NATIONAL
TRANSPORT
STRATEGY

PROTECTING OUR CLIMATE
AND IMPROVING LIVES

NTS
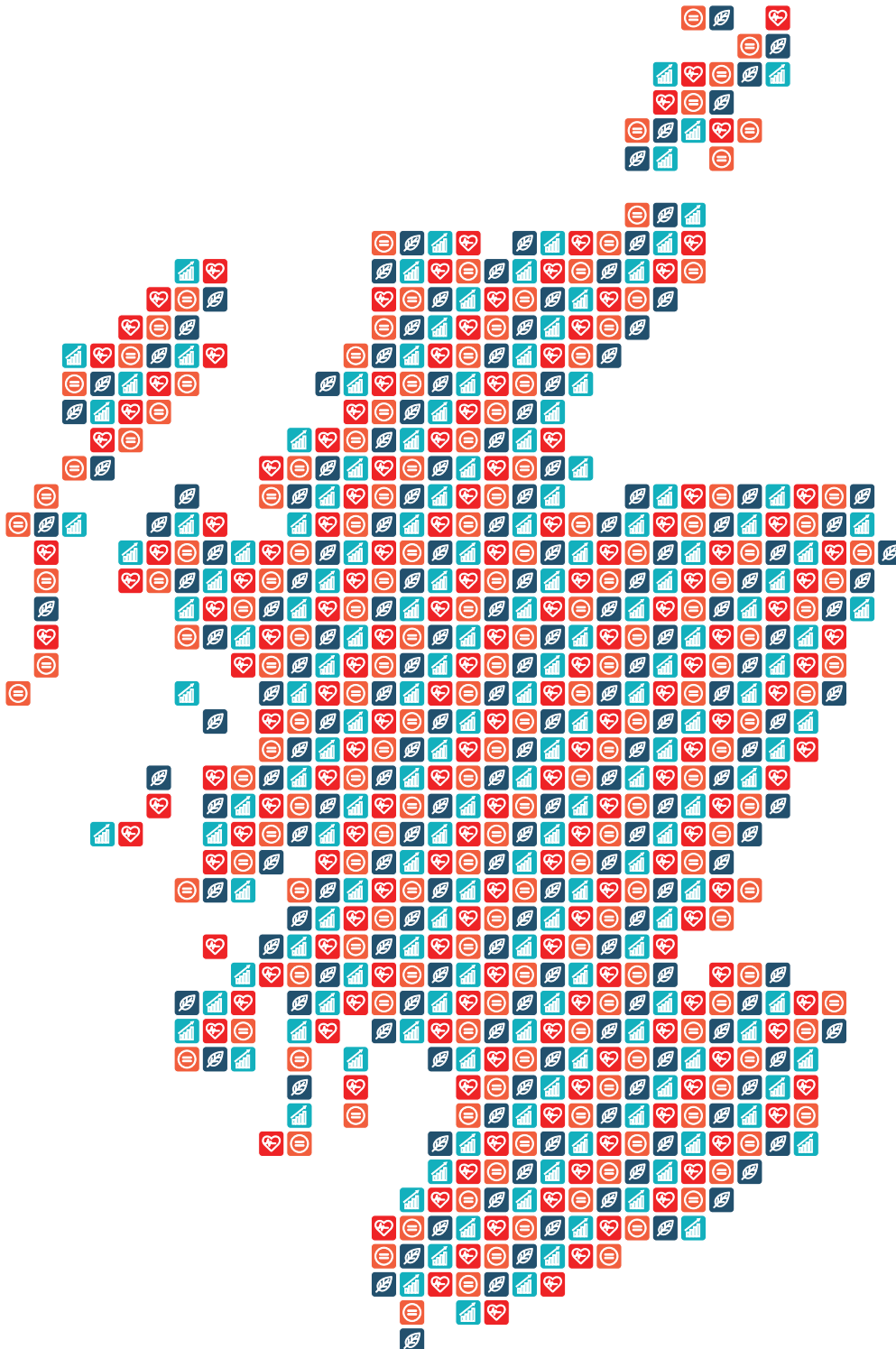
TRANSPORT SCOTLAND
CÒMHDHAIL ALBA

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Chapter 1 – Foreword

I'm delighted to present Scotland's new National Transport Strategy (NTS2), which sets out an ambitious and compelling vision for our transport system for the next 20 years, one that protects our climate and improves our lives.

This Strategy advocates a Vision for Scotland's transport system, that will help create great places - a sustainable, inclusive, safe and accessible transport system, helping deliver a healthier, fairer and more prosperous Scotland for communities, businesses and visitors. It sets out Priorities to support that Vision: *reduces inequalities*; *takes climate action*; *helps deliver inclusive economic growth*; and *improves our health and wellbeing*. Within these Priorities there is greater focus on reducing inequalities and taking climate action to ensure we address the key challenges we face.

The Strategy has been built using three pillars of: collaboration, engagement and evidence. The Scottish Government worked on the development of the Strategy with an extensive network of partners from urban, rural and island settings.
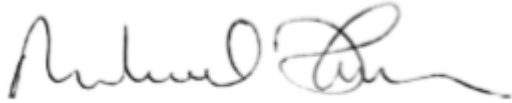
We reached out to groups and communities across the length and breadth of Scotland to hear the views of a wide range of users and non-users of the transport system. A comprehensive consultation exercise was undertaken on the draft Strategy and we welcomed the responses received from many individuals and organisations. The responses have been integral in finalising the content of the Strategy.

Evidence gathering and detailed analysis have been undertaken to support how, by implementing this Strategy, we will address the challenges, achieve our Priorities and successfully deliver the Vision and Outcomes.

We are now in an environment where the move to low and zero carbon transport is essential to our future wellbeing. In response to the global climate emergency, the Scottish Government has made one of the most ambitious climate commitments in the world to achieve net-zero greenhouse gas emissions by 2045. Over the 20-year period of this Strategy, the role of transport in achieving this target will be crucial and will require further development and use of low carbon technology. It will also require significant societal changes, including a reduction in the demand for unsustainable travel. Combining these with our plans to create equal opportunities for all, ensuring sustainable and inclusive growth and delivering great places to live and work that improve our health and wellbeing will ensure a solid foundation for delivering the Strategy.

Importantly, the Strategy signals the future direction of transport and provides the context within which decisions, in and beyond government, will need to be made. From local and central governments and regional transport partnerships

implementing policies, to businesses and individuals taking account of their actions and impacts when making travel decisions, we all have a responsibility for delivering the Strategy and making sure it is a success.

Michael Matheson MSP
Cabinet Secretary for Transport, Infrastructure and Connectivity

Chapter 2 – A vision for transport in Scotland

This Transport Strategy is for all of Scotland, recognising the different needs of our cities, towns, remote and rural areas and islands. It draws heavily on the latest evidence and has been developed through a collaborative approach involving a wide range of partners. An extensive engagement exercise comprising individuals, businesses and third sector organisations has been essential to its development. A consultation on the draft Strategy has also been carried out, with views invited from individuals and organisations across Scotland. The responses have played a key role in informing the content of the Strategy.

It is a Strategy for the whole transport system (people and freight) and it considers why we travel and how those trips are made, by including walking, wheeling[1], cycling, and travelling by bus, train, ferry, car, lorry and aeroplane. It is a Strategy for all users: those travelling to, from and within Scotland.

We all need to work together across boundaries to add value and ensure its success, involving all people in our society in decision making and empowering businesses and communities to play a vital part in the delivery process. We all also need to take responsibility for our actions, ensuring that our travel choices make a positive contribution to delivering the Strategy over the next 20 years.

The Strategy does not identify or present specific projects, schemes, initiatives or interventions, but sets out the strategic framework within which future decisions on investment will be made.

The Strategy presents our Vision for Scotland's transport system over the next 20 years, which is: We will have a sustainable, inclusive, safe and accessible transport system, helping deliver a healthier, fairer and more prosperous Scotland for communities, businesses and visitors.

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[1] Wheeling: refers to travelling by wheelchair.

Our Vision

We will have a sustainable, inclusive, safe and accessible transport system, helping deliver a healthier, fairer and more prosperous Scotland for communities, businesses and visitors.

Reduces inequalities

- Will provide fair access to services we need
- Will be easy to use for all
- Will be affordable for all

Takes climate action

- Will help deliver our net-zero target
- Will adapt to the effects of climate change
- Will promote greener, cleaner choices

Helps deliver inclusive economic growth

- Will get people and goods where they need to get to
- Will be reliable, efficient and high quality
- Will use beneficial innovation

Improves our health and wellbeing

- Will be safe and secure for all
- Will enable us to make healthy travel choices
- Will help make our communities great places to live

Our Vision is underpinned by four Priorities, each with three associated Outcomes. The Vision, Priorities and Outcomes are at the heart of the Strategy and will be the basis upon which we take decisions and evaluate the success of Scotland's transport policies going forward.

The Scottish Government's purpose is to focus on creating a more successful country with opportunities for all of Scotland to flourish through increased wellbeing, and sustainable and inclusive economic growth. This means creating a society that offers equal opportunity and ensures the benefits from a stronger economy are shared fairly. Inclusiveness and equality are key ingredients of our new Strategy.

We are also facing a global climate emergency. In response to this the Scottish Government has committed to an ambitious statutory target of net-zero greenhouse gas emissions by 2045. Transport will play a key role in achieving this important target and the contribution it can make is clearly reflected throughout this Strategy.

There are four interconnected Priorities to deliver our Vision: reduces inequalities; takes climate action; helps deliver inclusive economic growth; and improves health and wellbeing.

Reduces inequalities

Everyone in Scotland will share in the benefits of a modern and accessible transport system. Transport plays an important part in delivering the fully inclusive society we want. While we tackle inequalities, our actions will simultaneously reduce poverty, in particular child poverty. Our transport system:

- Will provide fair access to services we need: we have a duty to reduce inequalities and advance equality of opportunity and outcome, including the protected characteristics of age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, sex and sexual orientation. We will ensure that our disadvantaged communities and individuals have fair access to the transport services they need. The transport system will enable everyone to access a wide range of services and to realise their human rights.

- Will be easy to use for all: people have different needs and capabilities. Our transport system will recognise these and work to ensure that everyone can use the system with as few barriers as possible.

- Will be affordable for all: people have different incomes and our transport system will not exclude people from mobility by making it unaffordable. We will target actions to deliver the Strategy towards those needing most help, including those living in poverty.

Takes climate action

People will be able to make travel choices that minimise the long-term impacts on our climate and the wellbeing of future generations. We face a global climate emergency. Scotland must transition to a net-zero emissions economy for the benefit of our environment, our people and our future prosperity. Our transport system:

- Will help deliver our net-zero target: the Climate Change Act passed by the Scottish Parliament includes an increased ambition to reduce greenhouse gas emissions to 75% of 1990 levels by 2030, 90% by 2040 (i.e. the period covered by this Strategy) and net-zero emissions by 2045. Transport is currently the largest contributor to Scottish emissions and this will be tackled through a range of actions including an ambition to phase out the need for

new petrol and diesel cars and vans by 2032, changing people's travel behaviour and managing demand.

- Will adapt to the effects of climate change: in Scotland we are already experiencing the impacts of climate change and we will adapt our transport system to remain resilient and reduce the harmful effects on future generations.

- Will enable greener, cleaner choices: over the next 20 years, Scotland will see a continued transformation in transport where sustainable travel options are people's first choice if they need to travel. We will design our transport system so that walking, cycling and public and shared transport take precedence ahead of private car use.

Helps deliver inclusive economic growth

Scotland will have a transport system that will help deliver sustainable and inclusive economic growth enabling the whole country to flourish. Transport plays a key role in delivering Scotland's Economic Strategy's four priority areas of investment, innovation, inclusive growth and internationalisation. It enables firms to have efficient access to suppliers and customers. It allows people fair and affordable access to reach the jobs where they can be most productive and boost both business growth and household incomes through improving access to employment. Our transport system:

- Will get people and goods where they need to get to: network and services will be integrated effectively with spatial and land use planning and economic development, and adapt to changing requirements of our citizens, businesses and visitors.

- Will be reliable, efficient and high quality: everyone needs to be confident about how long a journey will take, and that it will be a simple and comfortable experience. We will be able to plan our lives, to get to work on time, access education and training, and to deliver goods efficiently and keep businesses running smoothly.

- Will use beneficial innovation: will pioneer and use new products, services and technologies developed from high quality research to improve our transport system. We will secure opportunities and investment for innovation and growth of testing platforms and supply chains to help Scotland be at the forefront of world leading developments in sustainable mobility.

Improves our health and wellbeing

Scotland's transport system will be safe and enable a healthy, active and fit nation. Our transport system needs to be safe and secure and give users trust and confidence that they will reach their destinations without threat. It should also allow people to make active travel choices to improve their health and physical and mental

wellbeing and seek to reduce health inequalities. It should support our Public Health Priorities[2]. Our transport system:

- Will be safe and secure for all: the prevention and reduction of incidents on the transport system will continue to be a priority.

- Will enable us to make healthy travel choices: active modes will be a preferred method of travel and have a significant positive effect on individual health and wellbeing, both by making people more active and by improving air quality. This will reduce the social and economic impact of public health problems such as mental health, obesity, type-2 diabetes, and respiratory and cardio-vascular diseases.

- Will help make our communities great places to live: cleaner, greener and sustainable places and networks will encourage walking, wheeling and cycling. This will deliver more social interaction, support local businesses and services and create vibrant communities.

There are no weightings applied to the Priorities in delivering the Vision and none are more important than the others. However, they reflect the increasing prominence of the need to address climate change and the agenda of progressive policies to reduce inequalities in Scotland.

The Priorities are also not independent of each other. Improving our health and wellbeing through promoting active travel, for example, will help us take climate action. Similarly, reducing inequalities will help deliver inclusive economic growth.

While the Priorities can be complementary, it is recognised that there can also be tensions between transport policies and these may need to be carefully managed. We must aim for economic growth that is inclusive, where there are opportunities for all to participate and benefit. Growth, also, must not have net adverse impacts on our climate or affect people's health through poorer air quality. When planning transport, decision makers will need to consider how their decisions will impact across all of the Vision, Priorities and Outcomes.

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[2] Scotland's public health priorities, 2018, https://www.gov.scot/publications/scotlands-public-health-priorities/

Chapter 3 – Current and emerging challenges

In recent years we have seen a number of positive trends in transport. For example, passenger journeys on ScotRail services have increased[3]. Total reported road casualties are at their lowest since annual records began in 1950[4]. Registrations of ultra-low emission vehicles (ULEVs) in Scotland have increased considerably[5]. Significant lengths of new paths have been delivered to enable more journeys to be made by walking, wheeling and cycling[6].

Notwithstanding these positive developments, Scotland's transport system continues to face a number of challenges: many people encounter problems when trying to access the services they need; vehicles continue to emit greenhouse gases and pollute the places we live and work; businesses still face congestion and delays when reaching their customers; and people still face barriers when wanting to cycle or walk to their destination. If this Strategy is to be a catalyst for change and deliver our Vision, Priorities and Outcomes, it must successfully tackle the challenges, as set out below.

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[3] Scottish Transport Statistics No 37, 2018, Chapter 7
[4] Key Reported Road Casualties Scotland 2018
[5] Scottish Transport Statistics No 37, 2018, Table 13.7
[6] Scottish Government

Poverty and child poverty

Between 2015 and 2018 over one million Scottish citizens were living in relative poverty each year, including almost 25% of children[7]. End Child Poverty estimates that, in 2017/18, levels were over 40% in some parts of Glasgow[8]. Many of those living with poverty are also disabled or have long term health problems. In addition to this, research[9] stated that over one million people in Scotland also live in areas that are at risk of transport poverty[10]. The Child Poverty (Scotland) Act sets both short-term (2023 interim) and longer-term (2030) targets and transport must contribute to achieving these targets.

In many cases, those on low incomes are excluded from maintaining social connections or accessing employment or training opportunities due to the affordability and availability of transport options. The single most important factor cited by those on low incomes as the greatest transport-related barrier is cost. This was affirmed through the engagement undertaken to inform this Strategy.

Average weekly household expenditure in Scotland on transport and vehicles in 2016-18 was £68.20, representing around a seventh of total household expenditure. The figure has fallen slightly from a peak of over 15% in 2012-14 but still represents a significant proportion of people's income[11].

