NESC Forum: Opportunities & Challenges for Climate Mitigation in the Irish Transport Sector

This publication contains highlights of the National Economic and Social Council's forum on *Opportunities and Challenges for Climate Mitigation in the Irish Transport Sector* which was held on Thursday 1st December 2015, in the Morrison Hotel, Dublin.

Contents:

Delegates at NESC Forum

Aim of the Conference

As part of NESC's sustainable development remit, the Council has undertaken work on the foundations and methods of sectoral climate-change mitigation plans. This is a follow-up to the Secretariat's 2012 report, *Ireland and the Climate Change Challenge: Connecting 'How Much' with 'How To'*.

This forum on sustainable transport was held in Dublin on 1 December 2015 with 43 participants. In advance of the day, a paper was prepared for NESC by consultant David Browne. This was circulated and provides reflections on the transport sector and a framework for discussion; it can be viewed on the NESC website at http://www.nesc.ie/en/news-events/events/transport-forum15.

The following summary, which was prepared by consultants Therese Murphy and David Browne, provides an overview of the themes and issues raised on the day. As such, the points raised are the views of the participants, rather than of the Council.

The purpose of the forum was to stimulate debate amongst relevant senior public and private decision-makers and stakeholders, with an emphasis on the opportunities and potential benefits afforded by sustainable transport. The forum was structured around four panel sessions, focusing on the following topics:

a) Reflections on areas of current progress and how to maximise opportunities for further development;
b) Practical sustainable transport solutions and the associated national economic, environmental and social benefits;
c) Low carbon solutions for both passenger vehicles and freight transport; and
d) Consideration of institutional and policy issues required to implement cross-cutting actions and innovative solutions.

The sustainable-transport forum opened with an introductory address by Rory O'Donnell, Director of NESC, which outlined the purpose of the forum and its importance in contributing to the ongoing debate on the climate-change challenge. The significance of climate mitigation in the transport sector was also emphasised and placed in the context of previous work conducted by NESC in the area of climate change. In particular, reference was made to the NESC 'three-track' approach as well as the joint 'how much' and 'how to' questions.

The need to focus on the 'how to' question was emphasised, in view of the fact that much attention is often placed on the 'how much' question, which is largely based on a top-down approach to effort-sharing and national commitments to emission reduction. The forum was therefore designed to consider the 'how to' question, by first reflecting on what we know and the progress we have made, before considering how we move forward. The

importance of strong institutional governance in facilitating change was also recognised, as well as the need to consider current governance arrangements in the transport sector and to determine whether these can be improved and strengthened.

PANEL 1: Reflections on Areas of Current Progress and Opportunities for Further Development

The opening panel session began by acknowledging the many challenges that affect climate mitigation in the transport sector, both in Ireland and internationally. There was a recognition that all too often we tend to focus on 'how much' we have to do in terms of percentage targets and it can be hard to connect with top-down emission-reduction targets and really understand what they mean or require.

An emphasis was also placed on the importance of taking time to reflect on progress made and also the opportunities and possibilities for the transport sector. It is important to look for solutions that have a good fit for Ireland and help us better understand how we can take the transport sector with us as we strive towards the development of a low-carbon economy.

Overall, the discussion during this session suggests that there are lots of pieces of what seem like a solution and which now need to be pulled together to shape into a national sustainable transport strategy that can be worked towards. There is no value in setting unreachable targets. Participants argued that there was a need bring the sustainable-transport agenda along a clean and efficient trajectory by prioritising what works and focusing on local-level change. There are lessons from failures as

well as successes, which will help us to better understand the way forward. Other countries can provide interesting ways forward, such as Finland's focus on mobility as a service that sees the whole transport sector as a co-operative, interconnected eco-system, providing services reflecting the needs of customers (see http://www.eltis.org/sites/eltis/files/case-studies/documents/mobility_as_a_service_heikk ila.pdf).

The following summary lists a number of important observations made during the session:

There is more going on than first meets the eye in the sector, including: a policy evolution in the last five years towards smarter travel; more people-centred design; effective investment in the Luas; fast and reliable regional bus services (enhanced by the positive impact of good roads); investment in cycling infrastructure such as the Western Greenway; regulations such as the renewables target of 10 per cent and the biofuel obligation scheme; taxation measures that have been effective, such as VRT and carbon tax; introduction of intelligent transport systems such as use of Real Time Passenger Information; and bus priority projects.

It was recognised that although these policies provided a sound basis for development, since many of them were introduced at the onset of the recession, investment was not secured for infrastructure. Specific reference was made to the limitations placed on the innovative Smarter Travel Policy due to the economic downturn. Although the reduced levels of activity in the last number of years improved climate mitigation from the transport sector, there has also been a lost decade of investment during this period. The return to economic growth is resulting in greater emissions and the lack of investment in sustainable transport has exacerbated the situation. Accordingly, there was a view

expressed that we are now really ten years behind in terms of infrastructure investment.

