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WHAT'S INSIDE:

Editorial

New business eco systems are emerging for transport that could transform many aspects of transport and logistics. The World Economic Forum review of the sector suggests that attempts to broker international deals on Climate Change and Trade have gone as far as they can. The future now depends on bottom up delivery.

Often the top down political initiatives attract the headlines but interest is growing in business models that drive future profits through sustainable approaches, providing services for the whole system, rather than just a single process. Putting all of the jigsaw pieces together in transport can be difficult given the complex multi-modal, multi sector structures. However successful approaches are being achieved and a recent review of car clubs by the RAC Foundation shows the rapid growth of several new types of business. Scaling new approaches rapidly is needed to deliver sustainable growth and this partly depends on the response of current big players in the industry.

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Five-Point Plan for the Bus Industry

A campaign group set up by the bus industry has outlined out a five point plan for growth. Greener Journeys aims to increase the value of bus and coach travel in stimulating economic growth, reducing congestion and CO2 emissions and enabling access to jobs, retail, leisure and vital services.

The five changes the campaign group thinks are needed are:

- Creating the right public policy framework
- Meeting the needs of bus passengers
- Supporting the bus in its vital role in the labour market
- Enabling businesses and local retail economies to benefit from bus services
- Building strong alliances across bus operators, businesses and local government

The group says that the wider economic impacts of the bus system are not recognised in public investment decisions. More people commute to work by bus than all other forms of public transport combined and bus commuters generate £64 billion in economic output. For example more than 85% of all employees of Asda get to work by bus. 40% of trips to the high street are made by bus, compared with 30% by car.

Public investment needs to provide adequate revenue funding in addition to capital funding streams to enable the 'full bus package' to be implemented. Planning has been specifically highlighted by Government as an area for interventions to support businesses and growth. The campaigners are therefore calling for tax incentives for bus commuting and greater take up of workplace travel plans.

To maximise the benefits of the bus it is essential that we give passengers what they need. This means encouraging greater take up of smart attractively priced multi-operator ticketing, and more local support for pro-bus measures like bus lanes to give people the speedy and reliable services.

Travel planning assistance and fares offers for school leavers and unemployed people to help would also help connect them to education, training and the job market.

> *"More people commute to work by bus than all other forms of public transport combined"*

Given the importance of the bus in helping people to access education and to up-skill and enter more productive jobs, the campaign group wants to see measures like travel planning assistance and fares offers for school leavers and unemployed people.

Bus infrastructure projects help to optimise the role of the bus in creating the right environment for business growth in their areas. An effective and locally appropriate framework for closer working between local business community is needed. Business Improvement Districts could use part of their levies to help fund bus improvements and Town Centre Management Groups should be including the bus as part of their town centre transport access strategies.

Buses are the most cost effective, flexible and immediate way the transport sector can reduce economically draining congestion and carbon emissions. Buses have the potential to reduce carbon emissions from road transport by as much as 75% in heavily congested areas.

Buses support the wider economy but if their full potential to facilitate growth in the UK is to be realised a concerted effort needs to be made across Government to create the right public policy framework.

The full five point plan is available from http://www.greenerjourneys.com/resources/report/

Making Buses Better

Bus industry think tank the TAS Policy Exchange has published a report on how to make buses better. The report asks why the performance of the bus industry is so variable, who and what is responsible for this variation, and how the benefits from the most successful areas can be replicated in areas that do not perform as well.

The analysis shows that relative success and failure is largely attributable to the actions of parties involved in securing bus services, rather than any 'natural' function of geography or demographic influence. Effective bus operators and effective local authorities can and have increased the level of bus use and the extent to which their bus networks serve their communities effectively. The performance of the bus industry is measured in terms of journeys per capita, accessibility of services, customer satisfaction, reliability, generalised journey time, growth in patronage, investment being made per passenger and population density. None of these measures in themselves accounts for the differences between different parts of the country but there is a clear correlation between customer satisfaction and the number of journeys per capita.

The report asks how good bus provision might be measured in the future concluding that accessibility to district/town centres, value for money from investment programmes, a high number of bus trips per capita, good customer satisfaction ratings and a reliability threshold of at least 90% of services operating at the scheduled time, would show which areas were underperforming.

Overall the report concludes that significant improvements to bus services could be achieved with little or no additional funding and that successful operations are not purely a result of market circumstances. Short term improvement depends most on operator initiatives but longer term local authority investment is also needed to secure longer term improvements for services. Most importantly transport authorities and operators need to work closely together, co-ordinating activity through Quality Bus Partnerships to deliver benefits to passengers and communities that are more than the sum of the separate parts.

Buses and the Economy

Greener Journeys, the bus campaign group, has recently published research by ITS Leeds on the relationship between buses and the economy. STR summarises some of the key findings.

Introduction

The bus is woven into the fabric of urban Britain. Over 5 billion bus trips are made every year and over a billion are to/from work. 2.5 million commuters depend on the bus to get to work, while a further one million use bus sometimes as a back up or occasional mode. This is around 12 per cent of the working population accounting for £64 billion of gross value added across GB. The research did not analyse Scotland separately but national travel survey data shows that more than a tenth of GB bus travel is in Scotland, implying that the bus industry probably adds more than £6bn to Scotland's economy each year.

The bus is rather democratic in nature being available to a wide range of society. But within that, groups such as young adults and those with no car available tend to be frequent bus users. Because the bus is a cog in a larger wheel, facilitating access to jobs, shops and recreational activities, it is not easy to quantify the contribution bus service makes to the wider economy. However, the Department for Transport estimate that in 2010/11 124,000 people were employed in the local bus sector in Great Britain, whilst in England the turnover of the sector was £5.3 billion. Of this £5.3 billion, £2.8 billion is derived from fare receipts, £1 billion in local government support to services or individuals, £1 billion from government to support concessionary travel and £420 million in Bus Service Operators Grant.

The Role of the Bus in growing the economy

Transport policies which lower the costs of business and freight travel can grow the economy by lowering factor input prices and reducing costs of production. These in turn lower output prices so that demand and economic output then increase as a consequence. Reductions in commuting costs have similar effects. Workers require compensation for their commute, and as commuting costs fall, so does their required level of compensation hence leading to a reduction in factor input prices. Commuting though has an additional impact as reductions in commuting costs can lead to economically inactive people joining the labour market. These effects occur at a national or supra-national level, as well as at a more local level.

In addition to growing a national economy, transport policies can re-distribute economic activity from one part of a country to another. This is because economic activity typically, all other things being equal, locates in the more accessible areas. Retail and tourism are classic sectors where the distribution of economic activity (i.e. in which part of the country/world money is spent) is sensitive to accessibility.

Recent developments in economic thinking have led to growth theories that emphasise spillover effects between firms as a mechanism for growth. Spillovers are benefits received for 'free' by one firm that have arisen due to the actions of another firm or firms. Classic examples include the sharing of a large supply chain, sharing of a skilled labour force, better matching of jobs to workers, knowledge dissemination from research institutions such as universities, etc. Transport effects feature in these frameworks in their role in supporting the city. This is because a key aspect of these theories is that spillover effects are at their strongest where a large concentration of workers are in close proximity leading to higher productivity per worker. This is particularly pertinent in knowledge based sectors. Transport, and public transport such as buses, trains, trams and underground in particular, facilitate these spillover effects by helping large volumes of people access the most productive parts of the economy (city centres). These added benefits of working inside large economic centres are also known as agglomeration economies.

> *"The bus industry probably adds more than £6bn to Scotland's economy each year"*

These theories also emphasise the significance of human capital development (i.e. knowledge and skills) as an important driver of economic growth. Access to an educated workforce is therefore important, as is the need to ensure the workforce can access the appropriate skills. Economic growth also depends on supporting the creative class who are an important and quite large subset of the population who are in the main responsible for driving forward economic growth. It is argued that in a post-industrial economy these people no longer locate where the jobs are, but instead seek out places where they are happiest. They therefore look for particular cultural, social and technological environments. By supporting city centres, public transport can create a valued cultural environment by providing the economic mass that will support a range of arts and sporting events, educational activities, cafes, restaurants, etc. These in turn make the city attractive to the 'creative class'.

Based on these influences on the growth of the economy there are three main ways that buses support the economy: labour market efficiency; labour market participation; and supporting the vitality of city centres.

Public Policy to add Value

Public policy towards buses can usefully be considered at two levels – the project level and the policy level. The former could apply to the assessment of bus infrastructure projects and to the case for supporting particular services from the public purse through tendering. The latter could apply to more generic questions such as the case for supporting the bus sector through Bus Service Operators Grant.

