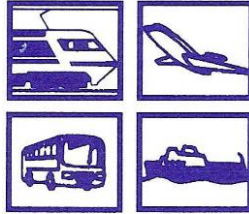


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## Scottish Association for Public Transport

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### Developing a World-class Transport System for Scotland: Experience from small European Countries

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*Abstract: The Scottish Government is issuing a series of papers comparing economic and social indicators in the UK with performance in ten small European countries: Austria, Belgium, Denmark, Finland, Iceland, Ireland, the Netherlands, Norway, Sweden and Switzerland.*

*Public transport performance is also a topic that needs attention. Scotland's trains and buses are facing severe problems of declining use and revenue, rising costs and cutbacks in the wake of the pandemic. But public transport has a vital future role in reducing CO<sub>2</sub> emissions from transport, overcoming energy shortages, avoiding road congestion and offering connectivity for all communities at affordable fare levels.*

*The Scottish Association for Public Transport (SAPT) has researched transport trends in these small European countries. In the best of these countries bus and rail use has been increasing steadily. Public transport is organised as an integrated system, with bus, rail and tram routes co-ordinated to offer seamless journeys, often needing just one payment for multi-modal travel within a particular area, making travel much easier and less expensive than in Scotland.*

*In Scotland, local transport authorities are faced with funding problems and are appraising the future of bus networks. We believe that this should not be confined to buses. The opportunity must be taken to widen this appraisal to plan bus and rail as an integrated network. Our firm conviction is that this could provide a much better level of public transport across all regions of Scotland, done most cost-effectively by co-ordinating services, making the best use of zero-carbon rail, bus, tram and subway.*

*We recommend that the Scottish Government commits to this integrated approach and implements the legislative changes, organisational structures and transport governance changes that are likely to be needed to deliver this vision of a world-class zero-carbon public transport system.*

# 1

## Experience from small European Countries

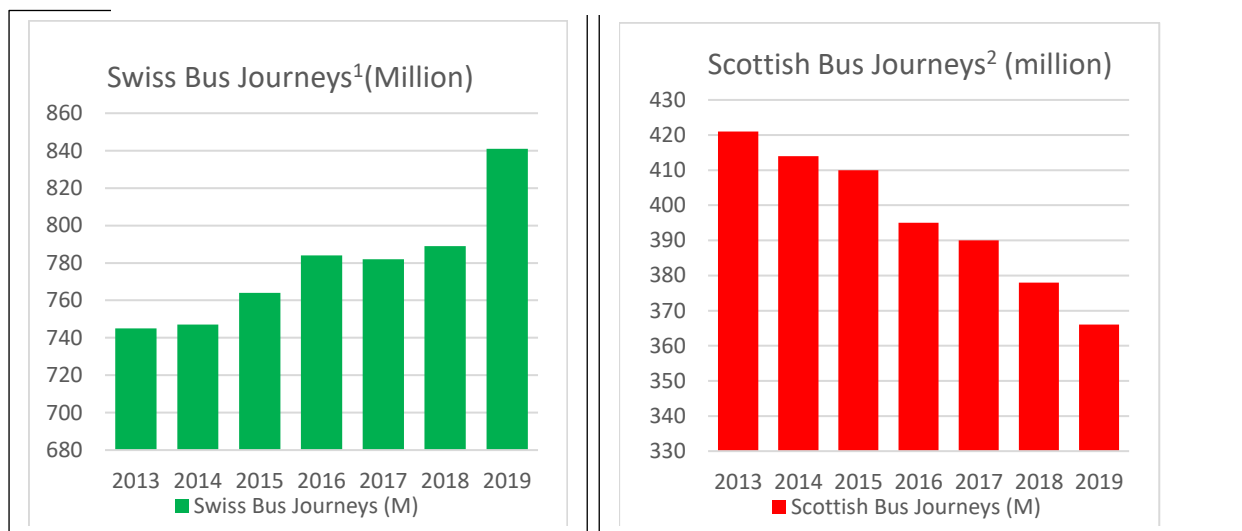
The Scottish Government is issuing a series of papers comparing economic and social indicators in the UK with performance in ten European countries: Austria, Belgium, Denmark, Finland, Iceland, Ireland, the Netherlands, Norway, Sweden and Switzerland.

In this submission to the Scottish Government the Scottish Association for Public Transport (SAPT) focuses on comparing public transport in these European countries (except Iceland) with Scotland. Evidence from other countries shows that Scottish public transport should be performing better.

Scottish bus and rail services face a post-covid crisis of falling use and rising costs at a time of increased pressure on public finances. Yet urban transport in main cities in Austria and Switzerland (and Germany) has prospered by development of public transport collaborations incorporating rail, bus and tram (Verkehrsverbunde: see Section 5.1). Metros have boosted city travel in several cities.

In rural areas in some countries, coordination of local buses with the national rail network is a key factor in increasing passenger numbers and bus revenue. Leisure trips by public transport can cut road congestion and pollution at tourist hotspots. The graph below highlights a quite dramatic contrast in bus usage trends comparing Scotland and Switzerland over 7 years from 2013 to 2019.