Concerns were raised among some of the participants in relation to the failure of the National Spatial Strategy and the failure to plan for a cogent long-term spatial planning framework, and it was remarked that this has led to Ireland having the lowest high-density housing in Europe and has resulted in high car dependency. In rural areas, while there are in theory alternatives to the car, inevitably households will necessarily be car-dependent. Others remarked that the car system in Dublin is at capacity. A rough calculation of the cost of daily delays in commuting times by one of the panel participants estimated the lost working hours to be in the region of €700m a year. Questions were also raised regarding park-and-ride schemes, which had not materialised in the last 10 to 15 years, and suggestions were made that these facilities could potentially offer significant benefits, particularly for those commuting to the M50. A number of requests were also made for a detailed analysis to better understand the co-benefits of a low-carbon economy.

However, despite the challenges relating to low-density housing in Dublin, there have been a number of successful sustainable-transport policies, including:

- Real-time passenger information for Dublin bus services, which is operated by Dublin City Council. The Sydney Coordinated Adaptive Traffic System (SCATS) was acknowledged as an example of international good practice that could be adopted here.
- Intelligent transport systems that use technology to make the best use of the existing bus service.
- Resurgence of interest in the area of cycling, which is encouraged through specific schemes

such as the Western Greenway. Although this is primarily a tourism initiative, it has had a knock-on effect in terms of interest and engagement in cycling. Indeed, a number of areas across Ireland have replicated or are planning to replicate this model.

Other comments referred to behaviour change and it was remarked that while this is critical, it is not sufficiently explored in Ireland. For example, it is important to understand why in some communities cycling infrastructure is not being utilised as well as in others. The role of behaviour change in informing policy and the need to invest in this area to build capacity was also recognised. There is a lack of general understanding of what carbon is as well as the choices and options that are available for using different modes of transport.

References were also made to the poor image or perception of public transport, with some participants emphasising that the public will only buy into what works. The need to create additional alternative transport options (to the car) to encourage public buy-in was also mentioned—for example it would be very useful to have cycleability and walking audits conducted on residential and urban areas. These audits would also highlight positive bottom-up examples that work in practice and could be implemented elsewhere. Specific concerns were also expressed regarding the lack of a national or indeed local walking strategy although progress was also recognised in that we have come a long way from 'where could we put the bus lane where we don't disturb the traffic' as the dominant paradigm. The lack of funding supply was widely identified as a major challenge, as was the need for new financial models and partners, not just State resources, and it was recognised that we require new approaches to planning infrastructure investment.

A number of delegates considered that we need to utilise assets more efficiently and made suggestions for the potential role of shared consumption through car sharing, asserting that we need to change the way that we look at the car. In the average household, the car is 95 per cent idle and this is a wasted resource. Others remarked that the 'fixation with the car' is already changing, particularly among young people, and the numbers of driving-licence applications are declining among young adults.

The value in better understanding co-benefits was also raised in relation to the potential for sustainable transport to create synergies across health, land use, sedentary lifestyles, sustainable communities and opportunities. The importance of health was also emphasised and a number of delegates considered that it is increasingly perceived as the big motivator. Others agreed and considered that there will be value in talking about health more in relation to travel and that it will become increasingly important in terms of behaviour change. A number of participants observed that the issues are about quality of life, the feel-good factor and creating a quality urban realm. The issue of particulates and NOx from diesel engines was also raised as a serious concern, particularly in view of the recent VW issues, and also the VRT tax reform, which has encouraged the 'Dash for Diesel'. This led to several questions regarding the current national biofuels strategy and whether this may need to change given what we know about diesel particulates. Others suggested that consequently there may be a greater role for EVs.

The enormity of the transition to a low-carbon economy and its impact on the transport system were recognised and some delegates considered that it had the potential to cause the greatest disruption to the transport system in 100 years. A number of comments emphasised the need for

new energy infrastructure investment to accommodate future requirements, such as electricity-injection points for buses, and an emphasis was placed on the importance of planning for these requirements now. Other opinions recognised that, although Ireland is well placed to adapt to new technologies and alternative fuels, there is uncertainty and some hesitancy over which measures should be adopted given our scarce resources. Some participants also made the point that the cost of mitigation in transport is perceived to be high and the rate of change in the wider energy sector (transition to a low-carbon economy) is creating additional uncertainty over which measures will deliver most carbon savings. There was a general consensus that collectively these factors have introduced a degree of hesitancy about making the right public investment.

Attention was drawn to the EU 2025 white paper, which outlines plans to decarbonise urban freight across the EU by 2030, and to the fact that other European cities, such as Amsterdam, are already planning zero-emissions strategies. The benefits for Ireland in looking at best practice elsewhere and benchmarking plans for decarbonisation against, for example London/Manchester/Amsterdam, was recognised by several participants. The Department of Transport, Tourism and Sport (DTTAS) advised that Ireland's national mitigation plan will include milestones for each decade to reach decarbonisation by 2050. The Department has begun a consultation process and is interested in becoming informed about managing transitions and the type of collaboration required for a societal transition. This point led on to a further observation by another delegate, who highlighted the importance of designing and planning for a decarbonised transport system collaboratively.

Several participants acknowledged that there is a complex challenge in relation to climate mitigation. A number of comments made reference to the weaknesses/deficiencies of cost-benefit analysis (CBA) as a tool to measure the benefits of sustainable-transport policy. Others observed that there is a need for a sophisticated analysis of the carbon savings and economic savings in different solutions—some benefits are intrinsic, whereas others are more systemic and therefore harder to identify and monetise—conceding that is some future-proofing already going on but this needs greater focus. Others pointed out that solutions to climate mitigation may not necessarily contribute towards alleviating traffic congestion, citing the electric car as an example. Further remarks called for a review to establish actions that will deliver large-scale emissions reduction at least cost.

