80p |
| Wales and Western | 31p | 35p | | 70p |
| Southern | 30p | 27p | | 59p |
| North West and Central | 25p | 27p | | 55p |
| Eastern | 27p | 24p | | 54p |

Pence per passenger km

## Tourist Pass for Public Transport Sought

Patricia Yates, chief executive of VisitBritain, has claimed visitors to the Edinburgh Fringe were unlikely to move on to visit other parts of Scotland because it was tricky to get around by public transport. She called for public transport information and ticketing to be improved to make it easier for tourists to navigate the system, comparing Scotland with fares and travel options available in Switzerland.

She said there were 3.5 million overnight visitors to Scotland from international markets pre-covid versus 15 million overnight trips from the domestic market, but internationals were responsible for 43 per cent of the spend. With better transport that spending could be more efficiently distributed across Scotland.

## Royal Mourning Train Travel

Although the Royal Train surprisingly played no part in bringing Queen Elizabeth's coffin south from Scotland, Scotland's railways had a significant role in the period of the nation's mourning. For the first time ever in its 180-year history, the Edinburgh & Glasgow Railway operated a 24-hour service providing an hourly train which even in the wee sma' hours was carrying hundreds of passengers and contributed to a 55% upsurge in footfall at Waverley on 12 September compared with the same day a week previously. Lessons learned from the Scottish experience were shared with rail industry colleagues planning the much bigger operation for mourning at Westminster.

## Decline in Competition Leads to Highland Council Stepping in to Run Buses

Highland Council in Scotland has started to provide bus services through its in-house transport operation, in a further response to the difficulty of procuring private sector contracts. Since before the Covid-19 pandemic, rural authorities around the country have been increasingly operating services in-house following a decline in competition for tenders. In some cases, no bids have been received, in others the prices asked were unaffordable.

The trend has accelerated as operators have reacted to reduced passenger numbers and increased costs in the last 12 months. Highland Council expects to save £1.4m by operating an inhouse bus company. 10 public and schools services have been transferred to council operation. The Council has invested in purchasing and leasing 12 buses, including six double-deckers, to deliver passenger and school transport services at a lower cost than commercial contractors.

The Scottish Parliament legislated four years ago to give local authorities the power to create arm's length bus companies, overturning the previous prohibition. The project is currently being run in-house as a pilot but will be monitored by the Economy and Infrastructure Committee with a view of expanding the number of services. Operating inhouse services provides a good option for both the customer and the authority but future options may consider setting up a new arm's length/municipal bus company.

# Bus Network Coverage Continues To Decline

Since 2015 there has been a steady decline in bus miles on the Scottish network despite a large increase in public funding through new network Support Grants (NSG and NSG+). The NSG approach replaces previous national funding of buses under BSOG.

Analysis of the registered bus mileage by Automatica shows that bus mileage declined sharply during the pandemic and shows no sign of recovering to pre-pandemic levels. When compared with 2015 bus mileage the latest data for 2021 and 2022 show an ongoing downward trend in bus mileage. If there are less buses running to less places then it will be harder for the bus network to expand its reach to new passengers and places.

National funding has sought to assist bus service recovery and in the latest round of Network Support Grant Plus (NSG+) from 9th October 2022 payments will be made for live kilometres of bus operation. NSG+ is now paid at 39.2p per live kilometre compared with the 50.4p per kilometre paid until 9 October 2022, which in turn was lower than the initial rate of 79.4p per kilome-



> **Conditions of the latest round of NSG+ require operators to demonstrate commercial sustainability following the end of emergency funding on 31 March**

tre when the scheme was introduced on 1 April 2022.

However there are strong headwinds, particularly a driver shortage partly due to backlogs at DVLA, Brexit, rising HGV driver demand leading poaching of staff, and people rethinking their work life balance.

Conditions of the latest round of NSG+ require operators to ensure commercial sustainability following the end of emergency funding on 31 March 2023. Detailed information about each supported bus kilometre is required from operators. Profit is permitted with up to 7% earnings before interest and tax retained by the operator, while profits between 7-20% will be shared equally with Transport Scotland. Any profits above 20% will go to Transport Scotland in its entirety. Low carbon vehicle and low emission vehicle uplifts continue to be paid under both the NSG and NSG+ funding schemes.

With the continuing decline in bus mileage and the impending further reductions in government support continues, monitoring of bus network coverage will be increasingly important in the months ahead.

## Percentage of Bus Mileage Run Compared to a May 2015 Baseline

# CAVForth Autonomous Bus Project Progress

Stagecoach East Scotland has carried the first passengers on the group's CAVForth autonomous bus project. They were 22 members of the Co-Design Panel, who were then invited to offer feedback on the service ahead of its launch.

Stagecoach says that once registered and observing a frequent timetable, CAVForth will be able to carry around 10,000 passengers per week between Ferrytoll park-and-ride site in Fife and the Edinburgh Park transport interchange via the Forth Road Bridge. The public launch in early 2023 is a slight slip from the previously-stated plans to go live in 2022.

The model type of the five buses used has now been formally named Enviro200AV by manufacturer Alexander Dennis. When in use, the CAVForth examples will carry a "bus captain" to reassure passengers and assist with queries and the purchase of tickets.

The Co-Design Panel is made up of local bus users who have volunteered to help Stagecoach and its project partners to design how an autonomous bus service should work. They have been involved in livery design for the Enviro200AV fleet and in work on communications. Other partners in the CAVForth project are Bristol Robotics Lab, Edinburgh Napier University, Fusion Processing, Transport Scotland and UWE.