People in low income households are more likely to travel by bus, while those in higher income households are more likely to travel by car. 41% of people living in a household with less income than £10,000 use a bus at least once per week, compared to 15% of people living in a household with annual income greater than £50,000[12]. In addition, 41% of households with less than £10,000 have access to one or more cars. This rises to 96% for those with an annual household income of £50,000 or above[13].

Public transport is therefore important to those on low incomes to allow them access to services and facilities they need. Yet, in many areas of high social deprivation, public transport options can be limited and relatively expensive. This can further

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[7] Poverty and Income Inequality in Scotland: 2015-2018, Scottish Government, 2019

[8] http://www.endchildpoverty.org.uk/poverty-in-your-area-2019/

[9] Transport Poverty in Scotland, Sustrans 2016

[10] Sustrans define this as people are deemed to be at risk of transport poverty when they don't have access to essential services or work due to limited affordable transport options.

[11] ONS weekly household spend on transport and vehicles relative to weekly household income

[12] Transport and Travel in Scotland, 2018, Table 28

[13] Transport and Travel in Scotland, 2018, Table 18

impact on poverty. For example, if access to large supermarkets is constrained by public transport availability, it can mean that people have restricted options and have to shop locally, where prices can be higher.

Social isolation

Globally, we are more connected than ever before. Advances in technology allow us to keep in touch with people across the world in many ways and at any time. However, many people still feel socially isolated, with 6% of adults, for example, having contact with family, friends or neighbours less than once or twice a week[14]. In addition, many disabled people feel trapped due to the lack of accessible transport, particularly on islands and in remote and rural areas.

There is increasing recognition of social isolation and loneliness as major public health issues that can have significant impacts on a person's physical and mental wellbeing. Evidence shows that social isolation and loneliness are experienced across Scotland[15]. Transport clearly has a role to play in reducing levels of social isolation.

Gender inequalities

Complex travel behaviour

Much evidence across the UK and Europe shows that women are constrained by a number of barriers that shape how they travel and their experiences of those journeys. The gendered division of labour means that women tend to take on a disproportionate level of care and domestic tasks, compared to men, in addition to full or part-time work[16]. Due to this, women are more likely to make multi-stop and multi-purpose trips, known as 'trip-chaining', combining travel to work with trips for other purposes such as taking children to school, looking after family members or shopping[17].

In England in 2014, 14% of women travelling to work during the morning peak did not go directly from home to work, compared to 7% of men. Women were more likely than men to go to work via taking children to school. Women who work part-time were more likely to have a multi-stop journey than women that work full-time or men, whatever their working status[18]. Further to this, public transport systems tend to be designed to serve the needs of commuters with traditional 'nine-to-five' working patterns, hence based on a travel pattern that is primarily male[19]. Public transport timetables and routes are, as a result, not designed to fit travel behaviour that is

[14] Scottish Health Survey 2017 edition, 2018
[15] Our Voice Citizen's Panel (2017). Survey on relationships with health and social care professionals, shared decision making, how loneliness affects people in Scotland, and how well services are working locally. p.46. URL: https://www.ourvoice.scot/697/documents/1058
[16] ONS (2016) Women shoulder the responsibility of 'unpaid work'
[17] Department for Transport (2014) National Travel Survey: Trip Chaining: 2002-2014
[18] ibid
[19] UK Women's Budget Group (2018) Briefing on Public Transport and Gender

shaped by unpaid care work and part-time employment[20]. Women are also more likely to travel by bus and less likely to travel by rail than men[21].

Understanding these points about women's travel behaviour is key to recognising how, for example, cuts to subsidised bus services have had a disproportionate impact on women, as well as how women are less likely to benefit from discounted rail fares and season tickets[22]. A lack of adequate public transport provision creates further barriers to women accessing employment and educational opportunities[23], so developing an understanding of women's travel behaviour and needs and applying this in the design of services must be a priority.

It should also be acknowledged that women are not a homogenous group. Their experiences of the transport system must be considered in terms of age, disability, ethnicity, sexuality, and class, dimensions which may exacerbate some of the issues and challenges faced.

It is necessary, therefore, that women's complex travel behaviour is properly understood in order to ensure fair access to the transport system for a group that comprises the majority of the population and to assist in tackling the gender pay gap in Scotland as outlined in the Scottish Government's Gender Pay Gap Action Plan.

Poverty and gender

A greater proportion of women work part-time hours (44% compared to 15% of men), with over 75% of Scotland's part-time workforce being female[24]. Women are also more likely to be in low-paid work, with 64% of people paid below the Living Wage being female[25]. In particular, lone parents, the vast majority of whom are women, are more likely to be living in poverty than other single working-age adults in Scotland[26]. Therefore, it is vital to consider transport poverty with gender in mind. Indeed, there are close links between women's poverty and child poverty so promoting gender equality will also likely have a positive impact on tackling child poverty.

Feelings of safety and fear of violence

The ways in which feelings of safety and fears of violence may shape women's travel behaviour should also be considered[27]. Women are more likely than men to feel very or fairly worried about being sexually assaulted and are also less likely to report feeling very or fairly safe walking alone at night compared to men (66% compared to

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[20] Greed (2019) Are we still not there yet? Moving along the gender highway, chapter in Scholten and Joelsson (eds) Integrating gender into transport planning: from one to many tracks; Transport Innovation Gender Observatory Project
[21] Transport and Travel in Scotland 2019
[22] UK Women's Budget Group (2018) Briefing on Public Transport and Gender
[23] Department for Transport (2019) Transport and Inequality
[24] House of Commons Library (2019) Briefing paper: Women and the Economy
[25] SPICe (2016) The Living Wage: Facts and Figures
[26] Poverty and Income Inequality in Scotland 2015-18
[27] Equally Safe Strategy, Scottish Government 2016

89%)[28]. Gendered abuse and sexual harassment are particularly associated with public transport[29] with concerns around personal safety when travelling[30]. Sexual harassment can intersect with other forms of abuse such as racism, homophobia, transphobia, and disability-related harassment[31], and it is therefore crucial to consider how fears and risks of violence associated with public transport disproportionately affect women from ethnic minorities, lesbian, bisexual, trans women and disabled women.

The changing transport needs of young people

Adapting the transport system to reflect the changes in the structure of Scotland's population and the evolving needs of different age groups presents significant challenges.

Evidence shows that there has been a decline in the number of domestic trips being undertaken by younger people (aged 17 to 29)[32]. The reasons for this are not necessarily related to transport, but they certainly impact on it and include:

- many young people are communicating more by social media rather than in person and therefore have less need to travel
- more young people are undertaking further and higher education, having to spend more on housing and delaying entering employment, therefore having less resources to spend on travel

The engagement undertaken with Young Scot[33] to inform the Strategy revealed that key issues for young people include the availability and cost of public transport, particularly to further and higher education, and personal safety when using services.

Meeting the needs of an ageing population

Scotland's population is ageing. In 2018, 455,000 people in Scotland were aged 75 or over. By 2043, this figure is projected to grow to 776,000, an increase of just over 70%[34].

[28] Scottish Crime and Justice Survey 2018
[29] House of Commons Women and Equalities Committee (2018) Sexual Harassment of women and girls in public places
[30] Government Office for Science (2018) Inequalities in Mobility and Access in the UK
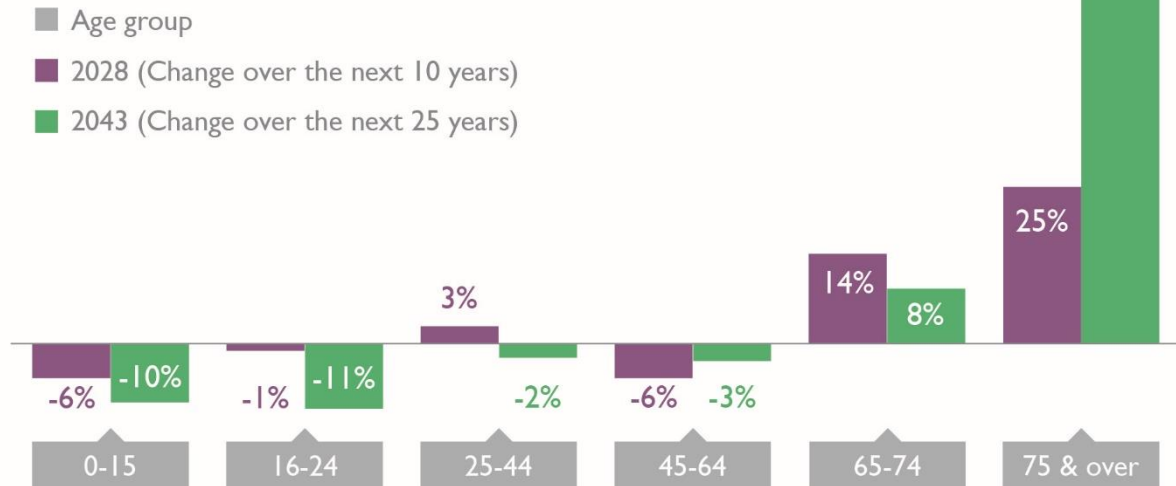[31] House of Commons Women and Equalities Committee (2018) Sexual Harassment of women and girls in public places
[32] Is the urbanisation of young adults reducing their driving? Chatterjee et al., 2018
[33] National Transport Strategy Review Young Scot, June 2019
[34] National Records of Scotland, Projected Population of Scotland (2018-based)

Scotland's older population is predicted to increase

Legend:
- Age group
- 2028 (Change over the next 10 years)
- 2043 (Change over the next 25 years)

Age group	2028	2043
0-15	-6%	-10%
16-24	-1%	-11%
25-44	3%	-2%
45-64	-6%	-3%
65-74	14%	8%
75 & over	25%	71%

Figure 1: Projected population change by age group

While historically people have tended to travel less as they got older, older people now are healthier, fitter, wealthier and more mobile compared with previous generations. They are likely to want to travel more and our transport system needs to support this to ensure older people, wherever they live, are not socially isolated.

The extensive engagement undertaken as part of developing the Strategy revealed that factors impacting on older people include inaccessible vehicles (particularly taxis, buses and trains), journey comfort, frequency of bus services and poor integration between different transport services.

The transport needs of disabled people

The proportion of adults with a long-term limiting mental or physical health condition or disability is increasing as the population ages. Between 2008 and 2017, the proportion of women who had a long-term limiting mental or physical health condition or disability increased from 28% to 34%, While, over the same period, the proportion of men increased from 23% to 29%[35].

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[35] Scottish Health Survey 2018 edition, 2019 (latest available data)

The increasing proportion of Scottish adults with a long-term limiting mental or physical health condition or disability
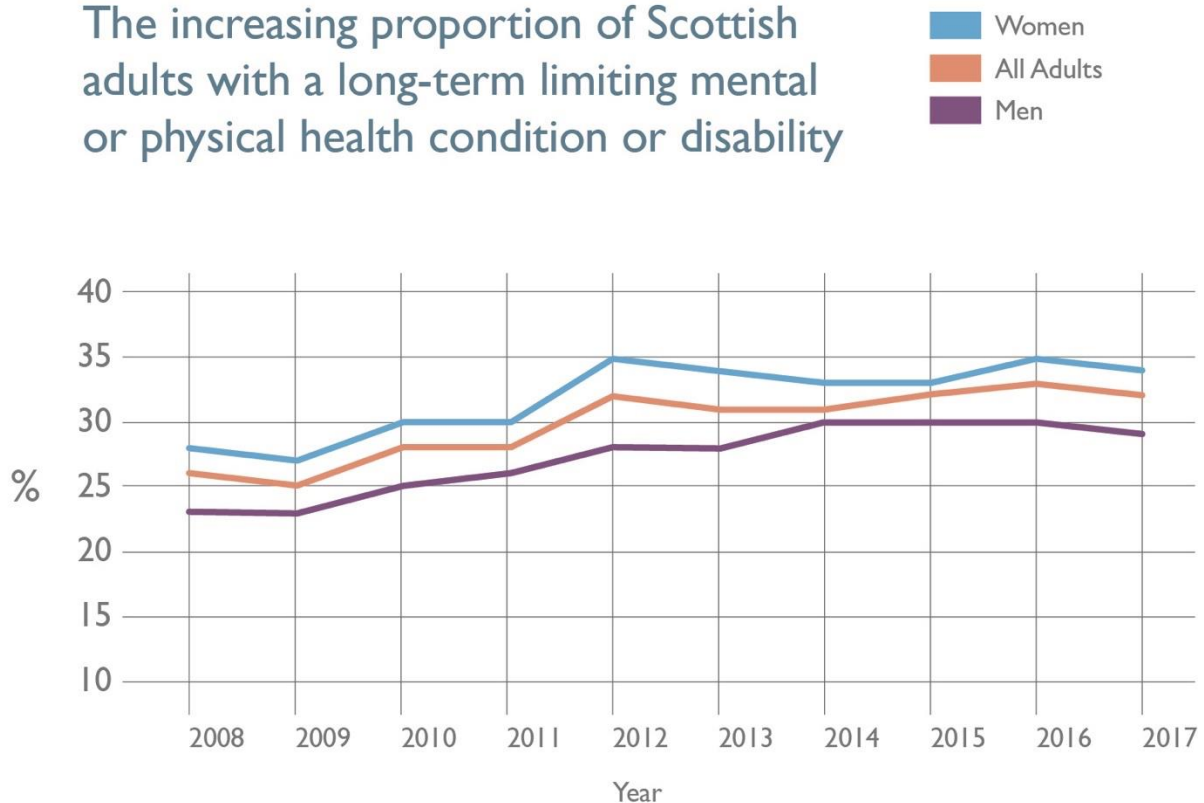
Figure 2: Percentage of adult population who have a long term limiting mental or physical health condition

Disabled people have the same rights as every other citizen[36] to equal access to employment and health and social care facilities and to participate in learning, social, leisure and cultural activities in order to live life as full as they wish to.

However, barriers to travel can create considerable problems for disabled people. Key challenges the transport system must address include:

- being able to access accurate and relevant travel information both before and during the journey
- being able to access public transport interchanges
- being able to access public transport vehicles
- being able to interchange between all modes
- concerns regarding safety and comfort on the public transport network

The provision of transport to health and social care can be a challenge for disabled and older people. Evidence suggests that 98% of disabled people have experienced

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[36] United Nations Convention on the Rights of Persons with Disabilities
https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities.html

a problem either booking or getting transport to medical and healthcare appointments[37].

Affordability is also an issue for disabled people. While there is a National Concessionary Travel Scheme for those eligible, disabled people are more likely to experience affordability barriers to transport relative to people without disabilities. Also, a lower proportion of disabled people are in employment compared to those who are not disabled, and are more likely to be affected by poverty than those who are not disabled[38].

These barriers lead to lower levels of travel amongst disabled people and contribute to a range of impacts that are not inevitable.

Scotland's regional differences

Transport challenges differ across regions of Scotland. The transport barriers facing those living in towns and cities in the Central Belt, for example, will not necessarily be the same as those living in towns and cities in other parts of Scotland or, indeed, our many remote, rural and island communities. In addition, different areas of the country may have their own transport requirements to meet their inclusive growth objectives. These challenges will need a range of solutions and models of governance to deliver them.

Cities and Towns

Our cities are growing. A limited supply of affordable city centre housing has led to more suburban areas with greater numbers of housing developments which has impacted on travel needs and patterns, particularly to city centres, where there are concentrated areas of employment. If past trends continue, then our cities will see increases in housing and population over the next 20 years[39]. The populations of many of our towns are also growing, particularly those in the Central Belt and within commuting distances of all our cities.

These changes are putting various pressures and demands on our transport system as the number of people in particular areas increases and their patterns of travel change to reflect different lifestyles. For example, more people wanting to access our city centres, often by private car, is impacting on climate change and air quality. The growing demand for greener public spaces with improved local air quality and improved safety for active travel will also affect vehicular access and our choice of travel in built up areas.

More vehicles also mean more congestion, and businesses located in or supplying firms in city centres are seeing increasing journey times and unreliability, thus impacting on costs and overall business performance. Due to these congestion

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[37] Mobility and Access Committee for Scotland, Report: Transport to Health and Social Care, January 2019
[38] Joseph Rowntree Foundation, https://www.jrf.org.uk/report/poverty-scotland-2018
[39] National Records of Scotland Population Projections

effects there is a growing recognition of the need to tackle the volume of vehicles through measures to effectively manage demand and encourage more sustainable travel options.