There was much discussion around the need for an overarching sustainable transport strategy and also the requirement for greater ambition for capital investment. The importance of taking transport-infrastructure investment out of the political cycle and also the need to decouple transport from economic growth were greatly emphasised. The importance of managing mobility, accessibility and social inclusion was also recognised: it is about changing hearts and minds. Comments called for more 'soft' supports and the need to increase focus on behaviour change and evaluation, with greater emphasis on joined-up thinking. A number of examples were cited, such as SEAI's Better Energy Communities Programme, which point to 'win wins' in health, sustainable living and energy use. Others suggested that there would be value in conducting a systematic review of what has worked and what has not worked in smarter travel. The success of community-based models for transport, such as the Active Travel

Towns and Sustainable Travel Demonstration Area programmes, which provide tangible examples of positive action in the area of sustainable transport, were also recognised. In addition to these broad policy initiatives, some specific regional efforts were also mentioned, e.g. improvements in regional bus services (partly because of an improved motorway network), investments in cycling infrastructure, greater biofuel penetration, etc.

PANEL 2: Social and Behavioural Change; Travel Demand Management—Practical Solutions and Potential Opportunities

The second panel session opened with a presentation from David Browne. This provided an overview of the climate-change discussions in Paris at COP-21 and the relevance for top-down emission-reduction targets generally and in the transport sector specifically. It was noted that Ireland's climate-change position has been strengthened by the recent Climate Action and Low Carbon Development Act 2015, not without its critics, and the establishment of the Expert Advisory Group on Climate Change. The presentation also stressed the importance of recognising that sustainable transport is not just about reducing greenhouse gas (GHG) emissions, burdens and targets, but is also about co-benefits and synergies in areas of health, land use and housing policy. Indeed, tackling climate change has ancillary benefits in terms of reducing air pollution, tackling sedentary lifestyles, which increase obesity, and improving safety on the road network. Furthermore, it can promote more sustainable communities and neighbourhoods that promote accessibility to opportunities, inclusivity and social cohesion.

The opportunities and potential benefits afforded by sustainable transport were outlined as was the means by which we can tackle the key technical, organisational and socio-political challenges in decarbonising the transport sector in Ireland. It was also noted that Session 2 is focused on social and behavioural change—practical solutions and potential opportunities. In effect, the emphasis is on travel-demand management or at a more basic level how we can reduce the need to travel in the first place.

A number of recommendations were made in the presentation. First, in the context of an overview of policy developments in the area of sustainable transport, including the 2009 Smarter Travel Plan and the National Cycle Policy Framework, it was suggested that the Department of Transport should carry out a review of the Smarter Travel Plan, which is now at a halfway point.

Second, the potential in having a national hierarchy of travel modes enshrined in legislation that would focus the allocation of investment and policy priority was recognised. This would need to fully consider the legal implications, particularly if it was to be adopted in road traffic legislation. Action 37 of the Smarter Travel Plan proposed a Sustainable Travel and Transport Bill, although the progress on this is not clear.

Third, clarity is required on the optimal fiscal measures and whether it is envisaged that the pricing of transport would move towards a cap-and-share scheme or national road pricing incorporating congestion charging, or a mixed toolkit of carbon levies and parking charges. Action 11 of the Smarter Travel Plan provided that "we will consider the application of fiscal measures aimed at reducing car use and achieving a shift to alternative modes of transport …… Where necessary, we will carry out

research to ensure effectiveness of this action". If road pricing is seen as the optimal approach, then this will require a considerable lead-in time to ensure that the infrastructure is in place and that security and privacy concerns can be dealt with. Although this may offer considerable potential in ensuring that the externalities of transport use are properly recognised and internalised in the cost of motoring, it may prove to be politically unpalatable based on recent Irish Water experiences. To have any prospect of being accepted, it would need to be revenue-neutral and revenues would need to be hypothecated for the provision of public transport and cycling facilities. Furthermore, special recognition must be given to the effects on the freight sector, which is predominantly road-dependent and may not have modal shift options. In any event, any radical pricing mechanism will need to recognise the legitimate concerns of those who are car-dependant and cannot avail of alternative choices.

Fourth, the need for a New National Planning Framework was identified. It was suggested that this could replace the National Spatial Strategy and build on the 2015 Planning Policy Statement, which states that the Government will ensure that the right development takes place in the right locations and at the right time and will provide the social, economic and physical infrastructure necessary. The establishment of the Office of the Planning Regulator was also noted. Others comments recommended that the Smarter Travel Plan should be placed on a statutory footing in the Planning and Development Act 2000, as this would enable decisions on planning permission and development plans and local area plans to be aligned with national smarter travel policy.

