Pay-as-you-drive: the road to a better future

reform scotland

Pay-as-you-drive: the road to a better future

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October 2013
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About Reform Scotland

Reform Scotland is an independent, non-party think tank that aims to set out a better way to deliver increased economic prosperity and more effective public services based on the traditional Scottish principles of limited government, diversity and personal responsibility.

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Objective

In 2009, Reform Scotland's *Power to Connect* report looked briefly at the issue of road pricing and the potential benefits it could offer. The purpose of *Pay-as-you-drive: the road to a better future* is to expand on our previous work, explaining how, using the powers Devo Plus would give the Scottish Parliament, a road pricing system could be introduced in Scotland to replace existing fuel and vehicle taxes.

The report considers how such a scheme could work in Scotland and why it would help to reduce carbon emissions, reduce congestion and provide a fairer and more effective method of paying for use of road space. The report also analyses what could be learnt from elsewhere, as well as how something that is traditionally seen as an unpopular policy could gain public support.

Findings

- Cars remain a huge contributor to road transport carbon emissions. While all other sectors saw a reduction in emissions between 1990 and 2008, the transport sector, which accounted for 22% of total Scottish emissions (not including international aviation and shipping) was 7% higher.
- Official Scottish figures estimating the volume of traffic on Scottish roads suggest that, while there has been little change on minor roads, there has been a 12% increase in traffic on Scotland's motorways between 2003 and 2011.
- Little progress has been made in meeting either the Scottish Government's National Indicator to reduce the proportion of driver journeys delayed due to traffic congestion or the National Indicator aimed at increasing the proportion of journeys to work made by public or active transport.
- There is roughly a 15p difference in the cost of a litre of petrol between the cheapest areas and most expensive. That means rural drivers filling up a 70 litre tank (such as in a Ford Mondeo) pay over £10 more at the pump.
- Official figures also suggest that people living in more remote areas have less access to public transport alternatives.
- While there has been a 13% increase in the total number of vehicles licensed in Scotland between 2003 and 2011, and a slight increase in the estimated volume of traffic on Scotland's roads, revenue raised from fuel duty and vehicle excise duty has stayed virtually static in real terms and has fallen as a percentage of the total revenue raised in Scotland.

Policy Recommendations

Clarify the objective of motoring charges

Reform Scotland believes that there should be three clear policy objectives of motoring charges: to reduce emissions; to reduce congestion; to increase fairness.

Of course, revenue generation is important, but our proposed Pay-as-you-drive (PAYD) scheme will continue to raise significant revenue. More fundamentally though, if motoring charges are effective in meeting their aims then revenue is supposed to reduce over time as people adjust their behaviour and fewer of them use cars, at least on busy roads and at peak times when charges will be highest.

We do not believe that the objective of current motoring taxes is clear. Changes to the Vehicle Excise Duty (VED) rates have directly addressed carbon emission, and this is to be welcomed (although we feel that VED punishes infrequent drivers by charging them the same as frequent drivers, which PAYD will address).

However, the main motoring tax, fuel duty, is a blunt and unfair instrument which takes no account of where and when people are using the roads.

Green or sin taxes need to be set at an appropriate level to discourage certain behaviour, but recently petrol duty changes have not achieved this objective and have done little to reduce congestion on our roads. This has only increased the public perception that such taxes are really about providing a steady revenue stream for the government rather than a genuine attempt to address congestion or vehicle emissions. This is exacerbated by the fact that as a percentage of the pump price, British drivers pay more tax on petrol and diesel than any other EU country[1].

A Pay-as-you-drive (PAYD) system of road pricing, in which people pay depending on which roads they use and when they use them, is both a fairer and more efficient way of allocating scarce road space.

Feasibility study on a national and local Pay-as-you-drive (PAYD) road pricing scheme in Scotland

Reform Scotland recommends that the Scottish Government carry out a feasibility study as a first step towards implementing a national and local Pay-as-you-drive (PAYD) road pricing scheme in Scotland. We would favour a scheme which charges motorists a variable rate for road usage depending on when and where they are driving. This would mean that people who live in

[1] 60% on petrol (joint highest with the Netherlands); 58% on diesel (next highest Italy and Sweden, 54%). Source: *Taxation of Road Fuels*, SN824, Antony Seely, Business & Transport Section, House of Commons Library

more rural areas with less access to public transport, or have to travel during unsocial hours, would face lower costs than those using more congested roads at peak times.

Evidence from other countries shows the part that road pricing systems can play in reducing journey times and congestion while improving reliability and having a positive impact on the environment. If a proportion of the revenues from the charging scheme went towards improvements in public transport, then this could be an additional benefit, particularly to those on low incomes who are more dependent on these modes of transport.

We believe that any scheme should be part of a completely new approach to paying for use of our roads. As such, road charges must be a replacement for the existing methods of paying for roads through Fuel Duty and Vehicle Excise Duty and not an additional means of raising revenue.

While the Scottish Government would be ultimately responsible for the scheme and would probably price motorways and national trunk roads, we would advocate local authorities setting local road prices in their area.

We accept that road pricing schemes can have large start-up costs. However technology, and the Galileo satellite system in particular, has developed considerably in the time since the Department of Transport published its feasibility study in 2004, and it is believed that such set-up costs would be considerably lower now than was the estimate then. The Scottish Government would need to investigate how much it would cost to implement such a scheme in Scotland. However, despite the set-up cost, such a change would lead to the introduction of a fairer and more effective way of allocating road space and provide national and local government with a useful means of addressing the problem of congestion on our roads which would mean faster journey times and greater reliability, contributing to economic growth and helping meet the country's climate change objectives.

Making the case for Pay-as-you-drive (PAYD)

Reform Scotland recommends that the Scottish Government should make the case for introducing a system of road pricing in Scotland and swing public support in its favour as a result. Moreover, since this is a practical solution based on fairness, we believe the opposition parties should be willing to help.

This is required because there has, in the past, been significant public opposition to schemes of road pricing. In part, this is because the Edinburgh congestion charge proposal, the most recent attempt to implement such a scheme, was effectively a tax rise because it would not have been accompanied by a commensurate reduction or abolition of any other motoring charge. Opinion polls, such as the one highlighted in this report, tend to illustrate that while

people do not support road pricing, it is more popular than the existing motoring taxation regime. Furthermore, other schemes (such as London's congestion charge) have found favour once they are up and running.

We believe that a policy to introduce Pay-as-you-drive (PAYD) road pricing could gain public support if the policy was properly explained. This explanation would need to highlight the following key points:

- Vehicle Excise Duty and Fuel Duty would be abolished and replaced by a fair system of motoring charging called Pay-as-you-drive (PAYD). This need not have a significant effect on the government's tax take because:
    - Current motoring taxes are aimed, albeit unsuccessfully, at reducing car use so by definition revenue would constantly reduce if they were successful
    - The government would be in charge of the figure at which roads were priced, and accountable to the electorate for it
- PAYD can reduce carbon emissions from road transport and help Scotland meet its climate change obligations because:
    - People will consider using public transport, car-shares or may even cycle or walk (which will also be good for public health)
    - People will consider shopping more locally, which will reduce food miles (and will also benefit the high street and the local economy)
    - Congestion, which is a contributor to increased emissions, will reduce through behaviour change
- PAYD can reduce congestion and journey times, which will:
    - Benefit businesses and the economy due to the quicker movement of people and goods
    - Reduce frustration on our roads and make for more pleasant journeys
- PAYD can be fairer, because:
    - All drivers will pay a fair price for the roads they choose to use, and the times they choose to use them
    - Infrequent drivers will pay less than frequent drivers, in contrast to VED which charges drivers the same amount irrespective of how much they drive
    - Rural and remote drivers (who may have less access to public transport), and those who have to travel at unsocial times, will pay less because they cause less congestion. This is in contrast to the situation under Fuel Duty, which involves rural and remote drivers paying the same level of tax as urban drivers despite urban drivers contributing more in terms of congestion and emissions and yet having greater access to public transport alternatives.

Whilst we recognise that a Pay-as-you-drive policy wouldn't change everyone's driving habits, and some may continue to behave as they do at present, it would be with a greater awareness of the costs of doing so.

PAYD has the potential to be a useful policy tool for government, allowing drivers to be charged fairly for the choices they make, and also to be charged appropriately for their impact on the road network and the wider environment.

Devolve greater tax raising powers to the Scottish Parliament

As we set out in our 2011 report *Devolution Plus*, Reform Scotland believes that greater tax powers should be devolved from Westminster to Holyrood so that the Scottish Government is broadly responsible for raising the money that it spends.

Our proposal would pass most taxes, with the specific exceptions of VAT and National Insurance, to the Scottish Parliament. This would, therefore, include devolving Vehicle Excise Duty and Fuel Duty. Under our Pay-as-you-drive (PAYD) scheme, these would immediately be abolished upon their devolution.

The introduction of road pricing is a good example of how greater fiscal powers could be used to introduce a completely different approach to a particular policy area, since they would be used to implement a new and better way of paying for the use of our roads. While congestion charging schemes could be introduced using the Scottish Parliament's current powers, this would be *in addition* to current UK taxes and would therefore be inappropriate and rightly unpopular. Reform Scotland wants to see a fairer and more effective way of paying for road use introduced, not an additional tax. Therefore, devolving the relevant taxation powers must be a pre-requisite for the introduction of a Pay-as-you-drive (PAYD) road pricing system in Scotland.

1. Introduction

The Scottish Government has a National Indicator aimed at reducing congestion on Scotland's roads and the Climate Change (Scotland) Act 2009 created a statutory framework for greenhouse gas emission reductions by setting an interim target of at least a 42 per cent reduction for 2020, and at least an 80 per cent reduction target for 2050 based on a 1990 baseline.