Many of Scotland's most disadvantaged communities are in cities, particularly in suburban areas. Yet, many of them are now having to travel longer distances to access employment opportunities as significant numbers of jobs tend to be in city centre locations.

<u>Remote and rural areas</u>

Rural Scotland accounts for 98% of the land mass of Scotland and only 17% of the population are resident there. Those living in remote and rural areas face many different transport challenges when carrying out their daily lives compared to, for example, those living in less rural areas of the mainland and urban areas.

People in rural areas usually have to travel further to access services and tend to have more limited choices when it comes to public transport, the latter meaning that rural households tend to drive more frequently than urban households[40]. It is also more difficult to integrate services in rural areas given the dispersed residents and low population densities. Adding to this, demand can be relatively low in many rural areas due to the tendency to drive more, which can lead to high fares for users and/or need for subsidy. Forecasts of declining population in many remote and rural communities in Scotland could result in lower population densities and make it even more challenging for public transport operators to deliver viable services on a commercial basis. Rural depopulation has received increased attention due in part to a growing body of evidence around the nature and impact of depopulation in rural Scotland, and the specific migration-related issues arising from EU Exit.

Longer commutes to work combined with more expensive fuel typically adds £30 to £40 per week to costs when compared to rural England[41]. Transport costs can therefore be a real challenge for those on low incomes living in rural areas, particularly when needing to access employment and essential services such as health and education.

The relatively high cost and low levels of frequency of public transport can also have a disproportionate impact on young people where it can lead to inferior employment and education opportunities. Delivery charges are generally also higher for people in rural areas, which will have increasing impacts as more people move to online shopping. Accessibility and cost issues also affect those with disabilities living in remote and rural areas – if they face problems accessing and affording public transport, finding and taking up employment opportunities may become challenging and can lead to more disabled people becoming isolated and trapped in poverty.

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[40] Scottish Transport Statistics No 37, 2018, Table 11.10
[41] A Minimum Income Standard for Remote Rural Scotland, 2013, http://www.hie.co.uk/regional-information/economic-reports-and-research/archive/a-minimum-income-standard-for-remote-rural-scotland.html

Many people and businesses in remote and rural communities need to be connected to urban areas, particularly Scotland's cities. However, some remote and island communities face the challenge of residents currently being unable to travel to and from Scotland's cities in the same day while undertaking a day's work[42]. In addition, transport in rural areas is particularly important as many businesses in these areas are predominantly small scale which can lead to more reliance on good transport infrastructure to support deliveries and suppliers, access to business hubs, travel to customers and distance to market.

Evidence shows that a greater share of people in remote rural and accessible rural areas find accessing services less convenient[43]. There are urban and rural locations within Scotland where the current level of public transport provision, including accessible transport, and connectivity issues can act as barriers to accessing healthcare, employment, education or training opportunities. Satisfaction with public transport in large urban areas was 77%, compared to only 44% in accessible rural areas[44].

A particular issue for rural areas is the lack of public transport acting as a barrier for young people accessing education, training and employment. This can result in long term out-migration[45] and impact on the sustainability of remote and rural communities.

<u>Island communities</u>

Island communities face similar issues to those living in remote and rural areas, but in many cases the challenges can be greater.

Research has shown[46] that the minimum income that households require for an acceptable standard of living in Scotland's island communities is well above that required in the rest of the UK, and in many cases higher than in other areas of rural Scotland. Factors resulting in additional costs for households in island communities compared to the rest of the UK include:

- longer commuting distances compounded by higher fuel prices
- issues around integrated timetabling
- the additional cost of the need to make occasional trips to the mainland
- additional ferry/air costs for inter-island travel

Island communities can also face additional freight costs, such as getting goods, including farming and seafood produce, to market or importing energy sources or building materials and labour. Additional charges for deliveries can also be a

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[42] Convention of Highlands & Islands support an ambition for an affordable day return to a city.
[43] Transport and Travel in Scotland 2018, Table 33
[44] Scottish Household Survey 2019, Table 9.3, 2018 data
[45] HIE survey, 2018
[46] A Minimum Income Standard for Remote Rural Scotland, 2013,
http://www.hie.co.uk/regional-information/economic-reports-and-research/archive/a-minimum-income-standard-for-remote-rural-scotland.html

challenge. Similar to remote and rural areas, transport can have an adverse impact on the long-term sustainability of island communities.
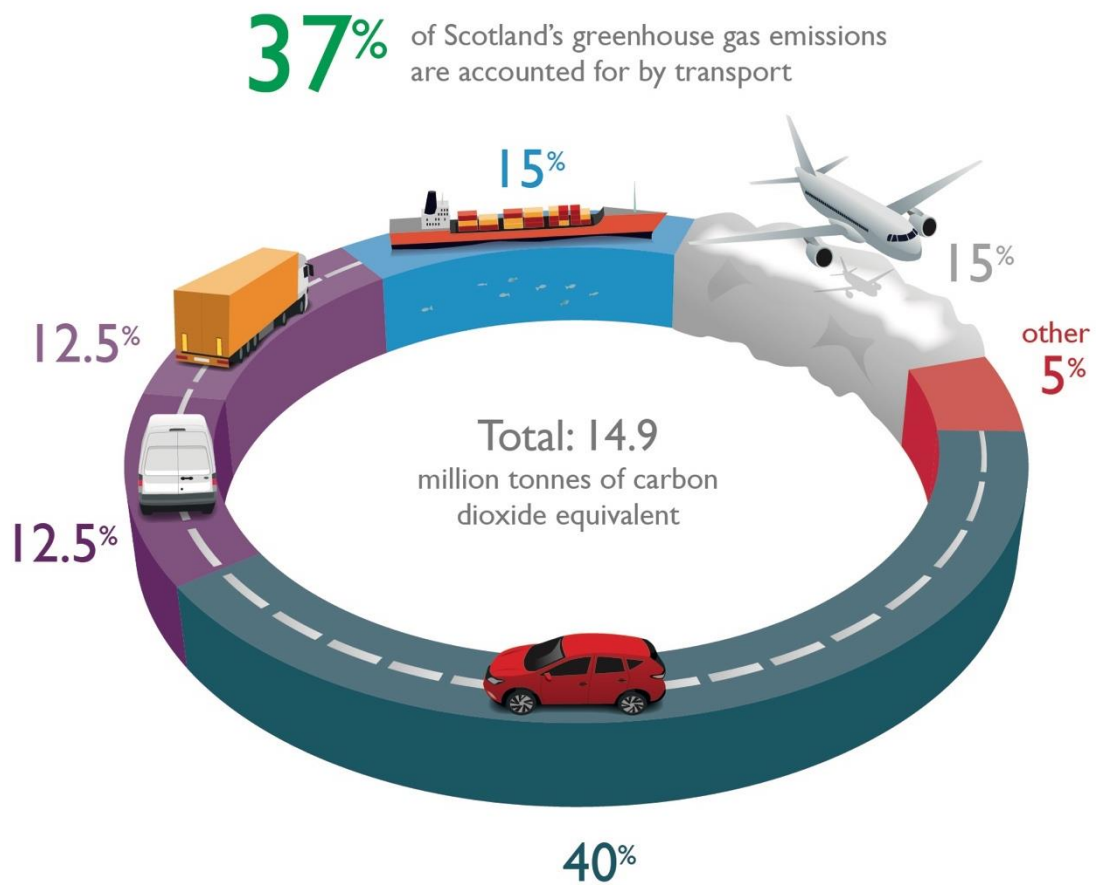
Global climate emergency

We are facing a global climate emergency and we need to significantly reduce our greenhouse gas emissions.

In the last five years, reductions in emissions from the power sector have enabled Scotland to reduce its overall emissions. However, this has led to the proportionate share of Scotland's emissions from transport increasing substantially. Transport is currently Scotland's largest sectoral emitter, responsible for 37% of Scotland's total greenhouse gases in 2017.

The factors affecting transport emissions are numerous and complex. The economic downturn in 2008 was a contributing factor to a fall in emissions, alongside fuel efficiency improvements and fluctuations in the price of oil. Between the 2007 peak and 2013 the trend in emissions from transport was downward. However, since 2013 there has been an increase each year, despite more efficient vehicles, due to an increase in vehicle kilometres driven. A key challenge is to reduce these impacts to help deliver the net-zero target.

Share of greenhouse gas emissions by mode in Scotland 2017

37% of Scotland's greenhouse gas emissions are accounted for by transport

15%

15%

other 5%

12.5%

12.5%

Total: 14.9 million tonnes of carbon dioxide equivalent

40%

**Figure 3: Share of greenhouse gas emissions by mode in Scotland, 2017**[47]

The largest source of transport emissions is cars, at 40%, followed by aviation and shipping which are both 15%. In addition, 25% of emissions were generated by a combination of Light Goods Vehicles (LGVs) and Heavy Goods Vehicles (HGVs)[48].

The proportion of single occupancy car trips also shows an underlying increasing trend. The figure of 66% in 2018 compares with a figure of 65% in 2013 and 60% in 2008[49].

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[47] National Atmospheric Emissions Inventory 1990-2017, 'other' includes bus and train
[48] Ibid
[49] Transport and Travel in Scotland 2018, Table TD9
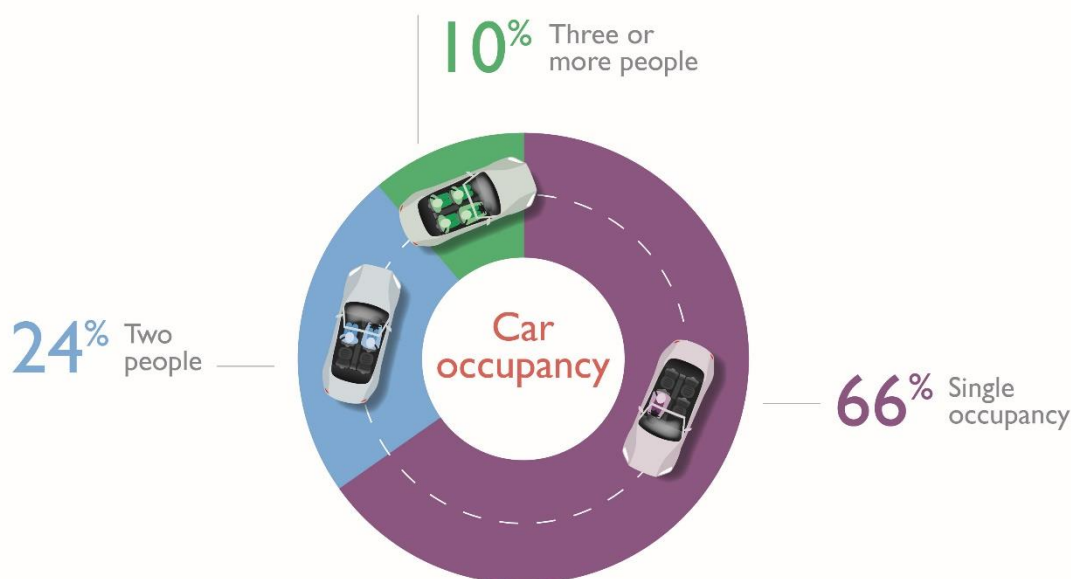
Figure 4: Car occupancy rates 2018

Adapting to climate change

In addition to minimising the future impacts of transport on our climate, our transport system needs to adapt to climate change impacts. Climate change directly affects the transport sector through the increasing number of more severe and frequent extreme weather events and the disruption they cause to the transport system, such as erosion of our coastal areas, landslides and rising water levels[50]. Importantly, it is recognised the disruption often disproportionately impacts on vulnerable communities with fewer and less resilient transport options.

In recent years, there have been several weather events which have led to significant disruption and resulted in high economic costs. Perhaps most notable amongst these is the so-called 'Beast from the East' in February 2018 which was the costliest weather event in seven years. The extreme weather cost the UK economy at least £1 billion per day as gridlocked roads, no trains and no buses meant many workers were unable to access employment[51].
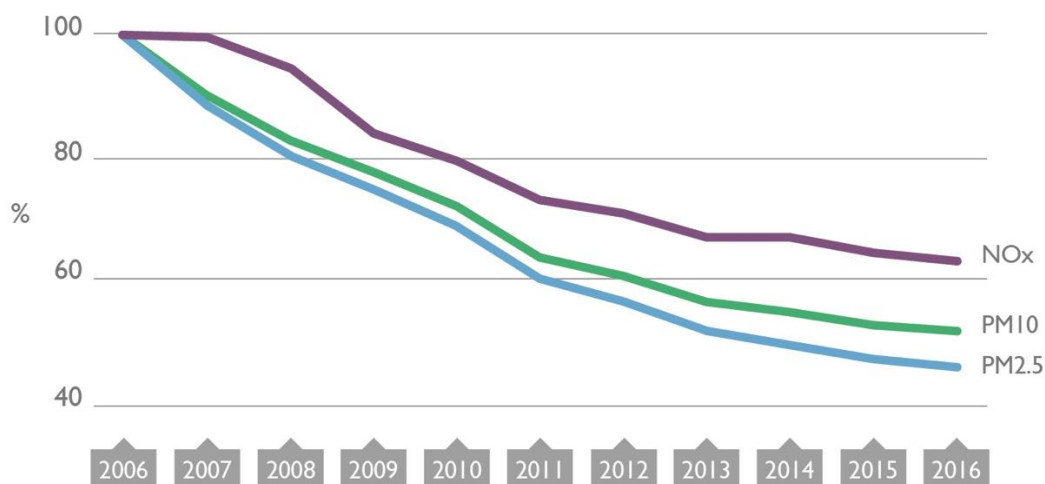
Air quality

As well as causing adverse impacts on climate change, our transport system has negative impacts on our air quality. Transport generates just over one-sixth of Scotland's total particulate matter (PM10) and over one-third of the total emissions of nitrogen oxides (NOx). The majority of these emissions are caused by road transport.

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[50] Scotland Climate Change Adaptation Programme 2, (SCCAP2) publication planned for later 2019
[51] Freezing Weather costs UK economy £1bn a day, P Inman, G Topham, and A Vaughan,

Emissions of NOx from road transport are reducing but not at the anticipated rate. Between 2006 and 2016, transport emissions of NOx[52], PM10[53], and PM2.5[54] declined by 37%, 48%, and 54% respectively.

Figure 5: Change in total transport emissions 2006-2016[55]

Despite these falls, transport, and road transport in particular, remains a significant contributor to poor air quality. Air pollution increases the risks of diseases such as asthma, respiratory and heart disease, particularly for those who are more vulnerable such as the very young and the elderly or those with existing health conditions. In addition, air quality is often worse in areas of deprivation and is a health inequality issue.

In 2010, fine particulate matter was associated with around 2,000 premature deaths in Scotland and around 22,500 lost life-years across the population[56].

Changing complex behaviour

To tackle emissions, a key challenge will involve getting people to change their travel behaviour, both in terms of reducing demand for travel and how they make particular journeys. People's travel choices are complex and influenced by a number of factors. Choices can reflect, for example, personal characteristics such as age, sex and

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[52] NOx refers to oxides of nitrogen, especially as atmospheric pollutants.
[53] PM10 refers to atmospheric particulate matter (PM) that have a diameter of less than 10 micrometres
[54] PM2.5 refers to atmospheric particulate matter (PM) that have a diameter of less than 2.5 micrometres
[55] Scottish Transport Statistics No. 37 2018, Table 13.1a /
[56] Cleaner Air for Scotland Strategy, https://www2.gov.scot/Resource/0048/00488493.pdf

income. They can also depend on where people live and/or work, geography, availability of transport, convenience and the built environment.

The activities for which people travel are changing too. More time spent on leisure activities, for example, has meant more people travelling greater distances to undertake outdoor activities. Also, the changing nature and location of work, land use, technology, housing and the move to more online retailing have impacted on and transformed people's behaviour in recent years.