The presenter acknowledged that the 'ideal' planning model is well recognised: high-density, mixed-use, connected to public transport, permeable, high-connectivity, etc. He also emphasised the importance of recognising that we have a legacy of low-density suburban housing and rural one-off housing. That is not simply a legacy of recent years but has evolved from traditional housing patterns that reflected agriculture as the main economic industry historically and the availability of land in the hinterland of traditional urban areas. It was also asserted that there is a disconnect between the policy rhetoric of what is aspirational and what is feasible. We need to devise a strategy for spatial planning and residential development that recognises this legacy and can retrofit more sustainable planning patterns within the urban footprint, which will include incentivising development on brownfield areas as well as areas that have been the subject of land-banking in recent years and which can be released through the new vacant site levies. He also encouraged the need to consider how strategic development zones can be used to encourage sustainable communities from a blueprint model, e.g. as was recently announced in Cherrywood. Furthermore, as a radical option, he proposed that we may need to consider whether local authorities or an executive agency use their powers of compulsory acquisition, particularly in low-density areas near public-transport stations.

Fifth, there is a need to prioritise cost-effective mobility management measures that can reduce travel demand or peak-hour congestion such as workplace travel plans, school travel plans, liftsharing, flexible working, etc. These are relatively low-cost and easy to implement and can expand on current initiatives such as the Department's Active Travel Towns programme and the Green Schools Programme.

Sixth, an alternative fuel and vehicle strategy for the transport sector in Ireland, which recognises the fuelling and infrastructure challenges if we are to transition to electric vehicles (EVs) or hydrogen fuel-cell vehicles, would be valuable. This should address the issues facing refuelling and infrastructure for alternative fuels and vehicles. During the course of the day, it was acknowledged that the EV infrastructure rolled out in the last number of years was strong. Critically, we need a clean fuels strategy for Bus Éireann and, particularly, Dublin Bus, which are obliged to comply with the Directive on Clean and Energy-Efficient Road Transport Vehicles in terms of procurement policy.

Finally, it was recognised in the presentation that institutional governance in the transport sector should be examined to establish whether it can be strengthened and whether it is oriented with sustainable transport as a primary objective. The recent establishment of Transport Infrastructure Ireland (TII) was acknowledged. In particular, the role of the National Transport Authority (NTA) needs to be re-examined to determine whether its remit in terms of transport and land-use planning should be extended nationally.

L–R: David Browne, Rory O'Donnell, Martin Diskin, Julie O'Neill, & Jane Hackett.

In the discussion that followed, change in culture was advocated. Several delegates were in favour of the creation of sustainable communities, where people can live and grow old in, and others suggested that a 'root and 'branch' change is required to prioritise active travel. A number of participants argued that an improved public realm is also needed to mainstream walking, and that we should reform the public service allowances for mileage based on larger engines and review parking for public servants. Others considered that the development and adoption of a national walking strategy was also necessary, supported by walkability projects for every community, as well as the possible implementation of low-emission zones in urban areas, which would have implications for the Dublin Bus fleet. Specific reference was also made to the width of footpaths and signalling of traffic lights as impediments to pedestrian traffic.

One contributor commented that he has been working as a traffic engineer and planner for many years and his experience was that we need to focus on what works and transfer ideas from successful projects. He specifically referred to smarter-travel project examples where appealing to health motives is more effective than emissions reduction. He also acknowledged that cycle facilities are expensive: walking is more accessible and the potential is higher and cheaper. Good infrastructure and continuous footpaths that are well lit are required. Solutions are there—we just need to work out how to implement them. Finally, he suggested that we need to stop setting targets but rather work with what works and then see where it takes us.

Another contributor referred to travel journeys in rural Ireland using a specific personal example (in which multiple carers were making car

journeys to care for a family member) and described long-distance commuting and urban sprawl as the 'Fields of Athenry'. He proposed that the significant annual advertising revenue (€21m) collected from the motor industry needs to be countered by those promoting more active travel modes. He observed that there is an obsession with doing all trips by car and that we need to increase the numbers of children cycling and walking to school. Another delegate referred to experiences in the local government system and the success of the Galway public transport project, and commented that there is a perception that it was not the Council's responsibility but that of the bus companies to provide local and regional services.

Several delegates mentioned that Dublin is behind many European cities and although the regional cities started from a low base, they have made lots of progress. Others argued that to persuade people to leave their car at home, the alternative needs to be attractive, comfortable and dependable. Transport is now part of the development management systems and many participants emphasised the importance of the integration of transport and planning. Some suggested that we need a public-transport policy for rural Ireland—if the service is good then people will pay. The question is how do you get people from rural Ireland in and out of the city? Suggestions included the requirement for stakeholders to lead by example, asserting that public transport should be a solution for everyone.

In the subsequent panel discussion, it was noted that there are issues for cyclists such as litter (glass) and illegal parking. A number of solutions were also proposed, such as the option of home working, which is a practical solution to effect behaviour change. However, others commented on the lack of broadband in rural areas. We need

both a rural and urban sustainable-transport strategy and we need to be strategic about cycle-path planning—put them in where you can plan an end. The school run was commented on and it was noted that there is a problem with heavy school bags. One person commented that NESC produced a report on urbanisation some 36 years ago.