How we use our cars and how and when we travel on the roads has a major impact on how successful we are at meeting these goals. However, especially in a country as diverse geographically as Scotland, taxing someone simply because they are driving a car is unfair. It doesn't reflect the ability of that individual to choose another mode of transport and takes no account of the congestion they are causing.

Policy makers need to consider what it is they want to achieve through taxation. If it is simply to raise money, then they need to be aware that the amount raised in fuel duty and vehicle excise duty in Scotland has stayed static in recent years and the Office for Budget Responsibility has projected that increases in fuel efficiency in new cars mean that it could fall in the future. Therefore, as a means of raising income, the policy needs to be addressed.

But if the tax is supposed to address behaviour and contribute towards reducing emissions and congestion, then it is failing in this respect as people in more urban areas should be less reliant on their cars since they have the potential to cause more congestion.

Reform Scotland believes that a more effective form of motoring charging needs to be introduced in Scotland to replace fuel duty and vehicle excise duty, primarily aimed at changing behaviour and therefore taking account of where and when people drive.

Road pricing is intended to link drivers' choices with the actual costs they impose on the transport system. Pricing can better match the demands of road users with the available capacity or 'supply' of road space. This can encourage people to use roads more efficiently – by taking alternative modes of transport, consolidating trips, or travelling during less busy times of the day.

Of course, this can only be done in Scotland if the powers over vehicle excise duty and fuel duty are devolved, which Reform Scotland believes they should be under our proposals as set out in 'Devolution Plus'.

2. Current situation

2.1 Taxation

Currently fuel duty and vehicle excise duty are the two main forms of taxation aimed at car use in Scotland. Both taxes are reserved to Westminster and policy remains the same throughout Britain. Tables 2 to 5 below illustrate the amounts raised in these taxes for both Scotland and the UK as a whole. Although VAT is not included, as it is not a specific car tax but a sales tax added to most goods, it is worth remembering that VAT is applied to the cost of fuel including the duty. This means that a 1p increase in fuel duty actually leads to a total tax increase of 1.2p per litre.

Vehicle excise duty varies depending on the engine size, emission and fuel type of the vehicle. CO2 emission details are shown on a car's V5C registration certificate. Current tax levels for cars registered after 1 March 2001 are:

Table 1: 2013 Vehicle excise duty rates for Petrol and diesel cars[2]

Band	CO2 emission (g/km)	12 month rate	6 month rate
A	Up to 100	£0.00	Not available
B	101-110	£20.00	Not available
C	111-120	£30.00	Not available
D	121-130	£105.00	£57.75
E	131-140	£125.00	£68.75
F	141-150	£140.00	£77.00
G	151-165	£175.00	£96.25
H	166-175	£200.00	£110.00
I	176-185	£220.00	£121.00
J	186-200	£260.00	£143.00
K*	201-225	£280.00	£154.00
L	226-255	£475.00	£261.25
M	Over 255	£490.00	£269.50

To give some examples, using these bands, according to Parkers, a Volkswagen Polo 1.2 S would be band D; a Ford Focus 1.6 Zetec would be band E; a Vauxhall Zafira Tourer 2.0 CDTi SRi auto would be band G; and a Land Rover Discovery 4 3.0 SDV6 GS auto would be band L. [3]

The Fuel Duty rate in the UK is currently 57.95p per litre.[4]

[2] https://www.gov.uk/vehicle-tax-rate-tables
[3] http://www.parkers.co.uk/cars/advice/road-tax-guide/2013/april-/road-tax-rates-for-2013/
[4] http://www.hmrc.gov.uk/budget2013/tiin-2522.pdf

Table 2: Fuel & vehicle excise duties raised in Scotland 2003-04 to 2011-12, £million cash terms[5]

	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Fuel Duty	1,866	1,923	1,945	1,964	2,073	2,063	2,196	2,300	2,296
Vehicle Excise Duty	356	365	389	400	433	455	464	467	475
Combined total	2,222	2,288	2,334	2,364	2,506	2,518	2,660	2,767	2,771
Scottish combined total as a percentage of UK combined total	8.09	8.16	8.22	8.23	8.27	8.33	8.34	8.37	8.46
Total revenue inc geographical share of oil	38,543	41,697	47,957	50,338	51,927	55,254	47,573	52,330	56,871
Fuel & vehicle excise duties as a percentage of total revenue raised in Scotland	5.76	5.49	4.87	4.70	4.83	4.56	5.59	5.29	4.87

Table 3: Fuel and vehicle excise duties raised in the UK, 2003-04 to 2011-12, £million, cash terms[6]

	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Fuel Duty	22,786	23,313	23,438	23,585	24,905	24,615	26,197	27,256	26,798
Vehicle Excise Duty	4,689	4,737	4,950	5,139	5,412	5,602	5,692	5,789	5,937
Combined total	27,475	28,050	28,388	28,724	30,317	30,217	31,889	33,045	32,735
Total revenue	422,416	452,622	486,486	519,321	546,968	533,257	512,581	551,387	572,636
Fuel and vehicle excise duties as a percentage of total revenue raised	6.50	6.20	5.84	5.53	5.54	5.67	6.22	5.99	5.72

Table 4: Fuel and vehicle excise duties raised in Scotland, 2003-04 to 2011-12, £million, real terms [7]

	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Fuel Duty	2,261	2,263	2,238	2,200	2,266	2,195	2,302	2,347	2,296
Vehicle Excise Duty	431	430	448	448	473	484	486	477	475
Total	2,692	2,693	2,685	2,649	2,739	2,679	2,789	2,824	2,771

Table 5: Fuel and vehicle excise duties raised in the UK, 2003-04 to 2011-12, £million, real terms [8]

	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Fuel Duty	27,606	27,435	26,965	26,425	27,225	26,193	27,463	27,818	26,798
Vehicle Excise Duty	5,681	5,575	5,695	5,758	5,916	5,961	5,967	5,908	5,937
Total	33,287	33,009	32,660	32,182	33,141	32,154	33,430	33,727	32,735

The tables illustrate that the amount raised in car taxes in Scotland has remained fairly static in Scotland since 2002/3 while the proportion of revenue raised in Scotland by car taxes has been in a slight decline, a situation which is fairly similar across the UK as a whole.

Despite these static figures, the total number of cars and the overall total number of vehicles in both Scotland and across the UK as a whole has increased, as illustrated in Table 6.

[5] Scottish Figures from 2003-04 to 2006-7 are taken from Government Expenditure and Revenue in Scotland 2007-08; Scottish Figures from 2007-08 to 2011-12 are taken from Government Expenditure and Revenue in Scotland 2011-12.
[6] UK Figures from 2003-04 to 2006-7 are taken from Government Expenditure and Revenue in Scotland 2007-08; UK Figures from 2007-08 to 2011-12 are taken from Government Expenditure and Revenue in Scotland 2011-12.
[7] Real terms figures using GDP deflators from HM Treasury: http://www.hm-treasury.gov.uk/data_gdp_fig.htm
[8] Real terms figures using GDP deflators from HM Treasury: http://www.hm-treasury.gov.uk/data_gdp_fig.htm

Table 6: Cars and total vehicles licensed in Scotland and UK

	Total cars 2003	Total cars 2011	Increase	Total vehicles 2003	Total vehicles 2011	Increase
Scotland[9]	2.03million	2.26million	11.5%	2.38million	2.69million	12.9%
UK[10]	26.24million	28.46million	8.5%	31.21million	34.23million	9.7%

There has, however, been only a slight rise in the estimated volume of traffic on Scotland's roads. In 2003, there were 42.04million vehicle kilometres driven on Scotland's roads, increasing by only 3 per cent to 43.39million in 2011.[11] However, it is worth pointing out that the volume of traffic on Scotland's motorways increased by 12 per cent while the volume on all minor roads only increased by 3 per cent.

The Office for Budget Responsibility's 2011 Fiscal Sustainability Report included a section looking at the projected revenue for fuel and vehicle excise duties[12].

It reported that the projected demand for fuel would decline by up to 20 per cent, with the fall most evident between 2020 and 2030 when improvements in fuel efficiency are expected to more than offset modest increases in mileage. As a result, it suggests that fuel duty will fall as a share of UK GDP from 1.8 per cent in 2010 to 1 per cent in 2030.

On the basis of current emissions bands for vehicle excise duty, as old cars are replaced with more efficient ones, the OBR projected that by 2030, with an average new car efficiency of 50 gCO2/km, around 85 per cent of new cars would be exempt from the duty. However, with an average life of a car around 14 years, only 40 per cent of the overall car stock would be exempt.

Although the projections produced by the OBR refer to the UK as a whole, the figures set out in tables 1 to 4 indicate that trends with regard to these two taxes are similar in Scotland. Against this backdrop, it would make sense to assume that revenue raised from these two taxes will decline in Scotland.

[9] Transport Scotland, Scottish Transport Statistics, January 2013
[10] Department for Transport, Vehicle Licensing Statistics, July 2013
[11] Transport Scotland, Scottish Transport Statistics, January 2013
[12] OBR, Fiscal Sustainability Report, 2011

2.2 Cost of fuel

The following charts from the RAC Foundation illustrate the breakdown of the cost of petrol and diesel.[13]

Chart 1: Breakdown of 136p per litre of petrol

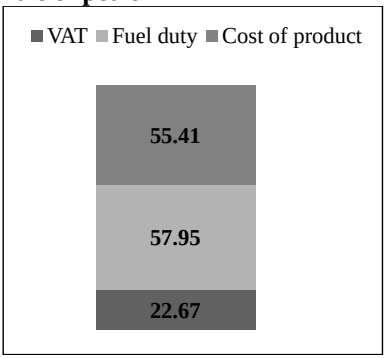
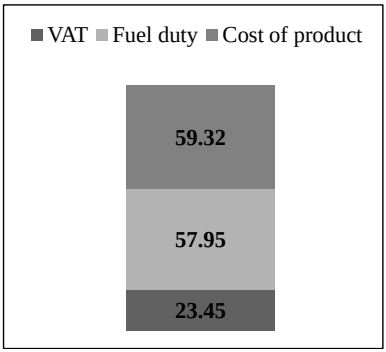


Chart 2: Breakdown of 140.7p per litre of diesel



The following information is sourced from www.petrolprices.com and details petrol prices across Scotland, giving information for both supermarket and non-supermarket forecourts.

