Transport policy has a major impact on every aspect of our lives, including our environmental impact. And with 2009/10 such an important year for transport planning in Northern Ireland (there is the upcoming Committee for Regional Development inquiry into sustainable transport and the Regional Development Strategy and the Regional Transport Strategy are both to be reviewed and updated), it was only appropriate that Northern Ireland Environment Link should seek to analyse transport issues. It is not an exaggeration to say that the decisions that are made in the coming year will have a significant influence on the transport systems we have for the next 20 years and beyond.

The main purpose of this report is to highlight and analyse the important issues that should be addressed in the upcoming reviews of transport policy. We have brought together papers from a wide range of individuals and organisations with an interest in transport issues. Reading through the papers you will notice reference to: climate change; sustainable development; one planet living; accessibility (including for the vulnerable); road safety (especially for walking and cycling); health – prevention versus treatment; community development; active transport; public transport; freight transport; planning policy; and new technologies.

NIEL has also made recommendations for the future direction of transport policy in the concluding article of this Report. We hope you find the Report interesting and challenging.
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It has long been acknowledged that adequate transport infrastructure is a critical component of a healthy economy. Of course, many of the negative aspects of transport systems, such as local air pollution and traffic accidents, have also been known and considered for some time. However, it is becoming increasingly clear that our transport choices also significantly impact on wider society’s wellbeing (transport policy is seen as a contributing factor to the current obesity ‘epidemic’) and on the global environment (emissions from transport are a major contributor to global warming).

With such a wide range of impacts to consider and the scale of the investment associated with transport infrastructure (£3.5 billion was identified to implement the Regional Transportation Strategy from 2002-2012), it is little wonder that transport policy is slow to change. However, there is now a case for arguing that revolution, not evolution, in transport policy is needed in Northern Ireland. It is essential that we grasp the opportunities, to design a modern and sustainable transport system, that are currently being presented by the reviews of the Regional Development (RDS) and Regional Transportation Strategies (RTS). Transport investments have a long lead-in time and they also have a lasting impact on the lives we lead. The policy and investment decisions we make today will to a large extent dictate the transport system we will have for the next generation and beyond, so we must ensure our decisions are future-proofed. Simple ‘predict and provide’ policies (which might be summarised as ‘build more roads’) and related policies which maintain an over-reliance on the car are no longer appropriate. These policies are not compatible with our climate change responsibilities, the implications of peak oil or our efforts to promote a healthier and more equitable society.

INDICATORS AND TARGETS
The choices that we have made in the past have resulted in a transport network that is not fit for purpose. The following statistics paint a picture of a transport network that is at odds with emerging regional, national and international targets and regulations.

EMISSIONS
Northern Ireland’s per capita greenhouse gas (GHG) emissions of 12.83 tonnes per annum compares badly with the UK average of 10.48 tonnes. While the UK as a whole has achieved a greenhouse gas emissions decrease of 15.7% since 1990, Northern Ireland’s total has decreased by only 5.8%. Much of the differences between the UK and Northern Ireland averages are down to our transport (and agriculture) emissions (Figure 1). While domestic transport emissions in the UK increased by 9% from 1990 to 2006, in Northern Ireland they increased by a staggering 51%. The transport sector now accounts for 25% of Northern Ireland’s total GHG emissions.

The Committee on Climate Change, the UK and devolved Governments’ advisor on climate change, predicted that more efficient vehicles and new transport fuels could deliver reductions of up to one million tonnes of CO₂ in 2020. This would represent an 18% reduction in transport emissions but greater reductions are required by 2020 and even more by 2050. These emissions reductions can only be achieved by promoting active and public transport and in the longer term through considerable changes to land-use policies.

JOURNEY PROFILES
The Northern Ireland Transport Survey (2005-2007) includes the following statistics:

- Approximately 35% of journeys travelled by the average person in Northern Ireland are short journeys of less than two miles of which 44% are taken by walking;
- The average number of journeys made by walking and cycling has fallen since 2002;
- 23% of journeys were made for leisure purposes, 21% to and
Footpaths to Sustainability estimated that if the number of short journeys made by walking was increased by 20% (on 2002 levels) by 2012 (the target for the Northern Ireland Walking Action Plan), a 5% reduction in the carbon footprint of transport would be delivered. If every short journey was made on foot or bike, the ecological and carbon footprints of transport would reduce by 16% by 2024.

**PUBLIC HEALTH**

A modal shift to walking or cycling would also be beneficial in health terms. Currently, over half of all women and two-thirds of men are either overweight or obese. Obesity lowers life expectancy, results in approximately 450 deaths per year in Northern Ireland and can lead to other associated health conditions such as heart disease, cancer and type-2 diabetes. Travelwise reports that a 10% increase in the number of frequent cyclists would result in a cost saving of £200 million per year for the NHS. Moreover, a frequent cyclist is expected to be as fit as a non-cyclist who is 10 years younger.

Measures introduced to encourage more cycling and walking may also make our roads and streets safer. Reducing and enforcing speed limits have been shown to encourage active transport and to reduce traffic casualties.

**PEAK OIL**

The move away from hydrocarbon-fuelled private cars may become an economic necessity. In July 2008 a barrel of oil cost nearly $150, a price that was passed on to the disgruntled consumers at the pumps. The price has reduced since, but it is only a matter of time before this price level becomes the norm. The International Energy Agency has predicted that oil will cost $200 per barrel by 2030.

Ther has been a slight increase (2%) in the percentage of journeys to work undertaken by private transport (84% in Northern Ireland compared with fewer than 70% for the UK); and

Belfast residents make 59% of journeys to work by private transport.

**LAND-USE PLANNING**

Land-use planning plays a particularly important role in shaping individuals’ behaviour with regard to travel and transport. It is, therefore, imperative that a co-ordinated approach be taken when considering land-use and transport. A review of the planning system in Northern Ireland is currently being conducted while a revised policy for development in rural areas was recently released. We must increase the density of housing in major settlements and concentrate future rural development in established settlements to reduce individuals’ need to travel by car and to provide a larger customer base for public transport operators. Public transport links should be incorporated into new developments, with new bus stops and services provided in growing villages and towns in a pro-active and innovative manner.

**RTS (REGIONAL TRANSPORTATION STRATEGY)**

In 2002 the Department of Regional Development launched the RTS with a vision for:

> a modern, sustainable, safe transportation system which benefits society, the economy and the environment and which actively contributes to social inclusion and everyone’s quality of life.

The RTS acknowledged that Northern Ireland suffered decades of under-investment in public transport. Despite this, it allocated two-thirds of its investment to roads infrastructure while just one-third was allocated to improving Northern Ireland’s public transport. The RTS aimed for a modal shift from car-use to public transport-use, walking and cycling. Unfortunately, but unsurprisingly, this aim is unlikely to be realised. In fact, the Travel Survey and emissions figures suggest we are heading in the opposite direction.

The Programme for Government and Investment Strategy, which were released in 2008, commit Northern Ireland to a continuing unsustainable transport system; highway measures have been allocated 80% of the transport spend. Although highway improvements can have positive effects on the other transport modes and the environmental impact of road transport in particular areas (improving local air quality at traffic bottlenecks) they also have the effect of reinforcing car-use. Northern Ireland’s indicative expenditure figures for transport modes need to be revised significantly if we are to move away from a transport system which is dominated by the car. It is generally accepted that the construction of new roads generates more traffic; therefore, the emphasis for roads should be efficiency rather than capacity. Only by increasing the share of the budget for other transport modes will significant strides be taken towards ending this reliance.
Transport Strategy for Northern Ireland

Conor Murphy MP MLA
Minister for Regional Development

The Regional Transportation Strategy (RTS) aimed to address the underinvestment in transport infrastructure here while also promoting sustainable travel and encouraging the use of modes of travel other than the private car.

Working with my Executive colleagues, I have sought to address the underinvestment. The primary focus of the Programme for Government is on growing the economy. Recognising that a modern, efficient infrastructure is an essential requirement for economic and social development, one of five key priorities is to focus on building our infrastructure. The majority of transport here, including public transport and freight, travels by road, using the motorways and main roads for longer journeys. It is important to improve journey times on the motorway and the trunk road network.

The Investment Strategy includes £612 million for roads schemes over the first three years and a further £2.5 billion for the period to 2018. This will see the Eastern Seaboard Corridor improved to a minimum of dual carriageway standard between Larne and Dublin, dualling of the A4 from Dungannon to Ballygawley, dualling of the A2 from Maydown to City of Derry Airport, dualling of the A5 between Derry and Aughnacloy and two major dualling projects on the A6 between Randalstown and Castledawson and between Derry and Dungiven, as well as other strategic road improvements across the region. The Southern Government has contributed £400 million towards the development of the roads infrastructure here.

This programme will improve journey times, saving time and cost for all road users. It will especially help the haulage industry which needs swift, reliable journey times to operate efficiently.

While there is an unprecedented level of investment for new road schemes, the £200 million available for roads maintenance is lower than recommended. This means there is a risk that the condition of our road surfaces will deteriorate.

The RTS also suggested a number of improvements to public transport including the introduction of new buses, Quality Bus Corridors, improved bus services, improvements to bus and rail stations, and the maintenance and improvement of the rail network.

Public funding provided by my Department has allowed Translink to convert Citybus to Metro; to carry out a Strategic Review to introduce additional Ulsterbus services; and to purchase over 194 new buses and 23 new trains. All this has resulted in a 31% increase in Metro passengers since 2005 while rail passengers (excluding cross border journeys) for 2007/08 are up by 53% on 2001/02.

My Department is providing £45 million over the three years to 2011 for a further 290 new buses; £137 million for rail over the three years to 2011 for 20 new trains, a track life extension project on the rail line between Ballymena and Coleraine, a complete track relay between Coleraine and Derry, an upgrade of the rail track between Lisburn and Lurgan, and a new station at Newry which it is hoped will be completed in 2009. The Investment Strategy includes a further £319 million for rail and £111 million for bus over the following 7 years to 2018.

Figure 1: Trends in Mode of Travel to Work 2001-7.
In November 2008 I announced that the Executive had agreed my proposals for the introduction of a Rapid Transit System in Belfast.

We are doing a lot to improve our transportation system: many of our main roads will soon be at least dual carriageway standard; investment in public transport has already resulted in an increase in passenger numbers; new trains on all our lines will provide more frequent, reliable services; and we will have a modern bus fleet with increased capacity.

But there are some major challenges facing us:
- Average morning peak bus speeds in Belfast are decreasing, as are average speeds on the Regional Strategic Transport Network;
- Greenhouse gas emissions from transport continue to rise (transport accounts for around a quarter of the man-made greenhouse gas emissions in the North); and
- While there are more people travelling by public transport, the vast majority of journeys are still made by car.

Independent research by the Consumer Council suggests that only three in ten people use bus services regularly, and less than one in ten uses train services. The Survey suggested that cost, frequency, choice, safety and reliability should be the priorities for public transport here, but around one in four questioned said that nothing would encourage them to use public transport.

In light of all this, I have asked my Department to review the RTS. I aim to ensure that our future transportation needs are met in ways which are both viable and sustainable.

The Stern Report says that a well-designed strategy can support economic growth and tackle carbon emissions. We need to aim to reduce greenhouse gas emissions while still supporting economic growth. To do this, we need to get the right balance and properly include the environmental and congestion costs of transport, to encourage technological innovation, to promote behavioural change and make the right decisions on investment.

I intend to make sure that everyone living here has an opportunity to contribute to these decisions. To that end, my Department will publish a draft Revised RTS for public consultation later this year.
Provision of a Rapid Transit System for Belfast features as a priority in the Northern Ireland Programme for Government, reflecting the need to have a modern, efficient transportation system which can positively reduce congestion, increase productivity, attract investment and improve the general quality of people’s lives.