To achieve our greenhouse gas targets, as well as enable a healthier and inclusive society, when people have to travel they will need to switch to more sustainable modes. For example, many journeys are relatively short and could be undertaken by walking and cycling. Just over 34% of journeys under 1km are made by car (either as a driver or a passenger)[57]. This rises to over 50% when the journey is between 1km and 2km. Changing people's travel behaviour to use more sustainable modes will have a significant impact on our environment, as well as our health and wellbeing.

Decline in bus use

In 2017-18, 388 million journeys were made on local bus services in Scotland[58]. This is down from 394 million (-1.5%) in the previous year and from 487 million (-20.3%) in 2007-08. This trend coincides with an increase of 7.4% in road traffic (vehicle kilometres) in Scotland between 2007-08 and 2017-18[59]. Changing travel behaviour and encouraging people to make trips by public transport rather than by private car is a significant challenge.

Bus use generally has been in decline since the 1960s for a number of reasons. One of these is due to longer journey times caused by congestion on the road network, particularly in urban areas[60]. The impact of congestion is illustrated in the figure below on the left. This cycle needs to be reversed to support a growth in bus usage, and the impact of this is illustrated in the figure on the right.
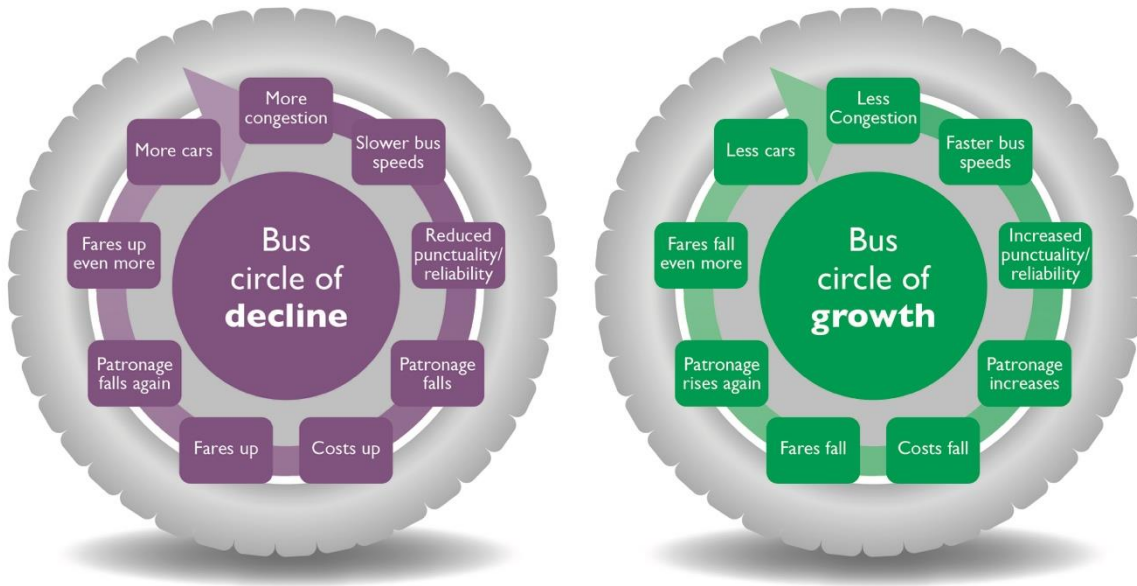
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[57] Transport and Travel in Scotland 2018, Table TD2a
[58] Scottish Transport Statistics No. 37, 2018. Table S1
[59] ibid
[60] https://greenerjourneys.com/wp-content/uploads/2016/06/TTBusReport_Digital.pdf

Figure 6: The bus circles of decline and growth

Whatever the causes of the decline in bus use, reducing passenger numbers risks driving down revenues and making some services unviable, resulting in their cancellations and, in some cases, communities becoming isolated[61].

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[61] "Trends in Scottish bus patronage"; 2017, KPMG for CPT Scotland

Helps deliver inclusive economic growth
- Will get people and goods where they need to get to
- Will be reliable, efficient and high quality
- Will use beneficial innovation

Productivity

Increasing Scotland's productivity and competitiveness is a key challenge to ensure Scotland's future economic prosperity. The latest evidence reveals that Scotland's productivity is ranked 16th out of 37 amongst OECD[62] member countries. This is in the second quartile but below other comparator countries such as Ireland, Belgium and Denmark. The Scottish Government's ambition is for Scotland to be ranked in the first quartile.

While Scotland's productivity level is not solely driven by the efficiency of its transport system, improvements in transport connectivity between businesses reduces costs and increases productivity, thus generating higher levels of economic growth[63,64].

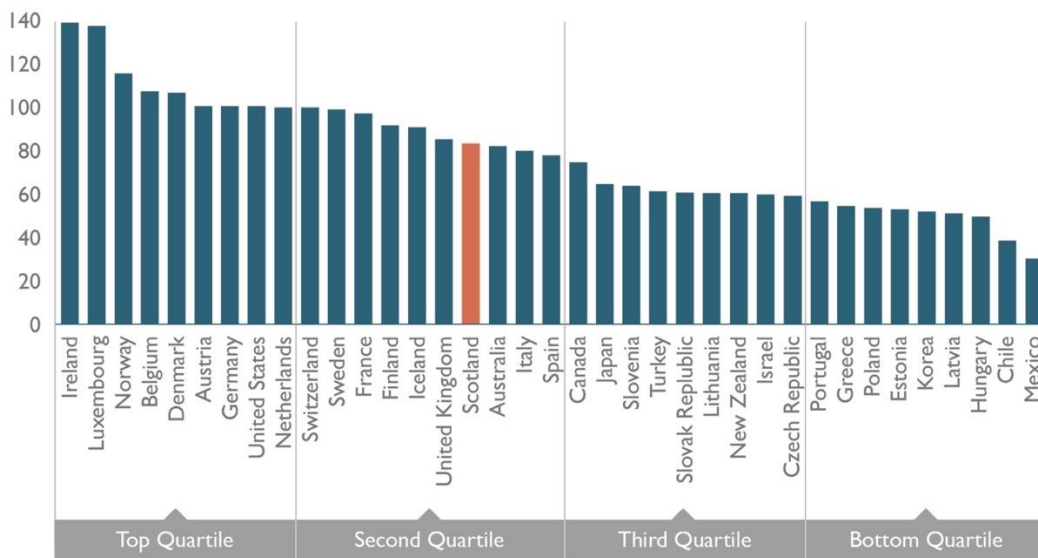Nominal GDP per hour worked in 2017, OECD countries (USA=100)

Figure 7: GDP[65] per hour worked 2017 (USA = 100)[66]

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[62] OECD – Organisation for Economic Cooperation and Development
[63] Scotland's Big Mo: Industrial Strategy, Inclusive Growth and the Future of Mobility, SCDI's Connectivity Commission, June 2018
[64] Transport's role in sustaining UK's Productivity and Competitiveness: The Case for Action, Sir Rod Eddington 2008
[65] GDP – Gross Domestic Product
[66] Scottish Government Labour Productivity Statistics, 2018 Quarter 3

Labour markets

People need transport to access employment, education and training. As a consequence, there will be fewer people out of work and Scotland's ambitions for growth will be supported. Transport can also make sure that the skills and experience of those in the labour force are effectively matched with the needs of businesses, helping to increase incomes and improve productivity.

The latest figures[67] reveal Scotland's employment rate, at 74.4%, is high compared with historical records. In addition, at 4.0% the unemployment rate remains low. This low unemployment rate, however, is not uniform across Scotland. Figures of 1.8% and 2.1% were recorded in the Orkney Islands and Shetland Islands respectively, but the local authorities of East Ayrshire, Glasgow City and Dundee City recorded figures of 5.8%, 5.9% and 6.5% respectively[68].

While transport access to labour market opportunities is not the sole cause of unemployment, there is evidence[69] that some people out of work see high transport costs - as well as physical barriers to access to transport - to employment locations as a barrier. This is particularly so for those in more rural areas, people with disabilities and long term health conditions, the young, those on low incomes and families with children, thus limiting the employment opportunities and options available.

Future skilled workforce

The transport industry is facing various challenges related to the workforce, both in terms of skills shortages in some areas and needing to retrain and increase skills of workers in other areas. We need to support a fair and inclusive transport sector for employers and the workforce.

An increasing number of workers in the transport sector are retiring or leaving the industry. With a lower number of young people entering the industry to replace them, a skills shortage is developing and there currently exists an increasing demand for suitably qualified and skilled labour.

The labour market also faces potential disruption through uncertainties related to EU Exit. For example, there are already issues around the availability of skilled labour in the logistics and distribution sector, with a particular concern about recruiting qualified HGV drivers where industry estimates highlight there will be a UK-wide shortage of between 35,000 to 60,000 drivers by 2020[70].

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[67] Labour Force Survey, July-Sept 2019
[68] Annual Population Survey 2018
[69] The Poverty Alliance Poverty and Transport Event, February 2019
[70] Shortage occupation list 2018

Audit Scotland's Maintaining Scotland's Roads report identified that roads authorities are increasingly concerned about the potential effect of staff reductions arising from budgetary constraints. They are worried at the loss of technical and commercial skills and expertise, an ageing workforce and how they can attract and train new staff. There is no central record of the scale of roads maintenance and transport planning staff reductions over the last few years, but, of the approximately 5,000 council staff currently engaged in roads activities, 40% are aged over 50 years and only 13% are aged under 30 years[71].

Trade and connectivity

Transport is crucial for our trade and competitiveness, within Scotland, across the UK and internationally. Improving gateways (such as airports, ports and major transport hubs) and the surface access to these gateways supports exporters to grow in existing markets and explore opportunities in new ones.

Scotland has strong trade links with 105 countries across nearly 100 different industries and sectors. Scotland's key export markets include petroleum, petroleum products and related materials, food and drink and power generating machinery and equipment, with 38% of all exports in these goods being sent to EU markets.

Scotland traded £57.6 billion worth of goods in 2018 beyond the UK[72], with more than half (56%) being exports, the remainder being imports. The £32.2 billion worth of exported goods was an increase of 12.7% on the previous year and destined for markets as summarised below[73].
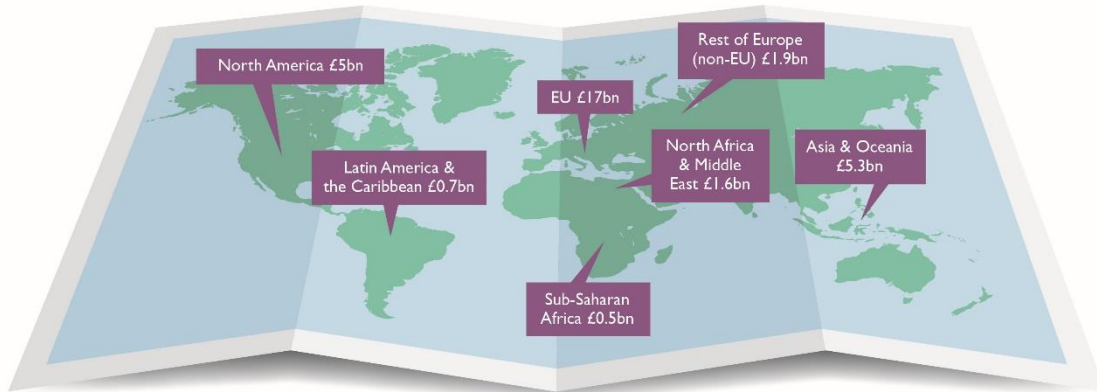
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[71] Maintaining Scotland's roads, 2016, Audit Scotland, http://www.audit-scotland.gov.uk/uploads/docs/report/2016/nr_160804_maintaining_roads.pdf
[72] Transporting Scotland's Trade, Transport Scotland, 2019
[73] Note: the importance of the Netherlands is partly because of the central role of Rotterdam in onward shipment.

Destination of Scotland's exports

North America £5bn

Rest of Europe (non-EU) £1.9bn

EU £17bn

Latin America & the Caribbean £0.7bn

North Africa & Middle East £1.6bn

Asia & Oceania £5.3bn

Sub-Saharan Africa £0.5bn

Top five export countries

| 1 Netherlands £6.9bn | 2 USA £4.3bn | 3 Germany £2.7bn | 4 France £1.6bn | 5 Republic of Ireland £1.5bn |

Figure 8: Scotland's Exports[74]

Aviation

To be productive, competitive and successful economically, it is important for Scotland to be well-connected. Aviation will continue to play a key role in Scotland's connectivity, both in international terms and within Scotland and the UK. We recognise the importance of regional airlines operating between Scotland's islands and its cities, and between Scotland and places where rail is not an effective alternative for businesses, such as to the south west of England.

We also want to make it easy for the rest of the world to visit and do business in Scotland. International visitors make a significant contribution to our tourist industry.

However, the environmental impacts of aviation need to be recognised and mitigated if we are to achieve our climate change targets. We must continue to explore opportunities for reducing emissions from the aviation sector for people travelling to, from and within Scotland.

Freight

The effective movement of goods is essential for trade and sustainable economic growth. Scotland's transport network supports the functioning of over 360,000 businesses. Delays on our transport system have a significant impact on firms that rely on their produce being delivered on time and to the level of quality their customers expect, such as those firms in the farming and fishing sectors.

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[74] Transporting Scotland's Trade, Transport Scotland, 2019

The efficient movement of freight is also important to consumers, both in terms of delivering goods to shops and, increasingly, directly to homes.

Freight is transported around Scotland by road, rail, air, sea and inland waterways. This complex pattern of movement is influenced by a number of factors, including demands and locations of customers, logistics and supply-chain management, improvements in technology and the governance of transport systems.

In 2018, total freight (excluding pipeline and rail) carried in Scotland was approximately 214 million tonnes[75]. Road freight made up the largest proportion (69%) followed by sea (31%) and then air (less than 1%). The vast majority of freight lifted in Scotland (111 million tonnes) was carried by road and remained within Scotland.

The number of goods vehicle trips, if left unchecked, is forecast to increase by 44% between 2014 and 2037[76], which will negatively impact on journey times and peak-period delays. Given the economic importance of Scotland's freight haulage industry, these factors will ultimately impact on the performance of the economy if not tackled.

There will also be an impact on the environment, which presents a further challenge. In 2017, HGV emissions were 3.5% higher than in 2016 and 5.2% above the 1990 baseline figure[77]. LGV emissions were 6.5% more than in 2016 and 95.6% higher than the 1990 baseline figure, the highest increase of all road transport. The increase in emissions from light goods vehicles reflects increasing vehicle-kilometres.

Within freight, in the main, larger vehicles are used for long-haul and regional distribution than for urban distribution. Indeed, the majority of road freight is moved in HGVs weighing more than 3.5 tonnes, usually articulated vehicles consisting of separate tractor and trailer units.

Although long-haul makes up the bulk of mileage and uses the largest vehicles, the wider social and environmental impacts of urban and last-mile distribution are more readily visible to the public, as the growth of freight traffic in busy urban areas can worsen congestion and air pollution. While the majority of the last-mile distribution in urban areas is undertaken by light commercial vehicles, and increasingly by bike courier, much of it is still carried by HGVs. This is particularly problematic at peak times when commuters are travelling to or from work and children are on their way to or from school. We recognise that freight is important to the success of our economy, but we must ensure that the negative impacts generated by the movement of goods vehicles are addressed.

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[75] Transporting Scotland's Trade, Transport Scotland, 2019
[76] Transport Forecasts, Transport Scotland 2018
[77] Carbon Account for Transport No. 11: 2019 Edition

Tourism

Transport plays a vital part in supporting tourism. It enables people to get to and travel within Scotland and allows them to explore the many sights and experiences our country has to offer. In 2018, Scotland welcomed just over 3.5 million overnight visitors from overseas, an increase of over 10% on the previous year[78] with changing patterns of holidaying (including more shorter breaks, and to more remote areas).

Tourism, from the UK and beyond, is a major contributor to our economy with over £10 billion spent in 2018[79]. While the majority of tourists visiting Scotland come from within the UK, data shows that overseas visitors typically come from countries with whom Scotland has a strong trade link. In 2018, 47.4% of visitors to Scotland came from one of the seven countries in either Scotland's top five importers or exporters (China, France, Germany, Netherlands, Republic of Ireland, Norway and USA), and spent a combined total of £1.1 billion – 49.5% of all visitor spend in 2018.[80].