Table 7: Sample petrol prices across Scotland

Area	Supermarket forecourt	Petrol price per litre	Stated date	Non-supermarket forecourt	Petrol price per litre	Stated date
Aberdeen	Sainsbury's Garthdee Road	130.9	30/7/13	Esso Pittodrie Express	132.9	26/7/13
Dundee	Tesco Extra Kingsway	133.9	30/7/13	Jet Forfar Road Service Station	134.9	26/7/13
Glasgow	Asda Govan	134.7	30/7/13	Springburn Service Station	134.9	30/7/13
Perth	Asda Perth	134.7	30/7/13	South Inch Filling Station	135.9	30/7/13
Kirkcaldy	Asda	134.7	30/7/13	Esso Mrh Wemyssfield	135.9	29/7/13
Paisley	Morrisons Paisley	134.9	30/7/13	Esso Rockfield Express	134.9	29/7/13
Edinburgh	Morrisons Ferry Road	134.9	30/7/13	Shell Stenhouse	135.9	29/7/13
Peterhead	Morrisons Peterhead	134.9	307/13	Peterhead Motors	138.9	30/7/13
Elgin	Asda	135.7	30/7/13	Esso Matrix Pinefield	136.9	30/7/13
Inverness	Tesco Ness-side	135.9	30/7/13	Esso Matrix Kessok	135.9	30/7/13
Stirling	Sainsbury's Stirling	135.9	30/7/13	Jet Morrisons Garage	136.9	30/7/13
Kelso	Sainsbury's Kelso	136.9	30/7/13	Maxwell Motors	137.9	29/7/13
Dumfries	Tesco Extra	137.9	30/7/13	Jet Border Cars	135.9	30/7/13

[13] http://www.racfoundation.org/uk-fuel-market-review/overview

Area	Supermarket forecourt	Petrol price per litre	Stated date	Non-supermarket forecourt	Petrol price per litre	Stated date
Fort William	Morrisons Fort William	137.9	30/7/13	Esso Mrh Ben	138.9	29/7/13
Oban	Tesco Oban	137.9	26/7/2013	Esso Halfway Filling Station	139.9	29/7/13
Stranraer	Morrisons Stranraer	137.9	30/7/13	Portrodie Filling Station	139.9	29/7/13
St Andrews	Morrisons St Andrews	137.9	30/7/13	-	-	-
Selkirk	-	-	-	Hillside Service Station	137.9	29/7/13
Forfar	-	-	-	Shell Forfar	138.9	29/7/13
Stornoway	-	-	-	Sandwick Road Filling Station	141.9	28/7/13
Lerwick	-	-	-	Sutherlands Filling Station	144.9	30/7/13
Ullapool	-	-	-	Lochbroom Filling Station	145.9	28/7/13

The information illustrates that there was roughly a 15p difference in the cost of a litre of petrol between the cheapest area and most expensive. To fill up a 70 litre tank (such as a Ford Mondeo) that is a difference of more than £10.

It is worth highlighting that, with the exception of Dumfries, the information supplied by petrolprices.com tended to point to supermarkets providing the cheapest fuel. Indeed, some will have paid less than the prices above by making use of some of the fuel promotions many supermarkets operate. The competition offered by the supermarkets will help keep prices low for some consumers. However, it is telling that in the areas where there tend not to be supermarket forecourts, prices are higher. Of course, supermarkets have the resources to use petrol as a loss leader, which smaller filling stations are unable to offer.

Island fuel rebate scheme

Although the sample petrol prices illustrated in Table 7 indicated that the island communities were among the highest petrol prices, it should be noted that they would be even higher still were it not for the UK Government's Island fuel rebate scheme.

Introduced in March 2012, this scheme gives motorists in the Inner & Outer Hebrides, Northern Isles, islands in the Clyde and the Isles of Scilly a discount of 5pe per litre of fuel.

EU clearance was needed for the scheme and fuel retailers on the islands receive a 5p a litre rebate on the petrol and diesel they purchase and are required to pass on the full saving to the customer.[14]

[14] HM Treasury, "Remote islands to get cheaper fuel from March 2012", 25 November 2011

It was reported in the press on 1 August 2013 that nine Scottish mainland areas are among the 35 UK districts where data is being sought from 1,500 retailers to consider extending the scheme. The mainland areas are Aberdeenshire, Angus, Argyll and Bute, Dumfries and Galloway, Highland, Moray, Perth and Kinross, the Borders, and South Ayrshire[15].

While the potential for extending the scheme to more areas will be welcome, it is worth stressing that this scheme is little more than a sticking plaster. Despite the discount, island areas still face some of the highest fuel prices, and as a result people there contribute more in tax than people in more urban areas. What is needed is an examination of fuel tax in general and a consideration of what it is trying to achieve.

2.3 Congestion and emissions

The Scottish Government has established a National Indicator to reduce the proportion of driver journeys delayed due to traffic congestion. According to the Scottish Government, the proportion of driver journeys delayed due to congestion increased from 10.8% in 2003 to a peak of 14.3% in 2007, with the 2011 figure at 11.2%.[16]

It is worth highlighting that the Scottish Government point out that the experience of congestion during car travel is strongly related to the time and purpose of travel, and is also linked to how built up the area is, with those living in 'remote rural' and 'small remote towns' being less likely to experience congestion than those in other areas.[17]

There is also a National Indicator aimed at increasing the proportion of journeys to work made by public or active transport. The 2011 figure of 30.8% is a decrease of 0.4% from the baseline in 2006 of 31.2%[18]

Although Scottish greenhouse gas emissions are falling, road transport remains by far the biggest source of transport emissions, accounting for around 70% in 2009, with emissions from cars contributing 60% of Scottish road transport emissions.[19]

Indeed, while all other sectors saw a reduction in emissions between 1990 and 2008, the transport sector, which, does not include international aviation and shipping, was 7% higher.[20]

[15] Herald, "Rural motorists in line for cheaper fuel as ministers seek to extend rebate scheme", 1 August 2013
[16] http://www.scotland.gov.uk/About/Performance/scotPerforms/indicator/congestion
[17] http://www.scotland.gov.uk/About/Performance/scotPerforms/indicator/congestion
[18] http://www.scotland.gov.uk/About/Performance/scotPerforms/indicator/transport
[19] http://www.scotland.gov.uk/About/Performance/scotPerforms/purposes/sustainability
[20] http://www.scotland.gov.uk/Publications/2010/09/06092729/2

2.4 Expenditure

Figures provided in the Public Expenditure Statistical Analyses[21] demonstrate the increase in transport expenditure in Scotland, though spending has started to decrease in more recent years.

Table 7: Expenditure on transport in Scotland, £m cash terms[22]

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Transport	1,654	1,612	1,828	2,707	2,838	2,727	2,923	2,727	2,722
of which: national roads	354	341	390	481	457	506	614	567	465
of which: local roads	458	486	598	651	626	654	684	690	710
of which: local public transport	79	71	71	238	247	266	275	258	268
of which: railway	511	443	455	1,072	1,155	915	937	875	902
of which: other transport	252	272	313	266	353	385	412	337	377

Table 8: Expenditure on transport in Scotland, £m real terms[23]

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12
Transport	1,365	1,370	1,589	2,416	2,596	2,563	2,788	2,672	2,722
of which: national roads	292	290	339	429	418	476	586	556	465
of which: local roads	378	413	520	581	573	615	652	676	710
of which: local public transport	65	60	62	212	226	250	262	253	268
of which: railway	422	376	395	957	1,057	860	894	857	902
of which: other transport	208	231	272	237	323	362	393	330	377

2.5 Who uses the road?

It is also important to examine who is using the road whilst considering any future policy for motoring charges – is it, for example, people who have no public transport alternative or wealthier individuals?

Transport Scotland's publication Transport and Travel in Scotland 2012, published in August 2013 highlighted a range of useful figures in this area which are illustrated in Tables 9 to 13

[21] PESA 2013 for figures 2007/8 to 2011/12 and PESA 2009 for figures 2003/4 to 2006/7. PESA was used over GERS as GERS does not break down transport spending.
[22] PESA 2013 for figures 2007/8 to 2011/12 and PESA 2009 for figures 2003/4 to 2006/7. PESA was used over GERS as GERS does not break down transport spending.
[23] PESA 2013 for figures 2007/8 to 2011/12 and PESA 2009 for figures 2003/4 to 2006/7. PESA was used over GERS as GERS does not break down transport spending. GDP deflators from HM Treasury: http://www.hm-treasury.gov.uk/data_gdp_fig.htm

Table 9: Employed adults* not working from home - usual method of travel to work, 2012

