Intervention 13 – Investment in low carbon and alternative fuel transport systems

1 Description of Package

The Scottish Government is committed to supporting the uptake of Ultra Low Emission Vehicles (ULEVs) as detailed in the Programme for Government (PfG). This intervention promotes the expansion of the electric charging infrastructure across rural, urban and domestic settings to support the transition of all vehicular modes to low carbon technologies.

The PfG highlights the key role that ULEVs will play in reducing greenhouse gas emissions and improving air quality; bringing benefits to drivers, communities and the wider environment. STPR2 Phase 1 is recommending the following actions are taken forward to accelerate the low carbon transport transition.

Expansion of the Electric Vehicle (EV) charging network

The STPR2 Phase 1 recommendation would cover support for supporting and introducing new models of financing and delivery, that support improvements in reliability, accessibility and availability of electric vehicle chargers as the market for EV grows of the Electric Vehicle (EV) charging network; increasing the coverage and increasing the awareness of the network.

As adoption and use of ULEVs and EVs increases, there will be a need to further increase the number and awareness of public charge points across the network. Transport Scotland, working with key partners and stakeholders, continues to develop the geographic spread of the ChargePlace Scotland network. The ChargePlace Scotland network has grown from 55 public charge points in 2013 to over 1,500 in 2020. All publicly available charge points are displayed on the ChargePlace Scotland live map[1] an extract is provided in Figure 1, which provides details on the location, type, status and

[1] ChargePlace Scotland, https://chargeplacescotland.org/live-map/

availability of each unit. The website also publishes Key Performance Indicators (KPIs) on a monthly basis that demonstrate the continued enhancement to the Scottish charging infrastructure.

Figure 1: Map Extracts of ChargePlace Scotland charge points

As the adoption of ULEVs becomes increasingly popular across both private and business use, adequate charging infrastructure is critical. It is widely recognised that as ULEV numbers increase so must the charging infrastructure expand to eliminate range anxiety by road users. Figure 2 below highlights the increasing popularity of ULEV's across Scotland with year on year increases in registration of plug-in cars and light goods vehicles[2]. Recent data from the Society of Motor Manufacturers and Traders (SMMT)

[2] Scottish Transport Statistics No. 38 2019 Edition, National Statistics Scotland. Available at https://www.transport.gov.scot/media/47300/scottish-transport-statistics-2019.pdf

indicates a 165% increase in Battery Electric Vehicles from 2019 to 2020 (year to date) across the UK[3].