**CAVForth will carry a "bus captain" to reassure passengers and assist with queries and the purchase of tickets**

Building on this success the CAVForth autonomous bus project in Scotland is to grow via a £10.4m second phase, CAVForth2 with an extension from Ferrytoll park-and-ride site in Fife to Dunfermline, a total distance of nearly 20 miles. This extension will add "more complex autonomous driving scenarios." The CAVStar design includes redundancy on all safety critical systems, with additional redundancy included in braking and steering equipment. A driver is thus not required, but as with the original CAVForth work, CAVForth2 will have one present at all times.



# How Can Self-Driving Vehicles Improve Safety

Ian Wainwright from the Chartered Institute of Logistics and Transport (CILT) noted that there were more questions than answers about safety of automation when giving evidence to the Transport Select Committee at Westminster. He noted that "The biggest issue is human behaviour, as it relies on enforcement, reactions from the public, and fail-safe vehicles. If we as humans get used to that fail-safe, do we just cross the street and cause possible incidents, meaning the potential of congestion can get worse."

Technology is developing very quickly, leading some manufacturers to claim their vehicles can operate at a high level of automation. Where there is clear business benefit, businesses will lean towards self-driving vehicles. As yet there has been very little evidence of how

the potential safety benefits will be achieved in practice. There are many people involved and interacting with the built environment and machines but little analysis of how to ensure that these interactions are failsafe including the security of the data used in system roll-out and interaction and the role of regulation to maintain performance.

Autonomous vehicles are coming but are well off widespread adoption. CILT suggest that the mantra must be safety, safety, safety; safety for users, safety for non-users, and safety of the systems. Wholesale introduction into the public domain requires significantly more work and a clear regulatory framework which is likely to require regular updating as technology develops and we get closer to full automation.

# Levelling Up

A new ferry for Fair Isle is one of ten Scottish projects to receive the support of the UK Government's Levelling Up fund. The successful bid made by Shetland Island Council will includes a £27m roll-on, roll-off vessel to replace the 37 year old Good Shepherd IV (pictured) and improve transport links to the small island 24 miles south of the Shetland mainland. A similar bid was made during the first round of Levelling Up funding last year but was unsuccessful at the time.



# No Plans for Scottish Emissions Trading Scheme in Strategy

The Scottish Government Draft Energy Strategy and Just Transition Plan notes that the UK Emissions Trading Scheme (UK ETS) establishes a market price for carbon and incentivises business investment in least cost decarbonisation. Although Scotland has set more ambitious targets for renewable energy than the rest of the UK, the new proposals suggests that relying on the UK ETS for setting a cap on emissions will be sufficient. Aviation and warehousing remain the only major parts of the transport system where emissions are to be capped.

The new paper says that "we are developing proposals to align the UK ETS cap with our ambitious net zero targets. We consulted on proposals to reduce the overall cap in Spring 2022 and will propose legislative amendments to the cap in 2023. As we align the ETS cap with our net zero targets, we will also continue to work with industry to support a managed and just transition, including how risks of carbon leakage are mitigated through the ETS."

It could become increasingly difficult to price fossil fuel taxes fairly in Scotland to manage the phase out of older petrol and diesel vehicles without extending trading to other types of transport to manage vehicle use to achieve decarbonisation targets. The consultation is open until 4th April here (https://consult.gov.scot/energy-and-climate-change-directorate/energy-strategy-and-just-transition-plan/)

# Climate Intelligence for Scotland?

Scotland needs a "climate intelligence unit" to help councils contribute to net zero goals, according to the Scottish Parliament Net Zero, Energy and Transport Committee. The Committee say that Scotland will not achieve its net zero goal by 2045 without major help for local government.

They are calling on the Scottish Government to set out a "comprehensive roadmap" giving councils detailed guidance on how they can help meet climate goals. A "more empowered" local government sector also needs better access to skills and capital to make its full contribution to net zero.

The committee's report calls for additional financial support to councils in future budget cycles for climate purposes. An estimated £33bn will be required to decarbonise heat in buildings alone and the report says it is "essential" to attract private investment at scale.

It also calls for an expanded role for the Scottish National Investment Bank and new work on strategies to secure deals with investors.

Meanwhile, it claims councils should set targets covering all emissions in their area and take a "more consistent" approach to net zero planning, budgeting and target-setting.

However, there is a skills deficit at local government level, it is claimed, and the drive to meet existing targets is making "unprecedented and often highly technical demands" on the sector.

A "more empowered" local government sector needs better access to skills and capital

# Could the Scottish Government's Approach to Testing for Net-Zero in City Deals Become the Blueprint for All Infrastructure?

The Scottish Government has published new guidance on how to achieve transparent and consistent carbon management across the City Deals programme, which could become the blueprint for applying a net-zero test to all transport infrastructure.

The guide seeks to ensure that carbon is an influencing factor in planning all projects and has been designed to accord with HM Treasury Green Book requirements. The guide seeks to ensure compliance with three goals:

- Quantification of whole life carbon using appropriate and authoritative sources;

- Minimisation of whole life carbon using relevant best practice methodologies; and,

- Identification of potential barriers to achieving net zero, e.g. skills, materials, technology.

The guide suggests that every project should have a business care which is compliant with net zero policies setting out:

- The relationship between the project and a just transition to net zero according to Scotland's Climate Change Plan.

- Relevant local or national carbon policies and strategies and demonstrated project alignment, e.g. accordance with a local authority net zero target date.