	How random adult usually travels to work/education (%)							*Sample size (=100%)*
	Walking	**Driver**	**Passenger**	**Bicycle**	**Bus**	**Rail**	**Other**	
All people aged 16+ in 2011:	13.6	61.4	6	2	10.1	4.3	2.6	*4,103*
by annual net household income:								
up to £10,000 p.a.	27.7	38.3	4.7	1.7	21.7	3.7	2.1	*169*
over £10,000 - £15,000	23	46.2	7.8	2	16.1	2.4	2.6	*449*
over £15,000 - £20,000	16.4	48.6	10.3	1.1	16.9	4.5	2.2	*532*
over £20,000 - £25,000	17.6	55.1	7.6	2.5	12.1	3.7	1.3	*603*
over £25,000 - £30,000	16.8	58.7	5.2	1.6	11.3	3.3	3.1	*510*
over £30,000 - £40,000	11.4	67.2	5.6	2	8.8	3.3	1.7	*800*
over £40,000 p.a.	6.2	73.3	3.9	2.4	4	6.4	3.8	*1,018*
by Scottish Index of Multiple Deprivation:								
1 (20% most deprived)	15.9	49.4	9.1	1.6	16.7	5.3	1.9	*654*
2	15.9	56.8	7	1.7	12.8	4.2	1.6	*848*
3	15.8	59.3	6.4	1.4	10.1	3.1	4	*870*
4	9.6	72.2	4.6	1.8	5.5	3.2	3.1	*983*
5 (20% least deprived)	11.6	66.2	3.5	3.6	6.8	6.1	2.3	*748*
by urban/rural classification:								
Large urban areas	16.9	51.2	5.4	2.8	15.9	5.8	2	*1,344*
Other urban	11.7	65.6	8	1.3	7	4.5	1.9	*1,248*
Small accessible towns	8.9	72.9	5.4	1.1	5.2	2.1	4.4	*374*
Small remote towns	27.5	51.5	4.3	3.2	6.8	2.5	4.1	*254*
Accessible rural	6.5	75.2	4.2	2.1	6	2.7	3.4	*445*
Remote rural	16	67.6	5.1	1.5	3.9	1.3	4.6	*438*

*Those in full-time employment, part-time employment and self-employed only.

Table 10: Employed adults* method of travel to work and whether they could use public transport, 2011 (This was not updated 2013 publication)[24]

	Usual method of travel to work				Car/van commuters†		
	Car/van	**Bus**	**Other**	*Sample size (=100%)*	**Could use PT**	**Could not use PT**	*Sample size (=100%)*
All people aged 16+ in 2011:	67	12	21	5,508	50	50	3,443
by annual net household income:							
up to £10,000 p.a.	49	25	26	291	47	53	142
over £10,000 - £15,000	51	21	28	670	56	44	317
over £15,000 - £20,000	59	17	24	836	44	56	480
over £20,000 - £25,000	66	13	21	863	51	49	538
over £25,000 - £30,000	66	10	23	656	51	49	425
over £30,000 - £40,000	73	9	19	1,042	46	54	725
over £40,000 p.a.	77	5	18	1,099	54	46	786
by Scottish Index of Multiple Deprivation:							
1 (20% most deprived)	56	20	24	851	58	42	438
2	63	16	22	1,154	51	49	680
3	70	9	21	1,208	43	57	791
4	70	10	20	1,243	45	55	835
5 (20% least deprived)	72	7	21	1,047	56	44	695
by urban/rural classification:							
Large urban areas	55	19	26	1,929	59	41	952
Other urban	74	9	17	1,712	54	46	1,153
Small accessible towns	75	6	19	454	45	55	312
Small remote towns	63	8	29	321	37	63	193
Accessible rural	80	6	14	618	36	64	476
Remote rural	76	4	21	473	24	76	356

*Those in full-time employment, part-time employment and self-employed only.
†Excludes respondents who don't know if it's possible to travel by public transport.

[24] Table 13: http://www.transportscotland.gov.uk/strategy-and-research/publications-and-consultations/j281378-00.htm

Table 11: Households public transport availability, 2011 (This was not updated 2013 publication)[25]

	Up to 6 mins walk to nearest bus stop	5+ buses per hour (but may have a long walk)	Bus stop within 6min and 5+ buses per hour	*Sample size (=100%)*
All households in 2011:	84	23	22	*14,358*
by annual net household income:				
up to £10,000 p.a.	86	27	25	*2,425*
over £10,000 - £15,000	86	25	23	*2,752*
over £15,000 - £20,000	86	26	24	*2,195*
over £20,000 - £25,000	84	22	20	*1,733*
over £25,000 - £30,000	83	22	20	*1,224*
over £30,000 - £40,000	83	21	19	*1,764*
over £40,000 p.a.	79	15	14	*1,744*
by Scottish Index of Multiple Deprivation:				
1 (20% most deprived)	93	35	32	*2,698*
2	89	27	25	*3,072*
3	82	18	17	*3,093*
4	74	16	14	*2,937*
5 (20% least deprived)	83	21	18	*2,545*
by urban/rural classification:				
Large urban areas	89	43	39	*5,166*
Other urban	90	18	17	*4,318*
Small accessible towns	84	3	3	*1,231*
Small remote towns	87	1	1	*775*
Accessible rural	65	2	2	*1,550*
Remote rural	58	1	1	*1,316*

Table 12: School children in full-time education, usual method of travel, 2012

	How does the random schoolchild usually travel to school?							*Sample size (=100%)*
	Walking	**Passenger Car/Van**	**Bicycle**	**School bus***	**Service bus**	**Rail (inc. U/g)**	**Other**	
All children	51.4	24.1	0.8	14.9	6.2	0.4	2.2	*1,923*
by annual net household income:								
Up to £15,000	60.1	16.1	0.2	11.2	10.6	0	1.8	*214*
over £15,000 - £20,000	53.7	18.5	1.3	12.1	9.2	0.7	4.6	*253*
over £20,000 - £25,000	59.1	19.6	0.5	11.2	7	0.2	2.4	*263*
over £25,000 - £30,000	49.7	27	1.5	14.5	3.5	0.3	3.5	*248*
over £30,000 - £40,000	47.7	26	0.2	19.5	5	0	1.6	*401*
over £40,000 p.a.	46.3	29.8	1.1	16.2	4.6	0.8	1.1	*517*
by Scottish Index of Multiple Deprivation:								
1 (20% most deprived)	56.9	16.6	0.6	11.5	10.4	0	4	*379*
2	54.3	24.8	0.7	11.7	5.8	0.3	2.4	*364*
3	47.9	20.9	0.5	20.4	7.7	0.4	2.3	*381*
4	44.1	28	0.8	21.8	3.4	0.2	1.7	*426*
5 (20% least deprived)	53.9	29.7	1.5	9.1	4	1.2	0.6	*373*
by urban/rural classification:								
Large urban areas	54.6	25.2	0.3	6	10.5	1	2.4	*598*
Other urban	59.5	25.5	1.3	8.4	3.6	0.2	1.6	*602*
Small accessible towns	56.4	20	1	18.7	2.4	0	1.4	*284*
Small remote towns	30	24.7	0.7	36.9	4.4	0	3.4	*229*
Accessible rural	27.9	19.2	1.5	40.1	7.9	0	3.3	*210*
Remote rural	54.6	25.2	0.3	6	10.5	1	2.4	*598*

*Includes school bus, private bus and works bus.

[25] Table 13: http://www.transportscotland.gov.uk/strategy-and-research/publications-and-consultations/j281378-00.htm

Table 13: People aged 17+, frequency of driving, 2012*

	Every day	At least 3 times per week	1 - 2 times per week	At least 2 - 3 times per month	At least once a month	Less than once a month	Has licence but never drives	Does not+ have a full driving licence	*Sample size (100%)*
All people aged 17+ in 2012:	42	13	6	1	0	2	4	32	*9,828*
by current situation:									
Self employed	65	18	8	1	0	1	1	5	*582*
Employed full time	62	12	5	1	0	1	3	16	*3,135*
Employed part time	46	14	3	0	0	1	3	32	*1,014*
Looking after the home or family	31	12	5	1	0	2	4	45	*476*
Permanently retired from work	26	18	9	1	0	2	5	40	*3,201*
Unemployed and seeking work	15	6	4	1	0	3	9	61	*485*
In further/higher education	18	9	6	1	1	4	11	50	*308*
Permanently sick or disabled	12	7	4	1	0	2	11	62	*506*
by annual net household income:									
up to £10,000 p.a.	18	9	6	1	0	3	9	55	*1,385*
over £10,000 - £15,000	24	12	5	1	0	2	6	50	*1,869*
over £15,000 - £20,000	33	12	6	1	1	2	6	41	*1,528*
over £20,000 - £25,000	44	14	6	1	0	1	4	30	*1,254*
over £25,000 - £30,000	48	15	7	1	0	1	3	25	*897*
over £30,000 - £40,000	58	15	6	1	0	1	2	16	*1,171*
over £40,000 p.a.	67	15	6	1	0	1	1	10	*1,364*
by Scottish Index of Multiple Deprivation:									
1 (20% most deprived)	28	7	3	0	0	2	7	53	*1,874*
2	36	12	6	1	0	2	5	39	*2,063*
3	43	14	7	1	0	2	4	30	*2,135*
4	53	16	6	1	0	1	3	20	*2,102*
5 (20% least deprived)	51	17	8	1	0	2	4	16	*1,654*
by urban/rural classification:									
Large urban areas	34	12	6	1	0	2	6	38	*3,256*
Other urban	45	12	4	1	0	1	4	33	*2,961*
Small accessible towns	46	16	6	2	0	2	3	25	*889*
Small remote towns	40	13	8	1	1	1	4	33	*584*
Accessible rural	57	15	7	1	0	1	2	17	*1,046*
Remote rural	49	16	9	1	0	1	3	21	*1,092*

*The frequency of driving is shown only for those who hold a full driving licence

The figures above show that employed adults not working from home were less likely to drive and more likely to take the bus the lower their annual household income and the more deprived the area they lived in. Interestingly, there was little variation in the use of the car to get to work depending on the rural/urban classification, though the proportion of people who said they could not access public transport for commuting increased the more rural the local area they lived in.

Similarly, with regard to children travelling to school, the poorer the household or the more deprived the area, the less likely that the child would travel to school by car and more likely to walk. Again, there was no real pattern by urban/rural classification with regard to car usage, though the more rural the area, the greater the reliance on school buses.