At the project level, value for money assessment of infrastructure such as bus priorities or busways or bus stations is in the hands of the transport authorities as promoters who need to make a case for support. Clearly the support or otherwise of the local bus operators evidenced by their willingness to participate in the scheme on the basis of revenue and/or cost saving effects is likely to be important to the fate of the scheme. For the larger schemes at least, cost-benefit analysis guidance is the assessment tool.

Among the well-established components of the assessment are:

- Modelling and appraisal of the direct first round effects of improvements on journey times, demand and user benefits

- The second round effects of changes in demand on quality of service through frequencies offered and hence on patronage (the so-called virtuous circle)
- The environmental and congestion impacts of modal transfers, particularly from car

Frequency, access/egress times, journey times, real time information availability and comprehensiveness of service (first and last bus) all affect demand for bus travel. The importance of reliability as a quality attribute also comes out loud and clear. This confirms the requirement in modelling and appraisal work on bus priority schemes to take account of reliability impacts.

Turning to the broader issues of public policy towards the bus industry, buses are so familiar and humdrum that it is difficult to see bus service as strategic. But it is. There are some respects in which transport cost-benefit analysis of the style described above does not fully reflect the wider contributions which the bus makes to the smooth running of the economy.

Firstly, there are ways in which bus services can improve labour market efficiency and increase labour market participation. These are not new points in terms of the transport appraisal guidance for assessing the welfare benefits of wider impacts but in the case of the bus sector it may be more feasible and credible to consider them at the level of policy analysis towards the bus sector rather than (or as well as) at individual project level.

Secondly, there is the issue of the treatment of unemployment in economic appraisal. In an underemployed economy, the creation of additional employment can have an economic benefit greater than that captured through changes in the cost of travelling to work.

"Infrequent users are willing to pay £38/year for this option value while frequent users are willing to pay £60/year"

Thirdly while the over 60s are protected by the concessionary travel scheme, there is no equivalent protection for people of working age in the lower deciles of the income distribution. Indeed, part-time workers are also unable to take advantage of the best fare offers such as weekly or monthly tickets and are more likely to be caught in a 'poor pay more' trap. The best indicator of likely distributive impact is given by the pattern of existing use.

Fourthly, there is a range of efficiency and distributive advantages of strong town and city centres. The agglomeration externalities discussed above are obtained by bringing together large numbers of people to participate in local labour markets. For those without access to a car, the town centre served by the bus is an efficient way of ensuring accessibility to a wide range of shopping, leisure and other services to all. Without a land use model it would be difficult to predict the impact of a 'no public transport' scenario on the layout of a British city, but a range of efficiency, distributive and environmental quality benefits would be at serious risk.

The Economic Contribution of Bus Services

Bus industry employees spend £2.1 billion in the economy, whilst the bus sector spends £2.5 billion in its supply chain. Through its supply chain the bus industry supports a further 83,000 jobs.

Various policy interventions are available to government which would impact on the quality/price of public transport service and hence the level of accessibility for users. These include:

- The taxation and subsidy arrangements for the industry (BSOG etc)
- The infrastructure arrangements (bus priorities, busways etc)
- The competitive environment (road user charging, workplace levies and other parking policy etc)

There are significant variations in the contribution made by the bus across urban Britain. This is due to a mix of factors including city layout and land-use, local socio-economic and employment mix, supportive policy mix on bus priorities, parking and strong dialogue between local politicians, officers, bus operators and other stakeholders. The best operations have positive ratings across a range of service quality indicators, enabling retention of market share of the working age population through a virtuous circle.

It is not useful to conjecture what the impact on the economy of a theoretical 'no bus' world would be. But it is clear that the bus supports the modern urban economy in the following ways:

- By facilitating better matching between people and jobs. In our survey, 10% of those who use bus to access their workplace said they would give up work but look for new employment if the bus service was not available. We estimate that 360,000 workers are in a better more productive job than they otherwise would have access to—net additional GVA £180 million.
- By improving the accessibility to education and training, especially for people from deprived areas
- By increasing labour market participation – estimated to be 30,000 more economically active people contributing an extra £190 million to the economy who would be forced out of the labour market without bus service.
- By supporting the vitality of urban centres. People use the bus to make shopping and leisure service trips to a value of £27 bn of which around £22bn is in town and city centres. This is the gross spend. Those who depend on the bus network to participate in the labour market or are in a better more productive job tend to be lower paid, live in areas of deprivation, are part-time workers and work in technical occupations, sales or customer service occupations or elementary occupations.
- By acting as a form of social insurance. People are willing to pay over and above their fares to have a bus service available to them as part of the urban fabric. Infrequent users are willing to pay £38/year for this option value while frequent users are willing to pay £60/year. If this were to be aggregated to GB level, the gross option value would be £700 million, which is conservative in relation to the industry turnover of £5bn.

The full research is published at http://www.greenerjourneys.com/resources/report/.

How the bus can help to deliver the Government's CO2 reduction targets

A new report, has been published by Greener Journeys, examining how the bus industry can contribute to meeting the Government's targets for reducing carbon dioxide (CO2) emissions, particularly in the medium term up to 2020. The report was researched and prepared by David Simmonds Consultancy in association with Derek Halden Consultancy and the University of Portsmouth.

The report shows that the best-used bus services in the major urban centres may well be reducing carbon emissions by 75% or more, if the emissions from bus operations are compared with the emissions which the bus passengers would generate by using cars.

The report finds that buses can play a useful role in helping to achieve the Government's targets for reductions in carbon emissions. The present environmental value of the bus is a mixture, with some bus services providing enormous environmental value, and others having an adverse effect (ie emissions would be reduced by abandoning the service and few if any other emissions would be generated instead). Planning for sustainable bus services is a complex balance between social need, economic viability, and environmental aims.

The bus can help reduce CO2 by a clear campaign of action as follows:

Increasing the number of passengers per bus has the virtuous circle of increased profits, lower fares, and reduced emissions per passenger, especially if improvements in ticketing reduce the tendency for additional passengers to slow down bus operations. Achieving this virtuous circle requires demand side interventions to influence passenger choices, and supply side measures to replace some poorly-used services with more carbon efficient alternatives such as demand responsive rather than timetables public transport.

Increasing use of lower carbon buses will make a substantial difference to carbon emissions from the bus fleet – this should deliver a 30% reduction compared with the same use of current buses with average emissions for the fleet. Improvements in driving practice ("eco-driving") should achieve a further improvement in this.

Bus operators should develop and promote best practice in eco-driving (including further tests on switching off engines whenever buses are stationary), continue investment in low emission vehicles when prices (and subsidies) make it financially attractive, market bus services to car users where they have potential to compete with car and have spare capacity, so as to increase average loads and reduce car emissions, where spare capacity is not available, use customer relationship management systems to nudge customers towards more lightly loaded services, and collaborate in well-planned Quality Bus/Better Bus Area initiatives.

> *"Achieving this virtuous circle requires demand side interventions to influence passenger choices, and supply side measures to replace some poorly-used services with more carbon efficient alternatives"*

Local authorities should continue implementation of Quality Bus/Better Bus Area initiatives which improve bus speeds, reliability and patronage (including addressing market failure for technologies that may not be commercially viable but which will contribute to social and environmental goals such as smart ticketing, realtime and other passenger information, etc), develop bus priority measures in particular to reduce the need for buses to stop in traffic and at junctions. This needs to include both protecting and enhancing the operation of bus services which are already good enough to compete with car travel, and to improve those where traffic delays are one of the barriers which prevent potentially competitive services from achieving their full potential. The authorities should maintain and enforce bus priority measures to ensure that their benefits continue to be delivered, seek replacement of poorly loaded inefficient bus services with more efficient routes and modes of operation, work with operators to develop viable bus strategies as part of wider transport packages based on achieving growth in bus patronage, and seek to ensure that land-use planning policies are tailored to allow and encourage efficient service by public transport.

Scottish Government and DfT should ensure that advice to consumers makes it clear that individuals can reduce their contribution to carbon emissions by choosing to travel by bus rather than by car, consider whether the figures on passenger transport emissions used in carbon accounting should be revised to show businesses the merits of encouraging or requiring their staff to use public transport where reasonably available; continue the Green Bus Fund and possibly extend it to support investment in off-bus equipment where new fuels or comparable changes are involved, consider the feasibility of offering green bus funding for retro-fit, and commission further research on how carbon-efficient buses could be with a combination of eco-driving and better priority measures to reduce the amount of deceleration and acceleration required in traffic.