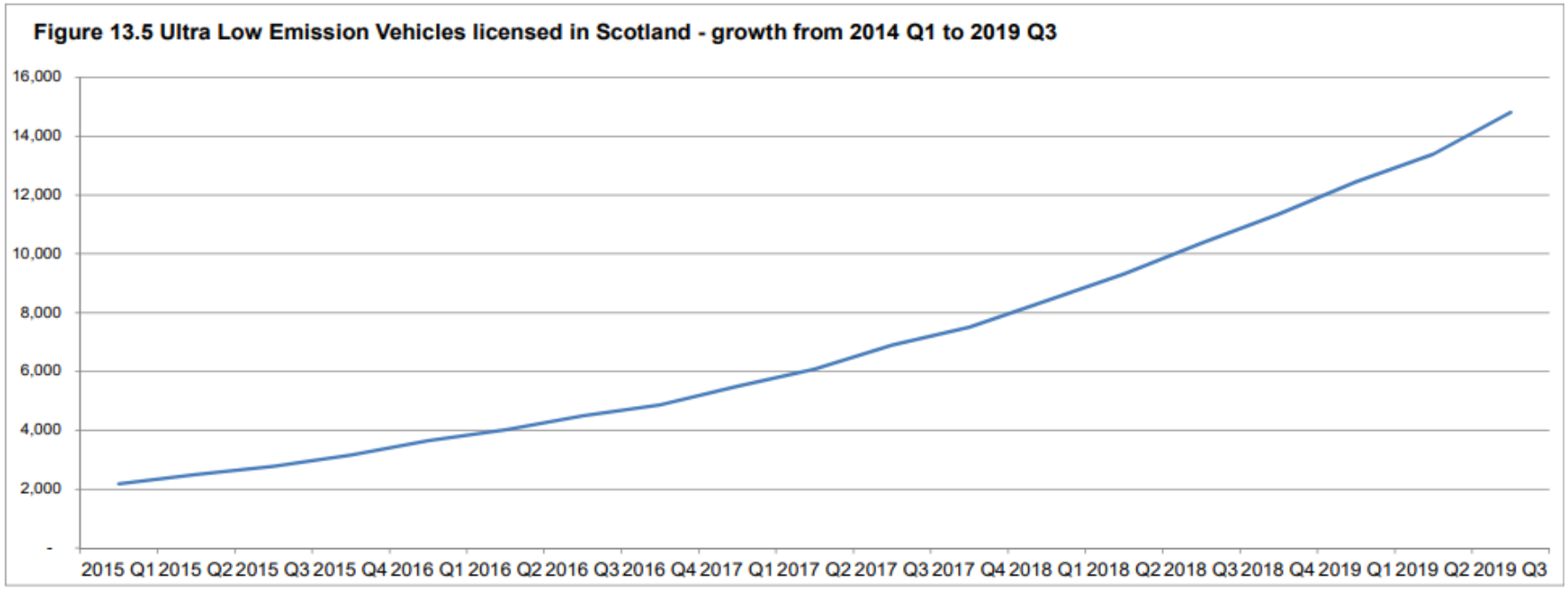


Figure 2: ULEV's registered in Scotland from 2014-2019

The A9 Electric Highway pilot project promoted by Transport Scotland will strengthen the national network of charge points by providing EV charging hubs along the route, enabling the use of ULEVs for long distance journeys as well as providing local charging for businesses and residents. Analysis of the data and information obtained from this pilot project will inform strategies for charging provision and public communication strategies on other key routes linking rural communities and urban centres, further removing barriers to ULEV uptake, and creating the conditions necessary to accelerate the shift from fossil fuel vehicles to ULEVs.

[3] The Society of Motor Manufacturers and Traders (SMMT), Electric Vehicle and Alternatively Fuelled Vehicle Registrations 2020, https://www.smmt.co.uk/vehicle-data/evs-and-afvs-registrations/

Working with the private sector to accelerate the shift to low emission technologies

The STPR2 Phase 1 recommendation would cover support for accelerating the shift to zero emission mobility by collaborating across the public and private sectors to support and enable investment in fleets, infrastructure and technologies.

This package would investigate ways of working with the private sector to encourage greater investment in fleets, infrastructure and technology to accelerate the shift to ULEVs. This would include developments in business models, technologies and incentives that encourage the private sector into the ULEV market, creating new revenue streams and incentivising investments. Enhanced engagement with the private sector presents an opportunity to significantly increase ULEVs uptake. Under the current Government restrictions and subsequent economic impacts from the COVID-19 pandemic, the business case for private investment in updating fleets, infrastructure or new technologies will remain challenging until business as "normal" resumes.

2 What we have heard?

Scotland is taking a leading role in promoting electric and other low-emission vehicles, with a commitment to phase out the need for new petrol and diesel cars and vans by 2032. In meeting this ambition, Scotland will need to develop and manage the necessary charging and other network infrastructure, whilst building consumer awareness and confidence.

The Scottish Government has already taken significant steps to reduce emissions from transport via the Transport Mission Zero work which aims to phase out petrol and diesel vehicles. Some additional £26million has been made available through the Government's Low Carbon Transport Loan Fund to support Scottish households and businesses to purchase ULEVs. Under the Programme for Government published in September 2020, the Government committed to invest £1.6billon over the course of the next parliament as part of the £2 billion Low Carbon Fund; this will cover different sectors across Scotland including low emission transportation and green energy.