Several participants called for a focus on easy wins, including wider footpaths; traffic signal times; an emphasis on accessibility not mobility; changing mindsets. Others asserted that more joined-up thinking is required at all levels, providing examples such as the need to change timings on crossings to favour pedestrians, particularly for schoolgoing travellers and older people: consider a walking allowance. Further comments included suggestions to create more appeal for cycling and walking among teenagers, particularly girls who cycle less than boys their age, and promote safe routes to school with more focus on walkability for urban areas. The point was also made that permeability is not always supported in communities but is needed for good mobility/accessibility strategies.

PANEL 3: Technological Development; Low-Carbon Solutions for Both Passenger Vehicles and Freight Transport

The discussion amongst the third panel of the day focused on recent innovations in sustainable-transport technologies and the main drivers behind these innovations. The overarching observation from the sessions is that fundamentally we need to better understand what would work in Ireland and what might be needed to enable/facilitate further development of technologies that fit with the unique

characteristics of the Irish transport sector. The following summary captures many important issues and points of view shared by panellists and delegates during the session.

Improving the fuel efficiency of road transport

The session began with an introduction from Lisa Ryan, which reviewed how CO2 tax-based systems can be used to improve the energy efficiency of conventional modes of transport and mitigate carbon emissions. The importance of carbon mitigation in the transport sector was also highlighted, given that 97.4 per cent of energy consumed by Irish transport is oil-based, of which 71 per cent is by road transport.

Attention was drawn to the considerable variation in emission rates across EU member states, even though there is a common set of EU regulations and the same vehicle brands are sold within the member states. The variation closely correlates with the type of fiscal measure and the incentives in operation within member states. The revised car tax system in Ireland, which provided an incentive to consumers to purchase low-emissions vehicles by shifting the basis of the tax from engine size to CO2 emissions, was highlighted. For the first half of 2008, before the new taxes came into effect, the share of the lowest emission bands was 25 per cent. After the tax reform in the second half of 2008, the share of these bands rose to 50 per cent. However, since the tax only applies to new car sales it was recognised that approximately 50 per cent of cars in Ireland predate the tax reform. The effective combination of information and regulation was highlighted as the determining factor in the success of tax reform. However, the taxation system does not have an effect on travel demand nor does it address issues in relation to the potential rebound effect associated with higher car use.

There was also some discussion on the testing of emissions in cars and the difference between real and tested emissions as well as the credibility of testing after the recent results from VW vehicles. The different approaches to testing between the US and the EU were also mentioned, as was the proposed changes in how cars are tested in the EU, which will take effect in 2017.

Status of biofuels in Ireland

A range of views were shared in relation to biofuels, recognising that these are seen as potentially important while acknowledging that some uncertainty remains about their role, given the concerns over use of imports and replacing food crops. 160 million litres are used annually in Ireland and 78 per cent of biofuels is imported. There were also concerns raised in relation to bio-diesel emissions such as particulates and nitrogen oxides (NOx).

A new Directive on indirect land use for biofuels has been agreed in principle and biofuels will be required to demonstrate 60 per cent reduction in GHG emissions through life-cycle assessment. However, there are foreseen difficulties with implementation. There is also ongoing research internationally and in Ireland on refining biofuels from food and other sectors, such as base chemicals in the pharmaceutical industry.

Electric vehicles

An industry expert suggested that fundamentally we need to decide if are moving towards full de-carbonisation of transport and if de-carbonising the grid is enough, since the EVs to contribute to GHG mitigation is based on the proportion of renewable generation in the electricity mix. He advised that recent indicators suggest that we are moving in the right direction: in 2012 more

than 50 per cent of electricity generated came from low-carbon sources.

Reference was also made to the existing capacity of the European electricity system, noting that if 100 per cent of cars in Europe were electric and if everyone opted to charge their cars at an off-peak time, this would be possible without adding to either the generation capacity or the transmission-system capacity. However, there are some issues around clustering and the distribution system.

There is slow but increasing take-up of EVs and four key factors were identified:

- Grants and incentives are in place but take-up is still slow—216 EVs were sold in 2014, which is considerably more than previously but still less than 1 per cent of car sales and substantially short of the numbers required to reach the 2020 target of 230,00 vehicles. It is estimated that the current EV fleet has fewer than 1,500 vehicles.
- Charging infrastructure across Ireland is excellent but local authorities don't always support dedicated parking/access to these points.
- Customers need a choice of tariffs, to include a low-rate EV tariff for off-peak times.
- Range is continuously increasing and battery range is expected to be 400km before 2020.

The current EV battery range is 80/100km, which is limiting the attractiveness of EVs as it is inconvenient for customers to stop regularly—hence the question, where is the incentive if the cost of electricity is the same as diesel? One delegate observed that international evidence suggests a combination of financial and non-financial incentives is required to increase the uptake of EVs. Citing the US, in states such as California, where a supportive information ecosystem as well as a government grant has been provided, there has been a much greater

uptake of EVs than in states where there is only a tax incentive (e.g. Colorado). Others observed that within Europe, Norway has introduced special provisions for EVs including: free parking, use of bus lanes, free tolls and free ferries. It was further suggested that some of these measures could be considered in the short term to encourage increased interest in EVs.

The need to increase customer choice as well as awareness was also mentioned, although it was recognised that Ireland has little control over the choice of EVs offered on the market (Right Hand Drive, RHD, represents 20 per cent of the European market and Ireland accounts for just 3 per cent of the RHD market). Another delegate commented that recent figures from the US are, however, encouraging—indications after three years show that EVs are experiencing higher penetration than hybrids.