- Categorisation following Scottish City and Growth Deal Carbon Guidance according to its Control (1-5) and Influence (A-C) over carbon in a Carbon Emissions Impact section or appendix.

- The whole life Carbon Emissions Impact associated with the project, including embodied carbon from construction, has been estimated in tonnes $CO_2e$ over the economic appraisal period.

- The Carbon Emissions Impact has been assigned an economic value using the BEIS carbon values (£/tonne per year, with workings appended) and included in the cost / benefit calculations.

> **The guide suggests that every project should have a business care which is compliant with net zero policies**

- Whole life carbon has been used as a differentiating factor in options appraisal. This may not necessarily be through full quantification of all options, provided that sufficient explanation is given as to why potentially viable lower carbon options have been discounted.

- How the Project has considered and incorporated financial requirements relating to the assessment and management of carbon. This includes voluntary carbon reductions and meeting foreseeable carbon-related requirements, e.g. avoiding direct carbon emissions from the use of fossil fuels in heating. If not explicitly stated, any such costs are assumed to be included in the Business Case.

- The methodology used to manage carbon in this and subsequent project stages is clearly set out, e.g. implementing PAS 2080: Carbon Management in Infrastructure.

- The project will include carbon as a differentiating factor in procurement through the supply chain.

- The mechanism by which carbon performance will be demonstrated once the project is operational is explained, e.g. 12 months building performance carbon data reviewed against design predictions. Monitoring and reporting periods should be included in the Full Business Case, according to the carbon management methodology used and project characteristics.

To illustrate how different types of project can be applied to control and influence carbon in infrastructure the guide sets out examples of different project types including:

> **For all projects, Scotland's whole life carbon emissions trajectory towards net zero by 2045 will be the carbon performance benchmark**

- A road that will be operationally net zero, e.g. by using renewable electricity for lighting, but will lead to an increase in vehicle km and associated 'tailpipe emissions' across the region (Category 3C).

- Deployment of a new technology for extracting carbon from the atmosphere that extracts more carbon than was emitted to create it. Its success leads to the accelerated uptake of this technology across the country (Category 1A).

- A skills programme with no specific carbon objectives that involves no construction and is intended to enhance the employability of individuals within a region (Category 2B).

- A new research centre building that is designed to be operationally net zero (i.e. no fossil fuels will be required to operate it) but will have no measurable bearing on wider carbon emissions (Category 3B).

The guide requires that the carbon performance of projects will be based upon the achievement of carbon commitments set out in the business case for the project. For all projects, Scotland's whole life carbon emissions trajectory towards net zero by 2045 will be the carbon performance benchmark, with examples of better performance being the achievement of net zero more quickly

# CERG Call for Net-Zero Test for all Transport Investment

How does opening a railway line to Levenmouth, dualling the A9 or building a the east west cycle route in Edinburgh contribute to the Scottish Government's net-zero goals. The Climate Emergency Response Group (CERG) want to see an explicit Net Zero Test for all future policy and investment decisions.

CERG suggest the new test would involve a layered approach from screening to assessment as required by the policy or project including:
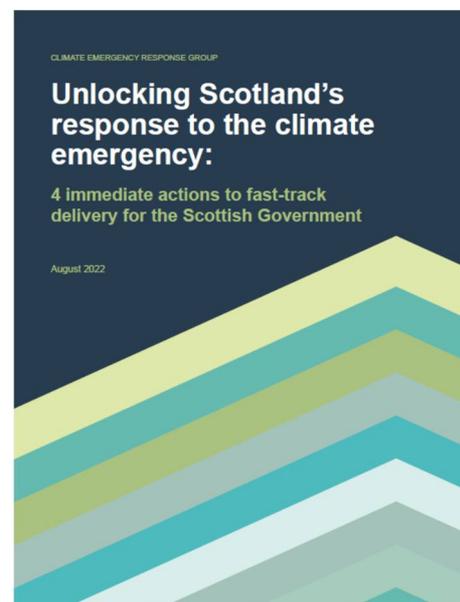
• Apply to individual projects as well as at an overarching programme level - aimed at ensuring compatibility with Scotland's 2030 and 2045 climate change targets.

• Inform policy and investment in the future as well as existing policy and infrastructure plans so they can be amended as required to align with net zero goals.

CERG also want to accelerate the shift from cars to active, public, and shared transport in Scotland's cities. They suggest that immediate actions for the 2022 Programme for Government in Scotland should be to:

- Shift to multi-year, non-competitive funding agreements with local authorities from 2023.

- Speed up consenting for new infrastructure and strengthen enforcement of priority measures by the end of 2022.

- Support more rapid decarbonisation of the bus sector in 2023.

- Engage with citizens to agree practical, workable solutions (national and local) from 2023.

- Provide stronger leadership and regional action on car demand management.



CLIMATE EMERGENCY RESPONSE GROUP

**Unlocking Scotland's response to the climate emergency:**

4 immediate actions to fast-track delivery for the Scottish Government

August 2022

# Are Net Zero Plans for Rail on Track?

Concerns have been raised over the pace of rail electrification with Network Rail achieving only 2.2km of track added in last year in Britain, less than 1% of its annual target which is needed to achieve a fully net zero railway by 2050.

The transport body has set a target of electrifying 448km of track a year but hasn't come close to reaching that target once in ten years. Of the track that is open to traffic, both freight and passenger, 2.2km of electrified track was added to the network in the past year, according to the Office of Rail and Road's Rail Infrastructure and Assets report for April 2021 to March 2022. This was due to remodelling at London King's Cross as part of the East Coast upgrade.