The European Commission and bus manufacturers should continue to review the consequences of the Euro standards, particularly in terms of the balance between further improvement in local air quality and the need to reduce weight and fuel consumption.

Scottish Transport in the News

STR summarises what the papers have been saying

AVIATION

Airport operators in Scotland have called for the devolution of Air Passenger Duty, anticipating that lower rates of duty could be important in developing overseas trips to and from Scotland with sizeable gains from the economy and tourism.

Following the BA takeover of BMI, two-thirds of BMI Scottish services to Heathrow have been axed. BA is providing larger aircraft on some Heathrow services and has also expanded flights from Scotland to London City airport, including a new service from Aberdeen.

Virgin Atlantic is considering introducing services from Aberdeen and Edinburgh to Heathrow if slots become available.

Ryanair is hoping for a better deal from the new owners of Edinburgh Airport but may otherwise divert some flights back to Prestwick. Annual passenger numbers at Prestwick have slumped to 1.2m, the lowest for a decade.

Disputes with Ryanair influenced a 1.1% fall in traffic at Edinburgh in April. But traffic was up 6.7% at Glasgow and 11% at Aberdeen. Edinburgh had a further 3.5% fall in July with domestic -6.5% and international -1.5%.

The rise of Jet2 overseas leisure flights has added further impetus to growth at Glasgow with passengers up 10% in May compared to 2.2% at Edinburgh.

Passengers at HIAL airports in May were 7.8% above May 2011 with a 19% rise at Barra and Campbeltown gaining from extra golf traffic to Machrihanish. Inverness was up 8.4% with

international flights being the main source of growth.Transport Minister Keith Brown confirmed that new planes are to be ordered to maintain services to the beach landing strip at Barra.

MARITIME

The Scottish Government has delayed decisions on ferry restructuring for three years and faced attacks that essential but controversial decisions are being delayed until after a 2014 Independence Referendum.

Western Ferries has ordered two new vehicle ferries for the Gourock-Dunoon route for delivery in 2013 and giving a 20 rise in capacity.

In a PPP deal with Lloyds, Scottish Government has ordered a £42m ferry for the Ullapool-Lewis route. Trip times will fall by 15 minutes to 2 hours 30 minutes and freight will be concentrated on a nightly service. There will be a 25% cut in fuel use compared to the two vessels presently on the route.

Ardrossan-Arran route has again been increased to two vessels during summer.

Serco has won a six-year contract for the Scrabster-Orkney service but this will be cut from 3 to 2 sailings per day. Serco will also takeover Aberdeen-Orkney-Shetland services.

The SPT supported Kilcreggan-Gourock passenger ferry has been performing well below specifications with a new vessel not yet in operation. Local politicians have called for termination of the contract.

Maritime expert Prof. Alf Baird of Napier University has accused politicians of delay in hampering plans by Pentland Ferries for a subsidy-free Burntisland-Granton passenger ferry needing only limited support towards initial costs for terminal infrastructure.

Jacobite Cruises has acquired a French catamaran with capacity for 250 passengers to improve cruises on Loch Ness. The company will soon welcome its millionth cruise passenger on the loch.

RAIL

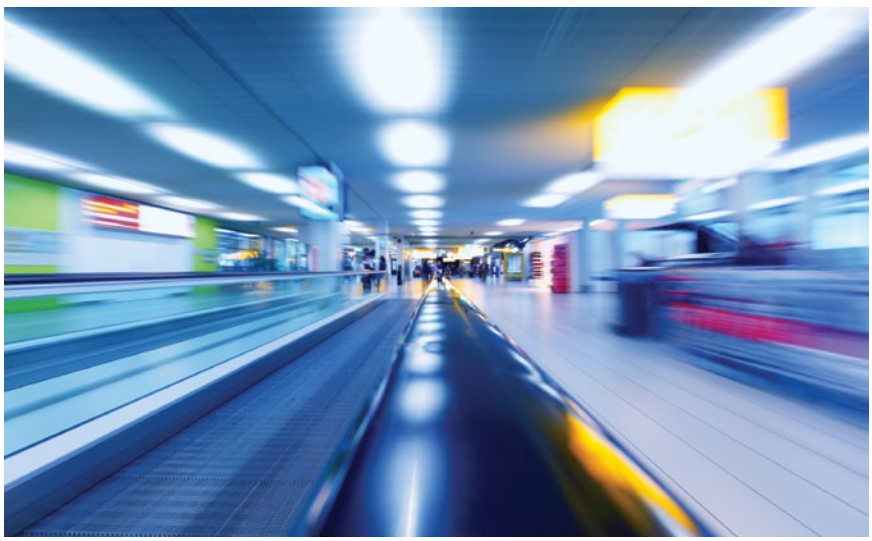
Faults in the refranchising of the West Coast Main Line led to current operator Virgin securing a temporary extension of its franchise into 2013. The proposed award of the franchise to First Group has been cancelled but has also raised wider issues relating to the franchising process and possible changes back to public ownership or a 'non-profit distributing' approach.

Total rail costs falling on the public purse have been criticised as excessive compared to benefits gained or alternative uses of such funding. Higher Scottish rail spending has been only partly justified by a lower population density over most of Scotland.

The Government has been criticised for protracted delays in agreeing a delivery timescale for a delivery of priority elements in a revised Edinburgh-Glasgow Rail Improvement Programme. This now includes works to extend platforms at Queen St High Level but other major elements of the scheme, including an additional 2 trains per hour from Queen St HL to Edinburgh have been delayed. The priority for an additional express half-hourly Glasgow-Edinburgh service in 37 minutes has been replaced by using electrification and a move to 8-coach trains to increase seat capacity and cut Glasgow-Edinburgh trips on the present quarter-hourly service to 42 minutes.

A Scottish Government announcement in early November confirmed that Network Rail has now assumed full responsibility for securing construction of the Borders Rail Scheme expected to be completed in 2015.

With completion of extra track capacity between Glasgow and Paisley Gilmour St, 2 extra trains per hour will run from Glasgow Central to Ayrshire with reliability on the approaches to Glasgow Central also improved by completion of a fast-track low cost electrification of the Glasgow-Paisley Canal line.



Trial running of Edinburgh trams between Gogar and the Airport is due in December with increasing prospects that the route through to York Place may open to the public before summer 2014. This is being linked with investment in Princes St once trams come into operation, offering a public realm and environmental opportunity.

The UK government has rejected a Scottish Government request for fuller rail powers, saying that it would not be sensible to break-up a coherent GB structure in which Scottish ministers can set fares and specify services.

Scottish Government has published responses to the consultation on the next ScotRail franchise from November 2014. A 10 year franchise is planned with a break at five years while the overnight Anglo-Scottish services will become a separate franchise. A closer alliance is being sought being the franchise holder and Network Rail on track maintenance, renewals and other lesser improvements. There will be a more flexible service specification with operators encouraged to develop marketing and lower fares on trains with empty seats. Maximum regulated fares will be extended to rural services and franchise bidders should seek to encourage greater integration with bus and ferry services. Final policies on peak fares have yet to be settled but the aim is to keep maximum fares no more than 1% above inflation with franchise bidders expected to introduce real reductions on off-peak and rural services. The UK government has specified a rise of 3% above inflation in January but is under pressure to ease this increase.

Scottish Government has specified the public funding towards Network Rail likely to be available in Control Period 5 – 2014/2019. In cash terms, this makes an average of £665m available in each year from 2014/15 exclusive of additional payments towards franchise support and rolling stock. Though the EGIP electrification programme has been slowed, the statement provides for: electrification of 100 km of single track per year, a minimum 15% rise in rail passenger km 2014-19, reopening of Borders Rail Route to Tweedbank, Phase 1 of Aberdeen-Inverness rail improvements including new stations at Kintore and Inverness Airport, and Phase 2 of Perth-Inverness line improvements to bring further cuts in trip times.

Network Rail and ScotRail have announced that a low-cost £12m electrification of the Glasgow-Paisley Canal line can proceed in a matter of months rather than years. There is further speculation that such developments may lead to early electrification of the Glasgow Crossrail link from Shields Rd to Bellgrove and also of the line to East Kilbride together with the South Suburban line in Edinburgh and extensions into Fife.

A survey for Network Rail finds that 82% of those living near the Borders Rail route support the project with 63% saying they will use it. Transport Scotland has denied fears that construction economies may lengthen Edinburgh-Tweedbank trip times to over an hour. Completion is expected in 2014/15.

DB Schenker is to introduce direct whisky container trains from Scotland to Wroclaw in Poland later this year.