A Strategic Outline Case (SOC), which examined the potential technologies and routes for a network, including bus and light rail systems, was endorsed by the Northern Ireland Executive on 27 November 2008. The SOC concluded that the most viable and appropriate system for the city was a modern and high class bus-based system. The likely numbers of passengers did not warrant the extra cost of a light rail system.

The SOC concluded rapid transit offers a service of improved speed, reliability, comfort, capacity and access features over conventional public transport. In addition it could offer other wider benefits for Belfast as the key economic driver of the region. All successful regions have strong cities at their core. Strong, vibrant cities need modern and efficient transport systems. Rapid transit would improve the city’s image, help to regenerate rundown neighbourhoods and open up new development opportunities throughout the city.

Bus-based rapid transit technology has been described as a ‘tram on tyres’. No fixed track is required, but it is segregated from other traffic as much as possible. It also has the flexibility to go on-street in mixed traffic and receives priority at junctions. The vehicles can be specialised, hybrid vehicles that can be powered by diesel/electric or gas, with appropriate guidance systems. Additionally, rapid transit will have high quality halts with level access to vehicles, real time information systems and off-vehicle ticketing to speed up the boarding process. The system will integrate with other public transport and is about providing a fast, efficient and sustainable network.

Three pilot routes have been considered:

- **EWAY** - running from Dundonald in the East to the City Centre;
- **CITI** - serving the new development in the Titanic Quarter; and
- **WWAY** - running from the City Centre to the Royal Victoria Hospital and on into West Belfast.

All three pilot routes will be connected together and will provide a network of services that would allow cross-city journeys for the first time. This would link socially disadvantaged communities with healthcare, jobs and education, and enhance the accessibility of tourist sites in the Titanic Quarter and leisure facilities.

Rapid transit will also provide an efficient infrastructure to support the future economic development of the greater Belfast area at an estimated cost of £150 million. This investment will help to grow a dynamic and innovative economy and deliver modern, high quality and efficient public transport services.

A dedicated Rapid Transit Division has now been established within the Department for Regional Development to undertake the preliminary design of the system. This will include completing the necessary statutory procedures and form the basis for public consultation. It is intended to have the CITI route in operation for 2012.
Active Transport

Steven Patterson
Sustrans

The Northern Ireland Executive is committed to reducing greenhouse gas emissions by 25% on 1990 levels by 2025. Transport accounts for 30% of all Northern Ireland’s CO₂ emissions. Reducing carbon emissions from transport will require a determined, cross-cutting approach from the Northern Ireland Assembly, the Executive and government departments working along with the travelling public. We must see a serious step-change to low carbon travel such as walking and cycling, linked to effective public transport.

There are major concerns about the increase in obesity. The cost of physical inactivity and obesity to the Northern Ireland economy in 2010 is likely to exceed £500m. The Health and Social Wellbeing Survey 2005-06 found that a quarter of all men and 23% of women in Northern Ireland were obese. This represents an overall increase of 26% in adult obesity since 1997.

There is a mixed picture regarding current travel trends in Northern Ireland. On the positive side public transport usage is rising across train, Metro and Ulsterbus services following significant investment from DRD and Translink. Cycling levels in Belfast have risen 87% since 2000; with the highest numbers on sections of the National Cycle Network.

On the negative side there is no indication that car use is falling. The investment in the road network may reduce journey times over the short-term but is likely to contribute to more people travelling further by private car. The percentage of people walking to work has decreased from 11.3% to 9% between 1996-2004.

There are important social equity issues around transport. There are now 900,000 vehicles registered in Northern Ireland for a population of 1.7 million yet 50% of households in areas of Belfast do not have access to a motor vehicle. Thirty-nine percent of women in Northern Ireland do not have a full driving licence.

We know there is significant potential for change in travel behaviour. Research by the Department for Transport showed that:
- Over 90% of adults consider that everyone should be encouraged to walk to help their health, help the environment and to ease congestion;
- Four in ten car users say they would walk more if congestion charging was introduced, if it was more expensive to park and if it was more difficult to park; and,
- Three in ten car users say they would reduce their car use if there was better provision for cyclists; such as more cycle tracks, cycle lanes, and parking facilities.

In Northern Ireland 20% of cars in peak time are taking children to school. We know around 40% of young people would prefer to cycle to school but only 3% do so.

In Northern Ireland 63% of all journeys are less than five miles (a 30 minute bike ride). So what are the factors discouraging active travel?

A major concern, which leads to people not cycling, is a perception that roads, particularly arterial roads, are unsafe. Sustrans supports a default 20mph or lower speed limit in all urban areas, as slower speeds help to improve road safety, encourage walking, cycling and public transport use, reduce fuel consumption and CO₂ emissions and reduce noise. The introduction of 20mph limits could reduce all casualties by 60% and child casualties by 70%.

We welcome the review of the Regional Transportation Strategy and would like to see smarter targets set for the way ahead. These would include:
- Targets for the percentage of trips made by each travel mode, specifically aiming to reduce car use and increasing walking, cycling and public transport;
• Targets to reduce CO₂ emissions from transport, starting immediately and increasing over time, with measures identified to ensure we meet these targets;

• Reappraisal of our road network setting a hierarchy of road users, with active and public transport at the top and single occupancy private car use at the bottom. Roads need to be redesigned to reflect this;

• Land-use planning that discourages car use and facilitates sustainable travel;

• Investment in “smarter choices” projects that are proven to encourage sustainable travel. Measures include workplace and school travel plans, and individualised travel marketing;

• A partnership approach (cross-departmental and linking to communities, NGOs and the private sector) to facilitate active travel;

• Sustainable transport policies, such as workplace travel plans, a reduction in car parking provision, car sharing, teleworking and teleconferencing introduced across all government departments;

• Targets to reduce road casualties facilitated by increases in walking and cycling; and

• Safe Routes to Schools and Bikeability Cycle Training available to every child in Northern Ireland.

Guidance published in 2007 by the National Institute for Health and Clinical Excellence (NICE) on physical activity and the environment puts walking and cycling centre stage in active living. NICE recommendations include:

• Ensure that local facilities and services are easily accessible on foot and by bicycle;

• Re-allocate road space from car to active travel;

• Restrict motor vehicle access (for example, by closing or narrowing roads to reduce capacity);

• Develop road-user charging schemes;

• Invest in traffic-calming to restrict vehicle speeds; and

• Develop safe routes to schools and provide a comprehensive network of routes for walking, and cycling.

Above all, we urge that a most explicit commitment is made to address the physical environment and to prioritise safer walking and cycling. If government at all levels does not introduce planning, transport, regeneration and economic policies that put active living, specifically walking and cycling, centre stage, then obesity levels and greenhouse gas emissions will continue to rise.

However, at least on the transport side, it doesn’t necessarily mean more investment. Economic appraisals of walking and cycling investment shows it to be very much better value than traditional spending on motor transport. For example, the Department for Transport (www.dft.gov.uk/webtag) in England evaluated three greenways linking to schools and reported cost benefit ratios of up to 1:38.
Case Study: Rural Safe Routes to Schools

Steven Patterson, Sustrans

Roughly one in five cars on the roads at 8.50am is taking young people to school, yet we know the majority of young people would prefer to walk and cycle. Over the last two years Sustrans co-ordinated an innovative project working with 18 rural schools to empower young people, with support from their parents, to change the way they travel.

The aim of the project was for Sustrans and our partners in Government to work directly with schools that were keen to increase levels of walking and cycling, to help them to create an active travel culture.

Schools in rural areas were invited to apply to take part and once the schools produced a Travel Plan they benefited from highway safety improvements, the provision of facilities (such as cycle parking) and support with motivational initiatives such as cycle training, walking buses, promotional activities and fun events.

The results were very impressive. After the project:
- 49% of pupils were driven to school compared to 64% before the project;
- 33% walked to school compared to 20% before the project; and
- 7% cycled to school compared to 5% before the project.

There were also benefits to the wider community. The highway improvements are being used for other journeys to shops and other services. The project also had an impact on the travel behaviour of parents, with 66% saying they were walking and cycling more after the project than they were before.

Ministers Conor Murphy MP MLA and Michelle Gildernew MP MLA at a Promotional Shoot for the Project.

The benefits and changes in attitudes by parents, pupils and staff are exceptional. Our recommendation would be to get involved now and reap the benefits of this scheme.

Mrs Gail Ferguson, Principal, Kilbride Primary School, Doagh

I applied for the project believing that the external work beyond the school gates would make St Mary’s a safer school. I didn’t realise that the biggest change in our school would be in our attitudes. We enjoy our school walks with a growing number of parents walking with us. Our children enjoy cycling on a daily basis and our new bicycle shelter is always full of bikes.

Joan Aldridge, Principal, St Mary’s Primary School, Derrytrasna

To download a Project Review visit: www.sustrans.org.uk/nischools

Pupils Cycling Home from Hezlett Primary School.
Cycling gets safer as more people do it. We must now tackle the fears that prevent people from cycling. Countries in Europe with high levels of cycle-use tend to be less risky for cyclists (see Figure 1). In Denmark, people cycle over 900km a year and it is a far safer country to cycle in than Portugal, where barely 30km is cycled per person annually. The Netherlands has witnessed a 45% increase in cycling from 1980-2005 and a 58% decrease in cyclist fatalities.

Increasing cycle use is good for the safety of other road users too. For every mile travelled, fewer injuries involve cyclists than motor vehicles. Every cycle trip that is a switch from car use means fewer injuries and deaths to others.

Reasons why the ‘safety in numbers’ effect occurs:
1. Drivers grow more aware of cyclists and become better at anticipating their behaviour.
2. Drivers are more likely to be cyclists themselves, which means that they are more likely to understand how their driving may affect other road users.
3. More people cycling leads to greater political will to improve conditions for cyclists.

This means that we can promote cycling without worrying that it will lead to more casualties. It is clear that ‘more’ and ‘safer’ cycling are perfectly compatible.

TACKLING THE FEARS THAT LIMIT CYCLING
Cycling isn’t as risky as commonly thought, with just one death every 32 million kilometres – that’s over 800 times around the world. Indeed not cycling is more risky than cycling: cyclists on average live two years longer than non-cyclists and take 15% fewer sick days.

Bad driving, speed, hostile roads and junctions, and the intimidation presented by certain types of vehicle, especially lorries, all discourage people from cycling. To get more people cycling, and make cycling safer, the Assembly needs to take a wide range of actions, for example:
1. Encourage safer driving - Improve driver training, traffic law and enforcement.
2. Improve the road environment for cyclists - Make 20mph the default urban speed limit and reduce rural speed limits.
3. Promote cycling positively by providing good quality cycle training for all ages and associate cycling with health and fun.
4. Measure fear and perception of danger experienced by cyclists.

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**Case Study: Cycling: Safety in Numbers**

Tom McClelland, Northern Ireland Cycling Initiative

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**Figure 1: Graph Showing the Average Number of Cyclists Killed per 100 million km Against the Average Distance Cycled per person annually.**

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**Table:**

| Those who own a bike and want to use it | 40% |
| People who agree that everyone should be encouraged to cycle for their health | 87% |
| Biggest deterrent to cycling is fear | 26% disagree, 47% strongly agree |
| 27% tend to agree |
| Cycling in the Netherlands and the UK |
| Cycle once a week | 87% |
| Never cycle | 70% |

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**Let’s get a move on!**
Promoting Public Transport

Ciaran Rogan
Translink

Public transport in Northern Ireland is a real success story. Translink’s integrated bus and rail network now carries over 80 million customers per year (see Figures 1 and 2) and customer satisfaction continues at an all-time high. Through its Metro, NI Railways, Goldline and Ulsterbus services, Translink’s vision is to provide integrated travel solutions that are attractive, sustainable and good value. The NI Budget 2008/09-2010/11 allocated £182 million to be invested in public transport - £137 million for rail projects and £45 million for new buses. This investment will contribute to ongoing growth in passenger numbers.