### Trends in Bus Journeys in Switzerland and Scotland 2013 - 2019



One factor affecting bus decline in Scotland is road congestion delaying buses, though this also occurs elsewhere. But evidence in this paper shows that comparator countries with integrated public transport perform much better than Scotland, where the transport framework is still largely based on the competitive approach of the Westminster 1985 Transport Act which deregulated buses.

Changes to Scottish public transport organisation and funding must now be considered.

Environmental and transport policy must exploit the potential of bus and rail together to meet the challenges of achieving net zero, reduced car and energy use and improved public transport connectivity. Transport is the biggest (36%) and fastest growing contributor to CO<sub>2</sub> emissions in Scotland. A better public transport network will be a key factor in tackling climate change and improving connectivity. Electric trains and low-carbon buses and active travel can cut emissions and energy use **but only if car owners can be attracted to switch to public transport.**

The contrast between public transport organisation and usage in Scotland with the other nine European countries is shown in the next sections. Section 7 concludes that based on the best evidence from continental Europe, Scottish rail and bus networks should be more closely coordinated to give a more effective service. But new legislation is likely to be needed. The Scottish Government has considerable autonomy on transport policy. This paper discusses how our transport framework could be tailored to overcome under-performance by introducing initiatives that have succeeded in continental countries.

1 Eurostat (<https://ec.europa.eu>).

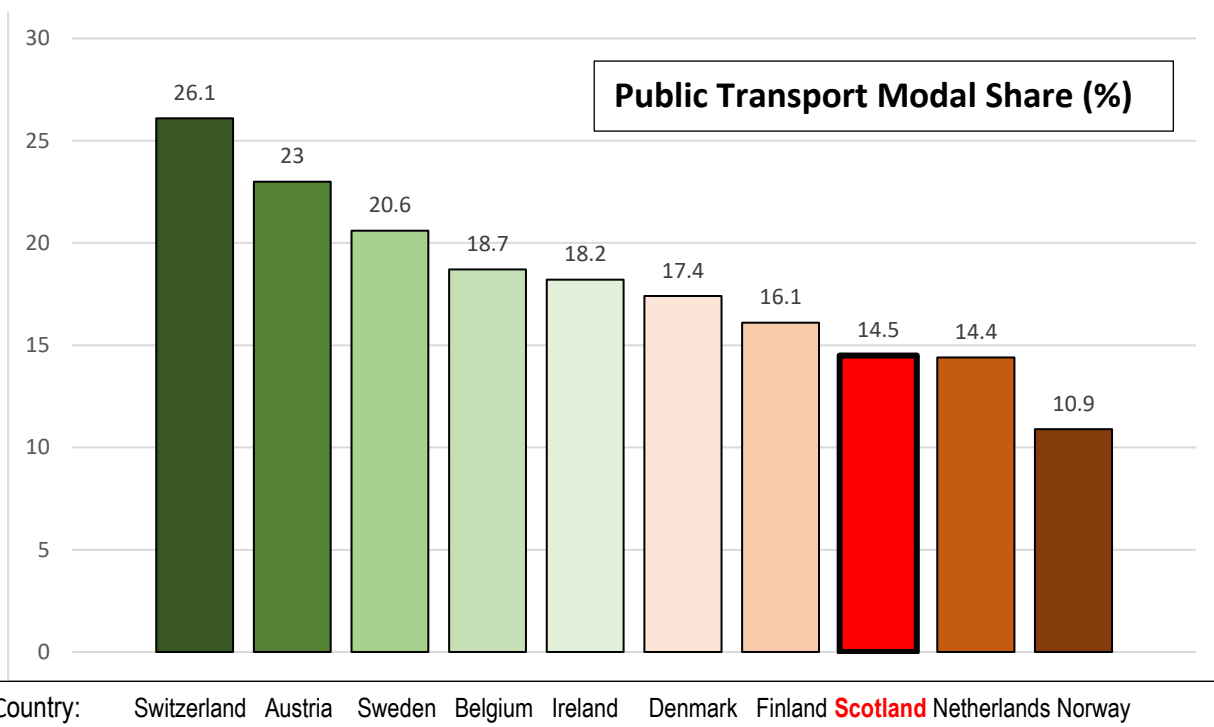
2 Scottish Transport Statistics <https://www.transport.gov.scot>

## 2 International Transport Comparisons

**Scotland can do better:** The table and chart below compare transport modal share (%) statistics for public transport and car in Scotland (**2019 pre-covid**) with other small northern European countries.

**Chart 1 Public Transport Modal Share (%) for ten small European countries<sup>3</sup> (2019)**

Country:	Switzerland	Austria	Sweden	Belgium	Ireland	Denmark	Finland	Scotland	Netherlands	Norway
Public Transport (bus+rail)	26.1	23.0	20.6	18.7	18.2	17.4	16.1	<b>14.5</b>	14.4	10.9
Car	73.9	77.0	79.5	81.3	85.6	82.7	83.9	<b>85.7</b>	85.6	89.1



Notes: Scottish numbers from Scottish Transport Statistics. Other countries from Eurostat (<https://ec.europa.eu>). Modal share is based on passenger kilometres, rather than passenger trips, as this statistic is used in EU publications. Figures do not include walking and cycling: in the Netherlands 27% of trips are by bicycle, 18% are walking ([www.government.nl](http://www.government.nl))

**In Scotland, public transport modal share is lower** than in any of the other countries other than Norway, and the Netherlands (where cycling, not included in these statistics, is high). Population densities and other geographical factors vary between countries and this affects transport usage.