The Government is also using its power as a large-scale buyer to establish a zero-emission heavy duty vehicle programme, accelerating the development and uptake of such vehicles in the public and private sectors. The programme has been developed in partnership between Transport Scotland and Scottish Enterprise with a minimum investment of £1 million in 2020-21[4]. This

[4] Protecting Scotland, Renewing Scotland, 2020

commitment includes the establishment of a zero-emission drivetrain testing facility in 2021, with a focus on hydrogen fuel cells to accelerate the development of these vehicles and the establishment of a new resource to support research and product development in zero emission mobility through pooling academic capability and enabling collaborations.

Across the bus sector, the Government has set bold commitments to zero-carbon fleet renewal and are actively engaged with a number of operators to deliver battery electric and hydrogen buses on our streets.

To incentivise operators to progress their sustainable fleet replacement strategies, the Scottish Government has made available an additional £9 million to support the immediate ultra low and zero emission fleet renewal investments for bus fleets. This investment which supports operators with the upfront capital costs associated with new low emission technologies, particularly at a time when COVID-19 has significantly impacted bus patronage and revenues, highlights the commitment to delivering a more sustainable bus network.

Aberdeen City Council has worked in conjunction with the private sector as well as both Scottish and European governing bodies to invest in alternative hydrogen fuel technology for several fleet vehicles across the city, including the largest fleet of hydrogen buses within Europe, with the city widely-recognised as a centre of innovation for alternative fuel technology. In addition to bus, several other hydrogen transport schemes have been piloted in Aberdeen including hydrogen electric cargo bikes for last mile deliveries and a hydrogen cell waste collection vehicle.

Continued investment through schemes such as Switched on Scotland and Switched on Fleets can continue to strengthen partnerships between private operators and Government, which in turn will be crucial in catalysing ULEV uptake. Through the Switched on Towns and Cities initiative, local authorities and partner organisations can apply for funding to provide infrastructure and local incentives to encourage and support EV uptake. In 2018/19 the fund awarded £12.1m to five projects across five local authorities. The Government has also pledged to continue its work with the Scottish Cities Alliance, who are involved in the commercialisation of hydrogen fuel cell buses and aim to apply this technology nationwide in the near future.

The Government has also committed £4 million in a zero-emission drivetrain testing facility. This facility will have a particular focus on hydrogen fuel cells with the aim of accelerating the development of these vehicles. The government has also funded the H_2A (Hydrogen Acceleration) project at St Andrews University which aims to maximise the economic opportunities from the shift to zero emission mobility solutions. It will also provide expert analysis by working with other world leaders in hydrogen technology which in turn will help to foster new partnerships between Government and industry.

The Government is also continuing its support of the Switched on Towns and Cities initiative where local authorities and partner organisations can apply for funding to provide infrastructure and local incentives to encourage and support EV uptake. In 2018/19 the

fund awarded £12.1m to five projects across five local authorities. The Government has also pledged to continue its work with the Scottish Cities Alliance, who are involved in the commercialisation of hydrogen fuel cell buses and aim to apply this technology nationwide in the near future.

Finally, through the STPR2 online survey, a common theme highlighted by respondents related to a lack of EV charge points. As shown in Figure 4, 53% of survey respondents said that they were either very dissatisfied or dissatisfied with distance to the their nearest EV charge point. The importance of building confidence in buying and running an electric vehicle through the widespread availability of EV charge points was also a point well-made across the regional engagement events.