THE JOURNEY SO FAR

With the introduction of new rolling stock in 2005/06 and the upgrade of all aspects of the service, a new rail service for Northern Ireland has emerged which is delivering significant increases in usage and enhanced passenger satisfaction. Some factors influencing this growth include:

Customer Focus

Translink NI Railways is committed to getting it right for its customers by providing high quality service at all times. This means delivering services on time, ensuring trains and stations are clean, modern and pleasant to use and with staff who deliver the service in a professional, friendly and helpful manner. Information derived from market research, formal passenger feedback mechanisms and ongoing quality assurance tools establish those service attributes most important to passengers.

Our Passenger’s Charter is a fundamental quality assurance tool used within Translink NI Railways. The Passenger’s Charter outlines standards and targets in relation to service delivery in terms of service reliability, punctuality, waiting time, standing, complaints procedures and what passengers can expect from our staff, etc. Performance targets include:

Reliability:
• 99.2% of all trains run as planned (Local services throughout Northern Ireland)

Figure 1: Bus Passengers.
Punctuality:
- 95% of trains on the Bangor/Portadown/Larne lines will arrive no more than 5 minutes late (Short Haul)
- 90% of trains on the Londonderry/Portrush lines will arrive no more than 10 minutes late (Long Haul)

Customer Satisfaction
Independent monitoring highlights that customer satisfaction in Translink NI Railways services is at its highest since records began 15 years ago.

Performance Improvements
Translink NI Railways is now one of the highest performing rail companies in the British Isles in terms of punctuality and reliability, exceeding standards laid out in the Passenger’s Charter.

Investment
In March, a contract was signed by Translink NI Railways, the Department for Regional Development and Spanish rolling stock manufacturer CAF for the supply of 20 new trains for Northern Ireland. This investment of £105 million will increase capacity of rail services by 25%, with the first of these new Class 4000 trains due to arrive in 2011.

Other major recent investments include: the completion of a £17 million upgrade of rail stations and halts across the network to provide better access for customers; the recent opening of a £1.7 million Rail Operation Training Academy; a £12.5 million track upgrade along the Londonderry railway line; and, construction of Newry’s new £14.6 million railway station including a 300 space park & ride facility which is due for completion this Autumn.

Innovative Rail Travel Promotions
A series of attractive rail travel promotions have also been implemented to encourage more people to use the train, including: a third off day return promotion; discounted family travel ticket available at key school holiday periods; and, exclusive Web Fare Enterprise Promotions. Northern Ireland also has one of the largest Concessionary smartcard schemes in the UK with nine different card types in operation across the Translink NI Railways network.

Sustainable Transport
Not only is bus or rail travel more sustainable than the private car for all communities, in particular those situated in urban settings, but we are also constantly delivering our services sustainably. As a large organisation, we use a lot of energy. Our Environmental Strategy objective says we will:

use vehicles, fuel and technology which optimise the balance of efficient operations, output emissions and environmental impact, with regulatory compliance as a minimum standard.

To help meet this objective, we have set environmental targets, including:
- To optimise fuel efficiency of new rail vehicles by selecting appropriate engineratings, engine technologies, transmissions and final driver ratios;
- To replace older trains (over 12 years) with new trains by 2013 creating significant reduction in exhaust emissions; and
- To improve the public transport fleet to assist modal shift from private car to bus and rail.

The company is also committed to reducing energy use at facilities across the network and ongoing improvements in energy ‘house-keeping’ are having a positive effect on energy consumption at Translink’s major sites.

In March, we launched our energy efficiency campaign aimed at raising energy awareness among employees in the workplace. In line with delivering environmentally advantageous services for customers, we are also aware of our responsibility to manage our ‘internal’ carbon footprint. Through various energy-saving practices and projects in the last financial year we have saved 570 tonnes of carbon.

LOOKING AHEAD
The latest independent performance research for public transport released in April shows that Translink customers continue to rate bus and rail services at an all time high. ‘On time’ targets were exceeded across all services and the introduction of more multi-journey and integrated tickets continue to offer customers better value for money and more choice. The challenge is to secure ongoing investment in public transport and continue the pace of growth while delivering services as efficiently as possible to encourage even more people to leave the car at home.
In November 1944 much of the medieval centre of Freiburg was flattened during a bombing raid. Yet its magnificent cathedral survived and many of the buildings in the 'Old Town' have since been rebuilt in their original designs to delight today’s residents and visitors alike.

But Freiburg’s historical façade sits alongside some thoroughly 21st Century technology in what has come to be known as Germany's capital of sustainable living. When the city was rebuilt and extended, it was with new ideas and on enlightened, carbon-conscious principles. Solar panels are ubiquitous, highly energy-efficient housing is the norm and it boasts the most efficient and integrated transport system you’re likely to encounter anywhere in Europe.

A highly innovative urban transport policy lies at the very core of Freiburg’s transformation. For a start, the medieval town centre was progressively pedestrianised, revitalising its use. With a bustling daily market surrounding the cathedral, the Rhine-pebbled streets radiate outwards throughout the rest of the city centre, full of people, rather than cars.

The old streets were widened to take trams and the tramway became the backbone of the city; 65% of residents live within walking distance of a tram stop. Public transport informs the planning system too; when a new suburban district, Rieselfeld, was under construction, a new tramline was included in the first construction phase. It was up and running when a mere 1000 residents had taken up houses in 1997; now it serves some 12,000 people, running every few minutes at peak times.

The tram system, or Stadtbahn, is seamlessly complemented by the regional train routes and integrated bus service ferrying residents from outlying rural villages. So, here we have public transport that manages to be reliable, frequent, convenient, comfortable and affordable; a monthly pass, covering the whole region, will set you back a modest €45.

Almost a third of daily commuters use public transport and another third get on their bikes. Freiburg is truly a cycling tour de force. In 1970, Freiburg had almost no cycle tracks; today, it has a 500km long network, many of the paths weaving through attractive sylvan routes. The city centre has over 9,000 cycle parking sites, including a thousand in the dedicated bike park beside the main rail station.

In this Belfast-sized university city, commuter car journeys have fallen dramatically since 1976, from 60% to 43%, taking 4,000 cars per day away from the centre, with a consequent 50% fall in road accidents. Belfast has a long way to go to match Freiburg; here 59% journeys to work are by private vehicle, 12% by public transport and 24% by walking and cycling.

Yet this is no city of fundamentalist ‘greenies’. The shiny German car marques sit in many driveways, McDonald’s and Gap are just as obvious in the shopping streets and there are even a couple of Irish pubs among the bierkellers. But with a population almost as big as Belfast’s, the people of Freiburg make a much smaller footprint on the earth. We could do with a few German lessons.
Decarbonising the Car

Malachy Campbell
WWF

If everyone in the world consumed natural resources and generated carbon dioxide (CO₂) at the rate we do in Europe/UK/Ireland/Northern Ireland, we would need three planets to support us. The impacts of this unsustainable consumption, which include climate change, deforestation and biodiversity loss, will have potentially devastating consequences on both humans and the natural world. WWF has a vision for a One Planet Future - a world in which people and nature thrive within their fair share of the Earth's natural resources. In order to achieve this, amongst other things, we need to reduce our consumption of fossil fuels through a combination of reducing demand, greater energy efficiency and ensuring greater use of renewable energy sources.

The reality of declining reserves coupled with increasing demand for oil, and all the economic, social and environmental implications that result, should ensure this shift is achieved as a matter of urgency. However there is little sign of it yet, even though the International Energy Agency has said:

The world's energy system is at a crossroads. Current global trends in energy supply and consumption are patently unsustainable; environmentally, economically and socially. But that can, and must, be altered; there's still time to change the road we're on.

TRANSPORT AND OIL

Liquid hydrocarbon fuels derived from crude oil provide 95% of the primary energy consumed in the transport sector worldwide. There is no other sector which is so utterly reliant on a single source of primary energy.

In the EU, transport is the sector with the largest demand for energy, accounting for 31% of total final energy consumption, of which road transport accounts for 85%. Emissions from road transport represented 29.4% of Northern Ireland's CO₂ emissions in 2006, an increase of 49.5% since 1990, and second only to energy production (35%). By contrast, road transport represents only 21% of the UK's total CO₂ emissions and grew by only 10% since 1990, so there is clearly a disproportionate problem in Northern Ireland. Passenger cars account for around half of all transport-related carbon emissions and at both the UK level and a Northern Ireland level around 15% of an individual's ecological footprint is attributable to personal transport. Clearly we need to change our travel patterns, if we are to achieve a One Planet Future.

POLICY BACKGROUND

The average efficiency for new cars in the UK was just under 170 grams of CO₂ per kilometre in 2006 while the US EPA reported that the average performance of 2008 model cars and trucks in the US was 20.8 mpg. The average for Ford was 19.6 mpg. The Ford Model T, invented in 1908, did 25 mpg.

In 2007 the European Union proposed a binding target for the average emissions across a producer’s range of 120g CO₂/km for new cars sold in the EU. The German car industry lobbied against the proposal and was supported by the German Government, which feared job losses. The EU amended its target and set it at 130g CO₂/km to be achieved by 2015. WWF-UK believes fleet-average energy efficiency of new cars sold within the European Union should smoothly increase year-on-year, so as to achieve continuous improvements corresponding to 120g CO₂/km by 2012, 80g CO₂/km by 2020 and 60g CO₂/km by 2025 - targets also supported by the European Federation for Transport and Environment.

ALTERNATIVE FUELS

Electricity and Hydrogen

The use of zero or low carbon fuels, including electricity and hydrogen, could help reduce transport emissions, especially if generated from a renewable source, such as wind power, thereby offering a completely green cycle for the fuel. As electric vehicles make use of
up to 75% of electricity taken from the grid, they are up to four times more efficient than conventional mechanical vehicles where only 18-23% of the energy contained in the fuel is converted into motion. Spain (1 million by 2014), Japan (50% by 2020) and the Republic of Ireland (10% by 2020) have already set targets for more electric vehicles.

The WWF book *Plugged In: The End of the Oil Age* focuses on solutions to our (over)reliance on oil for transportation needs, in particular the electrification of transport. According to *Plugged In*, the electrification of automotive transport will appeal to any country or region which: i) is a net importer of crude oil; ii) wishes to use indigenous energy resources as efficiently as possible; iii) has a large, or fast growing, road transport sector; iv) has a large, or fast growing, automotive industry; v) possesses, or intends to invest in, widespread electricity infrastructure; and, vi) is committed to tackling rising greenhouse gas emissions. It describes North America, the EU, Japan, China, and India as prime candidates, but the UK and Ireland also meet these conditions.

Hydrogen powered vehicles that use fuel cells emit only water. Its use in vehicles is relatively well established, with Daimler Chrysler buses running on hydrogen powered fuel cells (which work at 55% efficiency) in Chicago since the mid 1990s. In 2003 a trial of 30 hydrogen buses in ten European cities including Amsterdam, Barcelona, London and Madrid started. Prototype hydrogen cars already exist. Iceland has set a target of being a fossil fuel free, hydrogen economy by 2040. Given the potential for hydrogen, greater use of hydrogen vehicles could make a huge difference to both our fossil fuel bills and the air quality in urban areas.

The first report from the Committee on Climate Change in December 2008 included an analysis of what opportunities exist for making emission reductions. Northern Ireland could contribute emissions reductions of 1 MT CO$_2$ through developing efficient vehicles and new transport by 2020.

**Biofuels**

There are of course other options, including biofuels. If biofuels are to be used, WWF believes that only biofuels that are environmentally and socially sustainable should be promoted, through a mandatory sustainability standard and certification scheme, which should be developed for all bioenergy. In WWF's view, the following environmental principles need to be addressed by any standard as a minimum both for crops produced in Northern Ireland and as a requirement for imported fuel sources, namely that the products should:

- Not damage high conservation value habitats and biodiversity;
- Not degrade soil quality;
- Not adversely impact the quantity and quality of freshwater resources;
- Not lead to the damaging release of toxic compounds into the environment; and
- Lead to substantially positive lifecycle GHG balances compared to fossil fuel equivalents.