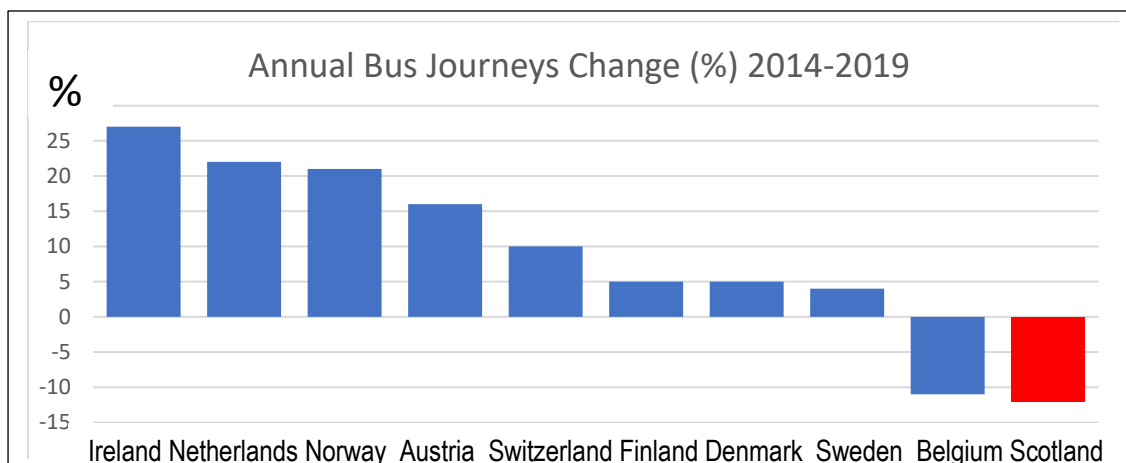
But statistics show that **Scottish bus usage was falling** pre-covid while growing in most other comparator countries. This is despite bus travel being free for half of Scots.

A comparison of bus usage growth or decline (comparing 2014 with 2019) in the nine countries is shown in Chart 2 (page 4). Chart 3 (page 4) compares rail passenger growth across the countries over the same period.

Differences between Scotland's public transport framework and that of other countries are analysed in Section 3.

<sup>3</sup> Eurostat (<https://ec.europa.eu>).

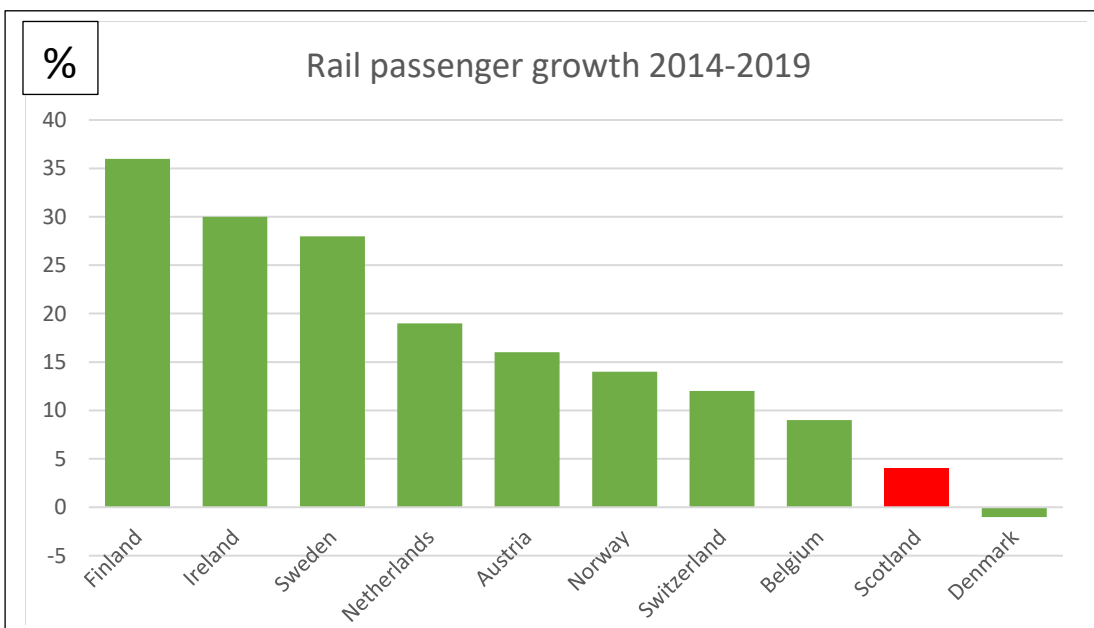
**Chart 2 Bus Passenger Travel Trends (%) over 5 years comparing 2015 and 2019**



	IRL	NL	NOR	AT	CH	FI	DK	SW	BE	Scotland
2014	8.4	4.5	3.8	9.0	5.9	7.5	6.6	9.7	15.4	414*
2019	10.7	5.5	4.6	10.4	6.5	7.9	6.9	10.1	13.7	366*
	+27%	+22%	+21%	+16%	+10%	+5%	+5%	+4%	-11%	-12%

Annual bus use (shown in the table above in billion passenger-kilometres) have increased between 2014 and 2019 in all countries **except Belgium and Scotland. Scottish bus use fell by 12%.** (\* Scottish data is shown in million bus journeys per year. EU countries use billion passenger kilometres, but this does not materially affect the percentage increase/decrease in each country).