Other participants had concerns in relation to the level of incentivisation that is appropriate and there is an ongoing debate as to how much to prioritise EVs within the transport hierarchy. Some argued that EVs do not have a good fit with the transport hierarchy and the need to ease traffic congestion, and called for priority to be given to encourage walking and cycling as alternative modes to the car. The potential for car sharing was also discussed, while recognising that improved incentives would be required to engage private companies. A number of best-practice examples of cities offering greater inducements for car sharing across Europe were also cited; however, other delegates remarked that most car-sharing companies are not interested in coming to Ireland. One of the reasons is that, unlike Dublin, internationally other local authorities allow car-sharing companies to operate free of charge. The need to integrate public transport and EVs was also mentioned, leading to a requirement for a

national plan for car sharing and EVs. The ability to pre-book an EV on arrival by rail in towns and cities was cited as a significant benefit.

The 'Drive for Zero' campaign in Cork provides an interesting example of a co-ordinated approach to encourage the uptake of EVs (see http://drive4zero.ie/). The scheme includes a range of incentives such as the SEAI E-Cars grant, zero per cent finance offered by car manufacturers on purchase of EVs, zero cost to charge an EV at work (30 employers involved) and the local authority offering zero cost to park, and free tolls. The scheme has been running for 12 months and other cities are looking to replicate the model.

Natural gas

A case was made for the use of compressed natural gas (CNG) as an alternative low-carbon emissions fuel, particularly in heavy goods vehicles (HGVs) where the proportion of emissions is greater. Attention was also drawn to the versatility of CNG, which can be used with bio-gas to create a carbon-neutral fuel.

Gas Networks Ireland (GNI) currently operate fill-up stations in Cork, Dublin and Shannon and have plans to introduce eight new stations per year. GNI is looking to learn from ESB networks on rolling out gas infrastructure. The availability of this infrastructure will allow energy/transport managers within haulage companies to develop proposals to change their fleet over to CNG. Some concerns were also raised regarding the risks for the private sector associated with investing in CNG charging.

Another initiative is the Green Bus route, which is a trial operating 20 CNG buses on two bus routes (2011). The wider international bus-procurement trends towards biofuels, hybrids and electric buses were also mentioned, and in particular the success of the Green Bus Fund scheme in the UK, which supports the procurement of 'green buses', and which could be introduced as an equivalent scheme here in Ireland.

Other HGV (bus) sustainable transport improvements

Within Dublin Bus a range of small technology improvements are improving the fuel economy of the bus fleet, including weight reduction and smart electronics (buses are now 16–20 per cent more efficient than the ones they replaced). Other initiatives include the use of driver-feedback technology and training to encourage eco-driving.

Shorter journey times for commuters increase the attraction of public transport (buses). In Dublin, the average speed of a bus journey decreased during recession. However, it is now increasing again. In addition, linking tickets for train/bus and also taxis increases the convenience of the public-transport proposition and therefore enhances attractiveness to customers. At present, Dublin Bus is operating at full capacity at peak and efforts are being introduced to try to encourage people to use service off-peak. The potential value of Real Time Information (RTI) in assisting the development of suitable solutions was also recognised.

PANEL 4: Institutional Development

In the final session, a range of comments was made in relation to the particular institutional challenges facing the transport sector both by the panel participants as well as during the general discussion. The success of recent structural reorganisation was also recognised, for instance the establishment of TII as well as the amalgamation of the National Roads Authority (NRA) and Railway Procurement Agency (RPA). The important role for agencies in implementing Government framework policies, through specific programmes that involve stakeholders and market actors, was emphasised. However, there are considerable difficulties in implementing a joined-up plan. It is therefore necessary to consider what is possible and also what change is required. In the discussion, the delegates made a number of important observations:

a) Stakeholder engagement and incentivising sustainable practices is important: there is a lack of capacity in institutions to engage with civil society and the NGO sector, e.g. in local authorities when there is no designated responsibility for sustainable travel. Transport choices need to be sold to the public as positive for multiple reasons.

b) There is a need for more links across departments and outside of departments. Key action is at local level. There is a need to strengthen our knowledge base of what works. There is a lack of R&D capacity—this is currently spread around and not co-ordinated. Transport planning should also be integrated with land use. Local authorities are a valuable test bed for experimentation: the trick is to capture the learning. The education sector has a key role in relation to location of schools and mobility of pupils: more linkages are needed.

c) The transport sector has many distinctive features: it crosses over more areas and sectors than any other, such as household and organisational behaviour, and intersects more with democratic governance. Something is missing in the transport institutional architecture. Institutional structures in policy systems have changed hugely in the last 20 years in transport. Given that it is a particularly complex sector and demand is driven by other sectors, it raises many governance challenges.

d) There is tension now between short-term issues and long-term structural issues. It is not yet clear what we have to do or how we are going to do it, but we do know where we want to get to. Institutional governance issues raised included the value of more R&D functions in the system.

e) Departmental restructuring could include aligning climate within the Department of Energy, Communications and Natural Resources, which maybe a better fit than the Department of the Environment, Community and Local Government. Agencies have a key role to deliver schemes and test practice whereas government departments are more effective at policy development. It is possible also that departmental silos have strengthened rather than diminished in recent years coming out of the economic crisis.