These figures tend to back up the view that wealthier people living in more urban areas are choosing to use the car over alternatives. Any policy that replaces the existing car and fuel taxes should not penalise those who have little access to public transport alternatives or those on low incomes.

3. Road pricing

3.1 What is it?

Road pricing as a term refers to any form of direct charging for using roads and generally schemes fall into three main types:

- charging for crossing a boundary around an urban area
- charging for driving within an urban area
- charging for the use of a linear section of infrastructure, usually a tunnel, bridge, or section of motorway

These schemes tend to use one or more of the following methods of charging:

- toll booths - cash or smartcard
- self declaration - road users use telephone, internet, retail outlets and other mechanisms to volunteer payment to the charging authority
- microwave tags - an electronic device in the windscreen which communicates with roadside equipment to register that a vehicle has passed a certain point and that charge is payable via a separate account or credit card
- automatic number plate recognition - cameras take digital photographs of vehicle number plates, which are then read by the system to identify the person liable for the charge

The most effective type of road pricing scheme is one which has takes into account where and when an individual is driving, so that congested urban roads at peak times are charged at a different rate to quiet rural roads.

Directly and indirectly, road pricing can lead to the relief of congestion; shorter and more reliable journey times; reduced air pollution; improvements in alternative transport services and the speeding up of programmes to expand transport network capacity.

Road pricing is not aimed at driving people off the roads, but to encourage them to consider driving at a different time of day, or on different routes, or not driving at all on some occasions. It can also help encourage more people to consider using different modes of transport, including public transport, which become more competitive as the cost of motoring would be a better reflection of its true cost. This means that individuals can better weigh up the costs of choosing between different modes of transport for each journey.

3.2 Implementing road pricing

In 2004, the UK Department for Transport published a feasibility study into whether and how road pricing might work across the UK as a whole. The report

focused on implementing a road pricing scheme which took time, place and distance travelled into account, whereby "*When we travelled on uncongested roads we would generally pay less, but on congested roads we would generally pay more. Paying the family road bill would probably be like paying the phone bill.*"[26]

Although this study envisaged a system covering the whole of the UK, it is useful in helping explain how a system could operate and give an indication of the costs of implementation. It is also worth noting that the report, published nearly ten years ago stated "*On the basis of expert advice, we estimate that the equipment necessary to deliver a full position-based charging scheme using satellite technology will not be available in a mass market, low cost form, until at least 2014. The launch of the Galileo satellite network, which is intended to go into commercial operation from 2008, will be a major step towards this particular solution, providing greater coverage and accuracy, even in the most challenging locations.*"[27]

This prediction ties up with the progress made on the development of the Galileo satellite network, and suggests that the necessary technology for a road pricing scheme which takes time, distance and place into account is nearing completion, as explained below.

Galileo is Europe's own global navigation satellite system and is inter-operable with GPS and Glonass, the US and Russian global satellite navigation systems.

By offering dual frequencies as standard, Galileo is supposed to be able to deliver real-time positioning accuracy down to the metre range. The system has four operational satellites launched so far - the basic minimum for satellite navigation in principle. By mid-decade the aim is for 18 Galileo satellites to be in orbit which will provide initial services to users. The complete 30-strong constellation enabling the full range of Galileo services is scheduled for the decade's end. [28]

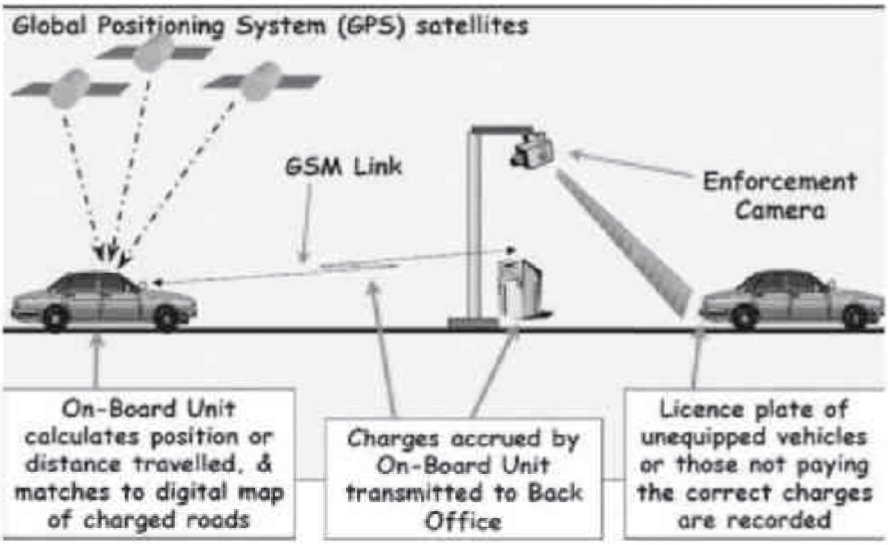
John Walker's report, "The acceptability of road pricing", for the RAC Foundation, explains in greater detail how a satellite system of road pricing would work[29]:

"A GPS receiver in the vehicle, combined with a digital map of the road network, enables the vehicle to calculate which road it is on – exactly like a satnav. If a charge apples to that road at that time of day, it can be calculated either in the vehicle or sent via a mobile radio link to the back office, which

[26] Department for Transport, "Feasibility study of road pricing in the UK - Full report", 2004
[27] Department for Transport, "Feasibility study of road pricing in the UK - Full report", 2004
[28] http://www.esa.int/Our_Activities/Navigation/The_future_-_Galileo/What_is_Galileo
[29] Walker. J, "The acceptability of road pricing", RAC Foundation, 2011

calculates the charge – the so-called 'Thick Client' (also known as 'Intelligent Client') or 'Thin Client' approaches respectively. There are pros and cons to each approach. The Thick Client needs a more powerful OBU containing a digital map, which needs to be kept up to date, as does the road tariff data; but privacy of the vehicle's location is easier to maintain. The Thin Client is a much simpler, cheaper unit, and only the digital road map and tariff data in the back office need to be updated; but maintaining privacy is a bit more complicated – though, as the Trusted Driver project demonstrates, it can be done.

"Although GPS technology on its own may not be able to accurately identify which of two adjacent roads a vehicle is on at any one instant, the use of 'map-matching' (i.e. comparing a series of locations with the digital map) significantly improves the accuracy. The availability of other GNSS such as the Russian Glonass, the European Galileo and the Chinese Beidou, as well as upgrades to GPS, will further increase the reliability and accuracy of this charging technology. Augmentation technologies such as heading sensors can also improve positioning accuracy, although they may increase the complexity and cost of the OBU."



Source: Walker. J, "The acceptability of road pricing", RAC Foundation, 2011

As Walker highlights, there are privacy issues regarding the personal information such a scheme would generate. However, data protection laws would prevent information being passed on.

The Department of Transport's study identified that a scheme which relates to time, place and distance captures the amount of driving taking place, in addition to where and when, and it had the following key advantages:

- road users can make choices influenced and informed by pricing signals throughout their journeys, rather than just once or twice each day
- short journeys are recognised as such, as are long journeys. Hence, charging relates much more closely to the use made of the network and the real contribution that a vehicle makes to congestion and other environmental effects, and, as a result
- much better use is made of road capacity.

A road pricing system needs to incorporate charging technology and an enforcement mechanism; and it needs systems to process charges and payments and handle enquiries, and, as the feasibility study states "*There is no doubt that it costs a considerable amount of money to introduce any type of road charging scheme*."

The study suggested that a UK-wide road pricing scheme could cost up to £62 billion to set up with an annual running costs of up to £5.5billion. The report noted that the major contributing cost would be providing and fitting the in-car monitoring units, and the cost of procuring the back-office structures necessary to operate a scheme including call centres, data processing centres and billing centres.

However, it also added that "*it is not possible to predict with any certainty what a national, distance-based, charging scheme using satellite technology would cost in the middle of the next decade. This sort of system has never been tried before and, without detailed design and testing, it is not possible to specify accurately what would be required. Moreover, the technology is still developing and, by the time this sort of scheme could be introduced, it would probably fall markedly in price*"

Another important issue raised by the feasibility study was the need to incorporate localised causes, and this would therefore require local authorities to have a role in helping set the different prices.

The Walker report suggests that costs would now be lower than in previous government estimates, due to "falling technology costs, and to GPS-based navigation and fleet management equipment already in vehicles which might be suitable for generating charge data". The Walker report suggests that a closer look at costs, preferably combined with a pilot scheme to confirm cost figures, would be a good idea.[30]

[30] Walker. J, "The acceptability of road pricing", RAC Foundation, 2011

Public opinion

Recent experiments with road pricing both at a UK level (in 2007 1.8 million people signed an e-petition against the introduction of road pricing) and at a local level (in 2005 74% of Edinburgh residents voted against a city congestion charge) have suggested a lack of public support.[31] However, before schemes in London and Stockholm were introduced, public opinion in those areas was also against the schemes, with only 40% of Londoners and 36% of people in Stockholm in favour of their proposed schemes. Since their introduction, public support has risen to 59% in London and 74% in Stockholm.[32]

A 2013 survey carried out by the RAC[33] in April 2013 for its Report on Motoring, asked a range of questions about motoring and its associated taxes across the UK. The results were broken down by region and although there was only a small group from Scotland, the results outlined, for both the UK as a whole and Scotland, are interesting.