**Chart 3 Rail Passenger Travel Growth (%) over 5 years comparing 2014 and 2019**



	FIN	IRL	Sw	NL	AT	NOR	CH	BLG	SCOT	DK	
2014	68.2	38.5	207.3	*	270.9	70.3	567.0	223	92.7	208.3	Millions of rail journeys
2019	92.8	50.1	264.6	*	314.8	80.4	635.6	244	96.4	206.6	* NL based on pass-km
	+36%	+30%	+28%	+19%	+16%	+14%	+12%	+9%	+4%	-1%	Difference 2014/19

Rail travel in all countries showed growth except Denmark. ScotRail showed the lowest growth over 5 years (4%) after Denmark (-1%). The five-year period was mostly covered by the Abellio franchise. ScotRail numbers have also recovered more slowly from the pandemic than other UK rail companies.

### 3 Scottish Transport Compared

Successful features of public transport systems in other comparator countries, if adopted in Scotland, would help reverse the downward trend of bus use, boosting prospects of bus and rail growth. Transport frameworks in the other countries are summarised in the Appendix. Most of the successful countries have integrated transport strategies combining bus and train and, in urban areas, tram and metro to provide a high-quality transport network competitive with car travel for many journeys, with affordable through tickets valid on the bus and rail parts of a multi-leg journey.

**Local Buses:** In many continental countries, local bus services operate as part of the national public transport network. Timetables are co-ordinated to connect with other bus routes and trains.

Most Scottish bus services operate commercially with support through Transport Scotland's Government Network Support Grant and concessionary scheme. Uneconomic bus services continue only if local authority support is given. Support now mainly focuses on school routes: many other services are threatened with cutbacks or withdrawal as costs rise, revenue drops and staff shortages worsen. Some communities may be left without public transport leading to rural depopulation.

*Unlike in some countries (for instance Switzerland, see Appendix A1) there is no Scottish Government commitment to maintain an adequate level of public transport in all regions of the country.*

**Timetables:** Returning ScotRail to state ownership creates an opportunity to replan schedules in consultation with local transport authorities and bus companies to develop co-ordinated timetables. The evidence from Europe shows that that this would boost recovery in both rail and local bus travel.

**InterCity Travel:** Competition between bus and rail on Scottish inter-city routes contrasts with the top-performing European countries of Switzerland and Austria which have co-ordinated trains and buses with no overlap. Scottish Citylink carries 5 million passengers yearly including concessionary trips. ScotRail Inter7City trains carried around 13 million passengers in 2019 earning £125M revenue. Citylink is a quality service that increases the overall public transport share of intercity travel but also increases government support needed for ScotRail as Inter7City revenue is affected by competition.

**Fares System:** Many of the continental comparator countries have multi-modal ticket options offering relatively cheap travel, particularly in cities. Introducing integrated ticket systems in Scotland would need co-operation between all transport operators. But the evidence suggests this is key to attracting many more people to use public transport. For instance, in Geneva a CHF 3 ticket or mticket gives 60 minutes travel on the whole city network of bus, tram and train routes. This type of ticket, together with day passes for all public transport, is available in many continental cities. Transport integration with a network-wide multi-modal fare system in Scotland would mean concessionary travel cards should be valid for all local transport. This is discussed in Section 5.3

### 4 Strategic National Transport Network

The Scottish Government should take steps to enable development of a strategic bus and rail network that provides **access to adequate public transport services throughout Scotland** (similar to Article 81a of the Swiss Federation's constitution, see Appendix 1).

**Public transport organisation, funding and timetabling** will need to be re-organised to improve bus/rail connections and reduce duplication of local bus and rail to make the most of available resources in the current financial situation. ScotRail's ongoing drive to reduce costs and boost revenue could, if successful, allow some Transport Scotland funds to be reallocated to increase the bus Network Support Grant refocused on strategically important but uneconomic bus routes.

Features of a Scottish public transport network relaunched on the best continental model would be:

- Train and bus timetables re-designed in consultation with local transport authorities to inter-connect and reduce duplication where possible, while preserving commuter and school journeys,
- Multi-operator ticketing allowing multi-leg journeys to be made by bus/train/subway/tram
- In City Regions, infrastructure capital investment in light rail, bus lanes, bus/rail interchange and park+ride to attract a major shift from car to zero-emission public transport and active travel. In the Glasgow City Region, for example, investment in Clyde Metro would revolutionise connectivity and replace some ScotRail short-distance commuter services. See Section 5.
- In rural areas bus routes linking villages and towns to the strategic national transport network to be financially supported through the refocused Network Support Grant. See Section 6