In the subsequent discussion, a question was posed as to what are the right institutions for the transport sector, given its complexity and the fact that it derives demand from the other sectors while also being dependent on the other sectors. The fact that the national Smarter Travel policy was developed at a time when there was a full-scale economic crisis was also acknowledged. One delegate observed that at a micro behaviour-change level, one of the issues is about having more time and/or information. We know what we can do in the medium to

short term but do we know what can we do in the long term? Others emphasised the need to become better at joined-up thinking and horizontal and vertical integrated thinking within Ireland. A specific comment was made in relation to the abolition of agencies, remarking that it is not necessarily a positive development as agencies are better positioned to manage policy delivery than the Department. This lead to the question—where is the overarching transport agency?

One of the participants discussed the school programme and the lack of capacity in intuitions to engage with An Taisce. Others commented on stakeholder involvement—asking what is the big push/nudge? Should there be a tax credit for leaving the car at home or a reduction in road tax if you prove you have driven less than 3,000 miles? Will there be money for walking and cycling projects? The importance of having access to funding to get things done was also acknowledged.

A specific point was made in relation to decisions to locate schools on the outskirts of towns, asserting that this makes no sense and a link needs to be made to stop this. The speaker argued that the Department of Education is a major generator of trips, remarking on the consideration of the implications of consolidating a number of schools as this may lead to increased travel distances.

Several delegates considered that the detrimental impact of transport on health is going to drive transport policy in the future and we need to put policies in place to bring transport along on a clean trajectory. Others conceded that sustainable transport is a complex area: you can make a change in one area without fully understanding the impact it will have on other areas. One delegate suggested that the future of sustainable transport is more about

adaptation and there is a need to strengthen working group connections and facilitate more working events. Others questioned how are we going to organise a comprehensive CBA? The need to influence people's behaviour and create awareness for a range of sustainable transport options was also emphasised—calling for initiatives to educate citizens on how best to co-ordinate exercise (sustainable transport options) in their lives. One delegate commented that any Regulator should have a role in incorporating a research agenda. Complexity is a common problem: we need a clear and shared understanding of priorities and not just co-ordination. Others commented that there is lots of fragments of R&D going on, so it may not be necessarily a question of capacity, again citing the need for an overarching strategy.

In a concluding point, a speaker called for institutional reform, asserting that the time is right for a spotlight on transport. Money is beginning to flow again and the Department has solved a lot of the structural issues already. The speaker suggested that a coherent national policy for transport should be developed. There is an important role for local authorities and communities as a valuable test bed for implementation and experimentation. There needs to be a strong alignment between transport and land use, and also commonalities between sustainable transport and the wider energy agenda.

A number of participants also proposed that there is a need for an overarching climate narrative for which there is broad societal buy-in, and from which the appropriate institutional framework for implementing mitigation and adaptation strategies that cascade sectorally can emerge. It was argued that we do not currently have an agreed narrative that would animate coherent political and institutional action.

In summary, although the delegates recognised that there is plenty of evidence of incremental learning or 'adaptation', there is no doubt some merit in being 'behind the curve' in that one can learn from early adopters. Another important observation concluded that there may be a cultural deficit and creating institutions with a focus on the coherence of the whole could be a useful counter-balance (for example, through the creation of a 'killer agency').

Concluding Remarks

The complexity and multi-dimensional nature of sustainable-transport policy was emphasised during many of the discussions throughout the day. This highlights the range of policy measures in place and also a considerable choice of measures that could potentially be adopted. The debate also recognised that specific measures will result in specific outcomes: for instance, policy measures designed to reduce urban congestion may not be especially effective in delivering emission reduction. Equally, low-emissions vehicles will not solve the urban congestion issue. The important point is that collectively these policies form part of a wider portfolio of measures, all of which need to be tied together in an overarching strategic approach that is designed to move Ireland towards a sustainable-transport future.

The discussions from the day indicate that in many ways the sustainable-transport challenge can be polarised into a rural or urban category. On the one hand, the urban solution (traffic congestion) is largely centred on modal shift and passenger-vehicle reduction, and this bears a strong correlation to the wider energy-efficiency (demand reduction) agenda, as both are highly dependent on public awareness and behaviour change. Low-emissions vehicles (renewable energy) could be considered a substantive part of the rural solution, since the prevailing low-density housing arrangement does not lend itself to a natural fit with communal transport solutions. The smaller town and suburban areas are expected to require a bespoke solution—convergence of policies designed to reduce passenger-vehicle journeys and encourage the uptake of low-emissions vehicles.

In summary, the panel discussions throughout the day sparked a number of ideas/suggestions as to how the sustainable-transport agenda could potentially progress: for instance, several delegates called for a formal review of the *Smarter Travel—A Sustainable Transport Future* report, to better understand what hasn't worked and why. Some emphasised that this review could be considered timely as the Smarter Travel Plan is now midway through its implementation cycle. Others suggested that a detailed analysis to better understand the co-benefits of a low-carbon economy, to include health, quality of life, urban realm, land-use, sedentary lifestyles and sustainable communities, would also be beneficial.