Fares for first class travel on the East Coast main line are up 39% since complimentary food and extra even-interval trains were introduced in May 2011.

Rail passenger trips in Britain rose 8.9% in 2010-11 to a record 1.16bn. Trips within Scotland rose 3.7% to 78.5m with trips between Scotland and other parts of Britain up 11.7% to 7.4m. In the year to March 2012, ScotRail has had a further 3.6% rise in passenger growth to 81m.

BUS AND TAXI

Beset by debt, FirstGroup is taking steps to improve profitability but has found that recent fare rises have led to steeper than expected falls in usage. More positive approaches are being considered but many services in Mid and East Lothian have moved to other operators – notably the publicly owned Lothian Buses which has also cut former day tickets from £7.30 to £5 and single tickets on the Pencaitland-Edinburgh route from the former £3.60 charge by First to £2.40. South Queensferry residents want an extension of Lothian Buses to their area.

East Lothian based Prentice Coaches has stepped in to offer scheduled buses for the first time, adapting two axed routes to take in more shops and attractions while buying two new Alexander Dennis vehicles to re-launch services in the North Berwick area. Eve Coaches of Dunbar have introduced a direct service from Ocean Terminal, Leith, to Seton Sands, restoring a direct link from Leith to Portobello.

Buses now handle 33.6% of passengers to and from Edinburgh Airport (19.7% in 2005). Private car acess has fallen from 50% to under 40%. Most other passengers use taxis.

Stagecoach has axed the hourly bus to Culloden battlefield as it is not commercially sustainable. Tourism groups complain that the decision was taken just at the start of the summer season.

The UK's five major bus companies, including First and Stagecoach, have agreed to subsidise fares for those between 16 and 24 not in employment, training or education. Others are seeking a wider policy change, using savings from cuts in the distance and age allowable for free bus travel to encourage bus and local transport use through greater use of discounts for local travel by a wider range of groups and caps on flat or electronic fares.

The Competition Commission has provisionally cleared McGill's purchase of Arriva services in the west of Scotland saying there is still sufficient competitive pressure from other operators giving McGill's a strong incentive to maintain service quality and avoid fare increases.

Scottish Government is providing a £3.3m grant to Aberdeen City Council to allow hydrogen buses to be introduced within two years. 10 buses have been ordered.

Western Isles Council has delayed plans to save £40,000 a year by reducing the free primary school travel provision from 2 miles to the statutory minimum of 1 mile. Most councils have already cut the distance to 1 mile but Western Isles faces concerns about walking on roads without pavements often in dark winter conditions

Glasgow's Fastlink bus route due to run from the city centre to SECC will not now open until after the Commonwealth Games. Glasgow City Council says that bus stops and signage will not be in place until 2015 but there has been criticism of why delays have been so lengthy.

Network Rail has dropped controversial plans to remove taxis from Waverley Station. Plans included golf-style buggies to transport people to and from the station, but the City Council was refusing to meet the £1m bill for streetworks necessary to relocate taxis outside the station. Instead Network Rail has raised the daily rate for cabbies inside the station collecting fares from £2.30 to £5 and is introducing a secure-entry system.

CARS, ROADS AND PARKING

Nicola Sturgeon has changed posts with Alex Neil to become Cabinet Secretary for Infrastructure and Capital Investment and also Referendum issues. She has attended the

ceremony for foundation laying for the central pillar of the new Forth Crossing.

Final legal objections to the Aberdeen Western Peripheral Road have been rejected with the government now studying a public/private not for profit partnership which might allow construction to begin by 2015.

Intense and prolonged rainfall over the summer led to transport being badly affected by landslides and flooding with increased pressure for future budgets to include greater allowances for increased costs arising from higher rainfall with a greater incidence of flash flooding. Highland Council is examining seven options for a permanent solution to the problem of A890 landslides on the shore of Loch Carron. Costs range from £23m to £115m. A £1.5m plan for an emergency relief for further A83 blockages at Rest and be Thankful and longer-term options are being examined.

After strong pressure, the Chancellor has postponed until January the 3p a litre rise in fuel duty due in August. This involves a £550m loss in income, met by costs savings in other parts of government.

The Scottish Roads programme remains heavily constrained by the costs of the additional Forth road crossing and no prospect of the use of borrowing powers until 2015.

£20m is to be made available for A75 upgrade between Hardgrove and Kinmount and bids have been invited for the £26m A75 Dunragit Bypass.

Further A77 grade separation is included in the £21m Symington to Bogend Toll scheme.

The £11m Pulpit Rock improvement on the A82 is due to start in 2013.

Transport Scotland is undertaking further study of options for an A77 Maybole Bypass.

Priority works on Perth-Inverness A9 dualling have been advanced to 2015 but full dualling will not be completed until 2025 despite campaigns following further road fatalities.

Management of the present and proposed Queensferry road bridges is to be privatised with FETA abolished and staff transferred to the new private contractor.

A joint report from Transport Scotland and COSLA suggests that, unless local authorities take steps to secure better value from road maintenance spend through shared services and planning, local roads may be transferred to a national agency. COSLA has strong reservations about the latter proposal, preferring a shared service approach and some shifts in the balance of trunk and local road spend.

A rise in the number of parking tickets issued in Edinburgh has revived allegations that parking charges and fines are another way to tax motorists. However, Edinburgh City Council is to extend free parking after 5pm during festive periods in August and possibly in December.

East Lothian Council has faced opposition to proposals for beach parking charges which could raise up to £1m a year and avoid the need for cuts in coast related services.

The number of motorists caught speeding in built-up areas is rising. Police see this as 'very disappointing'.

New car sales in Scotland are 5.5% ahead of 2011 with this rise being higher than in England.

Journey time signs that imply breaking motorway speed limits have been criticised. Under newly devolved powers, the Scottish Government is likely to maintain a 70mph motorway maximum even if the limit changes to 80 mph in England.

WALK AND CYCLE

30 years after the West Highland Way opened, it has been listed as a 'top world trek' by National Geographic magazine. Further long-distance walking routes have been announced as well as a canoe route through the Great Glen. Proposals include a Berwickshire Coastal Path, a Rob Roy Way, an extension of the Speyside Way from Aviemore to Newtonmore and a 45 mile pathway from Tyndrum to Oban.

SNH has found that walkers and cyclists are spending increasing amounts helping to boost the economy. Walking is the most popular outdoor recreational activity for adults as well as being the means of most short trips in towns and cities.

Transport chiefs in Edinburgh are planning to create safer and more attractive streets through redesign and the removal of many pedestrian barriers and other clutter.

Press coverage of cycling has increased, aided by the impact of more accidents and a rise in the health and sporting profile of cycling. Public opinion is becoming more supportive of increased public spending on walking and cycling along with appropriate regulatory and publicity changes. Streets adverts encouraging more space for child cyclists have appeared in many towns. Though Scottish road accidents have fallen to a historic low, Scottish accidents involving pedal cyclists in 2011 were 9% up on the 2004-08 average.

The world-class Cathkin Braes Mountain Bike Trail south of Glasgow is to open in spring 2013 and will be used as a Commonwealth Games venue in 2014.

Councillor Frank McAveety has been appointed a cycling czar by Glasgow City Council with the aim of making cycling the biggest participatory activity in the city by 2020. His remit is to encourage commuting, racing and leisure cycling. Bike trips into Glasgow city centre are already 50% up on 2009 but still account for less than 2% of commuting.

A study of the Cambus to Alloa walk/cycle route shows usage up 430% from 13,364 people in 2007 to 58,000 in 2011.

A recent Virgin Money survey has suggested that Glasgow is the sixth most bike-friendly place in Britain. Plymouth topped the list. Edinburgh was in 25th place out of the 60 towns and cities surveyed.

NEW PUBLICATIONS

A study by the think tank IPPR has concluded there is no evidence of a 'war on motorists'. In cash terms, motoring costs had risen 32.5% between 1997 and 2010 (a real terms fall) while rail fares had risen 66.2% and bus and coach tickets 76.1%. There was no case for a further delay in raising fuel duty in January 2013 by at least the level of inflation. The report also urged faster action on road tolls and congestion charging with some of the extra funds raised used to improve public transport.

A report from RAC Foundation suggests that fuel duty may have to rise 50% to cover a £13bn hole in Treasury coffers and fill the revenue loss arising more fuel-efficient cars, slower traffic growth and shifts to electric cars.

A report by the Office of National Statistics shows that Edinburgh attracts is second in the top ten list of UK tourist destinations with Glasgow at number five. In 2011 Scotland had a 9% rise in visitors from other parts of the UK but no rise in visitors from other places.