## 5 Integrated Transport for Scottish Cities

### 5.1 Reversing Decline

In Scotland's biggest city **Glasgow** and surrounding areas bus travel has **dropped by 31%** in 10 years from 234M (2008/9) to 161M (2018/19) journeys<sup>4</sup>. Bus travel in other Scottish regions has also fallen though by less, caused partly by long bus journey times due to road congestion. This compares with Zurich, a Swiss city of comparable size to Glasgow but with higher car ownership, where overall public transport use **increased by 61% over 15 years**<sup>5</sup> from 1990 to 2015. This was achieved by better co-ordination between operators and investment in a cross-city S-bahn tunnel for local trains. This growth in Zurich shows the benefits of fully integrating and investing in urban bus and rail into a comprehensive network. A recent study of six cities<sup>5</sup> shows the success of the *Verkehrsverbunde* in Switzerland, Austria and Germany: Hamburg (opened in 1967), Munich (1971), Rhine-Ruhr (1980), Vienna (1984), Zurich (1990), and Berlin-Brandenburg (1999). *"Since 1990, all six of those VVs have increased the quality and quantity of service, attracted more passengers, and reduced the percentage of costs covered by subsidies. By improving Public Transport throughout metropolitan areas, VVs provide an attractive alternative to the private car, helping to explain why the car mode share of trips has fallen since 1990 in all of the case studies."*<sup>5</sup>

A fundamental change to Scottish public transport organisation is needed to reverse the decline in usage and worsening financial position of both local buses and ScotRail. Best European experience shows a successful way forward. ScotRail now being in public ownership could be an opportunity to develop an integrated transport network for Scotland delivering benefits for users and taxpayers.

### 5.2 ClydeMetro and Edinburgh Tram

Given the poor performance of buses and the high operating cost of suburban train services in the Glasgow area, the ClydeMetro proposal for a metro<sup>6</sup> is a priority to solve Glasgow's transport problems. Using mostly existing and disused rail alignments for the Metro will give fast public transport journeys bypassing road congestion. Full integration with local buses can boost bus and metro traffic (as in European cities) and give the best return from this investment, particularly if automated train technology is deployed to reduce operating costs. Replacing ScotRail services on local Glasgow area routes (which cost £91 M in 2019<sup>7</sup>) could release government funding which could be reallocated to support the Strategic National Network proposed in Section 4.

Extending Edinburgh Tram from Granton to the Royal Infirmary and Bio Quarter, as envisaged in the Edinburgh City Mobility Plan, with full integration with Lothian Buses will cut congestion and emissions and give Edinburgh a transport system to rival other European capital cities.

### 5.3 Radically new Fares Approach

Setting up integrated urban public transport networks in Scotland would require a unified fares system for multi-modal journeys. This would raise the issue of extending concessionary fares to include all local travel (within local authority or SPT travel areas), including rail journeys, Edinburgh Tram and Glasgow Subway. As ScotRail is now state-owned, concessionary payments to re-imburse bus companies for free journeys would, for any concessionary passengers diverting to free concessionary rail travel, instead be made to ScotRail or the municipally funded zero-carbon Edinburgh Tram and Glasgow Subway. It is likely this would attract a greater transfer from car to concessionary travel. Most ScotRail trains in rural areas and the Glasgow conurbation have unused capacity<sup>7</sup> and could absorb additional local concessionary journeys at no extra marginal cost, particularly at off-peak times when many concessionary journeys are made.

Concessionary card holders would benefit from faster journeys and better connections between bus and train (and tram and subway), helping to reverse the downward trend in public transport usage.

<sup>4</sup> *Strategic Figures for SPT area and south-west Scotland from Scottish Transport Statistics*

<sup>5</sup> *Verkehrsverbund: The evolution and spread of fully integrated regional public transport in Germany, Austria, and Switzerland. Ralph Buehler, John Pucher, and Oliver Dummler. INTERNATIONAL JOURNAL OF SUSTAINABLE TRANSPORTATION 2019, VOL. 13, Issue 1 <https://doi.org/10.1080/15568318.2018.1431821>*

<sup>6</sup> *Clyde Metro, Intervention 9, Strategic Transport Projects Review STPR2 Scottish Government*

<sup>7</sup> *Fit for the future, ScotRail Route Analysis 2019/20 by ScotRail*

## 6 Strategic Rural Transport Network

Scotland's rural areas have a lower population density than most other small European countries other than Norway, Sweden and Finland. Rural bus routes are particularly susceptible to cutbacks. A strategic network of local bus routes, designed to complement and connect with trains, could be specified by regional transport authorities / councils and funded by Transport Scotland through a more targeted Network Support Grant to maintain national connectivity for towns in rural areas.

A service level of at least **four services per day by rail or bus** should be maintained for towns or transport interchanges in rural areas, with higher frequency on main routes. Costs could be contained by reducing duplication where reasonable. Demand responsive transport (DRT) could link smaller communities into the core strategic network as well as providing local transport.

Scotland's scenic rural railway lines like the West Highland, Kyle and Far North lines are international tourist attractions. New high-quality trains to rival the Swiss "Glacier Express" (see photo below) are crucial to exploiting this market and boosting tourism. Bus/rail integration is an opportunity to develop combined rail and bus tours to attractions like Loch Ness. Rural buses would have a growing role in this bus+rail green travel network giving national connectivity for locals and tourists. Road traffic gridlocks at visitor hotspots like Glenfinnan could be relieved by more people coming by train and bus instead of car.