Many of the debates also referenced international best-practice sustainable transport polices, citing examples where Ireland could learn from these experiences, and specific reference was made to the potential value of a dedicated review of internationally recognised decarbonisation plans to identify and establish policies that have a good fit with Ireland. A number of participants also questioned how the best sustainable transport policy and project choices were identified and prioritised in Ireland and suggestions were made for the inclusion of both conventional CBA and multi-criteria decision analysis in the project and policy-appraisal reviews.

Several delegates also called for greater emphasis on behaviour change and references were made to the importance of developing a clearer understanding behind motivation and the potential to stimulate modal shift. A number of participants mentioned the value of health motives, suggesting that they could be expected to be a more effective means of encouraging behaviour change than emissions reduction. Specific motivational ideas, including the development of walking and cycle strategies at city/county council level, and the introduction of initiatives to encourage the creation of sustainable communities and prioritisation of active travel, were shared.

L-R: Jeanne Moore, NESC, David Browne & Therese Murphy.

The need for an overarching strategic approach to climate mitigation in the transport sector was another common thread weaving through the various panel discussions, and a number of delegates specifically called for a review of the current institutional governance in the transport sector. Others considered that it would be important to prioritise the publication of a successor to the National Spatial Strategy and also the development of a rural transport policy to align with a general strategy for development of rural areas and residential housing. An alternative fuel and vehicle strategy that incorporates the requirements of the Directive on Clean and Energy-Efficient Road Transport Vehicles as it applies to public transport, particularly in urban areas, was also mentioned.

Appendix 1: Conference Programme

Welcome and Overview for the Day from Rory O'Donnell, Director, NESC

Session 1:
Reflections on Areas of Current Progress and Opportunities for Further Development

Facilitator:
Therese Murphy, Independent Consultant.

Panel Discussion:
Denise Keoghan, Department of Transport, Tourism and Sport.

Neil Walker, Ibec.

Brian Caulfield, Trinity College Dublin.

Hugh Creegan, National Transport Authority.

Session 2:
Social and Behavioural Change; Travel Demand Management—Practical Solutions and Potential Opportunities

Introduction:
David Browne, Independent Consultant.

Facilitator:
Larry O'Connell, NESC.

Panel Discussion:

Ciarán Cuffe, DCC Transportation & Traffic SPC.
Paul Daly, Waterford City and County Council.
Joe O'Neill, Galway City Council.
Mike McKillen, Dublin Cycling Campaign.

Session 3:
Technological Development; Low Carbon Solutions for Both Passenger Vehicles and Freight Transport

Introduction and Facilitator:
Lisa Ryan, University College Dublin.

Panel Discussion:

Matthew Clancy, SEAI.

Senan McGrath, ESB E-Cars.

Daniel Fitzpatrick, Gas Networks Ireland.

Kieran Lettice, Energy Cork.

Frank Kerr, Dublin Bus.

Session 4:
Institutional Development

Introduction:
Rory O'Donnell, NESC.

Facilitator:
David Browne, Independent Consultant.

Panel Discussion:

Rory O'Donnell, NESC.

Jane Hackett, An Taisce.

Julie O'Neill, Independent Consultant.

Martin Diskin, Department of Transport, Tourism and Sport.

Closing Remarks from Dr Rory O'Donnell, NESC

Appendix 2: Delegate List

Frank Barr	Irish EV Owners	Caroline Lyons	Department of Environment, Community & Local Government
Miklos Berencsi	Department of Transport, Tourism & Sport		
David Browne		Senan McGrath	ESB
Enda Buckley	Environmental Pillar	Mike McKillen	Cyclist.ie—The Irish Cycling Advocacy Network
Paraic Carroll	Trinity College Dublin		
John Carty	Ibec	Eoin McLoughlin	Department of Transport, Tourism & Sport
Brian Caulfield	Trinity College Dublin		
Matthew Clancy	SEAI	Jeanne Moore	NESC
Eric Conroy	INOU	Therese Murphy	3Consulting
Hugh Creegan	National Transport Authority	Martin Nolan	Bus Eireann
		Malcom Noonan	Green Party
Ciarán Cuffe	Dublin Institute of Technology	Conor O'Brien	ESB ecars
		Philip O'Brien	EPA
Derval Cummins	Ernst & Young	Larry O'Connell	NESC
Paul Daly	Waterford City & County Council	Rory O'Donnell	NESC
		Kevin O'Farrell	Dublin Cycling Campaign
Martin Diskin	Department of Transport, Tourism & Sport	Joe O'Neill	Galway City Council
		Julie O'Neill	Joint the Dots
Daniel Fitzpatrick	Gas Networks Ireland	Kevin O'Rourke	Marchena Management Services Ltd.
Jane Hackett	An Taisce		
Martin Hawkes	Climate Gathering	Cormac Rabbit	Metro Dublin
Mary Hussey	Dublin City Council	Lisa Ryan	University College Dublin
Denise Keoghan	Department of Transport, Tourism & Sport	Colm Ryder	Cyclist.ie—The Irish Cycling Advocacy Network
Emma Kerins	Chambers Ireland	Hendrik van der Kamp	Dublin Institute of Technology
Frank Kerr	Dublin Bus		
Kieran Lettice	Energy Cork	Neil Walker	Ibec