Across the UK the proportion of electrified route is now at 38.1%, compared to 37.9% from the previous year, an increase of only 0.2% in total electrified route track. In Scotland, using the measure of single line electrified track used by Transport Scotland, the national rail decarbonisation action plan estimates that around 29% of Scotland's railway track is currently electrified. In terms of the proportion of total vehicle kilometres under electric traction, however, the figure is far greater and constitutes 76% of all passenger journeys. The routes to Scotland's main rail freight terminals in the central belt are electrified, and around 45% of Scottish rail freight journeys are electrically hauled from origin to destination. A significant proportion of freight is cross-border so it is important to synchronise electrification plans with those in England to ensure they are fully electrified from origin to destination.

Rail Industry Association technical director David Clarke has suggested in a recent report to DfT that the rest of the UK should adopt an approach more like the Scottish one with a decarbonisation strategy, not an electrification strategy.

Whilst Scotland currently has a lower proportion of its network electrified compared to the rest of Great Britain, and other European countries, the Scottish action plan suggests that significant progress in recent years and a continued commitment to electrification in Scot-

> **Scotland currently has a lower proportion of its network electrified but significant progress in recent years and a continued commitment to electrification has seen this improve at a faster rate than elsewhere in Britain**

land has seen this improve at a faster rate than anywhere else in Britain.

In the last decade the Scottish Government has invested around £1 billion in some 441 (track) kilometres of electrification and associated infrastructure improvements directly benefiting over 35 million passenger journeys each year. Both the Stirling-Dunblane-Alloa (100 single track kilometres) and Shotts (76 single track kilometres) projects were brought into use/passenger service within 12 months of each other. The lines electrified in the last ten year period include:

- the new Airdrie to Bathgate route
- the Paisley Canal line
- the Cumbernauld line
- the Whifflet route between Rutherglen and Coatbridge
- the Stirling-Dunblane-Alloa route
- the main Edinburgh to Glasgow route via Falkirk High
- the Edinburgh to Glasgow line via Shotts

Across the UK, the total amount of electrified track currently open to traffic actually decreased over the past year. By March 2021, it stood at 6,045km (of a total 15,935km of track) but by March 2022, it was 6,042km (of a total 15,874 of track). This is due to Network Rail decommissioning certain lines. In order to achieve a net zero railway, 13,000km of total track kilometres open to traffic must be electrified.

# Decarbonising Shipping

Scotland's near neighbour Norway is the only country in the world with carbon pricing for emissions from shipping. A December 2022 report by the International Transport Forum at the OECD recommends that steps are urgently needed in all countries to invest in decarbonisation of shipping and that this will only be achieved with new pricing mechanisms.

The new report recommends that change is needed to:

- Introduce carbon pricing in shipping as part of a broader set of decarbonisation measures - A global carbon pricing scheme for shipping would accelerate the decarbonisation of maritime transport. Such a scheme should combine elements of the five different carbon pricing proposals put forward to the IMO. Regulatory instruments such as technical design requirements for ships and a low-emission fuel standard should accompany it.

- Consider designing a carbon pricing mechanism for maritime shipping as a "feebate" system - Under a "feebate" system, all ships emitting greenhouse gas emissions pay a levy that is used to subsidise zero-emission fuels and energy sources. Ships operating with zero emissions receive a rebate that covers the price difference between conventional fuels and zero-emission fuels or energy sources. This rebate is funded by increased levies for vessels that still burn fossil fuels. In this way, the "feebate" system incentivises operators to adopt emissions-free energy sources early while burdening late movers with higher costs and increasing pressure to convert. The "feebate" system should be introduced as soon as possible.

- Complement carbon pricing with a technical design requirement and a low-emission fuel standard - Governments should agree on a technical design requirement for "zero-emission readiness" for new vessels. This standard would require all new vessels to be capable of running on zero-emission fuels or other zero-emission energy sources. Governments should also consider introducing a low-emission fuel standard that would become progressively stricter and so help to phase out fossil fuels in shipping.

- Use carbon pricing revenues from maritime

> **A green shipping corridor was announced by the Aberdeen Harbour Board between Aberdeen and Norway in 2022 with plans to demonstrate hydrogen technologies by 2024**

shipping to facilitate an equitable transition to zero emissions - A substantial share of revenues from the carbon pricing mechanism would need to be reserved for general climate mitigation and adaptation projects in Small Island Developing States (SIDS) and least developed countries (LDCs), including projects related to decarbonising maritime transport. Using carbon-pricing revenues in this way helps balance potentially increased transport costs and negative impacts on trade. Retrofitting ships to make them zero-emission ready or adapting port infrastructure to accelerate the uptake of zero-emission energy sources are other potential uses.

- Make sure that these pricing schemes and standards cover well-to-wake emissions - Well-to-wake covers emissions from the entire process of fuel production, delivery and onboard use. The well-to-wake life-cycle view of greenhouse gas emissions in shipping will maximise emission reductions. Moving to a well-to-wake basis requires reliable data on emissions from the entire energy production process of alternative ship fuels.

A green shipping corridor was announced by the Aberdeen Harbour Board between Aberdeen and Norway in 2022 with plans to demonstrate hydrogen technologies by 2024. There will need to be many more pilot projects like this soon for peripheral nations like Scotland and Norway to be able to demonstrate that distance from major centres of population need not be an obstacle to low carbon trade in the future net-zero world.