*Transport integration in Switzerland boosts green tourism and the rural economy.*

*Photo above: Travellers have easy interchange between buses and trains at Brig station.*

*The Glacier Express (shown above) provides luxury travel on the metre-gauge Rhaetian Bahn from Zermatt to St.Moritz. This rail journey is an internationally renowned Swiss tourist attraction.*

*The integrated public transport system gives connections to the route from anywhere on the Swiss network via interchange at Visp, Brig and Chur.*

*In Scotland, better timetable co-ordination and ticketing between rail, bus and ferry would encourage more travel by public transport and increase visitor numbers without generating road traffic congestion at tourist attractions.*

## 7 Journey to Success

There are four issues to be resolved on the journey to a world-class transport system for Scotland:

- **Transport Reform:** Most buses in the successful comparator countries are municipally owned or operate on a franchise basis as part of a planned, integrated network. In Scotland, bus companies operating routes on a commercial basis do not normally disclose passenger numbers, making it difficult to plan an integrated transport network. The Transport (Scotland) Act 2019 made some provision for bus franchising and municipal ownership of buses, but there is a view that the Act protects the interests of commercial bus companies more than the needs of the travelling public.  
The Scottish Government has legislative powers over transport to make it easier for local transport authorities to establish integrated public transport networks as a key element in attracting more passengers to bus and rail and helping to meet the net zero target. This needs to go further than the current Bus Service Improvement Funds.
- **Timetable Co-ordination:** Reliable connections between different routes is a feature of the best integrated systems on the continent. To achieve this in Scotland, bus, rail and ferry timetable designers will need to collaborate more fully, taking account of local travel requirements and strategic connections. Operators changing individual timetables would need to consider implications for connections. This is already achieved in countries such as Switzerland.
- **Affordable Fares:** Fares, particularly on buses, have been rising in real terms. Unaffordable fares have social consequences in this inflationary period. Recovering rail and bus usage from the effects of the pandemic and the rail strikes now needs an ambitious plan to offer affordable multi-modal fares and a fully co-ordinated transport system, as in many continental countries.
- **Financial Considerations:** In today's economic situation it is unlikely that extra revenue support from government or local authorities will be available for transport. A new Green Transport Strategy must therefore depend on obtaining better outcomes from existing budgets by:
  - attracting more bus and rail usage and revenue by offering better co-ordinated services (generating growth as in countries with integrated systems analysed in this paper)
  - continuing to cut ScotRail operating costs by using technology to improve efficiency, for instance expanding the use of mtickets and multi-modal travel cards, and replacing some short distance suburban rail routes in the Glasgow area by ClydeMetro
  - minimising duplication between local bus and train services by developing integrated and interconnecting bus and rail route plans
  - reviewing the concessionary travel scheme to widen the availability to cover publicly owned local rail, tram and subway services. This should reduce net costs to the public purse by avoiding payments to private bus companies for journeys switching to rail. The social justification for Transport Scotland paying for long distance concessionary journeys by coach should also be critically evaluated as there is more need for higher Network Support Grant for essential but loss-making local buses specified by local authorities

***Evidence in this paper shows public transport in small European countries has a bright future and is crucial in reaching net zero. Success in Scotland will depend on changing the way train and bus services are organised to align with the European integration model. Local transport authorities need a greater role in allocating funding and co-ordinating transport to suit regional needs.***

***Rebuilding rail and bus usage is pivotal in cutting road congestion and emissions as well as cutting Transport Scotland's transport budget. Efficient and affordable public transport is a lifeline for people affected by the cost-of-living crisis. We recommend that the Scottish Government urgently reviews the issues raised in this paper and makes improvements to the public transport framework***

***Our association is analysing how a fully integrated Green National Transport Network based on Swiss-style co-ordination of rail and bus timetables would boost connectivity and efficiency. For further information contact John McCormick, Chair, Scottish Association for Public Transport.***

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## Appendix Country Comparisons

This appendix is a brief outline of public transport in nine small European countries, with a more detailed analysis of Switzerland, Austria and Norway where full public transport statistics are readily available both nationally and locally.

Comparable statistics for Scotland are difficult to source as some bus data regarded as commercially confidential is not disclosed. Good data is a prerequisite for good planning and management. An outline of public transport in each country follows.

### A1 Switzerland

Population 8.6M      Area 41285 sq km      Density 219 per sq km

(For comparison, Scotland has:

5.45M population, area 77910 sq km, population density 70 per sq km)

Generally considered to have the best public transport, Swiss trains, buses, trams and lake steamers are fully integrated with co-ordinated timetables and through tickets available between any points on the network. Cantons have a legal responsibility to ensure adequate public transport is provided in all regions of the country<sup>1</sup>.

The main rail network is operated by SBB, a corporation wholly owned by the Swiss Government. There are also over 70 local railways, mostly narrow gauge, serving local communities which often have a share in ownership of the lines. Timetables on these local lines are fully co-ordinated with SBB, with through fares available between any stations in Switzerland. All lines are electrified. The SBB main lines benefit from a high volume of international freight passing through Switzerland. The Swiss post office (PTT) provides bus services outside urban areas. Local bus companies operate many of these services through franchising agreements. Timetables are co-ordinated to make reliable connections with trains. There is no competition or duplication between buses, or between buses and trains: the whole system is operated as an efficient integrated public transport network and is a major benefit for tourists as well as Swiss residents.