Table 14 – I would support the introduction of more toll roads (Pay-as-you-drive) as an alternative to the current level of motoring tax

	UK number	UK percentage	Scotland number	Scotland percentage
Total	1,542	100	139	100
Disagree	647	42	63	46
Agree	473	31	37	27
Neither/Nor	422	27	39	28

Table 15- I would be willing to pay per mile I drive if it replaced some existing motoring taxes

	UK number	UK percentage	Scotland number	Scotland percentage
Total	1,542	100	139	100
Disagree	551	36	56	41
Agree	512	33	49	35
Neither/Nor	479	31	34	24

Table 16 – Road charges (a tax where you pay per mile you drive) should be higher for roads and times with the greatest congestion

	UK number	UK percentage	Scotland number	Scotland percentage
Total	1,542	100	139	100
Disagree	479	31	46	33
Agree	635	41	54	39
Neither/Nor	428	28	38	28

[31] Johnson. P, Leicester. A & Stoye G, "Fuel for Thought: The what, why and how of motoring taxation", Institute for Fiscal Studies, May 2012

[32] Johnson. P, Leicester. A & Stoye G, "Fuel for Thought: The what, why and how of motoring taxation", Institute for Fiscal Studies, May 2012

[33] JN7394 RAC Report on Motoring 2013

Table 17 – I am happy with the current balance of different motoring taxes

	UK number	UK percentage	Scotland number	Scotland percentage
Total	1,542	100	139	100
Disagree	757	49	67	48
Agree	224	15	23	16
Neither/Nor	465	30	39	28

Table 18 – Thinking about the different ways motoring tax could be raised how would you like to see the balance changed?

	UK number	UK percentage	Scotland number	Scotland percentage
Total	1,542	100	139	100
Tax on buying a new car				
Less	572	37	62	44
Same	766	50	61	44
More	204	13	16	12
Annual vehicle excise duty				
Less	748	49	68	49
Same	715	46	56	40
More	79	5	15	11
Fuel tax				
Less	1,183	77	115	83
Same	264	17	16	12
More	95	6	8	6

What the figures show is that although there is not a high level of support for road pricing, there is greater unhappiness with the level of existing road and fuel taxes. Therefore, there is potential to win over public opinion if a road pricing scheme was used to replace the existing fuel and vehicle excise duties and it could be demonstrated to the public that road pricing would help reduce congestion and emissions, while at the same time being fairer to those who live in more rural areas, or need to commute during more unsociable hours.

3.3 Examples from overseas

Singapore

Singapore introduced the first urban road pricing scheme in June 1975 as a means of controlling levels of traffic within the city. In common with most international examples of road pricing, it was a cordon tolling scheme in which a fee is charged to enter or drive within a particular area, normally the centre of a city. The system in place in Singapore charges for all journeys within the cordon rather than just when the cordon is crossed.

Initially, the Singapore scheme required drivers to purchase a licence to drive within the cordon area during the morning which was the peak period. Over time, the charges were increased and extended to include the afternoon period with exemptions for certain vehicles such as motorcycles, trucks and taxis removed. Roads outside the cordon were also brought into the scheme to mitigate the adverse effects on such roads. From 1995 onwards, Singapore

moved to an electronic system of road pricing based on units within vehicles and payment by smart cards. This required the introduction of cameras and equipment to read licence plates

The system has evolved to one which seeks to control congestion through a desired travel speed on the designated roads. Charges are flexible depending on type of vehicle, day, time and place with the fees varied every three months depending on whether travel speeds are higher or lower than the desired level. Road pricing is an important part of Singapore's transportation strategy, which aims to reduce the use of motor vehicles, and proceeds from the scheme have been used to develop transit systems including a Mass Rapid Transit heavy rail system opened in 1988 and a light rail network set up in 1999.

The effects of the road pricing system in Singapore were felt immediately with a reduction of 73 per cent in the number of private cars crossing the cordon, an increase of 30 per cent in car pooling and the use of buses doubling. Despite increases in income and ownership of cars, the system has meant that congestion is still lower than it was before the scheme was introduced.

Germany- The Lastkraftwagen-Maut

Lastkraftwagen-Maut (LKW Maut) was implemented in Germany on January 1st 2005 as a system of road pricing, initially covering 12,000km of the German autobahn. This was later extended to secondary roadways and major trunks roads in 2007, as a means of preventing alleged toll avoidance by some truck drivers.[34] The scheme is exclusive to vehicles weighing over 12 tons, with the majority of these being heavy goods vehicles (HGVs). The LKW Maut affects over 1.5million truck drivers from Germany and Europe.[35]

The system works by attaching an On-Board Unit (OBU) to the vehicle, which can be installed via a limited number of approved suppliers, thereby guaranteeing quality. The OBU is provided free of charge by Toll Collect (the company that enforces and collects charges) and remains its property, though users must pay for its installation.[36] Once activated, OBU calculates the cost of the journey automatically. A vehicle's weight, number of axles, and the extent to which the vehicle environment is harmed (via emissions) are all taken into account when calculating the charge.

Vehicles are banded into groups according to the amount of emission they produce, with the toll being up to 45% more expensive for the most polluting vehicles. As a result, the share of cleaner, less polluting vehicles has risen, with

[34] http://www.roadtraffic-technology.com/projects/lkw-maut/
[35] http://www.roadtraffic-technology.com/projects/lkw-maut/
[36] http://www.road-tolls.co.uk/FAQs_Toll_Collect.php

cumulated mileage of trucks from the worst three polluting bands compared to total mileage being down from 48% in 2005 to 8% in November 2008.[37] [38]

Resultant fees can be paid through a variety of methods. There are no toll booths, and therefore disruption to traffic flow as a result of Maut is low. Charges apply to both German and foreign-registered vehicles, with all revenue raised from tolls reinvested in the road network. Violation rates of the LKW Maut are low, at under 2%, with first time offenders receiving a fine between €100-400, while the maximum fine of €20,000 is reserved for repeat offenders.[39] Toll Collect uses 300 vehicles nationwide to enforce toll collection.

Net revenue is passed on to the federal government rather than the individual states from which it is raised. Annual gross revenue from the Maut was €4.5 billion in 2010, a significant rise from €3.4 billion in 2007.[40] [41] Money raised from the Maut has been used primarily for the maintenance of existing infrastructure, rather than new motorway infrastructure - something industry representatives have been critical of.[42] Reinvestment into the system is believed to have been in the region of €700m, a result of the significant administrative costs of Toll Collect.[43]

The Maut was not introduced alongside a reduction in other taxes and charges on hauliers, with hauliers having to the pay the toll in addition to existing fuel duties and various vehicle taxes. This has affected the ability of German hauliers to compete with hauliers in neighbouring countries, where taxes and fuel prices may be considerably lower.[44] The German freight market continues to be dominated by road haulage however, and while there has been an increase in rail freight of around 7%, it is difficult to determine causality.[45]

Stockholm Congestion Charge

The Stockholm congestion charge is a road tax levied on vehicles entering and exiting the city centre, implemented in order to benefit the environment, reduce traffic congestion and more evenly distribute the flow of traffic around the city centre. The Stockholm congestion charge was initially introduced as a 6 month, full-scale trial between January and July 2006, having been a condition of the Green Party supporting the Social-Democrat Government elected in 2002. However, a referendum followed the trial, in which the residents of Stockholm voted in favour of introducing the system permanently, and congestion charges were implemented permanently from 1st August 2007.

[37] http://www.asecap.com/english/documents/AlainEstiotTollCollect.pdf
[38] http://www.transport-expertise.org/index.php/2009/04/10/german-haulers-are-not-happy-with-the-last-lkw-maut-increase/
[39] http://www.publications.parliament.uk/pa/cm200809/cmselect/cmtran/103/10311.htm,
[40] Mobility tax in Germany, experience and recent developments, May 31 2011, Olswang
[41] http://www.publications.parliament.uk/pa/cm200809/cmselect/cmtran/103/10311.htm,
[42] http://www.publications.parliament.uk/pa/cm200809/cmselect/cmtran/103/10311.htm, 42
[43] http://www.roadtraffic-technology.com/projects/lkw-maut/
[44] http://www.publications.parliament.uk/pa/cm200809/cmselect/cmtran/103/10311.htm
[45] http://www.publications.parliament.uk/pa/cm200809/cmselect/cmtran/103/10311.htm

The congestion charge area includes the entirety of Stockholm city centre, with cameras at 18 unmanned entrance points forming a cordon around the city. Crucially, since the city centre is built on a number of islands with only a few points of entry, the system can effectively charge road users for driving within the city centre by tracking each journey through a control point. Every time a vehicle passes through a control point, whether entering or exiting the city, it is registered automatically by cameras that photograph the number plate. Charges apply Mondays to Fridays, between 06.30 and 18.29, and vary between 10K, 15K and 20K depending on the time of day and proximity to peak times. Payment of charges is not made at the control point, instead the charges – which are defined as national taxes by law – are paid to the Swedish Transport Agency at the end of each month. If the charge is not paid by the last day of the following month, a 500K surcharge is imposed.[46] More than 60% of payments are made automatically through in-car transponder and direct debit systems, whilst it is also possible to pay either in local shops, by bank transfer or online.

With regard to exemptions, there is no charge on Saturdays, Sundays, public holidays or the day preceding public holidays, or during the month of July.[47] Those that have a disabled parking permit, motorbikes, buses (of a total weight of at least 14 tonnes), emergency service vehicles, diplomat-registered vehicles, foreign registered vehicles and military vehicles, are all also exempt from the congestion charge.[48] Taxis were exempt during the trial period but have paid the charge since its permanent introduction in 2007, whilst 'green' fuelled vehicles were exempt originally although this exemption was phased out and came to an end in 2012. Finally, an exception is also made for traffic travelling from the island of Lidingö to the rest of Sweden, as the island has a single road connection which happens to go through the city centre. When the initial trial was introduced, these exceptions meant that nearly 30% of all car journeys would still be free of charge.[49]

The volume of traffic has been reduced substantially since the permanent introduction of congestion charges in Stockholm in 2007. Figures from 2011 show that the number of journeys over the cordon placed around the city limits has decreased 20% in comparison with the level of traffic recorded pre-charges in 2005. Whilst there has been some fluctuation, since the year of the full-scale trial (2006), the volume of traffic has varied between a 18-21% reduction. Equally, traffic volume on orbital roads by-passing the city centre have been seen to remain constant and unaffected by the charges.