# Net Zero Edinburgh by 2030?

In January 2023 Edinburgh City Council published an updated City Mobility Plan committing the Council to being net zero carbon by 2030. Transport has been hard to decarbonise. Will the latest plans close the gap between aspiration and achievement?
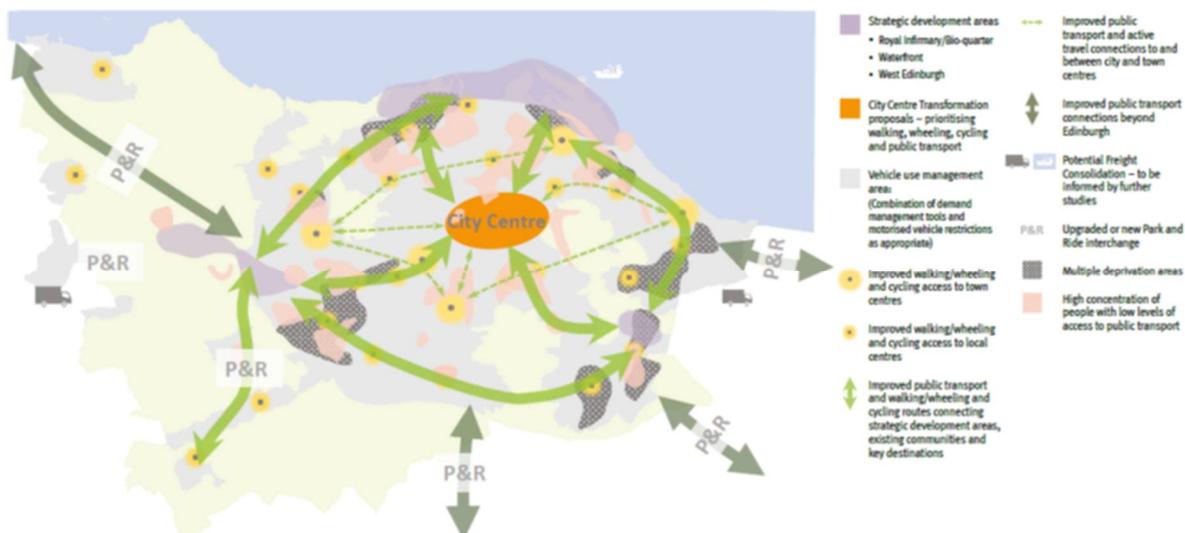
### *A City transformed*

The Council highlight that "This plan for Edinburgh provides a high-level picture of how the strategic priorities might be realised. Further studies will inform the development of specific proposals." The high level picture envisages that:

- By 2030 the mass transit network, including tram, will have been extended west and beyond and will have been developed to connect the Waterfront in the north to the Royal Infirmary in the south and beyond.

- The city region's seven park and ride facilities will be upgraded to support fast and frequent public transport along strategic bus lanes and mass rapid transit routes travel from these interchanges into the city.

- Additional regional interchanges will have been developed where required. This will give people travelling to the city a better choice to leave their cars at these interchanges and travel around the city on a fast, efficient public transport network.

- Some arterial routes will be being used for mass commuting by bike.

- The city centre will be largely car free. Car parking income, however will decline as car parking

**The funding of this Plan will be challenging with declining revenue streams from car parking and significant investment in infrastructure and services**

space is re-purposed and revenue from the workplace parking levy will fall due to less car commuting.

- Seamless pricing, ticketing and accessibility will allow passengers to move between different forms of transport, from their cars to trams and local buses at these interchanges, without having to pay at different access points.

- A comprehensive city freight and servicing operations system will be in place. Neighbourhood delivery hubs will be located close to public transport interchanges and public transport and active travel access points, allowing people to collect goods that cannot be delivered direct to their door.

- The cycling and walking/wheeling route along the coast from Fife to South Queensferry to Cockenzie and further will allow people access to one of the world's greatest urban shorelines, giving them easy access to the Forth and other improvements will close gaps in the active travel network

- The implementation of the Waverley Station Masterplan will be underway.

### Implementation Plan

The delivery of key elements of the plan set out key actions by 2023, 2025 and 2030 together with the responsible body, the overall scale of cost, and the funding arrangements.

The successful delivery of the City Mobility Plan will depend upon effective partnership working with communities, transport operators, businesses, developers, neighbouring local authorities in the city region, regional bodies including SEStran, and Transport Scotland. Strong collaboration with all stakeholders will ensure that the Council can support the city and region's best interests and deliver positive changes together for a more sustainable future. This is particularly relevant for projects and programmes which are not under sole Council control, such those relating to the rail network, trunk roads and cross-border assets.

The strategic framework and governance structures that guide regional transport infrastructure and planning are evolving. The development of the Edinburgh and South East Scotland City Region Deal provides the opportunity to renew the approach to economic growth and align it with spatial and transport strategy at the regional level. Decision making on major projects, such as further extensions to the Tram, will be in the form of business case development which will be taken to the appropriate committee of the Council, or an alternative partnership arrangement where appropriate.

### Project and Risk Management

The Implementation Plan brings together a wide range of action plans, projects, teams, delivery mechanisms and partnerships at different stages in their development and with diverse requirements. Opportunities to support the progression and delivery of key projects and actions will be captured as part of the Plan's monitoring and review process in collaboration with delivery leads and partners.

Identification of any risks to the delivery of key projects will also form part of the monitoring process so the Council can explore ways to manage and mitigate those risks as early as possible. This will be especially important where risks to delivery may have a significant impact on meeting the Plan's objectives.