**THE FUTURE**

It seems clear that collectively we can not continue as we have done thus far. This need for change was endorsed by Larry Burns, Vice-President of GM motors when he stated on Radio Ulster on 16th April 2009 that he didn’t think the internal combustion engine was sustainable.

The electrification of vehicles is progressing quickly (see *Project Better Place* Case Study pg 17). A standardised recharging network across Europe has been brought closer with 20 major energy firms and car makers having agreed in 2009 on a (European) plug standard - a potentially significant development.

The Norwegian Finance Minister proposed in April 2009 to ban sales of new gasoline-powered cars in Norway from 2015. Under this proposal, car makers could only sell new cars from 2015 that run fully or partly on fuels such as electricity, biofuels or hydrogen. Hybrids using fossil fuels and electricity, for instance, would still be permitted.

Like Ireland, China (the world’s largest auto market) has reached an agreement with Nissan and Renault to supply electric cars in early 2011.

Isn’t it time we plugged into the significant opportunities for reducing pollution and creating jobs by investing in renewables and get switched on to a new form of transport?
In 2008, the Irish Government launched their plan Building Ireland’s Smart Economy to re-organise the nature of Ireland’s economy from 2009-2014, which outlined the Government strategy, amongst other things, to:

implement a ‘new green deal’ to move us away from fossil fuel based energy production through investment in renewable energy and to promote the green enterprise sector and the creation of ‘green-collar’ jobs.

In 2008, Ireland’s Minister for the Environment, John Gormley, raised the target for the generation of electricity from renewables from 33% to 40% by 2020. Accounting for the single energy market and the 2008 All-Island Grid Study which found that up to 42% of power generation could be from renewable sources, there seems to be no good reason why Northern Ireland should not match this target.

In April 2009, Ireland’s Energy Minister, Eamon Ryan, announced the Irish Government had signed a Memorandum of Understanding (MOU) with the Electricity Service Board (ESB) and Renault and Nissan which will help Ireland not only realise, but surpass, the target of having 10% of Irish cars (approximately 230,000) fully electric by 2020. The ESB subsequently announced that up to 3,700 new jobs will be created (600 of them directly as a result of the development of the infrastructure for electric cars) and 1,300 outside the company, sustained by ESB, in Ireland because of this commitment.

There needs to be a symbiotic growth of the provision of renewable electricity and the development of an infrastructure for electric vehicles because, despite the added advantage of reduced tailpipe emissions, an electric vehicle is only as green as the electricity that charges the batteries. A fully green life cycle, with electricity generated from renewable sources (for example wind power), and not from fossil fuels, is needed.

With these developments in Ireland, particularly in relation to the recharging infrastructure, there will, no doubt, be opportunities for Northern Ireland, especially as the UK government has also committed to promoting green cars, as part of a £250 million plan to promote low carbon transport over the next five years. Though Ministers do not expect eligible cars to hit the showrooms until 2011, the strategy includes plans to provide £20 million for charging points and other necessary infrastructure.
As a result of geography and short-sighted planning, private cars will continue to be a considerable part of our transport mix for decades to come – electric vehicles (EVs) can help bridge the gap between our transport needs and the required emissions cuts.

Better Place, a privately funded enterprise, has developed a comprehensive solution to EV infrastructure. The brainchild of software entrepreneur Shai Agassi, the Better Place model is simple but compelling. In partnership with leading car manufacturers it aims to install a ubiquitous network of charging points and use software to communicate with electricity providers to charge the vehicles when demand would otherwise be low. More expensive electricity can be bought at peak times as required, and battery switching stations will be available for those wishing to travel beyond the average 100 mile range of EVs. Crucially, Better Place will only buy clean energy.

Israel was the first country to sign up and is in the process of installing 500,000 charging points and 100 battery exchange stations by 2011. Demark, Canada, Australia, Japan, Spain, California and Hawaii are due to begin implementing the programme this year and next.

Unless the energy used is cleanly sourced, a switch to electric is largely meaningless. However, EVs can serve to stimulate renewable markets by allowing the national fleet to act as a large decentralised battery and provide a market for energy generated at night. Demark, where wind provides 20% of the nation’s electricity supply, has signed up the scheme as a strategic move to not only remove transport’s dependency on oil, but also to increase the penetration of energy markets by intermittent renewables such as wind and solar.

This island has some of the best wind and wave resources in the world, although intermittency remains a big technical constraint. With the ability to upload and download electricity according to external demand, EVs would prove a formidable catalyst in the development of renewable power and provide an alternative to burgeoning petrol and diesel demand, which is the fastest growing source of CO₂ emissions here, and is on the increase worldwide.

In April 2009, the Irish government announced a target that by 2020 10% of all vehicles be electric. To aid delivery, a strategic partnership between the semi-state energy provider ESB and Renault-Nissan was announced. Sustainable Energy Ireland is also conducting a €1 million pilot scheme to assess the suitability of Ireland for electric vehicles, and to demonstrate and test various infrastructural systems.

The Assembly should watch closely and follow suit, starting with legislation to provide charging points in all public car parks, in anticipation of demand, and continued work to upgrade the grid. While Stormont doesn’t have tax raising powers, Westminster is beginning to provide tax incentives to those purchasing hybrid or fully electric cars.

As the Economist magazine noted recently, this is an idea whose time has come and the initiative is Agassi’s to deliver. Critics point to the huge costs of installing infrastructure, the size and cost of batteries and the relative inconvenience of charging over filling a tank. These drawbacks will not disappear overnight but Better Place still provides the most coherent alternative to oil for servicing our addiction to cars.
Air travel has been heralded as one of the great successes of the modern world, creating wealth and employment, enabling worldwide economic and cultural interaction, and enriching our lives. We know there are environmental concerns, which may or may not be answered by future technological breakthroughs; that aircraft noise affects thousands of people, including in the Belfast area; and that increasing numbers of groups are protesting loudly about the negative impacts of aviation. But the economic imperative to expand is surely overwhelming. Or is it?

The debate on the wider ramifications of aviation policy in Northern Ireland is still in its infancy. To a certain extent we are a ‘special case’ in UK terms due to our geographical position and our need to access Britain, not just in economic but also in social terms.

To thrash out some of the areas of conflict and common ground between groups across the spectrum, the Sustainable Development Commission (SDC) and Institute for Public Policy Research held meetings with the government, the aviation industry, academics, NGOs and citizens groups over a 12-month period. We published our findings in the joint report Breaking the Holding Pattern: a new approach to aviation policymaking in the UK.

The Sustainable Development Commission believes that sustainable aviation must meet five key targets:
- Meeting society’s needs, now and in the future;
- Be supported by good governance and subject to fair fiscal treatment;
- Make a fair contribution towards climate change targets;
- Reduce negative impacts on people and the environment; and
- Build skills and the economy across Northern Ireland and globally.

So, how can we in Northern Ireland, living on a small island on the edge of Europe, reconcile our concerns about environmental damage and our need to fly in circumstances where no other option may be available? How can aviation meet the five targets set out above?

The Executive has outlined plans which it hopes will boost our local economy. Connectivity through aviation is seen as key to plans to attract both greater numbers of short break tourists, as well as inward investment from finance and business services industries which are both low carbon and high value economic sectors.

Looking at two case studies in the Belfast area, the George Best City Airport and Belfast Port, we can see the challenges that exist in terms of managing our transport infrastructure and balancing economic and social needs with our commitments to reducing emissions and moving towards more sustainable lifestyles.

With Northern Ireland’s geographical position as an island peripheral to a larger island, the George Best City Airport is a growing strategic, economic and social hub. The airport operates under a cap of 45,000 flight movements per year with a maximum of 1.5 million seats. The Government’s The Future of Air Transport White Paper predicts passenger numbers will grow from 2.2 to 4 million per annum. Currently the airport is seeking to increase the cap on seats and to increase the size of the runway to cater for more European destinations. At the same time the airport is also working to reduce the impact of its operations. Ground vehicles have been converted from diesel to electric, and taxiing and holding aircraft time was reduced by 4% last year. Airport access remains a problem however - only 7% of passengers arrive by public transport.

Belfast is a trust port on reclaimed land and manages over 12,000 ship movements a year, with 17 million tonnes and £20 billion of goods and services.
services in 2007. The port accounts for 60% of Northern Ireland’s sea imports and 20% of the whole of Ireland. It is also the largest passenger port, though due to competition from the airport, sea passengers have declined from 2 to 1.27 million over five years. Like the airport, there is no rail infrastructure available to transport goods (or passengers) from the port, so all is done via road.

The port currently estimates the need for an extra 120 acres of space for its operations by 2025. This will be further out of the city centre to cater for larger vessels that require bigger, deeper quays. This expansion is expected to encroach on a special nature protection area. Alongside any increase in noise pollution from increased traffic at George Best City Airport the Sustainable Development Commission would have concerns about the negative impact not only on the local environment, but also the local communities in these areas.

From looking at these two case studies we can see a number of similarities. Here in Northern Ireland we have a clear reliance on sea and air travel. The service providers believe that reliance is increasing and are therefore following paths towards expansion. It is also clear that there is a real need for integrated public transport links to both facilities to be improved. This needs to be addressed, not simply as a means of moving people between and to transport hubs, but also in the context of ensuring that people don’t simply reduce their emissions on the ground only to increase them once they get in the air.

The impacts on the local environment around the Belfast harbour area need to be studied closely, as do the wider implications for Northern Ireland in lowering its already extremely high transport emissions.

While air transport will continue to be part of our future transport networks we must use other technological advances to cut out the need for unnecessary air travel. Video and telephone conferencing, for example, could and should cut down on the number of people boarding ‘red eye’ flights to Britain every morning in Northern Ireland and returning every evening. Changing the way we work will have a major impact on the way we travel and indeed, the way we see travelling. Similarly, whilst attracting greater numbers of short break tourists may be a laudable target from a governmental perspective, it must be set against the higher number of people who now avail of the many cheap short break deals leaving Northern Ireland from our local airports on a daily basis, spending money abroad that would otherwise be spent here.

We must also ensure that air and sea travel are included in future emissions budgets as part of a dedicated overall Northern Ireland budget. Cutting down on emissions does not need to mean cutting down on economic outputs but it will help the Government and business to think carefully about the best ways of pursuing economic growth in Northern Ireland. In many cases the most stable economic growth in financial and environmental terms, comes from stimulating smaller, local economies at community level, shortening supply chains and fostering self-sufficiency across a number of fronts.

Aviation and sea transport will remain important parts of Northern Ireland’s transport infrastructure but they cannot be allowed to grow in an unregulated or untested manner. Alternatives should be promoted and smarter options enhanced. We cannot get away from the fact that we live on an island and have close cultural and economic ties with our neighbours. But we should also not get away from the fact that we are having a negative impact on the planet and that meeting society’s needs, not just now, but also in the future, should be at the forefront of our minds.
In many cities, both medium sized and ‘World’ cities, demand management policies have been implemented with some success. However, in many, investment in public transport has lagged behind and as a result car ownership and use have increased.

There are now numerous examples of policies aimed at improving travel choice and reducing car use. Invariably these include a mixture of ‘carrots’ (public transport improvements, park and ride, and improvements to pedestrian and cycling networks), and ‘sticks’ (parking policy, re-allocation of road space and controls on vehicle access). Nottingham (-1.8%), Perth (Australia) (-4%) and Rome (-7%) are examples of cities where car use has been reduced.

Each of these cities have implemented traffic restraint policies including those aimed at reducing urban sprawl and invested in new public transport and service enhancements with transit-orientated development, including the focusing of new development around suburban stations. Perth has also implemented a work-place parking levy while Nottingham and Rome have implemented travel plans. In addition Rome has reduced city parking and re-allocated these spaces at park and ride sites in combination with access controls.