Tourists from within the UK (our main market, including from Scotland itself) mainly arrive or travel by road. Travel by aeroplane is by far the most prevalent mode of transport for international visitors to Scotland. Since 2002, the number of international visitors travelling to Scotland by air has more than doubled (+150%), while travelling by sea and via the Channel Tunnel have remained fairly stable over the same period, although there has been a marked increase in the number arriving by cruise vessels, rising from 369 calls with 268,481 passengers in 2010 to an estimated 912 calls with 920,000 passengers during 2019[81]. While travel to Scotland by rail for international visitors is also relatively low, for those travelling within the UK it is higher[82].

We must recognise that an increasing number of tourists, particularly in the peak summer months, can have impacts on our transport system. Our scenery is the main draw for visitors to Scotland and tourism is particularly important to our rural communities. However, increasing popularity can have a downside, and people in a number of Scotland's remote, rural and island communities are witnessing deteriorating road networks as traffic increases, particularly at natural and cultural attractions, with the use of much larger and heavier cars, caravans and motorhomes, as well as capacity constraints for taking vehicles on ferries.

It is important then, that while we will continue to welcome visitors to Scotland and benefit from the advantages tourism brings, we will encourage tourists to visit and travel within Scotland using more sustainable means.

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[78] Scotland's Tourism Summary Report, Visit Scotland 2019.
https://www.visitscotland.org/binaries/content/assets/dot-org/pdf/research-papers-2/2018-national-tourism-stats-summary.pdf
[79] ibid
[80] Transporting Scotland's Trade, Transport Scotland, 2019
https://www.transport.gov.scot/publication/transporting-scotland-s-trade/
[81] https://www.cruisescotland.com/
[82] ibid

Digital and energy

Developing a transport system in Scotland that reflects our changing and different needs cannot be achieved in isolation from other key influencing factors. Transport needs to be considered alongside other strategies and initiatives, including digital and energy.

Over the period of this Strategy, the choices that people make about where and when they work will be driven as much by changing digital technologies and communications as it will be by transport. How companies trade and the firms they trade with will also be influenced greatly by these changes. Availability of mobile connectivity across the transport system is a key enabler in the adoption of new digital technologies, whilst the availability of ubiquitous connectivity is fast becoming an expectation.

Moreover, the enabling nature of connectivity is expected to be increasingly important for the transport sector. For example, improvements in digital travel data provision and ways we access our transport via digital platforms are influencing growth in mobility as a service (MaaS). Improvements in digital technology and connectivity could impact on ways in which people work and travel, and these links could be an essential part of how transport is able to contribute to Scotland's emissions targets. Access to digital communications is also a vital factor in decisions made by disabled people about location and transport options.

We are seeing significant increases in people working from home and more flexible working patterns. The changes in traditional work patterns are, however, creating new and different demands on our transport system as we see, for example, fewer commuters in the regular peak periods. They generate demand for travel at different times and in different ways, as methods and times of travel and patterns of work change. Where people choose to live in relation to their workplace is also affected.

We are also seeing changes in people's shopping habits as more buying is done online and goods are delivered to people at home or in their workplace. The behaviours are replacing some personal travel by car or public transport with increased light goods transport. These trends are a result of the increasing use of improved technologies.

Our transport system needs energy to work effectively. Scotland is taking a leading role in promoting electric and other low-emission vehicles[83], with a commitment to phase out the need for new petrol and diesel cars and vans by 2032. Similarly, there has been, and will continue to be, a significant programme of electrification of the rail network, with around 75% of daily rail commutes in Scotland now made on electric trains.

This ambition is as much about energy as it is about transport. In achieving it, Scotland will need to develop and manage the necessary charging and other

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[83] Switched on Scotland Phase 2: An action plan for growth, Scottish Government 2017

network infrastructure, while building awareness and confidence on the part of consumers. We will involve experts with responsibility for delivering transport policy, vehicle manufacturers, those responsible for maintaining and operating the networks, transport operators, electricity generators and distributors, as well as the consumers and users of transport services.

Reliability

A reliable transport system is one where people can access where they want to go, when they want to go there and get there on time.

Businesses also need reliability, in that they should be able to deliver their goods to customers on schedule or with minimal delays as well as receive goods from suppliers at the times needed.

Reduced levels of congestion can improve reliability and journey times for businesses and other road users, leading to lower costs, increased levels of productivity and competitiveness, and positively support economic growth. It can also help attract inward investment and boost trade.

Between 2016 and 2018, 13% of total car driver journeys were delayed[84]. For journeys made for commuting or business purposes, the figure rises to 22% and 18% respectively.

Research revealed that some of Scotland's cities experience considerable congestion and associated disruption[85]. Listed below are factors relating to the cost of traffic congestion in Scotland:

- Glasgow was the third most congested city in the UK while Edinburgh was sixth
- in Glasgow during 2017, on average each driver lost 99 hours due to congestion which was a 4% increase from 2016. Congestion costs each driver in Glasgow £736 per annum
- outside of London, Great Western Road in Glasgow was the 9th most congested travel corridor in the UK's cities[86]
- in Edinburgh during 2017, on average each driver lost 165 hours due to congestion, a 10% decrease from 2016. This was estimated to cost each driver £1,219

The figure below presents percentage change in vehicle kilometres on Scotland's roads since 2007. While the volume of traffic declined between 2007 and 2011 in line with the economic downturn, there have been increases each year since then, with the increase between 2011 and 2017 exceeding 10%. If left unchecked, traffic is

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[84] Transport and Travel in Scotland 2018, Table TD12
[85] INRIX 2018 Global Traffic Scorecard http://inrix.com/scorecard/
[86] The INRIX analysis only focuses on cities and does not account for congestion hotspots outside of cities

forecast to rise further[87]. These increases in traffic volumes will impact negatively on reliability through increased congestion and more roadworks as greater pressure is placed on the operational efficiency of the network.

## Annual percentage change in million vehicle kms travelled by road
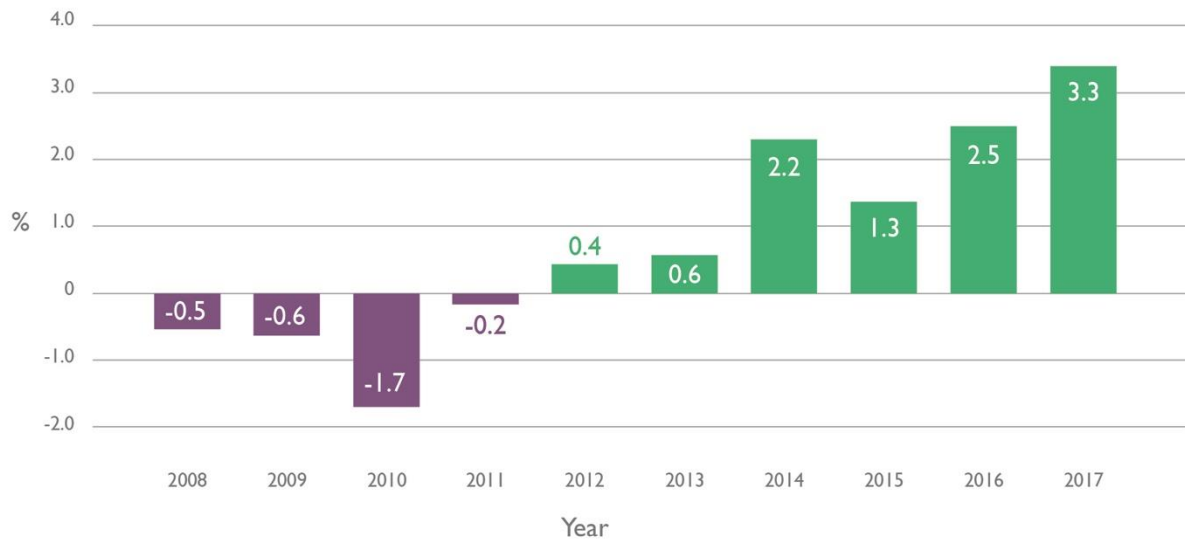
Figure 9: Percentage change in road traffic from base year 2007[88]

Reliability is also an issue on the rail network and data shows that this has declined from a peak of 93% in 2013 to just over 87% in 2019[89], albeit this is very much in the context of declining performance in the remainder of the Great Britain railway network as well.

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[87] Transport Forecasts, Transport Scotland 2018
[88] Scottish Transport Statistics No 37 2018, Table 5.1: Traffic (vehicle kilometres) by road class and type
[89] The Public-Performance-Measure (PPM) is the standard industry measure for reporting performance. It counts all trains which arrive within five minutes of the scheduled performance time (ten minutes for the long-distance TOCs), compared with the number of trains planned to run. The Office of Rail and Road's data reported for Scotland are for the ScotRail franchise proper, which covers 95 percent of the trains run in Scotland.
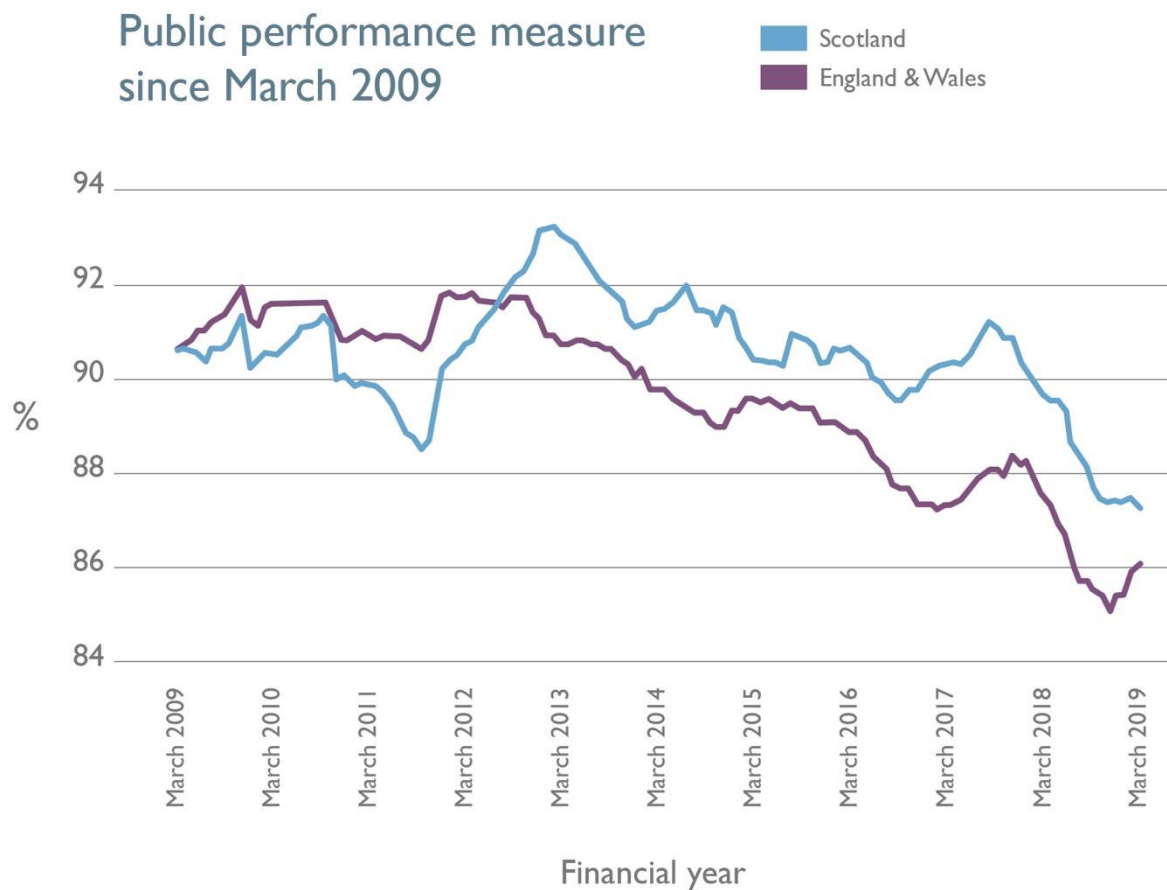
Figure 10: Rail performance

Funding and resources

The way in which the transport system is paid for and funded is complex, but it needs to be fair and sustainable and support wider outcomes.

The costs of delivering Scotland's transport system are significant. In 2017-18, total public sector expenditure on transport amounted to £2.95 billion[90]. This compares with a figure of £2.72 billion in 2007-08, an increase of 8.4%. The split of transport expenditure was £2.13 billion by the Scottish Government and £0.82 billion by local authorities. Going forward, there will continue to be competing demands and difficult funding choices to be made for both central and local government. This includes decisions about priorities within the transport infrastructure, and also between transport and other policy areas such as housing, health, education and energy.

In addition to these competing demands, achieving the net-zero target will put further pressure on limited budgets, as increasing focus is placed on areas where greenhouse gas emissions need to be reduced. There are other financial levers that

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[90] Scottish Transport Statistics, 2018 Edition, Table 10.1

could influence individuals' and businesses' travel choices such as the costs for parking. Also relevant are the reserved areas of Vehicle Excise Duty and Fuel Duty.

While it will be important for people to make fewer journeys by emission-producing vehicles, it must be recognised that people need to travel, and our transport system is important to how we live our lives. But we need to manage our transport assets effectively and invest efficiently in the resources needed to maintain and safely operate them and to make better use of existing capacity.

Spatial planning

Spatial planning can play a key role in addressing a number of challenges for our places, but needs to be properly aligned with transport planning to realise its full potential. The places where we live and work can have important impacts on our health and wellbeing. As our land use has continuously evolved, some places have become less sustainable and would benefit from renewal and improvement. Buildings should not be located in areas that are hard to reach and not well served by public transport as this can result in long journeys to access shopping and work, therefore discouraging walking and cycling and encouraging more car use. There are, however, many examples of sustainable transport options being designed into new developments that provide wider benefits for people and we need to ensure this approach becomes standard where appropriate.

Safety and security

Scotland's transport system needs to be safe. In 2018, 8,402 road accident casualties were reported in Scotland, a reduction of 11% compared to 2017[91]. This was also the lowest number of casualties since annual records began in 1950. However, while the overall numbers fell, of these, 160 were fatalities – an increase of 10% over the previous year.

Road incidents in Scotland continue to have a significant negative impact on individuals, families and society as a whole. There are also considerable inequalities, with children on foot or bike more than three times as likely to be involved in a traffic accident in the 20% most deprived areas in Scotland than in the 20% least deprived areas[92].

When people are travelling, they should be able to do so without the fear or threat of crime. Women and disabled people, for example, are more likely to experience affordability barriers to transport. They are less likely to drive and more likely to use public transport, particularly buses. However, many women and disabled people feel vulnerable when using public transport. This is especially true at bus stops or train stations that have poor lighting, are isolated and not frequently used at certain times of the day or are located in places perceived to be unsafe.

Rural areas have particular challenges compared to urban areas due to a relatively poor footpath network and the nature of the roads. Some schoolchildren can be at

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[91] Key Reported Road Casualties Scotland 2018, Transport Scotland Statistical Bulletin 2019
[92] Sustrans, Scottish Transport Applications Research conference May 2019
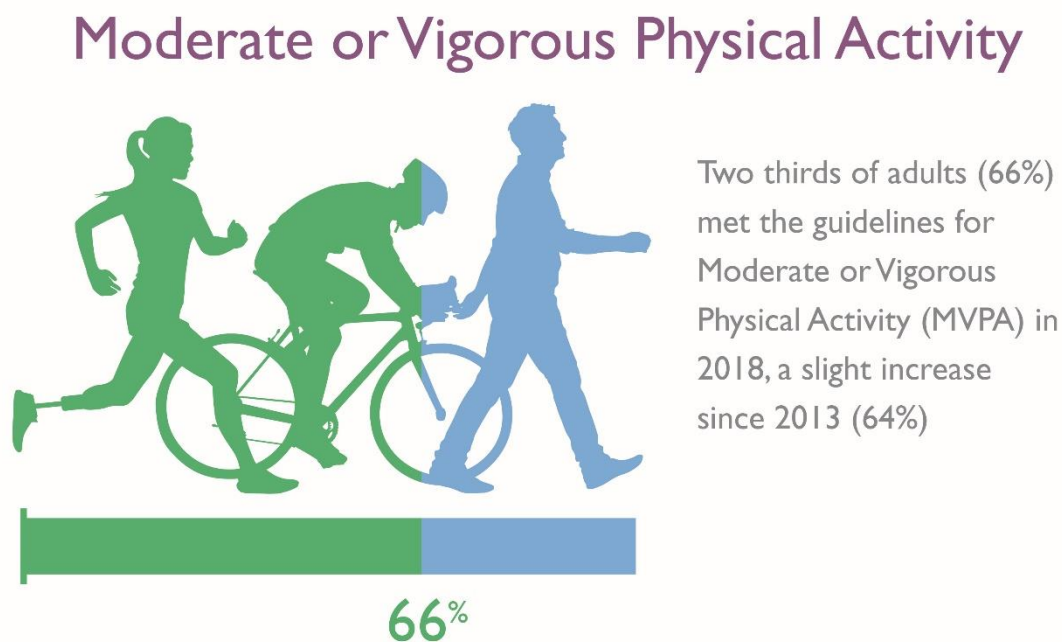
risk walking to school and there's the added challenges around farm machinery using rural roads.