Although 'green' fuelled cars are no longer exempt from the congestion charge, the sales and use of such vehicles have both increased over the period since the charge has been implemented. Between 2005 and 2008 the sales of alternative

[46] http://www.transportstyrelsen.se/en/road/Congestion-tax/Congestion-tax-in-stockholm/
[47] http://www.transportstyrelsen.se/en/road/Congestion-tax/Congestion-tax-in-stockholm/
[48] http://www.transportstyrelsen.se/en/road/Congestion-tax/Congestion-tax-in-stockholm/
[49] http://vianordica2008.vegagerdin.is/vetenskapligt_webb/Tisdag/Session3_sal3A/Eliasson2.pdf

fuel cars increased by 23% in Stockholm County, and similarly, whilst during the 2006 trial only 2% of journeys over the charge cordon were made by 'green' cars, by December 2008 this had increased to 14%. Furthermore, exemption from paying the congestion charge has been shown to be the primary reason for the increased purchase and use of 'green' cars. However, the majority of these vehicles are taxis, company cars and commercial traffic, with only 3.2% of traffic being private motorists in a 'green' car. Therefore with the majority of 'green' cars being driven by less price sensitive users, the exemption for these vehicles was phased out, in favour of the potential for increased revenues.

In common with the implementation of all congestion charging systems, the Stockholm congestion charge was met with a certain amount of both public and political resistance. However, since the original trial period, both public and political support for the system has grown substantially. A week before the 2006 trial, support amongst Stockholm residents stood at 36%; however this rose to 52% once the trial had started, to 66% immediately after its permanent introduction in 2006, and to 74% in August 2007. This increased support for the charges is attributed both to reductions in congestion and emissions, as well as a perception that the burden imposed by the charges is less arduous than had been expected. The change was also reflected by increasingly positive coverage amongst the media throughout the trial period and beyond. Meanwhile, whilst political acceptance is to some extent influenced by public support, the example of Stockholm suggests that allowing regional politicians authority over the design of the system and the revenues raised through the wider transport planning process, is crucial to achieving broad support. Indeed, building upon the success of Stockholm, congestion charges are now being introduced in other Swedish cities. This includes Gothenburg, where politicians from all parties have backed the proposals despite low levels of public support.

Milan

The first system of road pricing introduced in Milan was the Ecopass, a pricing scheme introduced with the aim of curbing pollution. High reliance on car use for travel in Milan, coupled with adverse geoclimatic conditions, results in high pollution levels in the city.[50] Attitudes towards Ecopass were for the most part very positive, with local media in Milan being supportive of the principles behind Ecopass.[51]

As far as public finances are concerned, Ecopass saw a net loss €-4.8 million for local authorities. Informal sources stated the total cost of infrastructure as €7 million, with annual management costs at €0.6 million.[52]

[50] The Urban Road Pricing Scheme to Curb Pollution in Milan: a preliminary assessment, page 5. Accessed here: http://www.genitoriantismog.it/sites/default/files/2009%20Effetti%20Ecopass%20Universita%20di%20Trieste.pdf
[51] Milan's Pollution Charge: Sustainable transport and the politics of evidence, page 9. Accessed here: http://www.berlinconference.org/2012/wp-content/uploads/2013/01/Mattioli-Milan%E2%80%99s_pollution_charge-202.pdf
[52] The Urban Road Pricing Scheme to Curb Pollution in Milan: a preliminary assessment, page 15.

Ecopass was introduced as part of a wider transport policy package including short-term policies such as new bus lanes, increased bus frequency, increase in parking restrictions and fees, and medium-term policies such as park-and-ride facilities and underground network extensions.[53] The charge was set according to the Euro emission standard of the vehicles entering the area, with discounts available for frequent users, with the aim of increasing political acceptability.[54] Exemptions to Ecopass were made for vehicles for handicapped people, those transporting perishable products, emergency services and public transport. No charges were made for electric and hybrid cars.[55]

Nine months after the introduction of the Ecopass, the number of vehicles entering the charging area had decreased by 14.2%. This was accompanied by a rapid increase in the share of exempted vehicles - in 2010, the share of exempted vehicles was as high as 90%.[56] The scheme was also successful in curbing congestion.

Milan Area C was introduced on the 16th of January 2012, replacing the existing Ecopass system. The system covers the 'Area C' or 'Zone C' within Milan, corresponding to the perimeter of the 16th century city walls (8km^2).

Introduced in January 2012 on the back of a city referendum in June 2011 on measures to replace Ecopass with a more comprehensive congestion reduction scheme, it passed with almost 80% of voters backing the municipal authority's plan.[57] Ecopass was deemed for the most part as successful as the number of most polluting vehicles entering the city fell dramatically, though overall vehicle numbers did not because of a general switch to cleaner cars, meaning congestion remained high.[58] The aims of the scheme is to improve public transport networks, to raise funds for soft mobility infrastructures (cycle lanes, pedestrian zones, 30kph zones), improve the quality of life by reducing the number of road accidents, and curb uncontrolled parking, noise and air pollution.[59]

The scheme functions using the existing ANPR system already in place meaning the implementation of the Area C charge did not require huge investment in new technology. [60] In 2012, the congestion charge generated revenues of €20.3 million, most of which has been reinvested in public transport, bicycle sharing schemes and other mobility-related infrastructure.[61]

[53] The Urban Road Pricing Scheme to Curb Pollution in Milan: a preliminary assessment, page 7.
[54] The Urban Road Pricing Scheme to Curb Pollution in Milan: a preliminary assessment, page 7.
[55] Milan: lessons in congestion charging: http://ec.europa.eu/environment/ecoap/about-eco-innovation/good-practices/italy/20130708_milan-lessons-in-congestion-charging_en.htm
[56] Milan's Pollution Charge: Sustainable transport and the politics of evidence, page 7.
[57] Milan: lessons in congestion charging
[58] Milan: lessons in congestion charging
[59] http://www.comune.milano.it/portale/wps/portal/CDM?WCM_GLOBAL_CONTEXT=/wps/wcm/connect/contentlibrary/elenco+siti+tematici/elenco+siti+tematici/Area+C/English/
[60] Milan's Pollution Charge: sustainable transport and the politics of evidence, page 6.
[61] Milan: lessons in congestion charging

Like Ecopass, the scheme is active from 7:30 to 19:30 on weekdays, except Thursday (7:30-18:00) to accommodate late night shopping.[62] To enter the 'Area C' of Milan, an entrance ticket must be purchased and activated. The ticket is charged at €5, and can be purchased at parking meters, newsagents, ATMs, or online.[63] Area C is monitored by cameras.

Within six months of the initial implementation of Area C, traffic in the area was reduced on average by 34%, when compared to the same period in 2011. Other successes were the increase in the commercial speed of public transport by 6% (buses) and 5% (trams). Other results include a reduction in the number of road accidents (-28%) a reduction in ammonia (-15%), nitrogen oxides (-20%), carbon dioxide (-22%) and Black Carbon concentrations (-40%).[64]

Milan does face challenges in fine-tuning the Area C scheme, however. Motorists who were driving through the city centre prior to introduction of their scheme tend simply avoid it, while cracking down on non-payers is also a must. A particular problem is drivers from neighboring countries such as France, which Milan does not have the ability to pursue for unpaid charges.[65]

Norway

Norway has been one of the leaders in urban road pricing schemes which have operated in the cities of Bergen, Oslo and Trondheim. These were all cordon tolling schemes based on tolling rings around the respective cities initially with manual stations to collect the tolls. As in Singapore, this gave way to greater use of electronic systems for collecting tolls. Bergen has gone the furthest in this respect with a fully automated system in place using cameras which record all vehicle licence plates. People have various options in paying the tolls including paying at petrol stations or receiving a bill through the post if they don't have a transponder. The electronic system in Bergen has reduced operating costs by 40 - 50 per cent, increasing the funding available for improvements to the transport system.

The main justification for the tolling schemes in Norway was to raise revenue for new road investment and other transport improvements, which would in turn reduce congestion. To make this explicit, the charges had a limited timescale in Oslo and Trondheim. All of this was to overcome public concerns about the new charges because it was felt that the public would not accept charges designed merely to manage demand for road space.

[62] http://www.eltis.org/index.php?ID1=5&id=60&news_id=3765
[63] http://www.comune.milano.it/portale/wps/portal/CDM?WCM_GLOBAL_CONTEXT=/wps/wcm/connect/contentlibrary/Per+Saperne/Per+Saperne/Area+C/English/
[64] http://www.eltis.org/index.php?ID1=5&id=60&news_id=3765
[65] Milan's Pollution Charge: sustainable transport and the politics of evidence

The impact on traffic levels has, therefore, been less than in Singapore. For example, in Bergen there has been only a 6 - 7 per cent decrease in traffic levels and in Oslo only a 3 - 4 per cent reduction in traffic.

Revenues from the schemes in Norway have been substantial since, following the introduction of electronic systems, collection costs were reduced to around 10 per cent of total revenues in all three cities. Initial fears that the scheme would harm the city centres in all three places have also been overcome since the implementation of these schemes as people and businesses have seen the benefits of increased mobility and reduced congestion.

3.4 Consequences for taxation regime

The Scottish Government could, if it chose, introduce a road pricing scheme into Scotland now. However, this would simply increase the financial burden already faced by car users in Scotland.

For an effective road pricing scheme to be introduced which seeks to charge users more fairly for the use of roads, it has to be instead of, rather than as well as, existing car taxes.