> **Over the last 10 years most of the carbon reduction has been achieved in the power sector, so much faster progress will be needed on transport**

### Investment and Funding

The funding of this Plan will be challenging, requiring significant capital investment, business transformation, and changing revenue streams. Detail will be developed through individual business cases. The Council says it will seek to maximise external funding, from both the public and private sectors. Where information is currently known regarding costs and funding it has been set out in the Implementation Plan. On certain actions only limited information is available post 2023 therefore further details will be added at each review point.

### Performance

15 key performance measures are identified including the goal of achieving net zero carbon emissions. The approach to achieving net zero carbon will be coordinated with the approach in the Council's 2030 Sustainability Strategy. The Sustainability Strategy notes that over the last 10 years most of the carbon reduction has been achieved in the power sector, so much faster progress will be needed on transport in the years ahead.
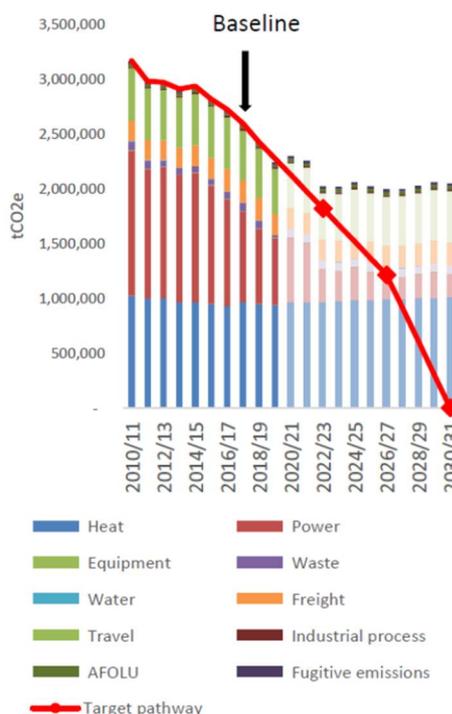
# How Will NPF4 Change Planning in Scotland?

The Fourth National Planning Framework, commonly known as NPF4, is required by law to set out the Scottish Ministers' policies and proposals for the development and use of land. In January 2023 National Planning Framework 4 was approved by the Scottish Parliament. This is a key milestone on the process to reform the planning system set out in the 2019. The new approach was guided by research into how planning policies were being applied in development planning, identifying how issues should be considered and addressed going forward.

The new approach to planning seeks to create greater clarity in how national government achieves its purpose whilst enabling local authorities to deliver for their people and places. NPF4 sets out key national principles enabling local planning authorities to implement these flexibly within their local areas. Key changes include:

- To recast the planning process to be better focused on outcomes with a clearer national purpose for planning.
- Milestones that are tracked transparently using defined outcome measures mapped across to parallel policies in the new framework.
- Priority for climate action with an overarching commitment that Scotland's future places will be net zero, nature-positive places that are designed to reduce emissions and adapt to the impacts of climate change, whilst protecting,

> **Recasting the planning process to be better focused on outcomes with a clearer national purpose for planning**

recovering and restoring our environment

- Including active and sustainable travel as key programmes of national significance.
- Reusing and repurposing infrastructure first by embedding circular economy approaches.
- In setting the framework for local development plans NPF4 seeks to avoid the need for national policies to be repeated in Local Development Plans to enable greater consistency in decision making across Scotland combined with flexibility to adapt policies at a local level.

### *Spatial Strategy*

NPF4 has six overarching spatial principles:

- Just transition: empower people to shape their places and ensure the transition to net zero is fair and inclusive.
- Conserving and recycling assets: make productive use of existing buildings, places, infrastructure and services, locking in carbon, minimising waste, and building a circular economy.
- Local living: support local liveability and improve community health and wellbeing by ensuring people can easily access services, greenspace, learning, work and leisure locally.
- Compact urban growth: limit urban expansion so we can optimise the use of land to provide services and resources, including carbon storage, flood risk management, blue and green infrastructure and biodiversity.
- Rebalanced development: target development to create opportunities for communities and investment in areas of past decline, and manage development sustainably in areas of high demand.
- Rural revitalisation: encourage sustainable development in rural areas, recognising the need to grow and support urban and rural communities together.

Eighteen national developments support the strategy, including single large scale projects and networks of several smaller scale proposals that are collectively nationally significant. National developments will be a focus for delivery, as well as exemplars of the Place Principle, placemaking and a Community Wealth Building (CWB) approach to economic development.

The strategy will be taken forward in different ways across Scotland, reflecting the diverse character, assets and challenges of places so regional spatial priorities

for five broad regions of Scotland are identified to inform the preparation of regional spatial strategies (RSS) and LDPs by planning authorities.

*Productive places*

Six national developments support the delivery of productive places:

- Clyde Mission brings together substantial public and private investment to remediate and regenerate brownfield land along the River Clyde for

## Legend

··▷  Strategic maritime routes

↔  Strategic connection

➤  Blue economy

/  Transmission infrastructure

## National Developments

① Energy Innovation Development on the Islands

② Pumped Hydro Storage
Scotland Wide

③ Strategic Renewable Electricity Generation and Transmission Infrastructure
Scotland Wide

④ Circular Economy Materials Management Facilities
Scotland Wide

⑤ Urban Sustainable, Blue and Green Surface Water Management Solutions
Edinburgh and Glasgow