If we look at world cities a number of these have also managed to reduce car use; London, New York, Paris, and Barcelona. This reduction in car dependency has been achieved through a package of policy measures. As with the smaller city examples these strategies have included investment in public transport and integrated ticketing, removal of car parking and the re-allocation of road space in favour of greener modes. These transport policies have also benefited from city centres with relatively high land-use densities, mix of people and jobs, and high quality pedestrian facilities.
Transport and Public Health

Claire Higgins
Institute of Public Health in Ireland

Transport is one of a range of social, environmental and economic factors outside the healthcare sector which are known to influence health. For example, transport policy can promote access to shops selling fresh, nutritious food, or can be used to facilitate walking and cycling and therefore have a positive effect on health. Conversely, traffic can be a hazard to all road users leading to accidents. Busy roads can divide communities and form barriers to social contact, which is also damaging peoples health.

This article details important links between transport and health. As the relationship becomes clearer, so too does the imperative to plan systematically in the transport arena for improved health.

TRANSPORT AND PHYSICAL ACTIVITY PATTERNS

Obesity has been identified as a major public health concern. In Northern Ireland 59% of adults are either overweight or obese and one in ten children were identified as obese in 2005/06. Obesity is a major contributor to many diseases including diabetes, hypertension, heart disease and cancer. Increasing levels of physical activity in everyday life can be facilitated by creating an environment conducive to walking and cycling. Maximising the opportunities for physical activity in everyday transport options needs to be a key consideration to our transport strategy.

The availability of public transport can influence levels of physical activity as most journeys begin and end with some form of physical activity to access the service. It has been shown that an average trip via public transport included 19 minutes of physical activity, almost two-thirds of the 30 minute daily recommendation set by the World Health Organisation (WHO). There is also an association between time spent in cars, physical activity and obesity. Each additional hour spent in a car per day is associated with a 6% increase in the likelihood of obesity.

Across the island of Ireland the number of children walking or cycling to school is rapidly decreasing and this is a worrying trend as exercise habits established in childhood are a key indicator of levels of physical activity in adulthood. Instilling the habit of incorporating activity into everyday life needs to be reviewed across the lifespan. Provision for cycling and walking enhances opportunities for physical activity and these issues are covered elsewhere in this bulletin.

AIR QUALITY AND HEALTH

Urban areas are affected by vehicle-related air pollution which can contribute to respiratory disease especially amongst vulnerable groups such as the elderly. Disadvantaged urban areas tend to be characterised by high traffic volume, with residents at increased risk of road traffic accidents.

SOCIAL CONNECTIONS

A well planned transport system can facilitate social connections which are important for mental health. Neighbourhood designs most likely to promote social networks are those that are mixed use and pedestrian orientated, enabling residents to perform daily activities without the use of a car. As traffic volumes increase, people’s sense of neighbourliness decreases.

LINKING CLIMATE CHANGE TO HEALTH

The influence of transport on climate change, which is identified as the most important public health challenge of the 21st Century, also has to be considered. Our unsustainable transport patterns are contributing to rising global temperatures. At an international level this means rising sea levels with accompanying flooding leading to the migration of communities and droughts creating food shortages with substantial risks of famine.

In Northern Ireland the health impacts could include increased levels of infectious diseases, deaths from higher temperatures and illness related to poor air quality.
Our transportation methods have a key role to play in mitigating the effects of climate change which can in turn contribute to reducing health inequalities.

TRANSPORT AND HEALTH INEQUALITIES
The impact of transport on health inequalities is evident. Defined as ‘different outcomes in health for different population groups’ there is a clear social class gradient which transport systems contribute to.

At an international level, the WHO recently launched Closing the Gap in a Generation which sets out areas for action to promote health equity through action on the social determinants of health. Transport is identified as one of these determinants of health and therefore it is essential policymakers understand the influence their decisions have on determining people’s opportunity for health. This includes recognising the different needs and usage patterns of urban and rural users and also different population group needs, for example those from disadvantaged backgrounds and the needs of the elderly and children.

Figure 1 demonstrates the role transport has to play in contributing towards health. Given the variety of influences, it is important that multi-sectoral approaches are used to include all relevant decision-making areas. Health Impact Assessment (HIA) is a method which should be adopted to systematically identify the potential negative and positive health impacts of transport proposals. It can ensure vulnerable groups are considered and evidence-based recommendations are formed to maximise the opportunities for health through the development of a sustainable transport system.

Further information regarding the Institute of Public Health in Ireland and Health Impact Assessment may be accessed at:

www.publichealth.ie/hia

**Case Study**

A Health Impact Assessment (HIA) conducted by Belfast City Council, looked at the health impacts of the draft Air Quality Action Plan for Belfast. The HIA, defined as a ‘combination of procedures, methods and tools that systematically judges the potential and sometimes unintended, effects of a policy, plan, programme or project on the health of a population and the distribution of those effects within the population’ determined that the areas which exceeded air quality limits were all identified as deprived communities along the main arterial routes into the City centre. Recommendations arising from the HIA strongly called for initiatives to promote cycling and walking initiatives to encourage increased use of public transport through park and ride schemes and the consideration of safety at such sites.

The HIA report may be accessed at:

www.publichealth.ie/ireland/completedhias
Integrating Public Transport and Land-Use in Belfast

Luke Kelleher, Austin Smyth and Geraint Ellis
Queen’s University Belfast and University of Westminster

June 2009

Belfast is today the most car-dependent medium size city in Western Europe. The impetus for this was early post war planning policy, greatly reinforced by 30 years of violence and political instability, and a tradition of ‘predict and provide’ and unimaginative transport and policy responses. The outward movement of residents and businesses has similarities with experiences in many US cities in the 1960s. The boost to demand for travel created by widespread segregation both ethnically and economically is also mirrored in the patterns of travel to/from school, which reflect the effects of the selective and segregated education system. The result has been to create an environmentally unsustainable urban structure with widespread inequities in access to opportunities. Can such a state of affairs be reversed and what role can public transport play in realising such a goal?

A quality public transport system that offers a really competitive alternative to the private car for journeys that cannot be made on foot or bicycle is a fundamental requirement in the creation of a sustainable city. However, this largely depends on an urban structure that facilitates more sustainable forms of transport, a supportive policy framework and a willingness of Belfast’s citizens to adopt lifestyles that reflect the city’s environmental capacity. A good example of the challenges we face in this respect is the case of travel to school patterns. Within the UK, Northern Ireland exhibits unparalleled levels of segregation in schooling on the basis of religion and academic ability at age 11. This is reflected in a wide range of school types which, together with the absence of school catchment areas for selection of students, results in a high degree of choice for parents in determining post-primary education for their children compared to other areas of the UK.

What has not been recognised until very recently are both the financial and environmental sustainability implications arising from this choice in terms of patterns of travel to school. A recent study by Queen’s University for the Department of Education found overall costs of providing school transport rising at a rate in excess of inflation due to the high proportion of pupils eligible for free home to school transport in Northern Ireland. In 2003, 19.7% of all pupils in Scotland and 18% in the Republic of Ireland received education authority funding for transport to school, while this was 30.1% in Northern Ireland.

The key difference between Northern Ireland and other parts of the United Kingdom is the selective and largely segregated nature of its schooling system. The travel patterns generated by school transport are likely to reflect parents’ circumstances and preferences when choosing schools.
If parents’ primary concern is journey time or travel convenience, this will have an obvious effect on choice of schools and travel patterns. However, if academic or religious selection is of primary concern, then the travel patterns become more complex and extended. The study and follow on research has demonstrated that the presence of so many different types of school and the survival of selective education and gender segregation all add very significantly to the financial and environmental cost of schooling in Northern Ireland.

The development of a more sustainable transport system cannot depend solely on the provision of public transport services or restrictions on car use, but must involve a wide range of policy areas that underpin the need to travel in the first place, with the planning system having a central coordinating function. After years of neglecting this wider context for transport Belfast, as Europe’s most car-dependent medium size city, faces a particularly acute challenge to reverse that position.

The Alternative Urban Transport Technology (AUTT) study completed in 1992 was prepared by a team from the University of Ulster and Queen’s University, provided a Vision for the year 2030. It recommended the development of Belfast along key transport corridors in a star shaped pattern, the arms of which would be designated for higher densities of development based on Scandinavian best practice. It also argued for the city to be tied together by a four line high quality public transport system explicitly linking East (two lines) and West Belfast via the city centre as well as a link to South Belfast feeding the already well served Northern corridor. The most ambitious option took the form of a Light Rail Transit system, a cheaper (and less effective) alternative based on guided bus technology along three of the corridors.

A critical argument in support of these proposals was the reduction of inequities in access to jobs revealed by the finding that people in non car owning households had 25 percent of the job opportunities available to neighbours with access to private transport. The AUTT study was extended in a subsequent study which yielded detailed estimates of travel demand and energy consumption, and the implications of adopting densification and a high quality public transport system along transit corridors. Total distances driven by private cars could be reduced by up to a quarter by the year 2030. The alignments recommended are virtually identical to plans announced 15 years later by the Department for Regional Development for a Rapid Transit System for Belfast.

The ability to mitigate current forces promoting decentralisation and sprawl, let alone control or reverse them, depends upon changes being made in a variety of areas of public policy including education. It also requires a strong planning system resistant to pressures for more low density development, and one which successfully promotes more compact and denser urban forms while preserving quality built environments. Where we choose to live, work, play and access a range of other services such as education and health will collectively determine our transport needs and lead to key decisions on whether we choose to walk, cycle, drive or catch a bus. There is, of course, something strongly individualistic about these choices, but the town and country planning system can play a major role in

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<td>77,908 (48%)</td>
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<td>20,665 (22%)</td>
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<td>32,019 (20%)</td>
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<td>50,769 (55%)</td>
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<td>-</td>
<td>25,103 (37%)</td>
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<td>10,848 (14%)</td>
<td>13,546 (14%)</td>
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<tr>
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<td>4800 (12%)</td>
<td>-</td>
<td>4237 (6%)</td>
<td>3117 (5%)</td>
<td>2418 (3%)</td>
<td>In “bus”</td>
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<tr>
<td><strong>Private Vehicle</strong></td>
<td>16,200 (40%)</td>
<td>-</td>
<td>39,111 (57%)</td>
<td>46,957 (71%)</td>
<td>62,241 (82%)</td>
<td>79,504 (84%)</td>
</tr>
<tr>
<td><strong>Total motorised work trips</strong></td>
<td>42,100</td>
<td>-</td>
<td>68,451</td>
<td>63,915</td>
<td>75,507</td>
<td>94,235</td>
</tr>
<tr>
<td><strong>All work trips (including walking)</strong></td>
<td>-</td>
<td>69,206</td>
<td>66,554</td>
<td>77,779</td>
<td>96,052</td>
<td></td>
</tr>
</tbody>
</table>
collectively organising these activities to make our lives more efficient and reduce the environmental, social and economic costs of travel. As time moves on, however, the conditions for a more sustainable future are becoming increasingly unfavourable as the urban structure accretes around patterns that support car dependency, frustrate attempts to tackle climate change and make the city vulnerable in a post-oil future.

Let’s get a move on!

collectively organising these activities to make our lives more efficient and reduce the environmental, social and economic costs of travel. As time moves on, however, the conditions for a more sustainable future are becoming increasingly unfavourable as the urban structure accretes around patterns that support car dependency, frustrate attempts to tackle climate change and make the city vulnerable in a post-oil future.


<table>
<thead>
<tr>
<th>Year</th>
<th>Total number of spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>1966</td>
<td>18,000</td>
</tr>
<tr>
<td>1967</td>
<td>12,500</td>
</tr>
<tr>
<td>1975</td>
<td>15,000 (5,500 private non-residential parking spaces)</td>
</tr>
<tr>
<td>2001</td>
<td>22,000 (10,000 private non-residential parking spaces)</td>
</tr>
</tbody>
</table>

Under current conditions and pressures the city and its public transport system are too weak to be able to withstand decentralisation pressures. Arguably we may have gone too far down the road to a rubber city for society and its decision makers to be able to justify small steps, let alone have the confidence to take the radical and expensive steps needed to grasp the opportunity which still presents itself to promote a truly sustainable European city. Realising the potential of any rapid transit system and the wider public transport network depends upon an effective and consistent planning system and building control procedures to both attract car users and underpin the physical, economic and social fabric of a more sustainable urban structure.