Our transport system is also becoming increasingly digital. We need to ensure it is secure against cybercrime for users, for example protecting bank details of rail passengers when booking tickets online, and transport operators who make increasing use of technology and data to operate their services.

Physical activity

The importance of active travel is becoming more evident as the consequences of physical inactivity are studied. It is estimated that physical inactivity contributes to over 2,500 premature deaths in Scotland each year[93]. According to the Scottish Government, physical inactivity is costing the Scottish NHS around £94.1 million annually[94]. This equates to an average cost of £18 per Scottish resident per year.

In 2018, a third of Scottish adults did not meet the Chief Medical Officers guidelines which recommend 150 minutes of moderate or vigorous physical activity each week. In addition, inequalities also exist, with adults living in the least deprived areas significantly more likely to meet the guidelines than those in the most deprived areas[95].

Moderate or Vigorous Physical Activity

Two thirds of adults (66%) met the guidelines for Moderate or Vigorous Physical Activity (MVPA) in 2018, a slight increase since 2013 (64%)

66%

Figure 11: Physical activity

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[93] Scottish Health Survey; Topic Report; Physical Activity. November 2014
[94] NHS Health Scotland, 2013
[95] Scottish Health Survey, 2017 edition, 2018

Over the last few decades our increasing reliance on cars has contributed to Scotland becoming less active as a nation. The figure below shows the latest travel to work mode share in Scotland for 2018[96]. Overall, over two thirds of commuters travel to work by car or van, either as a driver or passenger, compared to just 12% who walk and 3% who cycle.
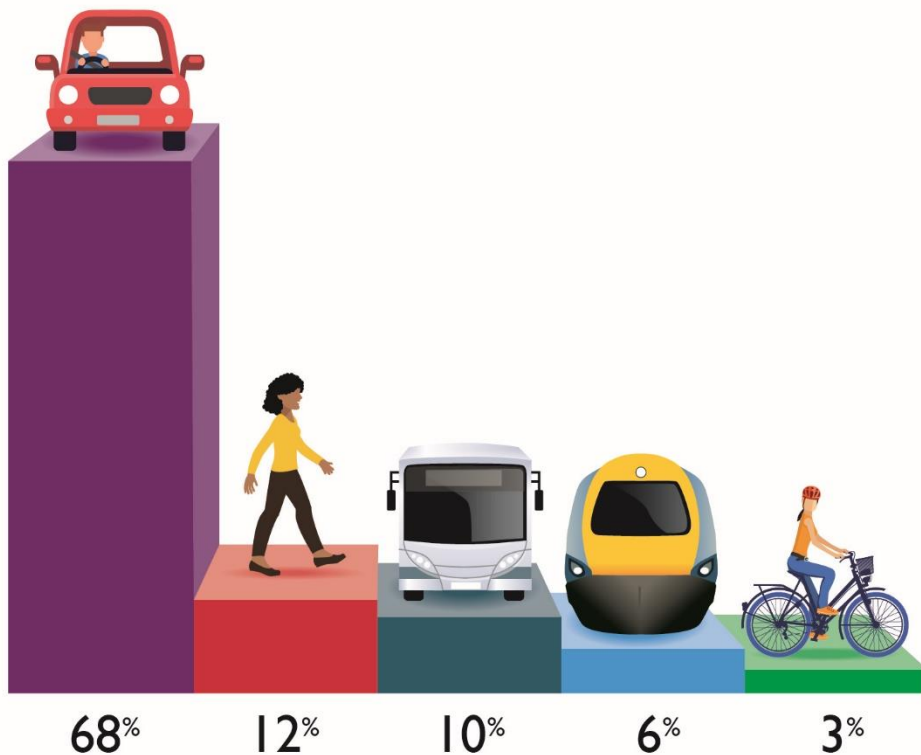
Figure 12: Transport mode share for work in 2018

The Preventing Overweight and Obesity in Scotland Strategy states that one of the most effective ways to secure the required 30 minutes of moderate activity per day is to reduce reliance on motorised transport, changing the means of everyday travel to walking and cycling. However, in 2017 there were 290 million vehicle kilometres travelled on Scotland's roads by pedal cycles[97]. This was 6.5% lower than in 2012.

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[96] Transport and Travel in Scotland, 2018 Table 7 Travel to work by other modes, such as motorcycle, ferry and taxi, make up the remainder.
[97] Transport and Travel in Scotland 2017, Table i: Traffic and passenger numbers in Scotland, 2012 to 2017

Currently, nearly a quarter (24%) of children travel to school by car[98]. Many of these journeys can be made by walking or cycling. It is particularly important that people learn healthy behaviours when they are young. These behaviours will likely continue into later life. Research shows that around one quarter of children in all age groups between 5 and 15 do not meet physical activity guideline over an average week and this declines with age[99]

The proportion of children meeting the physical activity guidelines declined with age
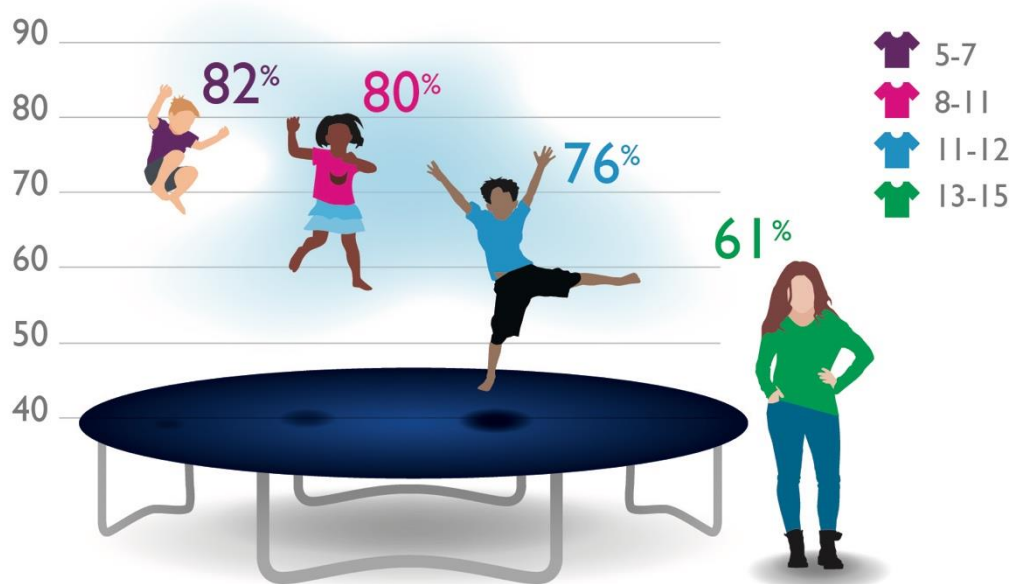
Figure 13: Proportion of children meeting the physical activity guidelines[100]

There are links between poverty and the availability of bikes. Household access to bikes increases with household income. 62% of households with an annual income of £50,000 or more have access to one or more bikes, compared to 20% of households with an annual income of up to £10,000[101]. Bicycle access is higher in rural areas than urban areas.

There are also links between household income and people walking just for pleasure or to keep fit. For those living in households with an annual income up to £10,000, 58% walk one or more days per week[102]. For those in households with more than £50,000 annual income the figure rises to 71%.

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[98] Transport and Travel in Scotland 2018, Table Sum 1: Summary of Scottish Household Survey results

[99] 2016 Scottish Health Survey

[100] ibid

[101] Transport and Travel in Scotland 2018, Table 18

[102] Transport and Travel in Scotland 2018, Table 25

Information and integration

High-quality journey planning information – both digital and physical – is important to enable a resilient transport system that allows people and goods to get to where they need to get to.

Currently, many people are choosing to travel by car instead of active travel and/or public transport due to the number of necessary interchanges on their journey. In some cases, journeys are not possible due to a lack of connections or accessible modes of transport. In addition, long waiting times, the need for multiple tickets and complex connections deter people from using some public transport services, resulting in many running below capacity. This is a particular issue for wheelchair reliant transport users.

Resilience

When there are extreme weather incidents, and planned or unplanned events which result in network disruption, it is vital that information is given to the public as early as possible so that they can act accordingly. It is also vital that necessary steps are taken for our more vulnerable travellers. Extreme weather leads to uncertainty about travel conditions for people and businesses. In these situations, commuters do not know if they can get to work. In many places, goods, including food, cannot be delivered causing significant further disruption.

Dedicated walking and cycling infrastructure must also be maintained to encourage use. Both trunk and local roads face considerable maintenance backlogs and need significant investment to ensure they are appropriately maintained[103]. This is also an issue for other parts of the transport system. For example, both our mainland to island and intra-island ferry fleets are ageing.

Similarly to that for motorised traffic, road condition is vital for cyclists and for buses. The effective maintenance of our networks is also important in reducing disruption and delivering a resilient and reliable transport system.

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[103] Maintaining Scotland's roads, 2016, Audit Scotland, http://www.audit-scotland.gov.uk/uploads/docs/report/2016/nr_160804_maintaining_roads.pdf

Chapter 4 – Meeting the challenges

In order to deliver the Strategy and address the challenges, the approach we must take is one of: Increasing Accountability; Strengthening Evidence; and Managing Demand.

The collaborative approach undertaken to develop this Strategy has been key to the development of the Vision, Priorities and Outcomes. We will continue to promote a more joined up, collaborative and participative approach to transport assets and services to deliver a better Scotland. To increase accountability we will: establish a Transport Strategy Delivery Board; establish Transport Citizens' Panels; and continue our business engagement. Transport governance and collaboration will also be improved as we continue the work initiated through the Roles and Responsibilities Group which undertook a review of transport governance.

Robust but flexible decision making requires strong evidence to underpin it, as such, we will design a robust monitoring and evaluation framework to: measure and report annually on performance; strengthen our analytical approaches; and continue to ensure equality of opportunity and outcome and minimising environment effects are at the forefront of decision making.

Successful delivery of the Strategy will not be achieved if demand for transport is not managed effectively. Measures will be put in place to support this. We will aim to make sure that public transport and active travel options are the preferred choice for people making short journeys.

Policies

A range of Policies has been developed that will act as the drivers of change and help address the challenges, achieve the Priorities and Outcomes and deliver the Vision.

The Policies are presented below under the four Priorities. The Policies are not exclusive to each of the Priorities and will contribute to a range of cross-cutting themes. For example, some Policies which contribute to 'Takes climate action' will also have positive impacts on 'Improves our health and wellbeing'.

The Policies are high-level statements of intent aimed at achieving the Vision, Priorities and Outcomes. They do not include details of specific interventions, such as projects or programmes. The interventions will be set out in a Delivery Plan, details of which are explained at the end of this chapter.

Importantly, overarching all the Policies, to address the challenges and achieve the Priorities we will embed the Sustainable Travel Hierarchy in decision making by promoting walking, wheeling, cycling, public transport and shared transport options in preference to single occupancy private car use for the movement of people. We will also promote efficient and sustainable freight transport for the movement of goods, particularly the shift from road to rail.
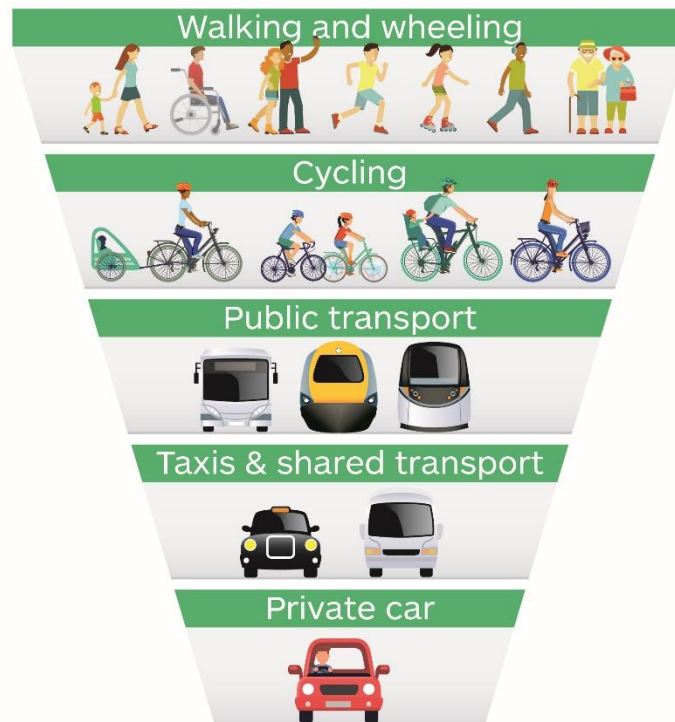
Figure 14: The Sustainable Travel Hierarchy

In addition, at the national level the Sustainable Investment Hierarchy will be used to inform future investment decisions and ensure transport options that focus on reducing inequalities and the need to travel unsustainably are prioritised. We also need to focus on maintaining and safely operating existing assets, taking due consideration of the need to adapt to the impacts of climate change. Investment promoting a range of measures, including innovative solutions, to make better use of existing capacity will then be considered, ensuring that existing transport networks and systems are fully optimised. Only following these steps will investment involving targeted infrastructure improvements be considered.

We will assess future investment decisions against their contributions to supporting this Strategy, and in particular how they impact against our Takes climate action outcomes and wider climate change targets.

Figure 15: The Sustainable Investment Hierarchy

Reduces inequalities

- Will provide fair access to services we need
- Will be easy to use for all
- Will be affordable for all

We want to create a Scotland that will enable everyone to share in the benefits of a modern economy which promotes wellbeing. Transport will play an important part in delivering the fully inclusive society. While we tackle inequalities, our actions will simultaneously reduce poverty, in particular child poverty. The Policies to realise this Priority and Outcomes are set out below.

Reduces Inequalities
Minimise the connectivity and cost disadvantages faced by island communities and those in remote rural and rural areas, including safeguarding of lifeline services
Ensure transport in Scotland is accessible for all by supporting the implementation and development of Scotland's Accessible Travel Framework
Remove barriers to public transport connectivity and accessibility within Scotland
Improve sustainable access to healthcare facilities for staff, patients and visitors
Ensure sustainable, public and active travel access to employment, education and training locations

Transport plays a key role in enabling people to realise their human rights. It is an essential requirement in enabling people to realise other human rights such as the right to education, the right to work, the right to take part in cultural and public life, the right to an adequate standard of living and the right to the highest attainable standard of physical and mental health.

The Strategy will support a rights-based approach to transport. We will work to ensure that access to suitable transport facilitates fulfilment of other human rights, in line with the National Performance Framework and Scotland's international human rights obligations. The Strategy will use this underlying principle to deliver Scotland's transport system for the next 20 years. This approach is directly informed by progressive policies being and, in that regard, proper adopted and implemented across Scotland, including the Scottish Government's strategic commitment to incorporate internationally-recognised human rights into domestic law.

Our future transport system will have a vital role in helping people across Scotland to move out of poverty. As noted in 'Every Child, Every Chance', the Scottish Government's first Tackling Child Poverty Delivery Plan[104], transport has a key role to play in impacting against the drivers of child poverty reduction. As noted, promoting gender equality will also likely have a positive impact on tackling child poverty and in that regard proper understanding of women's often more complex

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[104] Scottish Government, Tackling Child Poverty Delivery Plan (2018-22), March 2018

travel behaviour will help ensure fairer access to work and reduce the gender pay gap. Our vision for transport in Scotland will help households access employment, training and education – supporting an increase in earned incomes – and by being affordable will help to reduce overall household costs.

