Decarbonising Public Transport in Northern Ireland

Introduction

Bus and Coach NI have been asked to provide feedback to the NIA Committee for infrastructure in relation to their inquiry looking into NI's ambition to decarbonise road transport. We very much welcome this opportunity and would also be content to attend a briefing with the Committee.

As a collective of 33 private bus and coach operations, we have gathered primary evidence from future stakeholders in this process and identified regional best practice within the devolved nations.

This paper aims to highlight our challenges and solutions coupled with an exemplar project on how we as a region, can look at a fundamental change moving forward.

As everywhere needs to decarbonise and to make progress in a hurry, actions across all areas is essential and if we are serious about achieving net zero, every aspect of how we plan for transport will need to change. This will require new thinking, creative solutions and systemic change

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Transportation is routinely identified as one of the most difficult sectors to decarbonise and this is due to current cultural mobility patterns, the fact that transport is the least diversified energy end-use sector, the continuous growth of global demand for mobility, and the technical limitations to replacing oil-based fuels.

The decarbonisation of transport cannot occur without changes to the economy and we need a whole-systems approach that reflects the shift to digital connectivity, and the integration of transport with land-use planning, energy and green finance.

Policies and regulations will need to be aligned to ensure that government at all levels can plan for jobs, housing, digital, energy, transport, freight, tourism and all other drivers of the economy on an integrated long-term basis. A key challenge will be how to harness private investment in green infrastructure and recovery.

There are probably four broad areas of intervention which can deliver the decarbonisation of transport:

- Behavioural change
- Less travel can be undertaken
- More of the travel that is undertaken is by public transport and active modes
- The emissions of motorised transport are reduced to zero

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In terms of decarbonisation in Northern Ireland, it is important to note when looking at public transport in totality here, it comprises of all Translink public transport vehicles and also those belonging to the private sector.

A snap shot of the amount of vehicles is as follows and indicates the size of the challenge ahead

Translink:	1,443 vehicles
Private Sector:	1,120 vehicles
Total PSV :	**2,563 vehicles**

The transportation sector is responsible for about one-quarter of global GHG emissions and emissions are growing and liquid fuels made from oil dominate this sector. They are easy to transport and store, contain a great deal of energy for their weight and volume, and enable use of internal combustion engines. The degree of difficulty in decarbonising transport varies across the sector.

Electrification is relatively easy for smaller vehicles that travel shorter distances carrying lighter loads. For these vehicles, the added weight of a battery is less of a hindrance and the inherently simpler and more efficient electric motor and drivetrain (the system that delivers power from the motor to the wheels) make up for some of the weight penalty. However, for the larger vehicles and heavier forms of transportation of which there are a greater number, and which travel longer distances, there is a greater challenge in terms of decarbonisation .

It is important, at this stage to highlight that private sector companies in Northern Ireland have to carry out many different kinds of services from schools to sports to tourism etc., to be financially viable and this causes difficulties in trying to make choices as they use a range of vehicle types and sizes to cover the various services.

For example, for buses and smaller vehicles on shorter journeys, choice is generally battery-electric and for coaches, hydrogen fuel cell-electric. Biofuels and hybrids are still on the cards for those longer-distance routes, while hydrogen infrastructure is being developed .

We would also like to highlight at this point, the need for such transformation in the bus and coach fleet as they pertain to schools and it is vital that the buses and coaches that serve schoolchildren do not contribute to poorer quality air around schools. Government will have to support the development of emerging

technologies for this fleet, such as hydrogen-fuelled engines for heavy vehicles, and must incentivise private bus and coach fleet owners to upgrade their vehicles.

Decarbonisation in Devolved Nations

Without doubt, of the devolved nations in the UK, Scotland has by far led the way in terms of policy setting and implementation for decarbonising public transport.

Substantial Research has been conducted in this area and below are the main headlines of their approach so far:

Key Scottish Benchmarks Over the Past 10 Years.

- Low Carbon and Zero Emission Buses in Scotland. The Scottish Government has demonstrated a long-standing commitment to help decarbonise the bus sector.

- Currently, there are approximately 4,200 buses operating in Scotland, 64% of which meet Euro V and VI standards.

- As of today, only 0.5% of buses operating in Scotland are zero emission, with plans being put forth to increase this to 1.5%. However there is still a long way to go to reach a 100% zero emission fleet.

- Between 2011 and 2018, eight rounds of funding (via the Scottish Green Bus Fund) were held to encourage the shift towards Low Emission Buses (LEBs).

- The eight rounds of funding amounted to £17m which funded 191 electric-diesel hybrid buses and 18 full battery powered buses.

- In 2020, the Scottish Government has also made available a further £40.5m worth of funding as part of the SULEB (Scotland Ultra Low Emission Bus) scheme (first round of funding equated to £10.1m for 57 zero emission buses).

https://www.zemo.org.uk/assets/workingdocuments/ZE%20Bus%20Financing%20Information%20and%20Ideas%20Pack.pdf

Electric Vehicle (EV) Challenges & Solutions for Northern Ireland

We recognise that there are a number of ULEV options are available and in an effort not to overwhelm with too much detail and information , we will specifically focus on EV example below, both in terms of vehicle supply, cost and infrastructure support.