While we have shown how the segregated nature of Northern Ireland society has frustrated moves to sustainable transport, it is important to recognise that there has been a greater negative impact from the policies and institutional organisation of planning and transport policy. Thus, we have department responsibility for land use planning and transport split between two departments (Department of the Environment and Department of Regional Development respectively), making policy integration much more difficult. Indeed, the polarised political leadership of these two departments (DUP and Sinn Fein) tends to frustrate hopes for policy integration, particularly when neither department seems to give priority on tackling the long terms consequences of car dependency.

Compared to other parts of the United Kingdom, the policy strategies that guide both transport and planning have failed to prioritise effective sustainable transport and land use policies. The key policy document, the Regional Transport Strategy, is based on the basic premise that car use will continue to be the dominant mode in Northern Ireland and should therefore attract the majority of resources. Similarly, planning policy appears to place great emphasis on the need to facilitate housing in the countryside, unsustainable development par excellence, rather than shaping our built environment to tackle climate change and increasing resilience to the post-oil world we are increasingly hurtling towards.
Sustainable Rural Transport

Karin Eyben
Rural Community Network

INTRODUCTION
Rural transport is often a highly charged issue; whether it’s about the impact of rising fuel costs, un-gritted roads, poor quality roads, the lack of public transport or reacting to environmental groups’ concerns with regards rural communities’ over-dependency on cars and rising carbon emissions. As Irish Rural Link quoted in their recent paper on rural transport:

transport is a very complicated issue and easily falls within Rittel and Webber’s definition of a ‘wicked problem’. By this they mean ‘there are very many different angles to view the problem from and little consensus about the best way to view it...there is a lack of agreement about the best way to solve the problem....and the problems intertwine with other problems.

For those who own or have access to a car in a rural community, the issues and challenges can be very different to the 20.5% who don’t. If you own a car, the challenge is to keep mobile which might include the price of running a car, the price of fuel and safety on the roads. If you don’t own a car, your transport concern is about how to access vital and often disappearing services. There is often a vicious cycle in operation between increased car ownership, greater commuting distances and a decline in services, with key groups who don’t have access to a car, such as those on low income, young people and older people, losing out.

Both accessibility and mobility cover a wide range of rural sustainability issues linked to transport with accessibility defined as the ‘ease of reaching’ whereas mobility is the ability of an individual or type of person to move about [Commission for Rural Communities].

According to Comhar Sustainable Development Commission:
If Irish transport is to become more sustainable then it will be necessary to improve the sustainability of rural transport by reducing the amount of individual vehicle kilometres driven while improving mobility and accessibility to services.

Replacing the vicious cycle with a virtuous one will require ‘decreasing car ownership’, ‘decreasing individual miles driven’ and most importantly, ‘increasing accessibility and mobility to local services.’

Using the Inter-Departmental Urban-Rural Definition Group’s definition of rural [population of 4,500 and below] 34.7% of the total Northern Ireland population live in a rural area, with over one third of these living in settlements with populations ranging from 50 to 5,000 people. The remaining two thirds of rural dwellers live in settlements with populations of less than 50 people or in the open countryside.

Table 1: Transport Trends in Rural Northern Ireland.

<table>
<thead>
<tr>
<th>Area</th>
<th>Population Band</th>
<th>Households without a car (%)</th>
<th>Working population who walk or cycle to work (%)</th>
<th>Working population who use public transport to work (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Towns</td>
<td>4500 - 5000</td>
<td>24.1</td>
<td>9.4</td>
<td>4.4</td>
</tr>
<tr>
<td>Intermediate Settlements</td>
<td>2250 - 4499</td>
<td>20.0</td>
<td>8.5</td>
<td>4.8</td>
</tr>
<tr>
<td>Villages</td>
<td>1000 - 2249</td>
<td>23.8</td>
<td>16.3</td>
<td>4.9</td>
</tr>
<tr>
<td>Small Villages</td>
<td>500 - 999</td>
<td>21.4</td>
<td>16.6</td>
<td>4.4</td>
</tr>
<tr>
<td>Hamlets</td>
<td>50 - 499</td>
<td>10.9</td>
<td>4.0</td>
<td>2.7</td>
</tr>
<tr>
<td>Open Countryside</td>
<td>&lt;50</td>
<td>14.9</td>
<td>5.5</td>
<td>3.3</td>
</tr>
<tr>
<td>Rural</td>
<td>20.5</td>
<td>10.7</td>
<td>4.2</td>
<td></td>
</tr>
<tr>
<td>Other Urban Areas</td>
<td>28.6</td>
<td>14.8</td>
<td>4.9</td>
<td></td>
</tr>
<tr>
<td>Northern Ireland</td>
<td>26.3</td>
<td>10.6</td>
<td>6.9</td>
<td></td>
</tr>
</tbody>
</table>
According to Sub-Regional Transport Plan [2007]:

This means that there is a sizeable proportion of the rural population who live beyond walking range to a number of key services such as schools and food shops. Therefore these people need to use motorised modes of transport.

The Sub-Regional Transport Strategy also notes that:

In much of rural Northern Ireland, especially in the north and west, the majority of people do not live within easy reach of an existing bus service.

The Roads Services most recent Travel Survey for Northern Ireland [2005-2007] shows just over a half (52%) of households in Belfast had access to one or more cars compared to 79% and 76% in the East and West of Northern Ireland. Thirty percent of households in Northern Ireland had access to two or more cars. However, only 14% of Belfast households had access to two or more cars, compared to 34% of households in the East and 31% in the West. The Survey comments that the average number of cars per household remained fairly constant over the 2002-2007 year period. The high level of car ownership is due to a number of factors including declining services, poor public transport, and poor integration between land use and spatial planning.

The high levels of car ownership, combined with an increasing population, have clear implications for the sustainability of rural areas. Environmentally, the government has a legal obligation to cut carbon emissions; economically, there are, for example, significant individual costs in terms of fuel prices, maintenance and longer distances travelled; socially, declining services undermine the fabric and viability of rural communities coupled with a growing trend of migration from urban areas and an aging profile. If transport is to contribute to sustainable rural communities, then the challenges need to be understood and tackled through all three aspects, not just the environmental.

WAY FORWARD
This article started from the premise that rural transport should be set within a wider context of sustainability that focuses not just on environmental, but social and economic sustainability as well. The data show that the primary mode of transport in rural areas is the car and that this is not a luxury but a life-line in terms of ensuring the viability of rural areas and rural communities. If the environmental imperative is to decrease rural dwellers’ dependence on the car, then government needs to invest in efficient and effective alternatives for all in rural areas and in ensuring balanced regional development.

It is clear that:

• There is no Northern Ireland Rural Transport Policy – the Sub-Regional Transport Policy is a means of allocating funding as opposed to considering how to develop a rural transport system that will contribute to sustainable rural communities;
• There is a lack of coordination and integration between existing services such as the rural bus routes funded under the Rural Transport Fund and the Community Transport Schemes;
• There is a lack of coordination between government departments with regard to rural transport. For example, Health, Education and Regional Development. This means, for example, that school buses lie idle outside of school hours. The following quote demonstrates that more effective use could be made of existing transportation infrastructure:  
  *The yellow bus (ELB) comes in with a few kids on it, the white bus (HSS) comes in with some older people, the blue bus (Ulsterbus) has no one on it and then in comes the community transport bus in the middle of it all.*  [Community Transport Worker in Rural Childcare Report, DARD 2008]
• There has been a growth in the rural population which places greater demand on existing services and greater numbers of cars on the roads, with the population projected to grow further;
• The rural population is aging with 39% of pensioners living in rural Northern Ireland and 41% of farmers aged 55 and over [Age Concern/Help the Aged]; this has implications for existing services and the planning for future services in rural areas; and
• There are at least three conflicting definitions of what constitutes rural still being used within Northern Ireland which makes it hard to gather and compare existing data.

SOME OPPORTUNITIES

1. The forthcoming Rural White Paper committing the central and local government to a set of principles and actions with regard to the development of sustainable rural communities. The Department of Agriculture and Rural Development’s Rural Anti-Poverty & Social Inclusion Framework is also focusing on rural transport with the possible introduction of a Rural Assisted Travel Scheme on Rural Community Partnership Transport services. i.e. free travel for those over the age of 60 and half fare travel for the disabled by using their SmartPass. There are real opportunities for this Framework to challenge and engage with government departments and the Executive about the different nature of rural poverty and rural transport and influence the review of the transport strategy.
2. The Regional Transportation Strategy Review offers a real opportunity to consider how the funding available for rural transport might contribute to sustainable rural communities from the provision of infrastructure (footpaths, cycling paths, bus stops/waiting areas) to revenue funding and subsidies to bus services and community transport providers.

3. Effective Engagement and Consultation with rural dwellers and rural communities, particularly with those experiencing social exclusion, in the ongoing reviews of the RDS and RTS.

4. The potential for a Rural Action Plan for Sustainable Transport developed by DRD with a public service agreement with the new local government structures developing innovative transport solutions.

5. Rural & Equality Proofing of all proposals and policies considered for their impact on rural dwellers and particularly those who are most disadvantaged.

6. Walking & Cycling Networks – ensure that these are not only designed for leisure purposes but also to connect to destinations or to enable utility trips, such as commuting to work or school.

7. Information – Develop rural transport information that includes bus, community transport, taxis, demand responsive services (flexibly routed bus services), community lift giving schemes, community taxi buses, car pools, school transport, social services transport, non-emergency health transport, park and ride facilities and other transport initiatives available in the local area.

8. Inter-Departmental Cooperation and Projects leading to, for example, school buses being used for demand-responsive services out of school hours, such as for sport or community activities.

9. Transport better integrated with land and spatial planning at a local government and departmental level with a focus on addressing the accessibility needs of those most at risk from social exclusion.

10. The implementation of the Bain Review on the Location of Public Sector Jobs.

11. Further Research to gather data with regard to: mobility and accessibility of rural dwellers; transport needs, demands and behaviour; interconnections with urban environments and existing transport providers, services and facilities.

Transport is critical to the social, environmental and economic viability of rural areas. The core issue that campaigners and policy makers face is that the car is currently an absolute necessity in ensuring the mobility of rural dwellers and the accessibility of key services and employment. Up to now, rural transport policy has tended to focus on those who don’t have access to a car.

A new rural transport policy is needed which ensures that the problems of the immobile socially excluded are not analysed or tackled in isolation from the mobile included within a wider canvass of growing sustainable rural communities that balances environmental, social and economic sustainability and which encourages rural dwellers to use viable alternatives to the car.
INTRODUCTION
Kuxabussarna operates in the municipality of Ockelbo, 220 kilometres north of Stockholm. The population of Ockelbo is 6,400, with half living in rural areas. The population density of the region as a whole is 16 per km². The scheme was initiated by the municipality of Ockelbo in 1995 to demonstrate the potential for improving public transport in a rural area, particularly to increase both public transport use by motorists and the area served by buses. The plan was to combine existing (mainly public funded) services in the area (including school services, medical patient services, and services for elderly and disabled people), and to make them accessible to the general public. It was anticipated that using appropriately-sized vehicles would deliver savings.