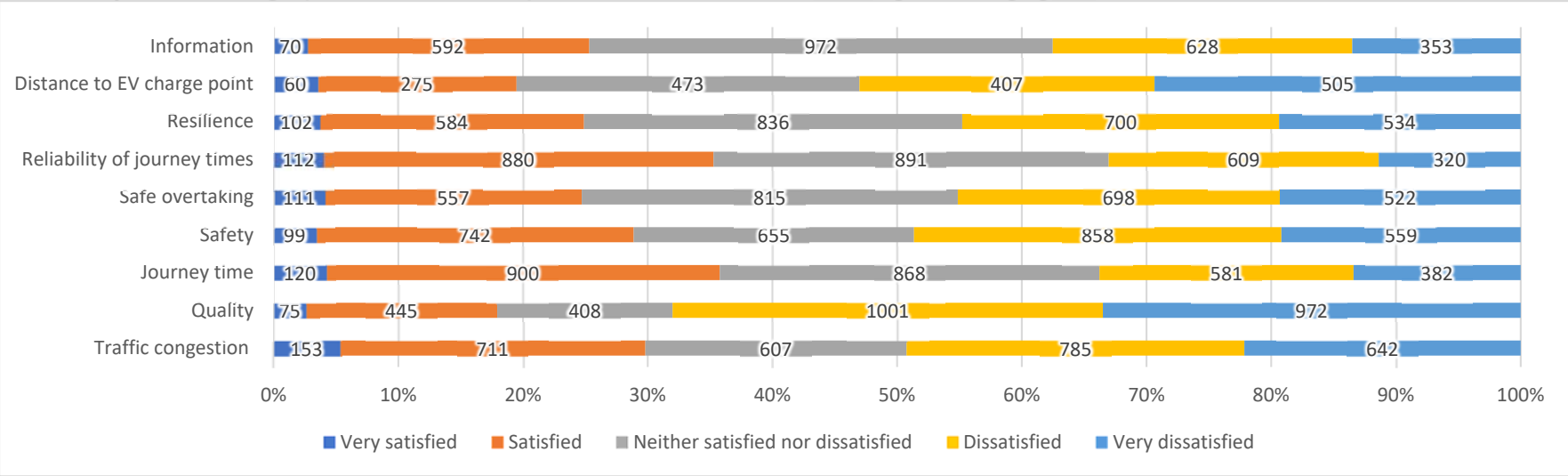
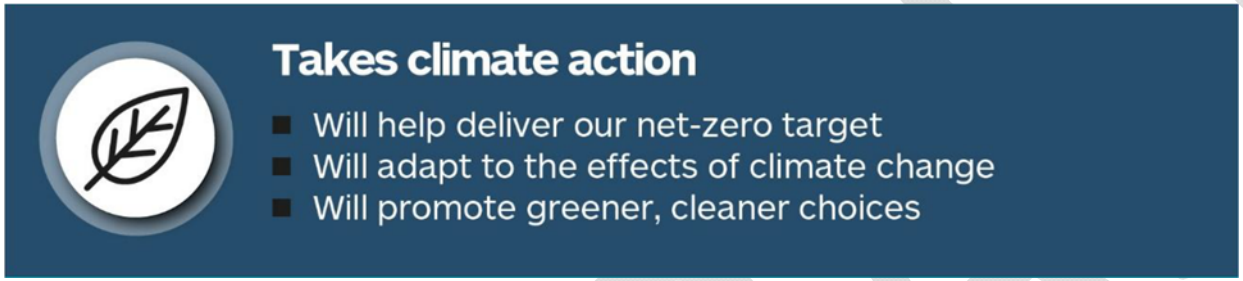


Figure 4: All Responses - Satisfaction Road

3 The evidence base to support a case for change

The Update to the Climate Change Plan published by the Scottish Government highlighted that transport continues to be the biggest emitting sector within Scotland accounting for 35.6% of total emissions in 2018[5], with private cars accounting for almost 40% of these emissions alone[6] (Figure 5). Whilst there have been large gains made by other sectors compared to their 1990 base levels (such as the power sector with roughly an 86% reduction in emissions from 1990 levels[7]), transport emissions are only 0.5% lower than they were 30 years ago (Figures 6a and 6b).



AS outlined within NTS2, Scotland must transition to a net-zero emissions economy for the benefit of the environment, people and the future prosperity of the nation. The transport system will help deliver the net-zero target. 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.