- Cost of Changing Fleet
- Operational costs
- Infrastructure Challenges
- Range of vehicles available

Cost of Changing Fleet

There is a need to explore how innovative business models could lead to different financing solutions for fleet transition and infrastructure

There is a need to support the development of innovative financing models to support investment into zero emission buses.

For example - Financial assistance in terms of subvention meeting the differential between EV and diesel costs.

Scottish Ultra-Low Emission Bus Scheme (SULEBS) - Scotland offer up to 75% of the difference

https://www.transport.gov.scot/public-transport/buses/scottish-ultra-low-emission-bus-scheme/

Financial Models

Scottish research, analysis, and stakeholder engagement, suggests that the overall market is shifting towards financing models where (the majority of) operators no longer hold to the tradition of entirely owning their assets.

Existing Finance Opps	Emerging Finance Opps	Potential Finance Opps
• Operating leases; • Finance leases; • Concessional loans; • Sale-and-leaseback (refinancing)	• Component (battery) leases • Green bonds • Integrated end-to-end financing	• Residual Value Guarantee • Revolving Fund • Mezzanine Loan • Partial Risk Guarantee (PRG) • Demand Aggregation

- The most prominent financing models within the current market are leasing models (namely operating leases). For operators, leasing models reduce up front costs significantly, whilst providing a predictable and steady cashflow prediction (for budgeting purposes). Financiers also benefit from premiums via regular lease payments.

- However, changes in accounting standards (e.g. IFRS 16) present difficulties e.g. having to now recognise most assets on balance sheets (unless certain criteria are met). Combining this with infrastructure challenges and costs, as well as technology risks and revenue uncertainty, operators are becoming more and more attracted to models based on “use and access”, for a particular asset / service e.g. “as-a-service” models.

- ‘Traditional’ financiers (e.g. banks and equity houses) are willing to invest in this space but require comfort around the residual value risk of the technology. Costs can also be reduced by providing clarity and certainty of demand

It may be that a combination of the models explored in this, is needed to facilitate the transition.

However, some form of security needs to be provided for any investment(s) made, be it in the form of a residual value guarantee or a guaranteed level of demand from operators.

This is an area where the Government / Transport Departments could intervene.

Operational Costs

- Transitional Fleet costs are one part of the financial puzzle.

- There would also need to be subventional operational assistance to allow operators to endure the cultural uptake from carbon providers to more greener transport.

- Government must support operations by offering financial support on decarbonised distances travelled .. **Scotland offer 30pence per km travelled**

https://www.transport.gov.scot/public-transport/buses/bus-services-operators-grant/

Infrastructure

- At present there are little or no commercial rapid charging points of note in place to facilitate any transitional Fleet cross over to EV the province.

- Private commercial hubs may exist within owner operator depots but there is certainly a lack of public infrastructure in place to satisfy PSV / HGV engagement.

- Throughout the UK commercial public transport hubs are opening on a weekly basis.

- Traditional service stations are rapidly including EV charging stations and EV only stations are already in the pipeline for rolling out over the next 3-5 years.

Public / Private / Partnership Opportunity

- There is an opportunity to create a dual location / rapid charging project which could be the first step forward in our EV infrastructure engagement.

- A pilot project could establish commercial rapid charging points in Belfast and Derry thus allowing comfortable return EV journeys for public and commercial use.

- Amazon for example are rolling out EV vehicles, but province wide journeys will be challenging especially NW locations.

- Power suppliers such as SSE for example are keen to roll out commercial charging hubs and NI govt could harness this and achieve the regions first major infrastructural step through PPP.

Other Support & Funding in GB :-

By way of information, please find below examples of funding in GB.

Government announces extra funding for zero-emission buses in England.

ZEBRA - https://www.gov.uk/government/news/multi-million-pound-scheme-for-zero-emission-buses-across-england-launched

There have been a number of recent announcements of funding available to support the transition to zero carbon road transport. A summary of these is provided here...