MAIN FEATURES OF THE SERVICE
Buses run between 06:00 to 17:00 Monday to Friday, on eight different routes designed so that 70% of local inhabitants live within 300 metres of a bus stop. Frequencies vary across the day, with a maximum hourly service. The routes are designed to connect with regional services to larger towns, so that they can be used by commuters. Passengers typically travel between 10 and 40 km. Kuxabussarna is a regular, scheduled service, so there is no booking system. Since the vehicles are not wheelchair accessible, an accessible taxi service is retained for more disabled travellers. One exception to the scheduled services’ fixed route is that buses will extend their run beyond the end of the normal route to collect or deliver disabled people living nearby. This does not affect the timetable, or the other passengers. The buses also carry freight. Bookings are made through the contractors, and the system is integrated into a nation-wide system called Bussgods.

The service is contracted out to three separate companies. Six vehicles are used, mostly medium sized, although the largest seats 60. Eleven staff provide an average 34 hours daily between them. A pamphlet about the “Kuxa” system was delivered to all households when the scheme was introduced. In addition, timetables are distributed twice a year to the households in the municipality to keep the inhabitants informed. Changes to published routes and timetables are displayed on the Ockelbo website. There are frequent references to the scheme in the local media.

LEGAL BASIS
The service uses standard bus service licences. Four-year contracts are awarded to contractors after competitive bidding.

OPERATIONAL INFORMATION
Commuters use the service to get to work in some of the larger villages. 40% of services go to schools, so use among school pupils is high (some schools have adjusted their timetables to fit in with Kuxabussarna). Despite the fact that it is not wheelchair accessible the service is used by significant numbers of disabled and elderly people. Since the introduction of Kuxabussarna, use of special accessible taxis has decreased. The freight system is used by the municipal administration for their internal post, by pharmacies, the postal service, local bakeries and other companies. Since the service is free to passengers, all the annual €375,000 costs are met by the local municipality. This represents a minor saving to the authority compared with the cost of preexisting services. It was calculated that the cost of collecting fares would exceed their value.

LOCAL IMPACT
As stated earlier, the service is used by commuters, schoolchildren, and others, including disabled people. Surveys have shown that passengers are satisfied with the service, and that over half thought the service was an important contribution to rural viability. Adult passenger numbers have increased fourfold when compared with the situation before the scheme was introduced.

Future plans include:
• expansion of the system;
• use of accessible vehicles;
• better integration with other public transport services and regional routes; and
• improvement to passenger information.

SUMMARY
• Scheme combined pre-existing publicly funded services transport, reduced vehicle sizes and opened the service to the general public;
• Free scheduled service;
• Fourfold increase in adult passenger numbers; and
• Increased value for money.
A key step towards a sustainable freight transport system would be investment by manufacturers in the development of alternative vehicle technologies which will reduce carbon emissions, but this will only be achieved if government provide the infrastructure and systems to support these vehicles. The Committee on Climate Change, who now advise Government on carbon issues, has indicated in their low carbon economy report that future transport emissions are likely to stem more from cars and vans than heavy goods vehicles (HGVs) and that currently HGVs are inherently difficult to upgrade to lower carbon versions as they are already efficient and do not generally produce high levels of emissions.

Unfortunately the existing railway line network in Northern Ireland cannot be viewed as an alternative means of transporting freight. This is mainly because freight by rail can only be economically viable when large units by volume can be transported from A to B where each location is close to the rail head. The infrastructure does not exist to support freight by rail and the last journeys carrying cement and beer between Belfast and Dublin were discontinued about six years ago. The journey time on the main road between Belfast and Dublin has improved significantly in recent times making freight movements by road so much more efficient than rail could ever hope to achieve.

**GOVERNMENT INTERVENTIONS**

The Companies Act 2006 further implemented EU Environmental reporting requirements in the UK and pressed companies to report against their obligations on the environment. High street chains will be under pressure from consumer spending power to be seen to take action to reduce their carbon emissions. There have already been very visible initiatives from Marks and Spencer’s in their quest to eradicate plastic bags from shops. This will place pressure on suppliers who provide services for these companies to demonstrate similar initiatives. Similarly, the Government and its departments need to be at the forefront of carbon reduction actions and operators will need to fulfil green obligations in order to win contracts.

**IMPROVING EFFICIENCY AND REDUCING ENVIRONMENTAL IMPACT**

Most businesses involved in the supply chain are interested in CO₂, as efforts to reduce emissions stem from burning less fuel, therefore saving money. Freight operators are in a difficult position as they are often right at the end of the supply chain.

Practically every consumable item that people buy will have been transported by a truck. Whilst manufacturing companies can relocate their operations to the Far East and then claim that they have reduced carbon emissions, the freight industry has no choice but to produce carbon emissions in the UK. Yet, the industry has already made great inroads into improving fuel efficiency through driver training, aerodynamic features, vehicle utilisation and routing, and scheduling. In 1980, before Euro standards, a 32 tonne gross combined weight (gcw) vehicle achieved eight miles per gallon. By 2008, a ‘Euro 5’ 44t gcw achieved the same mpg. Technology development for alternative vehicles, such as electric and hybrids, has proved slow and the infrastructure to refuel or re-power these vehicles is not fully available. Although there are many demonstration vehicles and ongoing trials, in the current circumstances the majority of operators have to continue with the existing technology. The sharp u-turn on the use of biofuels may have also dissuaded operators from using alternative fuels and exploring further options to reduce CO₂ emissions.

There is a strong link between improving fuel efficiency, lowering costs and reducing CO₂. This message is regularly seen in leading freight industry magazines and the FTA also promotes this message in Carbonfta,
a subscription product to help
members’ record, report and reduce
carbon emissions.

HGVs
Emission reductions in HGVs is
inherently more difficult to achieve
than for cars and vans given the more
limited potential for application of
power-train technologies. However,
alongside the use of hybrid rigid HGVs,
the Committee on Climate Change
highlights the potential savings linked
to non-power-train interventions
such as teardrop trailers and low
rolling resistance tyres. No reference
is made to longer semi-trailers or
longer, heavier vehicles.

ECODRIVING
The Committee anticipates that the
HGV Driver Certificate of Professional
Competence (CPC) periodic training,
introduced from September 2009,
will significantly increase emissions
reduction through more efficient
driving techniques. As there is no
equivalent compulsory driver training
or certification for vans, the emissions
abatement from van driving efficiency
improvements is expected to be
smaller and take longer to achieve.

SPEED LIMIT ENFORCEMENT
The Committee points to significant
falls in fuel efficiency as cars, vans
and HGV speeds are pushed above
optimal levels. It concludes that
limiting speed through lower limits
or tougher enforcement of existing
limits should be kept under review.

COMPANY CARBON AUDITING
Software tools are now enabling
companies to audit their carbon
emissions. Companies are encouraged
not just to work out carbon emitted
by their own transport operations,
but to take a supply chain approach –
measuring carbon emitted from raw
material to the final point of sale. The
Carbon Trust is one such organisation
that is strongly committed to
developing systems for carbon
auditing at a product level and has its
own carbon label.

ALTERNATIVE FUELS
Biofuel trials have been reasonably
successful with minor modifications
to the engines:
• The responsibility for the
sustainability of biofuels appears
to be with the oil suppliers;
• Vehicle manufacturers are proving
a stumbling block for experiments
with renewable fuels; and
• Natural gas offers an alternative
fuel for vehicles without the
sustainability issues that are
arising from biofuels.

TECHNICAL DEVELOPMENTS
• Engines have been enabled to
cut out after three minutes’
idling which can save 76 litres
per month per vehicle in an
experiment carried out across
seven vehicles; and
• Top speed was reduced from 56
to 52mph in urban areas which
resulted in a 2.7% reduction in
fuel consumption.

Simple measures can make significant
contributions to improving fuel
consumption. Technological advances
in HGVs such as hybrids can offer key
carbon reductions but are currently
only available in low volumes and
therefore not financially feasible for
many operators.

DRIVER TRAINING
Seventeen drivers attended simulator
training on three separate occasions
and as the training progressed there
was a significant change in driver
behaviour. Telematics were used to
measure changes in performance and
the first and final drive results were
compared.
• Revs reduced by 22%;
• There was a 50% increase in
torque under acceleration;
• The number of gear changes was
reduced by 28%;
• The time taken to complete the
simulation reduced by 8%; and
• When drivers returned to their
own vehicles, there was up to a
16% increase in fuel savings.

CONSOLIDATION CENTRES
The business case for consolidation
needs to be built up particularly
within the construction sector.
There is a market failure in the way
jobs are priced which does not take
into account the operational logistic
benefits that consolidation can bring
about. There is a need to build in
consolidation into the job pricing
rather than seeing it as an additional
cost element. Urban consolidation
requires a ‘complete change of
mindset’ as it initially looks like double
handling of products, but experience
has shown that it can reduce CO₂,
trafﬁc congestion and enable better
control over the timing of deliveries.

There is a long list of potential benefits,
from reducing the number of vehicles
in towns to increasing a wider range
of low energy transport methods.
Small businesses in the city have the
most difficulties of all in moving goods
in and out. Due to parking restrictions
and congestion, they have a lot to gain
from consolidation centres. However,
without public support, making these
centres profitable on their own has
proved to be difficult.

CONCLUSION
High tax is robbing small enterprises
of being able to invest in sustainable
action. It would make a great
difference if fuel tax was actually
invested back into the transport
sector itself. We need to start
challenging politicians and question
whether or not taxation at such high
rates is actually a productive route
when there is pressure to invest in
efficiency saving measures.

The recent rise in fuel duty will cost
around an extra £1,500 a truck per
year. Imagine what else this money
could be spent on if it were retained
in the business, how many drivers
could be put through the Transport
Research Laboratory (TRL) truck
simulator for example, how much
routing and planning software could
be brought!
Most key Scottish [and Northern Ireland] transport investments are based on their economic case. Other impacts such as social and environmental issues are sometimes considered but rarely used as deciding factors. The economic case is usually based mainly on enhanced productivity through ‘time savings.’ Other direct economic factors, such as increased productivity from improved health, are rarely given the same prominence despite their very real impacts. This is partly due to a more limited understanding of these other factors.

The study was designed to increase understanding of transport’s known ‘non-time savings’ direct economic impacts, and also identify gaps in collective knowledge. The author considered six categories: smarter choices [smarter choices are techniques for influencing people’s travel behaviour towards more sustainable options], active travel, local public transport, long distance public transport, private motor transport, and air transport. For each category, the available information on the travel mode and its impact on the economy were reviewed; further questions were identified; and an attempt was made to answer the questions if the available evidence was considered sufficiently robust. This led to a set of findings on the economic impacts of travel modes and a series of recommendations on

**KEY FINDINGS**

Table 1 below summarises the key findings by showing the economic impacts for several different transport-related measures or goals.

**KEY RECOMMENDATIONS**

1. Scottish Transport Appraisal Guidance (STAG) should include the direct economic benefits resulting from improved health due to increased cycling and walking as well as evidence on increased productivity and reduced absenteeism;  
2. STAG should reduce the emphasis given to time savings, as the benefits attributed are often unproven, while productivity benefits resulting from working when travelling by train or bus should be incorporated as these can outweigh any benefits arising from time savings;  
3. The health and congestion costs of additional car drivers should be fully considered in transport project appraisal;  
4. Research should be conducted on the displacement effect of car purchases. It is important to understand what people would spend their money on if they didn’t have the desire or need to buy a car; and  
5. The Government should publish annual statistics quantifying the net effect on the economy of air-based tourism. It is vital to know how much visitors spend in Scotland compared with the amount Scots spend when they fly abroad.