[5] Update to the Climate Action Plan 2018-2032, Scottish Government. Available at update-climate-change-plan-2018-2032-securing-green-recovery-path-net-zero.pdf
[6] Carbon Account for Transport No. 12:2020 Edition, Transport Scotland. Available at sct07209535161.pdf (transport.gov.scot)
[7] Reducing Emissions in Scotland Progress Report to Parliament, Committee on Climate Change, October 2020. Available at https://www.theccc.org.uk/wp-content/uploads/2020/10/Reducing-emissions-in-Scotland-Progress-Report-to-Parliament-FINAL.pdf

The impact of emissions from transport on the environment is well documented and established however there are also other substantive health and economic impacts associated with transport emissions. Health Protection Scotland (HPS) have published statistical estimates of the likely excess equivalent mortality would be in Scotland if Particulate Matter ($PM_{2.5}$) had been the main cause of death, estimating this figure to be 1724 premature excess deaths annually in 2016[8]. Road transport is the largest contributor of $PM_{2.5}$ and other carcinogenic pollutants, therefore generating a shift towards ULEVs will have a markedly positive impact on health as well as the environment. The overall societal economic cost of air pollution is estimated to be around £22.6b per year across the whole of the UK, as of 2018[9]. This figure is a combination of sick days, lost working days, treatments, environmental impacts and several other factors. A shift towards low carbon transport will have a significant impact on these societal costs associated with air pollution, due to the aforementioned contribution transport makes to Scotland's overall emissions.

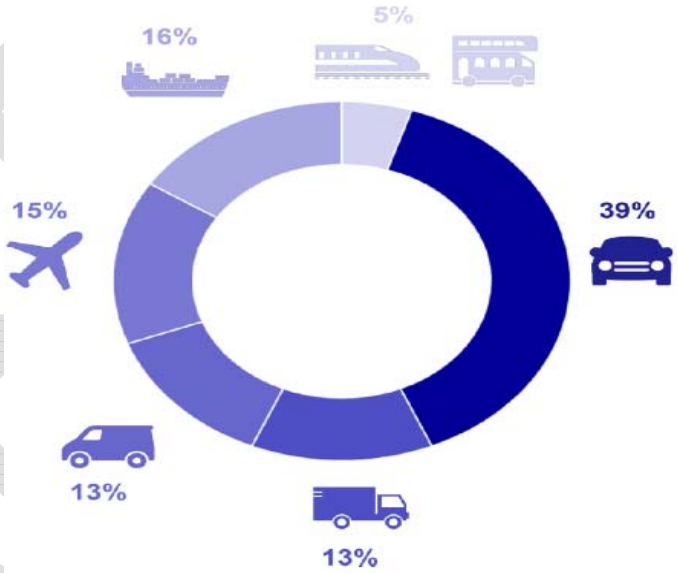


Figure 5: Emissions by mode of transport

[8] Air Pollution and Health Briefing Note, HPS, 2018. Available at HPS Website - Air Pollution and Health Briefing Note. Mortality Associated with exposure to fine particulate matter (PM2.5 Attributable Mortality) in Scotland
[9] Reducing Air Pollution in the UK: Progress Report 2018, Royal College of Physicians, 2018. Available at https://www.rcplondon.ac.uk/news/reducing-air-pollution-uk-progress-report-2018