AN EVALUATION OF THE BENEFITS OF CMAL'S PROPOSED 'HYBRID' FERRY

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Background

Ferguson Shipbuilders, Port Glasgow, is building two part-battery-powered ferries in a £22m contract for state agency CMAL, the owners of CalMac's fleet of ferries. Designed to carry up to 150 passengers and 23 cars, the ships are intended for short routes, including the link between Skye and Raasay.

This paper has been prepared to stimulate debate about investment in this innovation and to encourage wider debate about investment in ferries to ensure that Scotland has a sustainable approach into the future. The views expressed in this paper are those of the author and do not represent those of any other organisation.

CMAL maintain that battery power has been used for decades on naval submarines, but acknowledges it is a new technology for ferries. This requires lithium ion batteries weighing 7-8 tonnes to be installed in each ship. The idea is that the ships should be able to charge from the national grid overnight, drawing on renewable energy. However, importantly, the vast majority of ship power – some 80% or more - will still need to come from diesel engines, with the batteries only providing for around 20% of power.

The £22m cost for the pair is considerably higher than for similar conventionally-powered ships, but it is claimed by CMAL that the design will help reduce lifetime costs and lead to long-term savings. Further claimed benefits of the hybrid ferry design include reduced fuel consumption, lower CO2 emission and other pollutants, noise reduction and lower maintenance requirements.

Methodology

Here the CMAL hybrid ferry is evaluated and compared with a comparable size of proven design from Sea Transport Corporation, the latter one of the leading designers, builders and operators of small vehicle ferries internationally. The analysis considers and compares a number of key factors relating to each vessel. This includes, primarily, vessel capacity, engine power, service speed, and newbuild cost.

Figure 1 shows the CMAL 'hybrid' ferry. This is a monohull (i.e. single hull) of traditional design, a drive-through vessel with bow and stern ramps. It is typical of CalMac/CMAL small vessels, being a relatively heavy craft for its size (approximately 700 tonnes loaded displacement).

Figure 2 illustrates the Sea Transport design, showing a slightly longer version of the 35m ship analysed. This is a catamaran (i.e. twin hull), also with bow and stern doors and drive through configuration. Loaded displacement of the 35m catamaran is more than a third less than the CMAL monohull, at about 450 tonnes. A notable feature of the Sea Transport catamaran is the slender bow shape which helps to significantly lower resistance and reduce required power.

Both ship types are suitable for accessing gradient ramps/slipways and are also compliant with UK and EU Directives. Sea Transport's catamarans are operational in The Netherlands, UK, Australia, and in numerous countries throughout Asia, Middle-East, and Latin America. CMAL's monohull design appears very similar to other small ferries primarily operated by state-owned CalMac in Scotland.

Analysis

Ferry Dimensions

The CMAL monohull is longer, at 43m, than the catamaran, which is 35m (see Table 1). However, the catamaran has a larger deck area thanks to its wider beam of 15m compared with 12m beam for the monohull. Draft of the hybrid is 1.7m, with the catamaran a bit less at 1.6m. Wider beam represents a key advantage for the catamaran as the larger deck area means more vehicles can be carried.

Capacity

Both vessels are designed to carry 150 passengers. The narrower CMAL monohull is able to load 23 cars, whereas the catamaran has a greater loading capacity of 35 cars. This means the catamaran can carry the same number of cars as its length in metres,which is an advantage typical of catamarans designed by Sea Transport. Catamaran car capacity is based on the Toyota Camry (5m x 1.9m) which is now regarded as large size.

The catamaran therefore offers a 52% advantage over the monohull in terms of vehicle carrying capacity. This also means the catamaran can load more trucks and/or coaches than the hybrid monohull; in fact the catamaran can load 4 trucks or coaches as opposed to just 2 large vehicles on the hybrid ferry.

The 2 sets of heavy batteries positioned within the CMAL hybrid ferry require an additional large compartment to be installed on board. This compartment appears to comprise a bit more than the dimensions of a 20' container. The added battery facility is therefore equivalent to the hybrid ferry having to carry a loaded truck, non revenue earning, on each and every trip; this will in turn influence (i.e. increase) ship displacement and hence required power.

Power and Speed

The heavier CMAL hybrid monohull ferry has installed main engine power of 900 kW, for a stated service speed of 9 knots. By comparison, the Sea Transport catamaran has installed power of 700 kW for a service speed

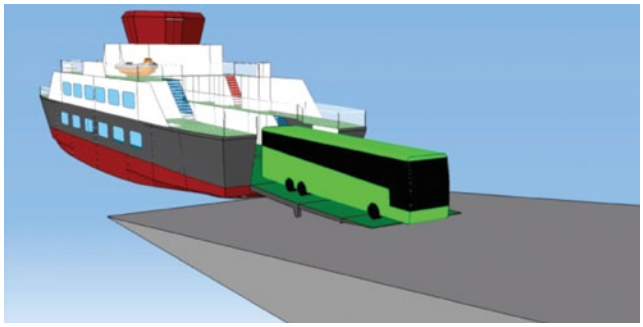


Figure 1: CMAL 'Hybrid' Ferry (Source: CMAL)

Figure 2: Sea Transport Catamaran Ferry (Source: Sea Transport Corp.)

Table 1: Technical and cost evaluation of CMAL 'Hybrid Ferry' and Sea Transport Catamaran Ferry

	Length (m)	Beam (m)	Cars	Passengers	Speed (Knots)	Engines (kW)	kW/Car space	Cost (£)	Cost per Carspace(£)
CMAL 'Hybrid'	43	12	23	150	9	900	39	11,000,000	478,261
(Power Demand @ 9 knots)						*350*	*15.2*		
Sea Transport Catamaran	35	15	35	150	11	700	20	4,250,000	121,429
(Power Demand @ 9 knots)						*450*	*12.8*		
Benefits of Catamaran:									
	Extra Car Capacity			+52%					
	Lower Installed Power			-22%					
	Lower Installed kW/Carspace			-49%					
	Lower Power Demand/Carspace			-16%	(@ 9 knots)				
	Lower Build Cost			-259%					
	Lower Build Cost/Carspace			-394%					
	Faster Speed			+22%					

of 11 knots, 2 knots more. The catamaran therefore has 22% less total installed power, yet carries more cars, and at a faster speed, than the hybrid ferry.

As the catamaran can carry 52% more cars than the monohull (i.e. 35 as opposed to 23), this means the installed power per car space for the latter is 49% less than for CMAL's monohull. In other words, the catamaran has half the installed kW-power per car space than the hybrid ferry. The 11 knot speed of the catamaran affords a further 22% operational advantage over the hybrid monohull ferry.

CMAL state that actual power demand for the hybrid monohull will be 350 kW at 9 knots. (Sea Transport believe 350 kW for the hybrid would at best only achieve max 8 knots speed.) Power demand for the catamaran at 9 knots is 450 kW. This means power demand per car space for the hybrid is therefore 15.2 kW, whereas for the catamaran it is 12.8 kW, 16% less.

Newbuild Cost

The published contracted cost of the two hybrid ferries is £22m, so approximately £11m each. This appears to be an extremely high price for what is a relatively small ferry. Sea Transport quotes a much reduced price of £4.25m for its 35m catamaran, which represents a cost saving of almost £7m or 259%. This implies that it would be possible to acquire **five** catamarans for the price of the two CMAL monohulls. Each catamaran has 52% more car capacity than a hybrid ferry, which means that 5 catamarans actually offer the equivalent carrying capacity of 7.5 hybrid ferries.

The newbuild cost per car space of the catamaran estimated at £121,429, is only a quarter of the equivalent cost per car space of the CMAL monohull (£478,261), representing a colossal saving of almost 400%.

For further comparison, data has been obtained on other recent orders for small ferries of a similar size. A 50m ferry capable of carrying 28 cars at 11 knots/750 kW built in Chittagong during 2012 for the Hundested-Rorvig route in Denmark cost US$4.5m (GB£2.9m), which is less than one third the cost of the CMAL hybrid. And Western Ferries has ordered two 48m ferries from Cammel Laird in Birkenhead capable of carrying 40 cars and 220 passengers at 11 knots/900 kW, at a price of around £4.0m each.