The full report is available at: www.transformscotland.org.uk

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**Table 1: Economic Impacts for Transport-Related Measures/Goals in Scotland.**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Economic Impact</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cycle mode-share of 13%</td>
<td>£1–£2 billion/year savings</td>
<td>Health Economic Assessment Tool for Cycling, World Health Organisation</td>
</tr>
<tr>
<td>Cycle mode-share of 27%</td>
<td>£2–£4 billion/year savings</td>
<td>Guidance on the appraisal of walking and cycling Schemes: TAG unit 3.14.1 Department for Transport; Economic appraisal of local walking and cycling routes, Sustrans</td>
</tr>
<tr>
<td>Switch 20% of car commutes to walking or cycling</td>
<td>£2.8–£11.6 million/year savings</td>
<td></td>
</tr>
<tr>
<td>Switch 40% of car commutes to walking or cycling</td>
<td>£5.6–£23.1 million/year savings</td>
<td></td>
</tr>
<tr>
<td>Each extra car passenger</td>
<td>£100–£145/year cost</td>
<td></td>
</tr>
<tr>
<td>Net tourism spend, 2004</td>
<td>£1.3 billion annual deficit</td>
<td>Why airport expansion is bad for regional economies, Friends of the Earth England, Wales, &amp; Northern Ireland</td>
</tr>
<tr>
<td>Net tourism spend, 2020 (projected)</td>
<td>£2.6 billion annual deficit</td>
<td></td>
</tr>
<tr>
<td>Health and climate impacts of international flights</td>
<td>£7.7 billion/year cost</td>
<td>Handbook on estimation of external cost in the transport sector, Maibach et al.</td>
</tr>
</tbody>
</table>
This vision for the future of the Northern Ireland Transport System in 2020 is based on a number of assumptions about funding, social trends and the policy imperative of reducing carbon use in our transport systems. The vision is possible with adequate funding and the need to adopt a clear demand management framework. Shifts in funding emphasis from roads to public transport should be accommodated as part of this process. Currently funding is estimated for the period 2008/09 to 2017/18 to be at £2645.0 million for roads and for the same period at £725 million for public transport. The vision for 2020 does not contradict the Spatial Development Strategy for Northern Ireland as specified in the Regional Development Strategy: a framework of urban hubs and clusters, key and link transport corridors and the main regional gateways of ports and airports.

Conventional transport planning has emphasised speed and capacity, but has underestimated the environmental and wider societal costs associated with the current range of transport choices and patterns of provision. It is also clear that car dependent communities produce patterns of disadvantage, especially amongst those on low incomes, women, the elderly and disabled and that this is especially pronounced in rural areas and outer metropolitan/urban areas. Increased public transport use conversely can reduce the need for expensive road infrastructure, reduce greenhouse gas emissions and urban air and noise pollution.

The vision for 2020 requires the adoption of mode shift targets that are realistic and reflect current transport needs and the range of trips and trip patterns present in a region that, with the exception of several larger settlements and cities, is predominantly rural in nature and has lower population densities. However, unless demand management measures are adopted over the coming period to 2020 Northern Ireland will continue to experience an increase in traffic volumes on key parts of the road network. Unless managed this will result in a decline in the liveability of places in both rural and urban areas and a continued rise in CO₂ emissions. Population is projected to increase in Northern Ireland to 1.9 million in 2020 from 1.7 million in 2006. This will generate a regional need for 250,000 additional homes. These homes need to be predominantly accommodated within existing settlements where a variety of transport choices are available.

The vision in this short paper is based on the assumption that demand management will have to become a reality. It must build on the current developments that have taken place in public transport on both the railways and buses which have both seen increases in passenger numbers. However, what is also clear is that technical fixes, new fuels and new vehicle technology on their own are not going to solve the problem. By 2020 we will not have the widespread adoption of electric vehicle technology (it may, according to estimates, obtain a 15% market penetration by 2015) with maybe only a 5-6% reduction in emissions which will in turn be swallowed up by the need to generate energy for these vehicles and the need for new charging infrastructure to support this. This vision is therefore based on the need to reduce the domination of the car, encourage transit oriented development, and higher urban densities, and a continued tightening of planning controls in rural areas to preserve these places but also to reduce the rate at which trip distances and journey lengths are growing.

A REDUCTION IN MOTORISED TRIPS?

In 2020 the region, as a result of mode shift targets, will see a reduction in motorised trips by private car and an expansion in public transport use, cycling and walking. Data from the Northern Ireland Travel Survey
indicates that 4739 miles per person per year were travelled by car in 2007. If a target to reduce the number of motorised trips by car were introduced; say a 5% reduction per annum, this would result in significant reductions. In year one this could result in a reduction of 237 miles per person at best or at worst would slow down the growth in car trips. This reduction can be achieved through the introduction of demand management measures (not necessarily road pricing) and lower fares for public transport. Growth in non-car journeys between Belfast and Londonderry are due to improvements in public transport provision and the provision of high quality networks for green modes but also due to the rising costs associated with running and owning a motor vehicle. A greater integration of land-use and transport in urban areas will result in increased population densities and lower job densities. Travel by public transport has been enhanced by the introduction of transit oriented development which has encouraged the development of workplaces and offices around public transport nodes. This has resulted in a change to the asset disposal policy currently operated by Translink.

Teleworking combined with flexible patterns of working have also contributed to the reduction in the need to travel and an expansion of home-based working. In Belfast the rapid transit network (CITI route and E-Way) have been successfully implemented and has now been in operation for several years. The E-Way which runs to Dundonald through deprived areas of Tillycarnet and Inner East Belfast through the City Centre to Royal Hospital and into West Belfast has been successful with plans to extend the scheme into the outer metropolitan area. The airports have also benefited from the building of rail links and this has resulted in the reduction of traffic levels at both airports but also on surrounding roads which have been for some years experiencing high levels of traffic. At the same time the rail link to Belfast International has allowed the Antrim – Lisburn line to attract new passengers on to it. The bus network in Belfast has expanded allowing the extension of Metro bus services to communities that have historically had low levels of access to public transport.

In rural areas, green modes of travel and public transport have increased their mode share as a result of enhanced levels of provision in terms of improved cycle paths and walkways and increased public transport frequencies. Commuters travelling to Belfast and other larger towns and cities in the region have benefitted from improved rail links between these major centres of population and the expansion of major park and ride sites, that have been built at key locations outside the city next to major interchange facilities. These sites are secure, staffed and popular with users. The park and ride bus fare is included in the car park charge and the services operate at a 10-15 minute frequency at their peak. Rural areas have also benefitted from the increased integration of community transport operations with Ulsterbus and other providers. This has allowed the development of integrated approaches to the adoption of service route approaches in rural areas, where users can travel to key locations that would otherwise have been unable to justify a public transport service.

**Conclusion**

Transport policy is clearly currently at the cross-roads in terms of the need to now achieve reductions in carbon emissions and achieve lasting changes in travel behaviour balanced against a requirement to maintain existing infrastructure for the purposes of trade and the economy. Associated with these developments is clearly the ongoing need to continue to reduce the fossil carbon content of transport fuel and increase the fuel efficiency of vehicles, but we also need to reinvent transport policy with new objectives in mind. Using the Spatial Development Strategy Framework outlined in the RDS, can an annual 5% reduction in motorised trips by car be achieved? Possibly; it does not necessarily mean reductions in levels of our personal mobility but a change in the way we behave and make our travel choices. However, to ensure that some steps are taken in this direction we need to urgently address the following issues:

1. Adopt mode shift targets – aimed at reducing the percentage of car-borne trips;
2. Integrate land use and transport planning (increase urban population densities and reduce job density);
3. Focus development around public transport nodes;
4. Reduce car parking in city centres and introduce other demand management measures as necessary;
5. Encourage walking and cycling and the development of high quality networks for these modes; and
6. Strengthen public transport in rural and urban areas – increase public transport speeds and reliability, and lower fares.

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Let’s get a move on!  

June 2009  

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Recommendations

Seamus óg Gallagher
Northern Ireland Environment Link

Policy Priorities for Northern Ireland’s Environment - The Way Ahead 2009 identifies the policy changes that NIEL members feel are important if Northern Ireland is not only to improve environmental performance, but also to address the economic and social challenges we currently face. Recommendations cover a wide range of strategic issues, including transport policy. Members recommend that:

- A Northern Ireland Climate Bill with a Northern Ireland specific legally binding reduction target of at least 3% per annum should be introduced;
- The EU target of sourcing 15% of all our energy (electricity, heat and transport) from renewable sources by 2020 should be adopted;
- The indicative spend figures for transport modes should be revised to ensure that at least 50% of Government investment goes to sustainable transport measures; and
- The new Regional Development Strategy (RDS) should provide the spatial framework for planning in Northern Ireland.

If adopted, these strategic priorities will enable more specific actions to be delivered. Northern Ireland’s transport policy requires revolution not evolution if we are to meet the challenges of the 21st Century. The Assembly must show Leadership, reconsider their Investment priorities, embrace new Technology and promote Behaviour Change in a serious way.

LEADERSHIP:
- Reduce Northern Ireland’s reliance on fossil fuels;
- Consider carbon and health impacts in all transport decisions;
- Update the Cost Benefit Analysis process for transport investments to include all environmental and social costs and benefits;
- Target enhanced public transport provision and other non-car measures at disadvantaged areas first;
- Reduce car trip numbers by 5% per annum;
- Enforce existing and lower (where appropriate) speed limits as a means to reduce transport emissions and accidents;
- Invest in emerging transport technologies to create jobs and wealth;
- Use aviation and car taxation revenues to improve active and public transport provision; and
- Focus future developments in existing settlements.

INVESTMENT:
- Put public transport at the centre of new development planning;
- Develop an integrated, attractive, affordable, frequent and reliable public transport system across Northern Ireland;
- Create facilities for active transport in our urban centres, transport hubs and work-places;
- Increase the availability of ‘park and ride’ and ‘park and share’ facilities servicing major hubs;
- Create continuous priority lanes on all strategic corridors into major urban areas; and
- Invest now to create the infrastructure for electric vehicles (grid and chargers).

TECHNOLOGY:
- Regulate for and incentivise efficient vehicles (target average vehicle emissions of 60g CO₂/km by 2025);
- Promote electric and hydrogen vehicles, especially for public transport and commercial fleets, and the infrastructure they require;
- Use the electric vehicle network and smart technology to create a ‘decentralised energy battery’;
- Only use renewable energy sources to charge vehicles; and
- Ensure biofuels meet social and environmental criteria.

BEHAVIOUR CHANGE:
- Pedestrianise more of our urban areas and reduce car parking to make people, not cars, the prime consideration in urban areas;
- Provide information to show drivers how to reduce their emissions;
- Provide Safe Routes to Schools;
- Consider active and public transport as a public health enabler;
- Provide road space and ‘end-of-journey’ facilities for active transport; and
- Reduce travel demand by encouraging working from home, video-conferencing, etc.
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Northern Ireland Environment Link

Northern Ireland Environment Link (NIEL) is the forum and networking body for organisations interested in the environment of Northern Ireland. It assists Members to develop views on issues affecting the environment and to influence policy and practice impacting on the natural and built environment of Northern Ireland.

NIEL provides information to Members and wider stakeholders through publications, events and the NIEL website. Our publications include ten editions of NIEL News per year (containing updates on Assembly news, events and environmental news), Environmental Reports (in-depth analysis of topical issues by experts and respected contributors), Fact Sheets (shorter, but focused analysis of specific issues) and practical guides, such as to sustainable food and energy conservation.

In addition, NIEL produces policy documents aimed at local and regional government representatives. Such documents include The Way Ahead, which identifies environmental policy priorities for Northern Ireland. Briefing Papers (background information and policy proposals on current political issues) and consultation responses (as part of the greater official consultation process) are also produced.

NIEL organises conferences and events in conjunction with Members and other partners. These conferences are designed to increase the profile of environmental issues, with a variety of specific audiences, including politicians.

Visit our website to find out more and to access all our publications: www.nienvironmentlink.org

Full Members

[Image of various logos and names of organisations]
This report is a compilation of articles representing the views of the authors and the opinions expressed do not necessarily reflect the views of NIEL or any of its members organisations.

If you have any comments on this issue or would like to contribute to future issues, please contact us.

Northern Ireland Environment Link
89 Loopland Drive
Belfast
BT6 9DW
Tel: 028 9045 5770
Email: info@nienvironmentlink.org
Website: www.nienvironmentlink.org