City transport is provided by municipal operators with tram or trolleybus routes in the main cities as well as buses. There has been public transport investment in most of the cities:

- Zurich (population 402K) invested in a cross-city S-Bahn, opened in 1990, which, coupled with co-operation with city bus and tram services, increased public transport usage by 61% over 15 years.
- Geneva (population 199K): The tram network has expanded from one line to five, with further expansion planned. Buses and trams are fully integrated and all run by TPG (transports publics genevois). TPG carried 223M passengers in 2019, up 11% from 200M in 2015 ([www.tpg.ch](http://www.tpg.ch)). A new cross-city heavy rail route partly in new tunnel and partly using an existing freight line was opened in 2019 linking the previously separate city stations of Cornavin and Eaux Vives to Savoie.
- Lausanne (population just 140k) opened a metro in 1991 formed by upgrading and extending a funicular railway. The two-line metro carried 47M passengers in 2019.

These comprehensive bus, tram and rail public transport networks connecting with regional and national rail services have a high market share of travel.

Note 1: Article 81a of the Federal Constitution states that *the Confederation and the Cantons shall ensure that an adequate range of public transport services is provided on rail, roads, water and by cableway in all regions of the country. In doing so, appropriate account must be taken of the interests of rail freight transport.*

## A2 Austria

Population 8.9M Area 83,871 sq km 109 per sq km

Austria has one of the best developed public transport networks in the EU. The national rail network OBB is state-owned. Passengers by rail grew from 9.3 billion passenger-km in 2006 to 13.35 billion passenger-km in 2019 (figures from Statista website). OBB passenger journeys grew as follows:

	2014	2019	5-year increase		ScotRail journey comparison		
					2014	2019	5-year increase
OBB Rail journeys	238 M	267 M	<b>+12%</b>	➔	92.7M	96.4M	<b>+4%</b>
<i>Austrian rail journeys per year</i>							

OBB also runs the largest bus fleet in Austria, OBB -Postbus, carrying 135M passengers annually.

A privately owned open-access operator, WESTbahn, runs intercity services from Vienna to Salzburg in competition with OBB.

Austria's capital Vienna has an extensive network of bus, tram, metro and rail routes. With a population of 1.9M this capital city has a transport network on a different scale from cities in Scotland. In the urban area, 99.7% of the population has convenient access to public transport within 300metres of home.

Public transport is integrated and marketed by the VVB Ost-Region (see section 5.1) under the *Wiener Linien* brand, making it easy for people to make journeys involving bus, tram, underground and train across the city zone. Single tickets, and day, 2-day, 3-day or 8-day passes are available, as well as monthly or annual tickets, for travel on all public transport.

	2014	2019	5-year increase		Scotland bus comparison		
					2014	2019	5-year decrease
Underground	439.8	459.8	+4.5%				
Tram	304.8	304.8	0				
Bus	186.6	196.1	<b>+5%</b>	➔	414	366	<b>-12%</b>
Total	931.2	960.7	+3%		Scottish local bus journeys (million per year whole country)		
<i>Vienna public transport use (million journeys per year in city)</i>							
Source: www.wien.gv.at							

In rural areas public transport provision is patchy with 15.4 % of inhabitants being shown as having no access to public transport based on a "Public Transport Service Quality Level" classification. The lowest classification has a minimum requirement of a bus stop with at least 4 services per direction per day with a maximum distance of 500m or a rail station at a maximum distance of 1250m.

### **A3 Norway**

Population 5.4M Area 385,207 sq km Density 15 per sq km

While Norway's population (5.4 million) is comparable to Scotland's, population centres are further apart. Hydropower accounts for 95 percent of the country's electricity consumption and since 2012, there has been an explosive rise in the number of electric cars.

The railway network goes no further north than to Bodø, which leaves the far north without rail provision. Instead, the dispersed northern population centres are connected by a large network of small airports for small aircraft. The country aims to electrify all domestic aviation by 2040. The public transport modal share for travel to Oslo Airport is 70%.

Norway has 100,915 kilometres of coastline, including 239,057 islands, many of which are served by passenger boats and ferries. The country is a pioneer in electric ferries and by the end of 2022, 72 of the country's ferry routes will be served by electric vessels, with another 14 in the pipeline.

Norwegian shipowners are committed to making the entire Norwegian fleet carbon neutral by 2050.

Responsibility for public transport provision is shared between central, regional and local authorities. The state carries overall responsibility for transport policy and is responsible for the country's trunk roads and rail network. Municipal authorities are responsible for local roads and ferry/boat services.

#### *Rail*

64% of the rail network is electrified, and there is an ongoing programme to increase this percentage, including in remote scenic areas. Train operation has recently been privatised, with operators bidding for 'traffic packages' for which the minimum level of service provision is predefined by transport authorities. TOCs lease all rolling stock from a state-owned specialist rolling stock company. Vehicles generally provide a high level of passenger comfort.

Most longer distance rail routes are relatively low speed with around 94% of routes being single track. For instance Oslo-Stavanger trains take over 7 hours to cover the distance of 187 miles, an average of less than 27 mph. Oslo-Bergen 430 km (267 miles) takes 6 hours 30 minutes at 41 mph. Air transport is the most common mode for long distance intercity travel.