⑥ Urban Mass/Rapid Transit Networks
Aberdeen, Edinburgh and Glasgow

⑦ Central Scotland Green Network

⑧ National Walking, Cycling and Wheeling Network
Scotland Wide

⑨ Edinburgh Waterfront

⑩ Dundee Waterfront

⑪ Stranraer Gateway

⑫ Digital Fibre Network
Scotland Wide

⑬ Clyde Mission

⑭ Aberdeen Harbour

⑮ Industrial Green Transition Zones

⑯ Hunterston Strategic Asset

⑰ Chapelcross Power Station Redevelopment

⑱ High Speed Rail
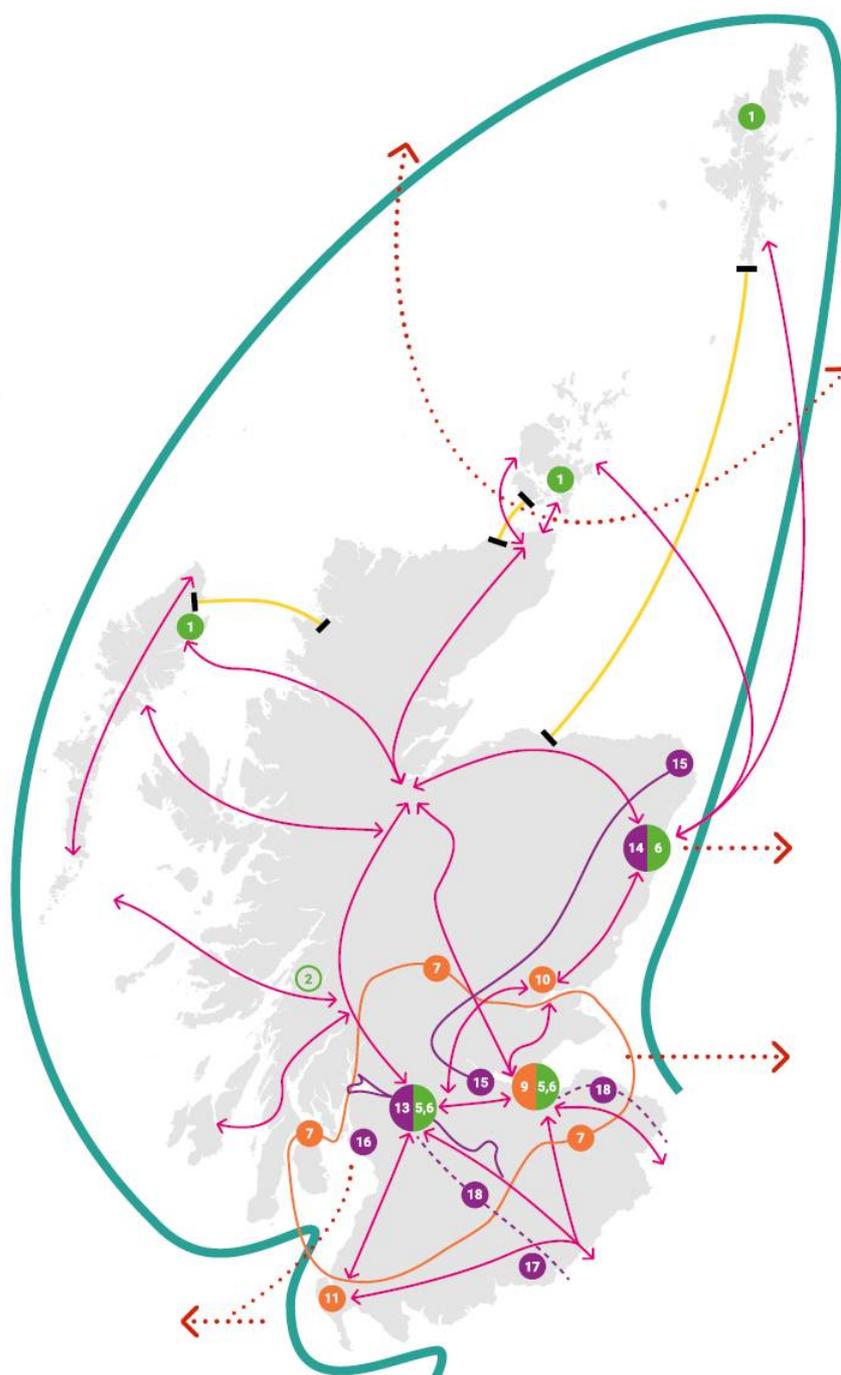
economic, social and environmental uses.

- Aberdeen Harbour facilitates completion of the South Harbour and access to it as well as a more mixed use waterfront for Aberdeen on areas of the harbour that will not in future be required for port uses. This will contribute to international and national connectivity, freight and the renewable energy sector.
- Industrial Green Transition Zones support transformation of key sites including by putting in place the infrastructure needed to commercialise carbon capture and storage and decarbonise industry. Innovation will provide green jobs, reduce emissions and help Scotland lead the way on new technologies.
- Hunterston Strategic Asset supports re-use the port and wider site, engaging in new technologies and creating opportunities from nuclear decommissioning to make best use of existing infrastructure and provide local benefits.

- Chapelcross Power Station Redevelopment involves the reuse of a key site to provide a range of economic opportunities for local communities. Energy produced will help to reduce heating and transport emissions within the wider region.
- High Speed Rail ensures connectivity with the United Kingdom (UK) and beyond, reduce long distance transport emissions and optimise the benefits more widely.

> "National developments will be a focus for delivery.........High Speed Rail ensures connectivity with the United Kingdom (UK) and beyond, reduce long distance transport emissions and optimise the benefits more widely"

# Scottish Government's Strategic Transport Project Proposals

In recent months the Scottish Government's strategic transport project proposals have been the subject of much discussion including at the November 2022 STAR conference when Transport Scotland and their consultants Jacobs explained their approach and recommendations.