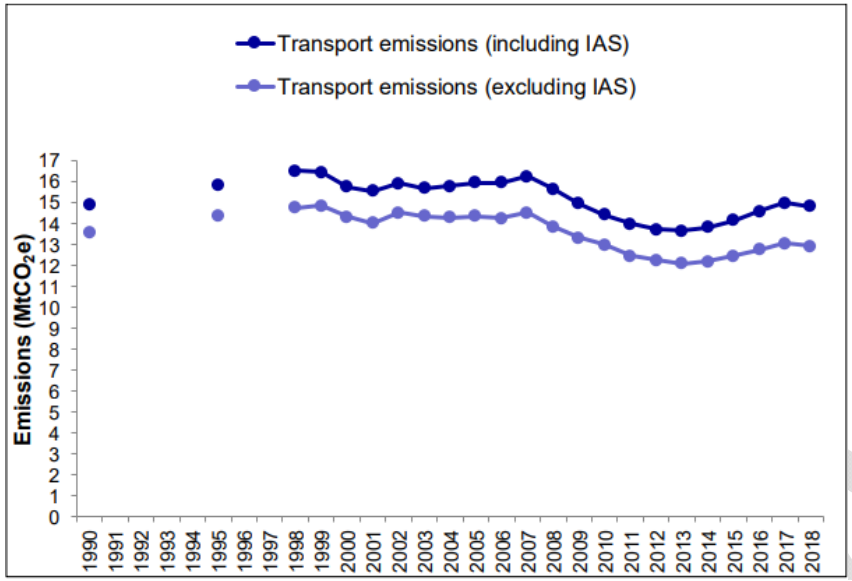


Figure 6(a): Transport Sector Emissions 1990 - 2018

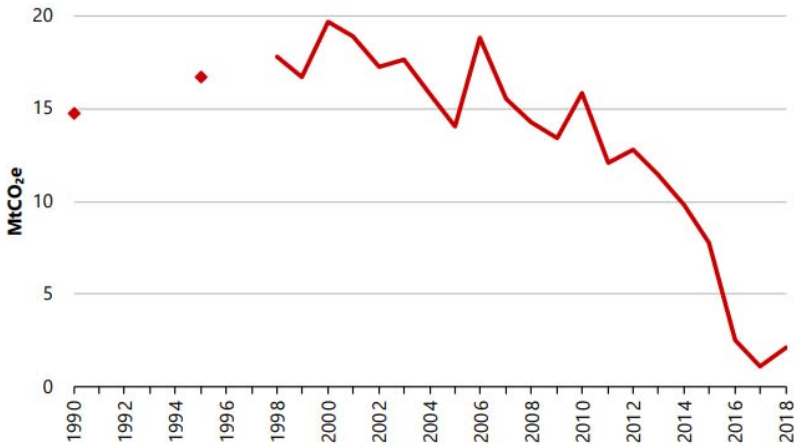


Figure 6(b): Power Sector Emissions 1990 – 2018

4 The strategic rationale

In passing the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019 the Government enshrined into law a commitment to achieve net zero emissions by 2045[10]. In 2017 transport accounted for almost 40%[11] of Scotland's total greenhouse gas emissions highlighting the crucial role low carbon transport will play in achieving the aim of net zero by 2045.

To tackle emissions, a key challenge will involve getting people to change their travel behaviour to more sustainable, low carbon modes; such a switch will deliver significant benefits for the environment, as well as our health and wellbeing.

[10] UK Government, Climate Change (Emissions Reduction Targets) (Scotland) Act 2019
Available at: https://www.legislation.gov.uk/asp/2019/15/contents/enacted
[11] Scottish Transport Statistics No. 38 2019 Edition, National Statistics Scotland. Available at https://www.transport.gov.scot/media/47300/scottish-transport-statistics-2019.pdf

Why Now?

- The realisation of the Programme for Government will help to sustain the considerable progress that has been achieved to date in promoting the use of ULEVs and readdress any adverse impact or slowing of uptake associated with the impacts of COVID-19. This support would be applicable to a range of different types of vehicles and applications to accelerate the uptake of ULEVs and to realise the multiple benefits that this offers to individuals, communities, businesses and the country as a whole.
- Government intervention may be required to provide the platform for private sector organisations to engage with the ULEV market to create a strong and steadily switch to low carbon alternatives. Working with the private sector and other partners, this package will monitor the need for additional incentive, infrastructure and new technology to drive forward innovation and encourage private sector investment in low carbon transport technologies.
- The Scottish Government has promoted the use of ULEVs, with a target to phase out the need for new petrol and diesel cars and vans by 2032 The global shift towards EVs means that ULEVs prices are coming down year on year, but the price point for a new vehicles remains a significant barrier for many wishing to switch to more sustainable vehicles.

The need to continue to support and encourage the transition to low carbon transport had very strong support across the national and regional transport authorities responding under STPR2 engagement. As declared in the recent Climate Change Plan update the Scottish Government have committed to a 'green recovery' from COVID-19, that captures the opportunities of a just transition to net zero. The approach recognises climate change as a human rights issue and the transition to net zero as an opportunity to tackle inequalities. This package would build existing interventions to promote the expansion of the electric charging infrastructure across rural, urban and domestic settings to support the transition of all vehicular modes to low carbon technologies. This intervention aligns with the objectives of Protecting Scotland, Renewing Scotland, 2020 and the update to the Climate Action Plan 2018-2032, Scottish Government.