- **Zero Emission Bus Regional Areas** (ZEBRA) Scheme (link) - Information for local transport authorities in England, outside London, on how to apply for the ZEBRA scheme. Deadline for Expressions of interest (standard track) *ends 25 June*.
- **SBRI Zero emission road freight, supporting uptake of battery electric trucks** (link) - Organisations can apply for a share of £10 million, inclusive of VAT, to provide an innovative solution to enable fleets to switch to battery electric trucks. *Closes 21 April.*
- **Zero emission road freight strand 1: electric road systems** (link). UK registered businesses can apply for a share of up to £10 million for feasibility studies into an electric road system demonstration. *Closes 5 May*.
- **Zero emission road freight - strand 2: hydrogen fuel cell vehicles** (link). UK registered businesses or organisations can apply for a share of up to £10 million for feasibility studies into a hydrogen fuel cell vehicle demonstration. *Closes 5 May*.
- **Zero emission road freight strand 3: supply chain technology** (link). UK registered organisations can apply for a share of up to £10 million for feasibility studies and industrial research in supply chain technology. *Closes 5 May.*
- **APC 18: developing the UK's low carbon automotive capability** (link). UK registered businesses can apply for a share of up to £25 million for UK-developed late-stage R&D, to support growth in advanced low carbon propulsion capability in the automotive sector and its' associated supply chain. *Closes 5 May.*
- **Automotive Transformation Fund Expression of Interest: Round 9** (link). UK registered businesses can apply for a share of up to £1 billion for capital centric investment projects that help industrialise the electrified automotive supply chain at scale in the UK. *Closes 21 April.*
- **Infrastructure solutions for zero emission vehicles** (link). UK registered businesses can apply for a share of up to £10million to develop infrastructure solutions that address challenges associated with the transition to zero emission vehicles. Funded by the Office for Zero Emission Vehicles (OZEV). *Closes 21 April.*

- **Transitioning towards Zero Emission Vehicles : CR&D** (link). UK registered businesses can apply for a share of up to £7 million, to develop on-vehicle solutions that address challenges associated with the transition to zero emission vehicles. Funding is from Office Zero Emission Vehicles (OZEV). *Closes 21 April.*
- **Transitioning towards Zero Emission Vehicles: feasibility studies** (link). UK registered businesses can apply for a share of up to £7million to develop on-vehicle solutions that address challenges associated with the transition to zero emission vehicles. Funding is from Office Zero Emission Vehicles (OZEV). *Closes 21 April.*
- **Driving the Electric Revolution: Supply Chains for Net Zero** (link). UK registered businesses of any size can apply for a share of up to £22 million for innovation projects focused on supply chain development for power electronics, electric machines and drives. *Closes 30 June.*
- **Zero emission road freight strand 3: supply chain technology** (link). UK registered organisations can apply for a share of up to £10 million for feasibility studies and industrial research in supply chain technology. *Closes 26 May.*
- **Niche Vehicle "EV Challenge" Innovative Charging Competition 2021** (link). A platform for collaborative research and development in the area of innovative charging solutions for electric vehicles within the UK niche vehicle sector. *Closes 15 April.*
- **Niche Vehicle "EV Challenge" Early Stage R&D Competition 2021** (link). (Proof of Concept) – to demonstrate the accelerated development of technologies (based around specific areas), directly applicable to on-road, zero emission UK niche vehicles. *Closes 15 April*
- **Niche Vehicle "EV Challenge" Late Stage R&D Competition 2021** (link). (Production Readiness) – to demonstrate the accelerated development of low carbon and zero emission technologies (based around specific areas), directly applicable to on-road or off highway, UK niche vehicles. *Closes 15 April.*

Support and Funding in Northern Ireland

There is much that still needs to be done by the NI Executive to support the passenger transport industry in its move to ULEV and we would value proper formal consultation and direction on this.

It is clear that other devolved nations are well ahead on many fronts and we need to get caught up with them quickly.

The gap in funding transport decarbonisation stands as a significant roadblock to the zero carbon emission ambition as does the lack of partnership with the private transport sector and the lack of information and leadership available.

The private transport fleet has not been included as part of considerations to date and was not mentioned in the NI Assembly Research piece on Decarbonising Transport in N.I. This obviously needs to change as the fleet is 78% of the size of the public transport fleet and only 300 vehicles less and needs to be part of the decarbonisation plan.

For the public transport fleet here, there is already a plan to deliver a zero emission bus and rail fleet by 2040 and some new hydrogen-powered double decker buses have already been delivered with funding from the DfI and the Office of Low Emission Vehicles . Indications to upscale the use of electricity and hydrogen as a bus fuel, for the public fleet, an average annual requirement of 120 vehicles per annum is required. This will require circa £41.6m between over the next ten years. The rail fleet programme will require over £40m per annum. This highlights the need for funding.

Looking beyond the pandemic, never have issues around the environment, congestion and social inclusion been so prevalent. However, with so much uncertainty as to the continuing viability of many private sector transport businesses, especially those with smaller fleets, as many people avoid travelling and restrictions on associated industries that coaches support are still in place, the private sector has not been able to dedicate the appropriate amount of time and effort to plan for decarbonisation and will most definitely need financial support to decarbonise the fleet.

We are all facing a climate emergency and while the balance of interventions will differ between places, decarbonisation needs to happen rapidly and everywhere. While we focus here on the carbon imperative, we also point to the wider benefits or side effects policies can have, and stress the importance of having an integrated transport strategy which has decarbonisation at its core, rather than seeing carbon as an add-on.

Delivering a zero carbon future for the passenger transport sector here will require a huge collaboration between citizens, industry and government and will most definitely require vision, leadership, political will and funding.

Karen Magill
On Behalf of the Members of Bus and Coach NI
14TH April 2021.