Scotland's transport system will be one that addresses issues around gender inequalities and the barriers that impact on when women travel, the modes they use and, in particular, their concerns around safety. It will take account of the more complex travel patterns of women due to, for example, domestic care and more part-time working, and consider the disproportionate impact on women when decisions are being made to cut or remove public transport services.

Our transport system will continue to meet the changing needs of young people, particularly by ensuring they have affordable and sustainable access to education, employment and training opportunities enabling them to fulfil their potential.

This Strategy will play a crucial role in tackling social isolation by connecting people through improvements to transport, allowing them to socialise, access services and meet with friends and family face to face. Our transport system will continue to take account of the changing needs of older people and help challenge the inequalities that people face as they age, including health and disability issues in line with A Fairer Scotland for Older People: A Framework for Action[105]. It will help improve the lives of older people in Scotland by giving them greater opportunities to be connected, engendering a sense of greater independence and increasing confidence in older people's ability to travel.

The Strategy will support the vision set out in Scotland's Accessible Travel Framework and, in line with the Framework, ensure that 'all disabled people can travel with the same freedom, choice, dignity and opportunity as other citizens'. Disabled people have the same rights as every other citizen in Scotland and we will listen to and work with disabled people to ensure these rights are realised.

Access to health and social care facilities is crucial for many people in Scotland. This includes 140,000 NHS Scotland employees as well as the large number of out-patients and people visiting family members and friends in hospitals. It is particularly important for the increasing number of older and disabled people in Scotland who, in general, have a greater need to visit health and social care services. As a society, it is important that older and disabled people can plan and get to their GP or hospital without facing physical barriers and enduring distress, anxiety or additional transport costs.

We will continue to work closely with authorities to improve transport access to health and social care. This will include ensuring that sustainable access is an integral part of the planning process when decisions are made about locations of, for example, hospitals and in the delivery of health services. It will also be important that

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[105] https://www.gov.scot/publications/fairer-scotland-older-people-framework-action/

the experiences of the people affected by these decisions are involved in shaping them, such as the design of transport service provision.

In addition to improving access to health and social care facilities it will also be important to create systems that reduce the need for people to travel to access services, such as more effective management of waiting lists, better use of technology to monitor health and access care, and raise awareness of the considerable volume of traffic that is attributable to people travelling to healthcare facilities.

The regions of Scotland have different characteristics - economic, physical, social and cultural - and also have different requirements from the transport system. A single approach will therefore not be the solution to addressing the challenges faced by different geographies. Our cities, towns, remote rural and island areas will need a targeted approach to meeting their needs. Indeed, even places of the same type, for example cities such as Edinburgh and Aberdeen, will require targeted approaches.

The Strategy, through the approach to planning and delivery, will account for our different regional differences, as recognised in the National Islands Plan[106] and the National Council of Rural Advisers[107], and adopt targeted approaches that align with local needs. Importantly, the Strategy will ensure those living in rural, remote or island communities will be well connected and have as equitable access to services as those living in the rest of the country, therefore making a positive contribution to maintaining and growing the populations in these areas.

Rural Scotland has a big part to play in supporting our wider economy and relies on us encouraging people to live and work there. Creating an enabling environment that will do that is therefore important along with building in the ability to travel easily to access work and services.

Whilst alternative modes of transport to car use must be encouraged, we also need to accept that car ownership is not a luxury but a necessity for many living and working in rural areas. For this reason, this Strategy will take a realistic and staged approach to the use of vehicles in rural areas that recognises the practical realities of travel in many rural areas.

In addition, in line with the Islands (Scotland) Act 2018, we will continue to ensure that the transport system works for our island communities and delivers what they need from island connectivity, recognising the importance of ferry and air services to overall journeys.

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[106] Scotland's National Islands Plan, 2019
[107] New blueprint for Scotland's rural economy: recommendations to Scottish Ministers, 2018

Takes climate action
- Will help deliver our net-zero target
- Will adapt to the effects of climate change
- Will promote greener, cleaner choices

We face a global climate emergency. We need to aim for a transport system that encourages people to make travel choices that minimise the long-term impacts on our climate and that will increase the wellbeing of future generations. Scotland must transition to a net-zero emissions economy for the benefit of our environment, our people and our future prosperity. The Policies to realise this Priority and related Outcomes are set out below.

Takes Climate Action
Reduce emissions generated by the transport system to mitigate climate change
Reduce emissions generated by the transport system to improve air quality
Ensure the transport system adapts to the projected climate change impacts
Support management of demand to encourage more sustainable transport choices
Facilitate a shift to more sustainable and space-efficient modes of transport for people and goods
Improve the quality and availability of information to enable all to make more sustainable transport choices

We must tackle the global climate emergency. The Scottish Government is committed to reduce greenhouse gas emissions to 75% of 1990 levels by 2030, 90% by 2040 and net-zero by 2045. This Strategy will help contribute to achieve these targets.

Scotland's future transport system will get people to where they need to get to, but that has to be without the significant adverse environmental impacts. Scotland will continue to be a responsible global citizen with a moral obligation and legislative framework to contribute to the challenge of climate change and to influence others to do the same. Our Policies will ensure people's travel choices will not have significant adverse impacts on the long-term future of our planet and the wellbeing of generations to come.

The reasons why people travel and the methods they use are not fixed. Social changes and lifestyle choices are changing and people's behaviour is constantly evolving to reflect this. We will ensure that as people change their behaviour and select new travel choices, there will be more options available to them which protect our environment.

It is recognised that, in certain circumstances, using the car can be essential. However, for the majority of trips, people have a choice. We will continue to improve the attractiveness of active and public transport to extend these choices, but we all must take responsibility for our actions and the impacts on the rest of society caused

by our travel decisions, firstly by considering whether the journey is necessary and then, secondly, deciding the most sustainable way in which that journey can be made.

We will continue to explore effective solutions to manage demand. This will include better public transport and more and improved active travel options.

More people wanting to access our city centres, often by private car, is impacting on air quality, and subsequently on people's health. While Scotland's four largest cities are introducing low emission zones, which through the restrictions on the most polluting vehicles will ultimately help improve air quality, more will need to be done. The Transport (Scotland) Act 2019 will enable local authorities to introduce schemes under which a charge may be levied for employers providing workplace parking places.

This Strategy will support a range of further measures and approaches. People and businesses will be encouraged to travel sustainably as a result of better integration of transport and spatial planning. This will be supported by opportunities created through enhancements in digital technologies, such as more flexible working and mobility as a service. Emissions will be reduced through a shift to the use of greener travel options, including higher levels of active travel.

The new technologies which are emerging to make vehicles less dependent on fossil fuels will contribute to the success in achieving the net-zero target. However, that will not be enough. We will not build infrastructure to cater for forecast unconstrained increases in traffic volumes. Instead, we will manage demand and reduce the need to travel by unsustainable modes. Not taking steps to effectively manage demand for car use is no longer an option. To help achieve this we will encourage people not to make unnecessary journeys.

We will support advances in technology and new innovations to ensure improvements in engine efficiencies which will help increase the uptake of ULEVs. The answer, however, is not necessarily a total switch to ultra-low emitting cars. Replacing petrol or diesel cars with, for example, a car with an electric or hydrogen powered engine will continue to generate congestion and have the negative impact this has on people and businesses. We must therefore transition to more space-efficient and sustainable vehicles such as public or shared transport, as illustrated in Figure 16.
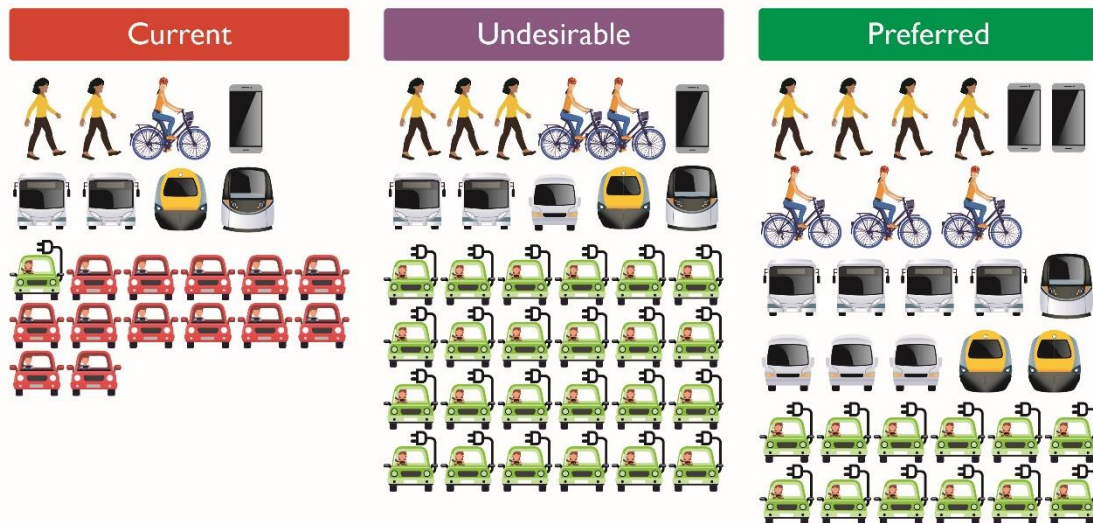
Figure 16: Preferred future transport system

As we transition to a low-carbon economy we will ensure that this is done in a way that is fair and in accordance with the Just Transition principles to:

- support environmentally, and socially, sustainable jobs
- support low-carbon investment and infrastructure
- develop and maintain social consensus through meaningful engagement with workers, communities, Non-Governmental Organisations, businesses, industry bodies and any other relevant groups
- make all possible efforts to create decent, fair and high-value work in a way that does not negatively affect the current workforce and overall economy
- contribute to resource-efficient and sustainable economic approaches which help address inequalities and poverty

The net-zero 2045 target is supported by:

- public bodies taking the lead by working towards phasing out petrol and diesel cars from the public sector fleet and also phase out the need for any new petrol and diesel light commercial vehicles by 2025
- the ambition to phase out the need for new petrol and diesel cars and vans in Scotland by 2032
- plans to decarbonise Scotland's passenger railways by 2035. Where electrification isn't feasible or it is not appropriate to do so, there will be investment in battery-powered trains and work with developers of hydrogen fuel cell trains to accelerate their development and deployment through practical trials in Scotland
- work to decarbonise scheduled flights within Scotland by 2040

While we must meet our net-zero greenhouse gas emissions commitment, we must also ensure the transport system adapts to existing climate change impacts. The

Strategy and its Policies will ensure the resilience of the transport network is enhanced, so that future transport projects deal effectively with the predicted changes and that the existing transport system is adapted to deal with increased rainfall, more frequent high winds and rising temperatures.

Bus is a key element of the Sustainable Travel Hierarchy. It is the dominant public transport mode, accounting for three quarters of all public transport trips[108]. It is particularly important to areas which are not served by the rail network, including much of rural Scotland. It can be an important element in multi-modal journeys, for example, as part of the first or final mile of a longer train journey. It also tends to be more active than a car journey as travelling by bus typically involves a walk to or from the bus stop.

Bus continues to be a relatively more sustainable and space-efficient mode of travel and a very flexible form of mass transit which needs to continue to have an important role in providing mobility. A bus can carry up to 75 passengers[109] at one time while occupying little more road space than a single car, which, in many cases, may be carrying only one person.
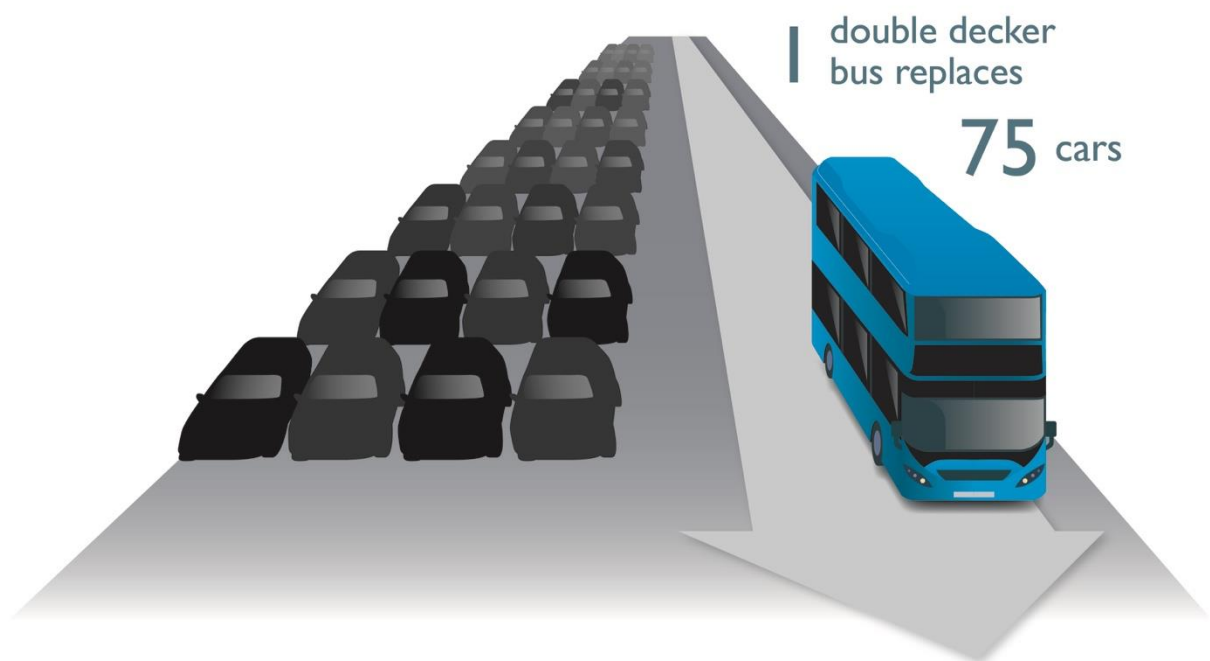
Figure 17: Bus capacity compared to cars with single occupant[110]

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[108] Scottish Transport Statistics No. 37 2018, chapter 11 headlines
[109] The new enviro400XLB three-axle double deckers vehicles recently introduced in Edinburgh are a UK first and been developed in close collaboration with ADL and chassis manufacturer Volvo can carry up to 100 passengers
[110] Improving Air Quality in Towns and Cities – Why buses are an integral part of the solution, Professor David Begg, Greener Journeys, April 2017

We will continue to invest in opportunities to make bus, and public transport more generally, a more attractive option for existing and new users in line with the findings of the Big Climate Conversation[111]. Improvements will be made by investing in, for example, bus priority infrastructure to tackle the impacts of congestion on bus services and raise bus usage, including reallocating road space on parts of the motorway network to accommodate space-efficient vehicles. The Transport (Scotland) Act 2019 provides powers which offer an ambitious new model for bus services. It provides local transport authorities with options to influence and improve bus services in their area, collectively ensuring that there are sustainable bus networks across Scotland. The Act will support local transport authorities to meet local needs and circumstances, whether they wish to pursue partnership working, local franchising or running their own bus services.

It is not just passenger transport that will need to adapt to the challenges around our changing climate and adopt low and zero carbon vehicles, our freight industry will also need to change considerably. The freight sector will have to respond to the increasing need to decarbonise through the use of new technologies and business models, as well as adapting to changing demands of consumers. The scope for electrification in freight is the subject of ongoing research and innovation, and automation is likely to be another significant shaping force.

The market for heavier zero emission vehicles, such as HGVs, is less developed than for cars but it is still evolving quickly. However, we will continue to work with public bodies, the automotive sector and Scotland's innovation community to explore effective solutions to reduce emissions from the freight sector and make a significant positive contribution to the net-zero target.

Scotland's freight sector is fragmented and privately controlled. The emissions generated by the freight sector are considerable and we must work collaboratively to develop an effective solution to addressing adverse greenhouse gas and air quality impacts, such as looking at options for last-mile delivery.