It is therefore beyond doubt that small vehicle ferries of up to 50m length can readily be bought for around £4m or less, even in Europe. As to why the £11m newbuild cost of the (smaller capacity) CMAL hybrid ferry is so much higher than the catamaran and other similar vessels, most likely this relates to a number of factors, including:

- Use of more steel in construction of what is a 'traditional' monohull ferry
- Expensive batteries and associated equipment/systems
- Added complexity of the hybrid monohull
- CMAL's in-house 'design team' appears to have ignored superior alternatives
- Limited incentive for a public agency (i.e. CMAL) to procure ships at lower cost

Conclusions

The heavy 'hybrid' ferry is claimed to be environmentally friendly, yet any 'benefit' gained through the partial use of its limited battery power is outweighed by the inefficiencies inherent in the design and cost of the CMAL monohull relative to the Sea Transport catamaran (and other vessels).

The key technical and operational advantages of the established Sea Transport Corporation catamaran design compared with the CMAL hybrid monohull ferry are:

- 52% extra car capacity
- 22% lower installed power
- 49% less installed power per car space
- 16% lower power demand per car space (at 9 knots)
- Potential for 22% faster speed (11 knots), and
- 250 tonnes less loaded displacement (i.e. one third less weight to shift around)

The significant cost advantages of the catamaran over the hybrid monohull are:

- Build cost saving of nearly £7m per vessel (some 259% less)
- Four-fold (i.e. 394%) build cost saving per vessel car space

Compared with the Sea Transport Corporation catamaran, the 'hybrid' ferry therefore offers no advantage in terms of installed power or power demand per car space, and hence achieves no environmental advantage over existing ferries as claimed by CMAL. Moreover, the catamaran offers over 50% extra car capacity, and achieves this at almost one third the capital cost of the hybrid.

Operating cost of the catamaran will benefit from reduced depreciation, and lower fuel cost per car space. Revenues should be potentially greater thanks to the 52% extra vehicle carrying capacity offered by the catamaran. The catamaran therefore offers opportunities to help reduce operating subsidy that the hybrid ferry does not.

Conclusion

CMAL's 'hybrid' ferry will clearly not achieve its stated aims to reduce costs and emissions. Innovation can be expensive but with alternative fuel efficient options available and no clear route towards sustainability, combined with the opportunity to acquire small ferries at very competitive prices, the CMAL 'hybrid' ferry pilot is a questionable use of scarce public resources.

Logistics & Supply Chain Industry - Outlook 2012

The World Economic Forum's Logistics & Supply Chain Global Agenda Council is chaired by Prof Alan MacKinnon (formerly STSG Chair and Professor of Logistics at Heriot Watt University). The Council has recently published a wide ranging review of the logistics sector which challenges the supply chain industry to think globally act regionally, and tackle the growing challenges of trade facilitation, supply chain risk management, transport infrastructure, nurturing supply chain talent and creating sustainable systems. The full review is published at www.weforum.org and a few key points are summarised for STR. Scotland's status as a trading nation has derived from its wide choice of ports and excellent maritime connections and its future success depends on playing a key role within global supply chains.

Logistics and Trade Facilitation

There is growing acceptance that the traditional form of negotiation, which was preoccupied with trade barriers and tariffs, is outdated in a world criss-crossed by complex supply chains in which value is added incrementally, in numerous locations. Research has shown that deficiencies in the physical movement of goods are a greater deterrent to trade growth than institutional trade barriers. Often these logistical constraints are not confined to the borders, but extend across the internal infrastructure and freight market. The importance of these constraints is not sufficiently recognized by trade negotiators. Partly, this is because they lack an understanding of modern supply chain practices, but also because they do not adequately consult the businesses affected.

Supply Chain Risk and Resilience

Supply chain complexity and "interconnectedness" is increasing rapidly at a time when the risk of disruption caused by extremes – such as geophysical disasters, terrorism and strikes – is mounting. In addition to the standard list of "mega-threats", others which could have a major impact in the next few years include:

- Piracy: if continued unchecked, may precipitate industrial action by maritime trade unions
- Bankruptcy of one or more major carriers: although the freight market would adjust, the removal of significant amounts of maritime or air freight capacity at short notice could dislocate time-sensitive global supply chains

> *"Deficiencies in the physical movement of goods are a greater deterrent to trade growth than institutional trade barriers"*

- Cyber attack: paralysing cloud computing networks on which logistics systems are becoming increasingly dependent. More needs to be done to "stress-test" supply chains against potential risks and to take "near misses" into account. Analysis of near misses in the aviation sector has greatly enhanced air safety.

Chain Decarbonization

Over the past year, several major logistics-related developments have occurred. In the maritime sector, significant progress had been made in establishing energy efficiency standards for new vessels. The European Union has set a target of reducing CO2 emissions from transport by 60% by 2050, with "zero-emission city logistics" by 2020. The World Economic Forum has taken the lead in trying to get a group of international organizations to harmonize the measurement and reporting of greenhouse gas (GHG) emissions from freight transport.

To date, the Climate Change actions have been preoccupied with macro-level, top-down approaches to cutting GHG emissions. There is a new focus on developing industry case studies to show how "bottom-up" efforts by individual companies and trade associations can yield significant carbon savings, independently of new global agreements on climate change.

Supply Chain Skills Gap

Logistics companies and trade associations are reporting problems in obtaining enough qualified staff in logistics including in the United Kingdom. The demographic changes being seen such as an aging workforce, and diversifying demographics compound the challenges.

Green Logistics

Catherine Weetman of DHL presented her vision of sustainable supply chains to the Chartered Institute of Logistics and Transport in Septermber 2012 in Glasgow. This article summarises her vision of how to rethink and redesign for a one planet world.

Demand and Supply

The age when people depended on oil has been short, but transport now stands alone of the major economic sectors in the economy by steadily continuing to increase its dependency on oil. Energy stored in fossil fuels like coal, oil, and gas can be released easily but world population expansion means that the continued use of fossil fuels for transport energy needs is not possible as demand exceeds supply, in every realistic prediction of the future. A sustainable transport system involves storing energy as fast as we use it.

Re-think and Re-Design

Work by the Ellen Macarthur Foundation explains the change from a linear economy to closed loop systems. Cradle to grave systems are replaced with cradle to cradle systems. There are many sustainable business models emerging with logistics companies being pioneers of many of these. The new models include: mass customisation, shared ownership, zero waste services, up-cycling, additive manufacturing, closed loop systems, 3D printing, recycling, re-distribution, bio-capacity investment, product service systems, mass customisation, local ownership, time banks, cooperatives, open sourcing and integrated renewable energy.

There are many examples of growing businesses delivering these services. Car clubs and bike sharing systems are product service systems. These sustainable systems concentrate the added value in service delivery, rather than products, with the focus being on use rather than ownership, new types of service providers sell the functions of the product via sharing, pooling, and leasing.

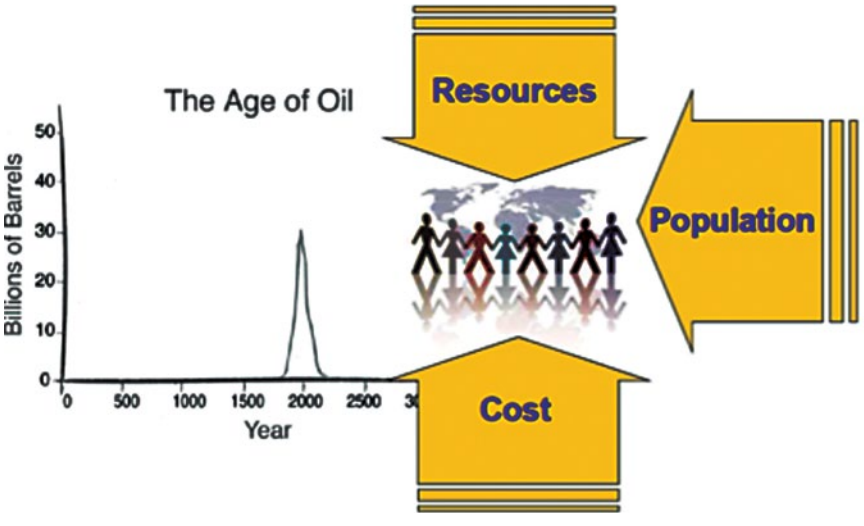
"sustainable systems concentrate the added value in service delivery, rather than products"

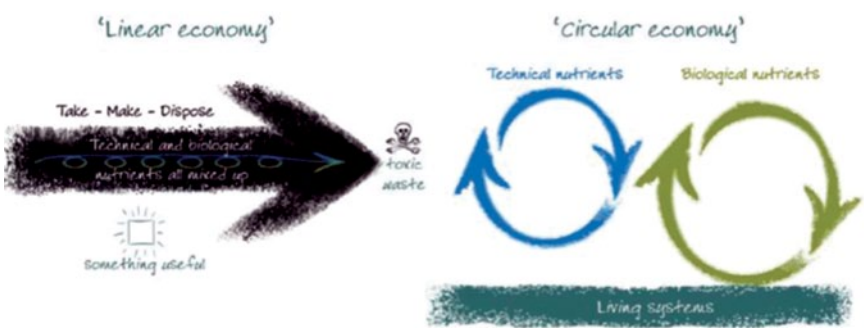
Examples of recycling and re-distribution to add value to the life of products include ebay and freecycle.