#### *Long-distance coaches*

Coaches are operated by private companies that run services under licence issued by the Ministry of Transport. They provide a high level of passenger comfort.

#### *Urban transport*

Urban transport is provided by private companies that are contracted to do so by municipal authorities. The largest cities have committed to a goal of no growth in car transport. In return for this commitment, the government subsidises local public transport infrastructure improvements. All buses must be low or zero emission (electric or natural gas.)

The larger cities provide not only bus services but also tram/light rail and/or ferry services, and in the case of Oslo (population 635k) also a metro consisting of five lines totalling 85 km, with 101 stations, and a tram network of six lines with 99 stops. Trams run every 10 minutes on each route during the day. In 1980, a tunnel built under Oslo connected the separate heavy rail networks to the east and west of the city. Multi-modal tickets give access to a large network of transport services, locally and in the wider region, with reliable and easily accessible real-time service information available at stops and aboard vehicles.

Before March 2020, public transport use was rising in Norwegian cities. Bus travel increased from 344M to 434M journeys (+26%) over 5 years from 2014 to 2019, and in Bergen the number of residents using public transport for daily journeys doubled in the period 2010 – 2018. At the same time, all cities saw a fall in car mileage.

Sources: Statistics Norway [www.ssb.no/en/statbank](http://www.ssb.no/en/statbank) and Flytoget AS

## A4 Sweden

Population 10.35M      Area 528,447 sq km      25 per sq km

The Swedish railway network is liberalised. The national authority Trafikverket owns and maintains the state's railway infrastructure as well as road and ferry infrastructure. Most longer distance trains are commercially operated by state-owned SJ but local trains are franchised and subsidised by local authorities.

Rail use increased over five years (2014-19) from 12,121 to 14,617M passenger km (+21%).

Stockholm (population 976K) has a metro with 100 stations, used by around 1.1 million passengers per day. An extension with 20km of new track and 11 new stations is now being built.

Bus passenger km rose from 10,290M to 10,871M (+6%) over the same five-year period. Bus services in some areas are free.

Data source: Statista

## A5 Belgium

Population 11.6M      Area 30688 sq km      375 per sq km

Belgian passenger trains are operated by SNCB, a state-owned autonomous company.

Bus services are operated by three regulated companies covering three geographical areas of Flanders, Wallonia and the Brussels metropolitan area.

## A6 Ireland

Population 5M      Area 70273 sq km      72 per sq km

Public transport in the Republic of Ireland is overseen by the National Transport Authority. Dublin has an electrified suburban rail network (DART) and a two-line tram network (LUAS). There are ambitious plans for expansion of the tram network, and for a new €9.5 Billion fully automated metro for Dublin, providing 16 stations mostly underground.

Rail use rose from 38.5M passengers in 2014 to 50.1M in 2019, an increase of 30%.

Public bus services are regulated by the National Transport Authority under the Public Transport Regulation Act 2009. Bus passenger journeys rose from 197M in 2014 to 227M (+15%) in five years from 2014 to 2019.

Source: [www.cso.ie](http://www.cso.ie)

## A7 Denmark

Population 5.8M      Area 42951 sq km      137 per sq km

Denmark contains more than 400 islands, with several bridges connecting to the Danish mainland. The main train operator is the state-owned Danske Statsbaner (DSB). The rail network consists of 3476 km, with 1756 electrified.

Rail use fell from 208.3M (2014) to 206.6M passenger journeys (2019), a reduction of 1% over five years. Serious problems with the Italian-built IC4 diesel fleet, originally due to enter service in 2003, have badly affected rail service reliability. The IC4 fleet is now due to be replaced by Alstom electric trains from 2025

The number of passenger journeys made by buses in Denmark also fell from 347M to 312M (-10%) over the five years from 2014 to 2019.

Copenhagen's bus network is franchised to Keolis on a 10-year contract. Danish cities are now only buying electric buses.

Copenhagen metro opened in 2002 and has now expanded to three lines serving 37 stations. The driverless light metro supplements the larger S-Bahn suburban rail network and is integrated with the local DSB and regional trains and the municipal Movia buses.

Public transport including buses, taxis and trains represent 18% of distance travelled, with cars accounting for 66%. Bicycles and motorcycles are used for 4.6% of travel, with vans accounting for the remainder.

[The Danish Transport System, Facts and Figures \(europa.eu\)](#)

## A8 Finland

Population 5.5M      Area 338,440 sq km      Density      18 per sq km

Finnish state-owned railways VR Group have achieved high growth of 36% in passenger journeys over 5 years by cutting operating costs and substantially reducing fares as the economy recovered from a downturn.

There is a network of commercial express bus services competing with rail, as well as urban buses which are regulated. Bus passenger traffic increased from 7540M passenger km in 2014 to 7900M passenger km (+4%) in 2019. ( [www.statista.com](http://www.statista.com) )

## A9 Netherlands

Population 17.4M      Area      41,543 sq km      Density 508 per sq km

Passenger rail transport is operated by a number of companies given concessions by the transport authorities. The dense rail network connects nearly all major towns and cities.

Rail passenger travel increased by 20% from 2014 to 2019 (source:Systra).

Cycles are used for a much higher share of journeys than in other countries. More than one quarter of all trips made by Dutch residents are travelled by bicycle.