Aviation policy is a reserved matter and while offsetting the environmental impacts of aviation will be a challenge, there are real opportunities to work with the aviation sector to help Scotland succeed. Ongoing advances in engine and airframe technology mean aircraft can fly further, more quietly, and more efficiently than ever before. Also, vehicle electrification is not constrained to cars, and there are developments in electric and hybrid aircraft being progressed by manufacturers which present exciting opportunities for Scotland's air services. For example, the potential for all-electric propulsion to be the standard for shorter Highlands & Islands routes in the future will continue to be explored. We will also work collaboratively with Scottish airports to take measures to reduce emissions on the ground from both aircraft and surface vehicles.

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[111] Big Climate Conversation, Scottish Government, 2020.

For ferries, there is currently no available low/zero carbon alternative to fossil fuels. If ferries are to make a more significant contribution towards carbon reduction, however, and ultimately achieve zero carbon, then emerging alternatives such as all-electric and hydrogen powered vessels will need to be developed. There is potential for all-electric ferries on shorter routes with smaller vessels but for the longer routes, with larger and heavier vessels, and higher energy requirements, other options will need to be explored. Alongside work on alternative fuels, Caledonian Maritime Assets Ltd (CMAL) is appraising design improvements to new vessels which can reduce fuel consumption.

Ferries provide lifeline services to island and some remote mainland communities and the pursuit of pathways to low/zero carbon will be balanced by the need to retain and develop essential services for the transportation of people and goods to and from the islands. A thorough review of options for these pathways will consider operational, technical and service design issues as well as vessel design and the future potential of low/zero carbon fuels.

Scotland is a leader in research and development into harnessing the potential for hydrogen energy. We are looking to continue working with the sector to encourage and support further research in the roll out of new environment enhancing technologies into cleaner fuels, to explore with industry best options and a viable approach to reducing emissions. Shipping is a global sector, with vessels from around the world calling at Scottish ports, and efforts to reduce the environmental impact of the sector will require a coordinated approach at EU and IMO (International Maritime Organisation) level. The introduction of the EU Sulphur Emission Directive in 2015 and extended to all EU seas in 2020 imposes additional costs to operate clean fuels or force vessel owners to retro-fit air cleaning scrubbers. This means ships and maritime firms from EU member states have to use low-sulphur fuels or gas cleaning systems in order to comply with the limits, significantly reducing the environmental impact of shipping in EU waters.

Helps deliver inclusive economic growth
- Will get people and goods where they need to get to
- Will be reliable, efficient and high quality
- Will use beneficial innovation

The transport system plays a crucial role in the successful performance of Scotland's economy and ensuring regional cohesion. It enables people to get to work and ensures firms are able to get their goods and services to markets in Scotland and beyond. It is an important contributory factor in Scotland's competitiveness, impacting on productivity of our labour force and the efficiency of businesses. A thriving Scotland needs an effective transport system. The Policies to realise this Priority and Outcomes are set out below.

Helps deliver inclusive economic growth
Increase resilience of Scotland's transport system from disruption and promote a culture of shared responsibility
Increase the use of asset management across the transport system
Provide a transport system which enables businesses to be competitive domestically, within the UK and internationally
Ensure gateways to and from international markets are resilient and integrated into the wider transport networks to encourage people to live, study, visit and invest in Scotland
Support Scotland to become a market leader in the development and early adoption of beneficial transport innovations
Meet the changing employment and skills demands of the transport industry and upskill workers
Integrate transport and wider infrastructure policies and investments, including digital and energy, to unlock greater benefits

We are witnessing a dramatic and rapid change in transport. Innovations coupled with improvements in technologies are fundamentally changing the provision of services and bringing opportunities that couldn't be imagined only a few years ago. Just as the introduction of trains and the motor car revolutionised travel in the 19th and 20th centuries respectively, new innovations and emerging technologies will have similar effects this century, impacting significantly on the supply of transport and the changing needs and demands of our people, communities, businesses and visitors.

There are many economic benefits likely to arise from technological advances and we must ensure Scotland is at the forefront. Market opportunities, for example, could be generated in the development of software and digitisation of manufacturing processes. There will also be opportunities in the supply chain of manufacturing vehicles and parts for Connected and Autonomous Vehicles (CAVs) and ULEVs.

Our Strategy embraces innovation and technological advances and provides a framework for them to be used to Scotland's benefit: to create more sustainable

modes; to provide greater and equal opportunities for disadvantaged groups; and increase the efficiency and safety of the system. We need to ensure that: Scotland is at the forefront of growth in ULEV markets; that there is a fair distribution of investment costs that benefits all consumers; and that Scottish businesses capitalise and gain from new market and technological opportunities.

The development and deployment of CAVs has the potential to bring transformative change to peoples' lives, not just in how we travel, but in how we work, where we live, the environment, and safety. A CAV Roadmap for Scotland[112] sets out the future vision for how Scotland can benefit from and contribute to this exciting and innovative sector.

Autonomous vehicles could make public transport more viable in certain areas. Driver costs can account for over a third of total costs and, without these, public transport services could be introduced across many parts of Scotland where they are currently not commercially viable. However, it is possible that autonomous vehicles could have negative impacts[113]. For example, additional journeys by self-driving cars, when they return to their collection points after dropping people off, could lead to increasing levels of road congestion. This could be amplified if costs of using autonomous vehicles are lower than current travel costs, leading to more journeys.

There will also be opportunities beyond automation and other new technologies. The increasing connectivity of businesses and customers, offered by bigger and better data, is enabling new business models to emerge in many industries, and creating a new 'sharing economy'. Sharing of services is an increasing option, both for individuals and businesses. The freight industry, for example, in response to greater online shopping, has established freight sharing practices and new business models are consequently emerging. The changing needs of young people, who often choose 'usership' over ownership, is also driving the sharing economy. These new patterns of supply and demand and changes in mobility will create many opportunities for businesses to explore and develop, thus providing potential for new employment across Scotland.

Scotland has the essential ingredients to capitalise on these exciting opportunities. We now have a highly qualified and highly skilled workforce and this has been improving over time. In 2018, Scotland had more people (47.4%) aged 25 to 64 who are tertiary level educated than any other EU country[114].

While these advances in technology should be embraced, as a consequence many workers will need to be retrained and supported to gain new skills. We will work with industry partners to assess the skills the industry will need to support the transition to zero emission mobility. This will be done in line with Scotland's Labour Market

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[112] A CAV Roadmap for Scotland, Transport Scotland, 2019
[113] A Time of Unprecedented Change in the Transport System, The Government Office for Science, 2019
[114] EUROSTAT, Proportion of tertiary level educated people aged 25-64 year olds, Apr. 2019

Strategy[115], Fair Work Action Plan[116], Future Skills Action Plan[117], Gender Pay Gap Action Plan[118] and A Fairer Scotland for Disabled People – Employment Action Plan[119] which aim to ensure that our workforce has the suitable skills and resilience to deliver fair, inclusive and sustainable economic growth.

We have one of the world's most successful skills systems but we must build on this to address the challenges we face in Scotland, including an ageing workforce, de-population of rural areas, digitalisation and technological advances and the global climate emergency. We will re-orientate the skills system to be more agile, flexible and able to respond at pace to changing skills needs. Employers have a critical role in shaping and delivering our ambitions and we will work collaboratively to create a culture of collective investment in Scotland's workforce. We must also ensure that the transport sector delivers on the five dimensions of fair work: security, effective voice, fulfilment, opportunity and respect.

Scotland's relative strengths and opportunities in low and zero emission technologies, including our expansive renewable energy sector, transferable skills from the oil and gas sector, and our globally significant research base, are all areas that we can capitalise on to position Scotland as global player in supply chains for emerging and future mobility technologies and business models.

Better integrated decision making - both between transport and individual sectors such as energy and digital, as well as within the wider Scottish Government infrastructure investment process as set by the regular cycle of Infrastructure Investment Plans – will help to create a more efficient transport system that helps to unlock the potential for inclusive growth by connecting more communities to jobs and services while ensuring more sustainable travel choices. This will also position Scotland well to benefit from the period of significant innovation. This will include new and existing partnerships with Skills and Enterprise agencies, Scotland's research community and the commercial sector. This integrated approach will be closely linked to the Policy relating to spatial planning and land use under the Improves our Health and Wellbeing Outcome.

To maintain Scotland's competitive position, we need to make it as easy as possible for Scottish firms to do business abroad and for foreign firms to do business here. We want to make Scotland an attractive place for the rest of the world to visit, live and work. Trade and connectivity with EU and global markets is impacted by uncertainty around Scotland's future relationship with the EU as a result of the UK EU Exit. There is a particular challenge with the lack of direct freight and logistics routes to the continent, with Scotland currently being dependent on routes via England for the vast majority of imports and exports. We will continue to work with

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[115] Scotland's Labour Market Strategy, 2016
[116] Scottish Government, Fair Work Action Plan, 2019
[117] ,www.economicactionplan.mygov.scot/future-skills/
[118] http://www.employabilityinscotland.com/participants-and-barriers/women-and-work/gender-pay-gap-action-plan/
[119] https://www.gov.scot/publications/fairer-scotland-disabled-people-employment-action-plan/

partners in the freight industry to understand their needs and provide a framework that enables Scottish firms to be competitive and succeed across the globe, including getting their goods to markets.

To ensure we continue to welcome a growing number of international visitors we need to retain our important air links and also develop new routes, while also taking measures to minimise the environmental impacts that international tourism generates.

Better integrated decision making - between transport and digital, energy and health sectors – will help create a more efficient transport system that meets people's needs while also ensuring more sustainable travel choices.

We will address the increasing demands on expenditure in a number of ways. We will ensure that resources are used as efficiently as possible in achieving our Priorities and Outcomes. This will include robust assessment of potential transport options against objectives during the appraisal process to ensure benefits - social, environmental and economic - are maximised per pound of public expenditure and value for money across all our investment is delivered.

We will ensure our assets are managed as effectively as possible to minimise waste by using new and improving technologies and innovative techniques. For example, we will ensure our resources can be re-used in line with approaches to adopting the circular economy. We will also better protect the resources we have by adapting to climate change.

To maximise the public sector expenditure impact on helping to deliver the 2045 net-zero target, we will explore and consider a range of alternative funding options. For example, it is possible that a higher proportion of future investment will come from the private sector, through technological advances and innovation, and we will work in partnership to explore opportunities. Alternatively, a change in user behaviour could result in less road infrastructure investment required by local and central governments if fewer journeys are made.

We will have a transport system that is resilient and speedily recovers from disruption, thus minimising impacts of delayed journeys on our networks and users. We will deliver this through strong resilience planning, which is not just about the physical resilience of our transport system but also about how disruption is managed and the speed of recovery.

Improves our health and wellbeing
- Will be safe and secure for all
- Will enable us to make healthy travel choices
- Will help make our communities great places to live

Our transport system needs to be safe and secure and give people trust and confidence that they will reach their destinations without threat. It should allow people to make active travel choices to improve their health and wellbeing and seek to reduce health inequalities. The Policies to realise this Priority and Outcomes are set out below.

Improves our health and wellbeing
Increase safety of the transport system and meet casualty reduction targets
Implement measures that will improve perceived and actual security of Scotland's transport system
Ensure that transport assets and services adopt the Place Principle
Reduce the negative impacts which transport has on the safety, health and wellbeing of people
Provide a transport system that promotes and facilitates active travel choices which help to improve people's health and wellbeing across mainland Scotland and the Islands
Embed the implications for transport in spatial planning and land use decision making

Adopting the Strategy and implementing the Policies will ensure people feel safe on Scotland's transport system. Investment will focus on maintaining the positive trends in accidents and meeting the targets for casualty reductions. Importantly, it will help minimise the impact of transport incidents on users and their families.

A world-leading Road Safety Framework to 2030 is being developed in partnership with the road safety community and key stakeholders. It will set out a collaborative approach to take Scotland towards an ultimate vision of zero fatalities and much reduced serious injuries on all our roads, as well as active travel networks.

Our transport system will also be secure and everyone should feel secure using it. We will also continue to work with operators so that people have trust in the system they are using and can be confident that the privacy of their personal information is not under threat.

We recognise the clear need for people to change their travel behaviour. Small changes in people's behaviour can have a big impact on individual health and wellbeing. For adults, achieving the recommended amount of 150 minutes of moderate to vigorous physical activity a week helps prevent and manage over 20 chronic conditions such as coronary heart disease, stroke, type-2 diabetes, cancer, obesity, and musculoskeletal conditions. It can also have a significant positive impact

on people's wellbeing[120]. Importantly, it is estimated that by getting Scotland active, life expectancy would increase by more than a year, given our current inactivity level[121].

People are more likely to walk and cycle where safe and accessible active travel infrastructure is available[122]. By embedding the Sustainable Travel Hierarchy, Scotland's transport system will be designed with sufficient walking and cycling options to help us become a healthier, more active and fitter nation and tackle medical problems caused by poor levels of activity. It will also reduce the adverse impact on our air quality and the risks from diseases this causes.

A collaborative approach will be encouraged to ensure all relevant partners work together to make walking and cycling the most popular and preferred mode of travel in Scotland for short journeys.

Planning and development have a major influence on our transport system. We will continue to work collaboratively to ensure that, when planning decisions are made, as a priority they will consider the impacts on transport. In identifying sites for development of housing, employment, schools, offices, factories, hospitals, and tourist attractions transport considerations will play a crucial role and will do so as early in the planning process as possible. This will have a positive impact on the choices about the types of journeys we make, when we make them and how we make them.

Our ongoing work on planning reform will continue to improve links with transport infrastructure, in the long term benefiting air quality and greenhouse gas emissions, and improving health.

Similarly, transport accessibility will influence the location and design of future development. Transport will help planning and development and also ensure our communities are sustainable. We will continue to create a planning system that puts in place options that will discourage people from owning or using cars. They will be designed so that workers in, and visitors to, an area are attracted to public transport or active travel options ahead of private cars. The transport system will also help ensure that places are convenient to get to without having to use a car. Strong links with spatial planning, including the National Planning Framework and local development plans, will ensure we understand and address these challenges. The benefits of place making and sustainable and active travel infrastructure/modes will also play an important role in helping to re-vitalise town centres.

Overall, the transport system and the consideration of the current and future transport needs of people will be at the heart of planning decisions to ensure sustainable places.

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[120] World Health Organization 2018
[121] The Lancet Series: Physical Activity, July 2012
[122] Big Climate Conversation, Scottish Government, 2020.

To help deliver this, we will continue to work collaboratively with partners to ensure that the Place Principle[123] is applied and that all those responsible for providing services and looking after assets in a place work and plan together, and with local communities, to improve the lives of people.

Our policies will make it easier for people to make informed travel choices and encourage more sustainable travel, and increased provision of integrated modes and ticketing and better information provision will play key roles. Smart ticketing or payment options have been introduced on a number of rail, bus, tram and subway services across Scotland and these will continue to be key areas for investment to encourage modal shift to public transport. There are also multi-modal journey planners, such as Traveline Scotland, to help those with interchanges make better travel choices and plan their journeys in the most cost effective or time efficient way. Similarly, improved information services will be key areas for investment to support the delivery of the Priorities and Outcomes.

Delivery

This National Transport Strategy presents the strategic framework for our transport system over the next 20 years. Clear priorities have been set out which provide a strong focus on ensuring transport contributes to reducing inequalities faced by people in Scotland, takes action to protect our climate, supports the delivery of inclusive economic growth and improves the health and wellbeing of our citizens.

We all have a responsibility for delivering the Strategy and making sure it is a success. From local and central governments implementing policies, to businesses and individuals taking account of their actions, and the wider impacts on society, when making decisions to travel and choices around how they make their journeys.

Working with partners involved in developing the Strategy, we will publish a Delivery Plan that will set out how the Strategy will be delivered. The Delivery Plan will be regularly updated and provide detail on how the Priorities and Outcomes will be achieved and how the Vision will be delivered, in line with the Policies set out in this Strategy. The Delivery Plan will also align with the Strategy's Sustainable Travel and Investment Hierarchies.

The Delivery Plan will report annually on performance in addressing the challenges and achieving the Outcomes using the monitoring and evaluation framework. Indicators will, where possible, be broken down to look at demographic, socioeconomic and geographic factors. The Strategy will be flexible, through the Delivery Board, and adapt to emerging and changing evidence.

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[123] https://www.gov.scot/publications/place-principle-introduction/

Any enquiries regarding this document/publication should be sent to us at
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This document is also available on the Transport Scotland website:
www.transport.gov.scot