Ford motor company's Model U concept car also shows the closed loop thinking. The company has unveiled a car sourced from existing materials powered by a hydrogen engine and using chemicals chosen for their human and environmental health qualities, capable of perpetual recycling. Other parts of the car are made from a corn-based biopolymer that can be composted after use.

A future which embodies these principles is bright. Many times before societies have faced major challenges and sharp transformations have been needed. We are currently experiencing one of these major transitions to shape a new society and economy. Within a few decades, society social and political structures and key institutions will have changed or been re-arranged. Transport and logistics has an important role to play:

"Whatever you do will be insignificant, but it is very important that you do it" - Mahatma Gandhi





Car Club Innovations and Why they Matter

In June 2012 the RAC Foundation published research by Scott Vine of Imperial College London which maps out the car club sector and what can be expected from it. The research is published at http://www.racfoundation.org/research and this article summarises a few of the key points. Edinburgh was one of the first UK cities with a Car Club and with car clubs membership and use expanding across Scotland this research is a timely review of the state of the sector.

Car clubs are growing quickly in the UK, and entirely new types of services are beginning to emerge. Their impacts are small today, but as car clubs grow in scale increasing attention is being paid to this sector. This research has assessed the implications for:

- Consumers: How, in practical terms, does the 'car access' offered by car clubs differ from owning a personal car or relying on one-off services such as taxis or car hire?
- Industry: What are the implications for existing markets? What opportunities exist to support or provide car-club-style services?
- Road users: What do car clubs mean for emissions, road traffic conditions, and use of alternative forms of transport?
- Policymakers: What is the appropriate role of the public sector?

Customers

From a customer's point of view, the main advantages of relying on a car club are:

- The fixed costs of owning a personal car are not incurred.
- There is no ongoing responsibility for the car: insurance, maintenance, MOT, finding a secure parking location, and so on, are all looked after by another party.
- A variety of models can be hired to suit different mobility needs on different occasions.

However there are also disadvantages

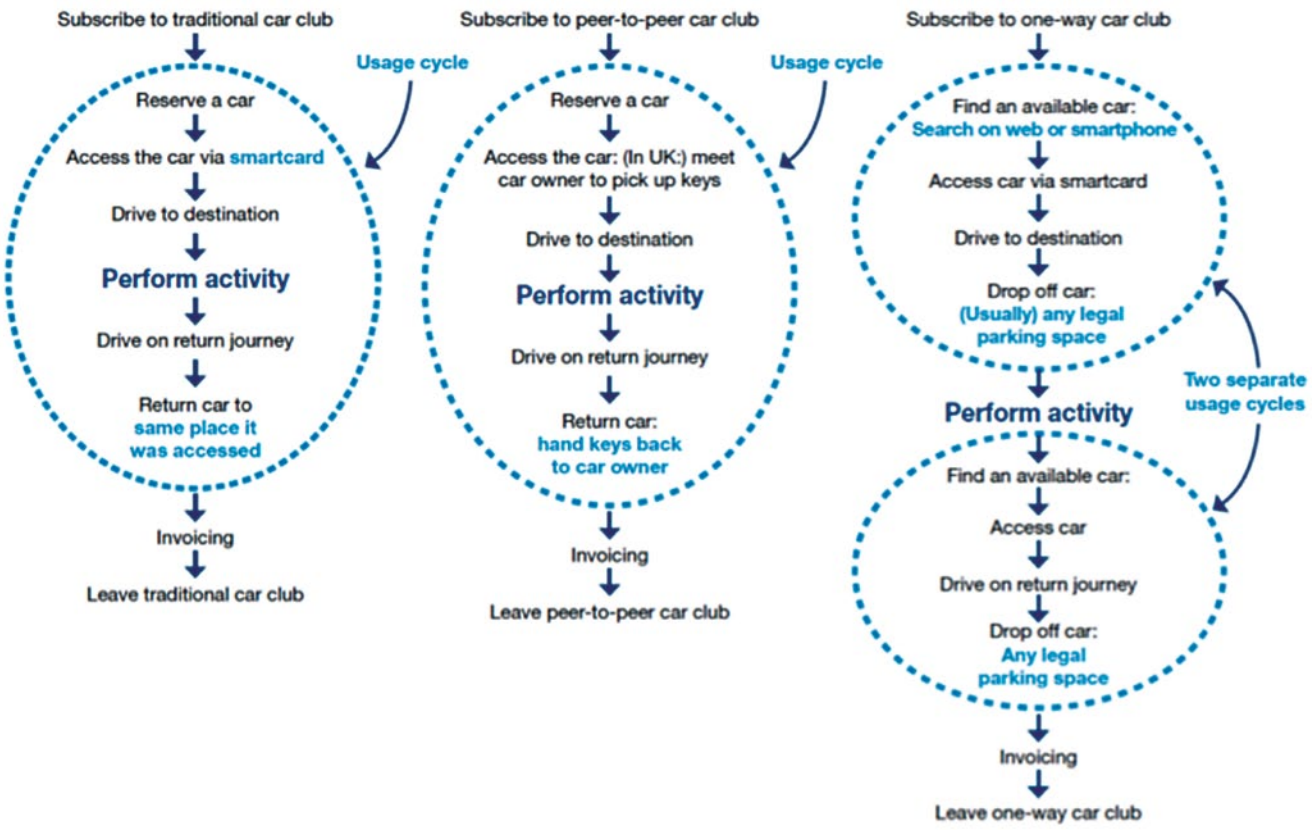
- Usage costs are higher than the cost of petrol for a personal car.
- The driver has less control over where, when, and for how long a car is used and where it is parked.

In any type of car club, a driver accepts responsibility for the state of the car at the beginning of their usage episode accepting both that it is fit for use and that it has no unreported damage. When a driver uses a car club vehicle, they agree to inspect it at the outset and be satisfied that the current condition of the vehicle is accurately recorded or risk accepting responsibility for damage caused by a previous user.

Responsibility is not shared between customers but passed along from user to user as with car hire.

There are three main types of car club:

- A 'traditional' car club (is an organisation that rents cars to customers on a short-term basis, frequently in 30-minute increments. Examples include Zipcar and City Car Club. Cars are owned by the car club, which is usually a private company. The fleet is dispersed in neighbourhoods, in dedicated parking spaces which may be on-street or off-street. Customers must subscribe, which means an initial DVLA driving record check, and then frequently the payment of a fixed annual fee. To use a car one must first make a reservation; typically this is done via a web interface or smartphone app. At the appointed time, the customer accesses the vehicle by swiping a smartcard on the windscreen. In order to avoid liability, it is the customer's responsibility to ensure that any damage to the vehicle is reported before using it. By the end of the agreed reservation period, the vehicle must generally be returned to the same parking space from which it was accessed. Some car clubs outside the UK permit open-ended reservations, where the customer can return the vehicle when they please and pay only for the additional time used.



- 'One-way' car clubs are centrally owned like traditional car clubs, but they allow subscribers to use cars for one-way journeys within a defined geographic area. Advance reservations are possible, but most use is spontaneous. Customers thus pay by the minute for only the time they are driving one of the cars, whereas in a reservation-based system the customer pays for the entirety of the reservation period regardless of whether they pick up the car late or return it early.
- A 'P2P' car club serves as a middle-man between car renters and car owners who wish to rent their car out to them. The cars are owned privately – not by the central organisation – and used on a round-trip basis. The P2P car club arranges insurance and facilitates the market. The revenue stream typically comes from a percentage of each rental within the system. Car renters find available cars on the system's website; requests to rent a car are passed along to its owner for their approval. Both owners and renters rate each other; these ratings, which all users can see, help people to determine who they are comfortable interacting with in future. Some P2P car clubs have telematics systems installed that can read smartcards and allow an authorised renter to access a car independently. WhipCar, the largest operator in the UK, does not currently have such systems, and thus renters and car owners owners must meet before and after each booking to exchange the keys.

Further innovations in services will result from new organisational structures and technological advances. As the market matures, car clubs will increasingly offer a diversity of services.