This could certainly be done on a UK basis. However, as roads policy is devolved to Holyrood and for the Scottish Government to properly implement a scheme, it would need to have control over both vehicle excise duty and fuel duty.

Reform Scotland has recommended that both of these taxes be devolved to Scotland as part of its Devolution Plus proposals, which would in turn enable a road pricing scheme which replaced current motoring taxes to be developed.

VAT, as a sales tax would still be applied to fuel in Scotland, as it would for the rest of the UK, and the Treasury would accrue the revenue raised from this.

4. Policy Recommendations

Clarify the objective of motoring charges

Reform Scotland believes that there should be three clear policy objectives of motoring charges: to reduce emissions; to reduce congestion; to increase fairness.

Of course, revenue generation is important, but our proposed Pay-as-you-drive (PAYD) scheme will continue to raise significant revenue. More fundamentally though, if motoring charges are effective in meeting their aims then revenue is supposed to reduce over time as people adjust their behaviour and fewer of them use cars, at least on busy roads and at peak times when charges will be highest.

We do not believe that the objective of current motoring taxes is clear. Changes to the Vehicle Excise Duty (VED) rates have directly addressed carbon emission, and this is to be welcomed (although we feel that VED punishes infrequent drivers by charging them the same as frequent drivers, which PAYD will address).

However, the main motoring tax, fuel duty, is a blunt and unfair instrument which takes no account of where and when people are using the roads.

Green or sin taxes need to be set at an appropriate level to discourage certain behaviour, but recently petrol duty changes have not achieved this objective and have done little to reduce congestion on our roads. This has only increased the public perception that such taxes are really about providing a steady revenue stream for the government rather than a genuine attempt to address congestion or vehicle emissions. This is exacerbated by the fact that as a percentage of the pump price, British drivers pay more tax on petrol and diesel than any other EU country[66].

A Pay-as-you-drive (PAYD) system of road pricing, in which people pay depending on which roads they use and when they use them, is both a fairer and more efficient way of allocating scarce road space.

Feasibility study on a national and local Pay-as-you-drive (PAYD) road pricing scheme in Scotland

Reform Scotland recommends that the Scottish Government carry out a feasibility study as a first step towards implementing a national and local Pay-as-you-drive (PAYD) road pricing scheme in Scotland. We would favour a scheme which charges motorists a variable rate for road usage depending on when and where they are driving. This would mean that people who live in

[66] 60% on petrol (joint highest with the Netherlands); 58% on diesel (next highest Italy and Sweden, 54%). Source: *Taxation of Road Fuels*, SN824, Antony Seely, Business & Transport Section, House of Commons Library

more rural areas with less access to public transport, or have to travel during unsocial hours, would face lower costs than those using more congested roads at peak times.

Evidence from other countries shows the part that road pricing systems can play in reducing journey times and congestion while improving reliability and having a positive impact on the environment. If a proportion of the revenues from the charging scheme went towards improvements in public transport, then this could be an additional benefit, particularly to those on low incomes who are more dependent on these modes of transport.

We believe that any scheme should be part of a completely new approach to paying for use of our roads. As such, road charges must be a replacement for the existing methods of paying for roads through Fuel Duty and Vehicle Excise Duty and not an additional means of raising revenue.

While the Scottish Government would be ultimately responsible for the scheme and would probably price motorways and national trunk roads, we would advocate local authorities setting local road prices in their area.

We accept that road pricing schemes can have large start-up costs. However technology, and the Galileo satellite system in particular, has developed considerably in the time since the Department of Transport published its feasibility study in 2004, and it is believed that such set-up costs would be considerably lower now than was the estimate then. The Scottish Government would need to investigate how much it would cost to implement such a scheme in Scotland. However, despite the set-up cost, such a change would lead to the introduction of a fairer and more effective way of allocating road space and provide national and local government with a useful means of addressing the problem of congestion on our roads which would mean faster journey times and greater reliability, contributing to economic growth and helping meet the country's climate change objectives.

Making the case for Pay-as-you-drive (PAYD)

Reform Scotland recommends that the Scottish Government should make the case for introducing a system of road pricing in Scotland and swing public support in its favour as a result. Moreover, since this is a practical solution based on fairness, we believe the opposition parties should be willing to help.

This is required because there has, in the past, been significant public opposition to schemes of road pricing. In part, this is because the Edinburgh congestion charge proposal, the most recent attempt to implement such a scheme, was effectively a tax rise because it would not have been accompanied by a commensurate reduction or abolition of any other motoring charge. Opinion polls, such as the one highlighted in this report, tend to illustrate that while

people do not support road pricing, it is more popular than the existing motoring taxation regime. Furthermore, other schemes (such as London's congestion charge) have found favour once they are up and running.

We believe that a policy to introduce Pay-as-you-drive (PAYD) road pricing could gain public support if the policy was properly explained. This explanation would need to highlight the following key points:

- Vehicle Excise Duty and Fuel Duty would be abolished and replaced by a fair system of motoring charging called Pay-as-you-drive (PAYD). This need not have a significant effect on the government's tax take because:
    - Current motoring taxes are aimed, albeit unsuccessfully, at reducing car use so by definition revenue would constantly reduce if they were successful
    - The government would be in charge of the figure at which roads were priced, and accountable to the electorate for it
- PAYD can reduce carbon emissions from road transport and help Scotland meet its climate change obligations because:
    - People will consider using public transport, car-shares or may even cycle or walk (which will also be good for public health)
    - People will consider shopping more locally, which will reduce food miles (and will also benefit the high street and the local economy)
    - Congestion, which is a contributor to increased emissions, will reduce through behaviour change
- PAYD can reduce congestion and journey times, which will:
    - Benefit businesses and the economy due to the quicker movement of people and goods
    - Reduce frustration on our roads and make for more pleasant journeys
- PAYD can be fairer, because:
    - All drivers will pay a fair price for the roads they choose to use, and the times they choose to use them
    - Infrequent drivers will pay less than frequent drivers, in contrast to VED which charges drivers the same amount irrespective of how much they drive
    - Rural and remote drivers (who may have less access to public transport), and those who have to travel at unsocial times, will pay less because they cause less congestion. This is in contrast to the situation under Fuel Duty, which involves rural and remote drivers paying the same level of tax as urban drivers despite urban drivers contributing more in terms of congestion and emissions and yet having greater access to public transport alternatives.

Whilst we recognise that a Pay-as-you-drive policy wouldn't change everyone's driving habits, and some may continue to behave as they do at present, it would be with a greater awareness of the costs of doing so.

PAYD has the potential to be a useful policy tool for government, allowing drivers to be charged fairly for the choices they make, and also to be charged appropriately for their impact on the road network and the wider environment.

Devolve greater tax raising powers to the Scottish Parliament

As we set out in our 2011 report *Devolution Plus*, Reform Scotland believes that greater tax powers should be devolved from Westminster to Holyrood so that the Scottish Government is broadly responsible for raising the money that it spends.

Our proposal would pass most taxes, with the specific exceptions of VAT and National Insurance, to the Scottish Parliament. This would, therefore, include devolving Vehicle Excise Duty and Fuel Duty. Under our Pay-as-you-drive (PAYD) scheme, these would immediately be abolished upon their devolution.

The introduction of road pricing is a good example of how greater fiscal powers could be used to introduce a completely different approach to a particular policy area, since they would be used to implement a new and better way of paying for the use of our roads. While congestion charging schemes could be introduced using the Scottish Parliament's current powers, this would be *in addition* to current UK taxes and would therefore be inappropriate and rightly unpopular. Reform Scotland wants to see a fairer and more effective way of paying for road use introduced, not an additional tax. Therefore, devolving the relevant taxation powers must be a pre-requisite for the introduction of a Pay-as-you-drive (PAYD) road pricing system in Scotland.

5. Conclusion

Reform Scotland believes that a system of road pricing which charges drivers for the time, distance and location of their journey offers a fairer and better way of charging for use of our roads than the current tax regime.

Currently, people who live in urban areas have access to cheaper fuel and more public transport alternatives than those who live in more rural areas. People driving in urban areas are also more likely to be contributing more in terms of congestion and emissions, yet the tax regime does not take this into account. As a result, an individual driving in a remote area with no public transport alternative is paying the same level of fuel tax as the person driving in the urban centre who is contributing more in terms of congestion and emissions and yet has greater access to public transport.

While vehicle excise duty rates are based on emissions in an effort to tackle environmental concerns, it is arguably easier for wealthier individuals to upgrade to more fuel efficient models on a more regular basis. So the poorer individual who doesn't use their car on a regular basis, therefore creating less pollution, and who can't afford to buy a new car can end up paying more than the richer person regularly commuting in their more efficient car and so creating more pollution.

This system is unfair and takes no account of the actual harm individual drivers cause in terms of carbon emissions and congestion.

A road pricing scheme which takes account of time, location and distance would result in motorists regularly driving in congested areas at peak times paying more than drivers in less congested areas.

Such a policy would not unduly penalise the less well off because, as the Scottish Government figures we highlight indicate, the more deprived an area, the less likely an individual will use the car for commuting to work or school. In fact, this policy could make car ownership for individuals where the car is only needed for irregular journeys more affordable than it is at present.

However, Reform Scotland believes that the best way to implement such a scheme and to ensure it gained public support would be by replacing existing motoring taxes. For this to be done on a Scottish basis, this requires these taxes to be passed to Holyrood, as we recommended as part of Devolution Plus.

It is clear that the current taxation regime is not effective at changing behaviour and will not continue to raise as much income as it currently does. As a result, Reform Scotland believes that a fairer and more sophisticated method of

charging for road space in Scotland needs to be introduced, one which can actually help change behaviour, but does not punish those without alternative options. On top of this, technological advances since the UK Government's feasibility study in 2004 mean that a Pay-as-you-drive road pricing scheme in Scotland is now a very viable road for the future.

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