In January 2023 University of the West of England Professor Glenn Lyons published a short critique of the Scottish Government's new strategic transport proposals. Glenn particularly welcomes the strong commitments being made by the Scottish Government such as achieving a reduction in total car kms travelled per year of 20% by 2030 compared against pre-pandemic levels but seeks more explanation of how the projects being proposed will help to achieve this goal.

At the STAR conference it was noted that STPR has been influential in the decision to boost investment in local trips by walking and cycling, with these now being regarded as strategic projects. For many years the national government policy line has been "local issues are a matter for local authorities". The recognition that local decision making takes places within a national context set by Scottish Government is a huge step forward so that national investment in walking and cycling is recognised as vital for all aspects of the economy, environment and society.

> **STPR2 is not a funded plan, and even outline costs are not described, so it is difficult to understand how the prioritisation of the government proposals has been undertaken**

Perhaps the most confusing part of the strategic project investment plans is that it is quite difficult to work out what is in scope and what is considered out of scope. Local roads and car parks are seemingly out of scope, though it is difficult to understand how parking which plays a key role in transport interchange can be implemented without national support. Some local road improvements increasingly provide nationally critical functions such as those currently being funded as part of city deals where the interactions with the STPR appraisals are not clear.

Also out of scope are land use changes, the delivery of digital connectivity; funding of services (including fares and subsidies), and changes relating to legislation and regulation. It is the interaction between infrastructure provision and many of these 'out of scope' projects that defines the potential effectiveness of future investment plans. The benefits of infrastructure cannot really be separated from the costs of using the infrastructure, and effective business cases depend on how projects are funded including charges for use. There is reference to potential opportunities that are perceived to be outwith Scottish Government 'control' such as road fuel tax, but less detail on how agreements with UK government departments might help to build consensus on future approaches.

Possibly the clearest statement on scope is "STPR2 provides an overview of transport investment, mainly infrastructure and other behavioural change recommendations, that are required to deliver the National Transport Strategy priorities". However, STPR2 is not a funded plan, and even outline costs are not described, so it is difficult to understand how the prioritisation of the government proposals has been undertaken.

The proposals explain that the prioritisation was based on widespread engagement activities generating 14,000 ideas, from which 2,800 options were long-listed for further sifting to 1,400 standalone options. On page 49 is a tabulation of how the 1400 standalone options are grouped with around a fifth of these being active travel. Shares for rail and road are next largest at 14% and 13% respectively. However, the relationship between the investment in modes of transport and the National Transport Strategy infrastructure priorities such as reduced emissions or a fairer society are not clear. It is also not clear whether out of scope suggestions that could have helped to achieve National Transport Strategy goals have been referred on to some other implementation mechanism, and without information on the proposals considered out of scope it will be difficult for other stakeholders to take forward these suggestions.

Prioritisation was also assisted by the development of six scenarios: three different spatial economic growth futures and two travel behaviour variants of each future. The technical report notes that differences due to travel behaviour variants dwarfed the economic varia-

tion and as a result only two travel behaviour scenarios are considered. Given that nearly every travel behaviour change is associated with a spatial economic change – the decision to shop locally for example – it is difficult to understand how the economic feedback loops can be separated so clearly from the spatial economic growth scenarios. However, the scenarios are defined more in terms of ambition to reduce car travel than potential capability to achieve that ambition so feedback loops do not seem to be part of that process.

The reports do not explain the process by which the two scenarios have been used to influence 45 recommendations but  set out in STPR2. The proposals suggest that further analysis will be needed to assess business cases and potential impacts to understand the contribution to policy goals. A table is presented which lists the 45 recommendations and indicates how transport policy objectives relate to these recommendations but most of the contribute to most if not all of the objectives. However this raises more questions than answers and Glenn Lyons lists a few of his questions as:

- Why does investment in demand responsive transport and mobility as a service not address the safety and resilience objective when smart, integrated public ticketing does?
- Why doesn't zero emissions vehicles and infrastructure transition support sustainable economic growth?
- Why doesn't decarbonisation of the bus network support sustainable economic growth while decarbonisation of the rail network does?
- Why does Future Intelligent Transport Systems tick all the objectives but Intelligent Transport Systems renewal and replacement only tick three of the five? If we are renewing and replacing them, surely they become Future ITS and tick all the boxes?

The reporting gives no indication of what behaviour changes are being assumed to happen as a result of the investments.  Improved access to affordable public transport may be necessary but may not be sufficient to achieve large reductions in car use. The focus is on infrastructure, so decarbonisation is predominantly assuming technology-fixes, but if the big effects on

## Would STPR2 be considered legally compliant?

emissions relate to behaviour change how will the behaviour change be achieved? Perhaps the behaviour change is assumed to come from out of scope options rather than the 45 recommended options?

You'll have seen from the above that I find myself with some unanswered questions. Overall, I feel I now have a better familiarity with STPR2 and how it finds its place within the bigger picture, but I'd like to be clearer (hopefully comments in response to this article will help!).

The discussions at the STAR conference in November 2022 concluded that much more work was needed before any of the STPR proposals could be regarded viable projects, but Glenn Lyons adds an even greater challenge, consistent with the recent comments from the Climate Change Committee on the gap between aspiration and firm plans in Scottish Government proposals.

Last year the UK Government was found wanting by the High Court in that its Net Zero Strategy was deemed unlawful. It was not sufficiently clear how the strategy would ensure compliance with the legal decarbonisation requirements. Would STPR2 be considered legally compliant?