"One-way car clubs provide larger benefits in terms of widened car access, whilst traditional car clubs offer greater environmental benefits"

Although it is recognised that there are uncertainties in how services and markets will evolve, it appears that one-way car clubs provide larger benefits in terms of widened car access, whilst traditional car clubs offer greater environmental benefits.

Both types of services are predicted to have a majority of subscribers that drive somewhat more than they otherwise would, and a minority that on average drive considerably less. The analysis of the potential market in London forecasts just over 400,000 active subscribers to traditional car clubs as compared to just over 100,000 today. More strikingly, the forecast is for around 1.5 million subscribers to a prospective one-way system in Greater London.

Car manufacturers are beginning to design cars specifically for use in car club operations. At present, vehicles in car club fleets are typically standard models that have been fitted with aftermarket telematics. By way of contrast, bike-sharing systems, such as London's cycle hire scheme, use purpose-built bicycles. Despite automotive engineering being much more complex and working to longer timescales, car models built specifically to suit the demands of car club operations are now emerging, and will continue to do so.

Car club systems at scale would work very differently to the prevailing system of personal car ownership. When demand is greater than available capacity, 'virtual congestion' occurs within a car club's reservation system rather than traffic congestion on the roads: some users cannot access a car whilst others can, in contrast to the pervasiveness of road congestion. In principle such advance knowledge is an improvement over the unreliability that results from road traffic congestion. On the other hand, car clubs rely on wireless communications and back-office IT systems that are vulnerable

to system-wide disruption. Moreover, access to a car club fleet can also be controlled in ways that access to road space cannot, raising a host of provocative questions.

At this point in the market's development, the overriding principle for the public sector should be to preserve its flexibility: there is no need to rush into long-term contracts or large-scale publicly funded projects. The single most important point of interaction with car club operators arises in tendering for privileged access to on-street space. Failure to take action at scale in the short term does not preclude a rethink over a longer period, by which time – it must be presumed – technologies will have improved and there will be lessons to be learned from others' experiences.

It is suggested that other public sector actions should include:

developing joint public transport / car club ticket products, ensuring that under-represented lower-income groups are not excluded, and engaging car clubs for staff use, thus allowing a reduction in the (non-emergency) publicly owned car fleet.

Car club activity – and other non-traditional ways in which cars are used – should be integrated into wider transport data collection efforts (e.g. the National Travel Survey). The guiding principle would be to track both subscriptions, and, for any journey made in a car, the means by which the car was accessed. This would provide greater credibility regarding impacts: to date, nearly all understanding of car clubs' effects relies on data from surveys where respondents are surveyed specifically because they are customers of a car club. Changes to household travel surveys must be carefully considered in the light of the possibility of introducing a discontinuity into time trends. A relevant precedent, however, is the separate treatment of taxis and minicabs in travel surveys; each is used for a rather small share of travel, but the distinction is important for policy reasons.

A number of important research questions remain unanswered.

Evaluation methods are still in their infancy; this is particularly acute with regard to peer-to-peer and one-way car clubs. The nature and extent of 'induced travel' is also poorly understood: whether and how people adjust their destinations (and how frequently they visit them) to take advantage of a car club subscription. Life-cycle analyses of the environmental impacts of car clubs are needed; in other words using methods that take into account manufacturing, scrappage, and effects on the second-hand car market. A related issue is to do with the long-term impacts of car club subscription on people's desires for future personal car use: this is a complex matter about which little is known; it is suggested that a starting point would be to institute regular exit surveying of car club users.

Reported Road Casualties in Scotland

The latest statistics published by Scottish Government show that on Scotland's roads in 2011 there were 2,061 people reported killed or seriously injured (186 of whom died). In total there were 9,974 reported injury accidents in which 12,770 people were reported as being casualties.

Since 2005, all police forces have reported contributory factors when collecting data on accidents. The views of contributory factors reflect the reporting officer's opinion at the time of reporting the accident and are based on the information which was available at that time. Driver/rider errors or reactions were reported in 66 per cent of all reported accidents with 'failed to look properly' the most common type (involved in 32%). Travelling too fast for the conditions or excessive speed was reported in 12% of all reported accidents and 26% of fatal accidents. Pedestrians involved in accidents were most likely to have failed to look properly as an associated contributory factor (recorded in 45% of all pedestrians), followed by careless/reckless or in a hurry (19%), impaired by alcohol (13%), crossed road masked by stationary/parked vehicle (12%) and failed to judge vehicle speed/path (11%).

"Unless there is a change to current trends, the number of serious and fatal pedestrian and cycle casualties could overtake car user casualties within a few years"

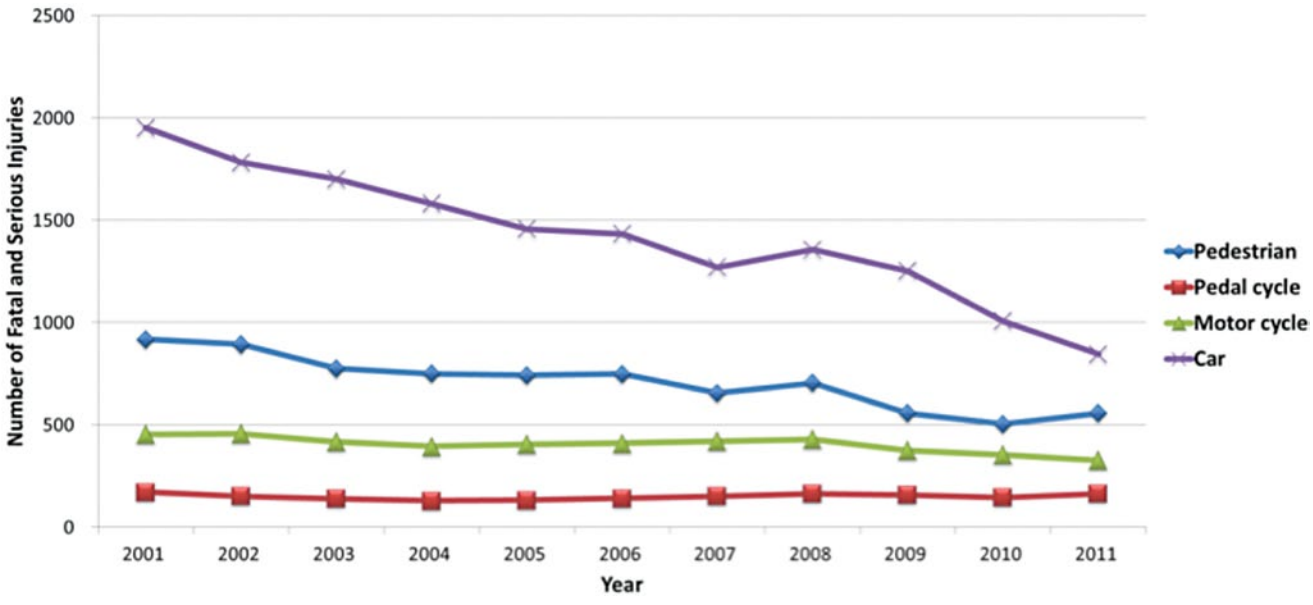
Scotland's Road Safety Framework was launched in June 2009. It included specific targets and milestones for casualty reduction which were adopted from 2010. The new targets differ from previous targets in that deaths have been separated out from serious injuries and separate targets have been set for reductions in injuries for adults and children by 2015 and 2020.

The new casualty statistics show that the figure of 186 people were reported as killed in 2011 is 36% below the 2004-2008 average of 292 so the reduction achieved is below the 2015 milestone. 1,875 people were reported as seriously injured in 2011, 28% below the 2004-2008 average of 2,605 - so the reduction is just below the trajectory. 7 children were reported as killed in 2011, 67% below the 2004-2008 average of 15, and below the 2015 milestone and 2020 target of a 50 per cent fall. 203 children were reported as seriously injured in 2011, 60% below the 2004-2008 average of 325 and below the trajectory for the 2015 milestone.

The estimated number of drink-drive accidents fell by around a third, from about 780 in 2000 to roughly 530 in 2010, the latest year for which estimates are available.

The decreases on the number of car casualties must be viewed against the fall in the number of trips made by car as a driver reported in the Scottish Household Survey of about 5% between 2001 and 2011. In contrast the reductions in the number of pedestrian casualties must take account of the increases in the number of walking activity of over 15% reported in the same period.

Levels of walking and cycling are rising but at a slower rate than the rise in pedestrian and cycle casualties. Unless there is a change to current trends, the number of serious and fatal pedestrian and cycle casualties could overtake car user casualties within a few years.



Fatal and Serious Road Casualties 2001 to 2011