An Roinn Iompair,
Turasóireachta agus Spóirt
Department of Transport,
Tourism and Sport

Sustainable Mobility Policy Review

Background Paper 2
Active Travel

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Context and questions for consideration

This background paper is one of a number of papers that have been prepared by the Department of Transport, Tourism and Sport to inform a public consultation on Ireland's sustainable mobility policy. The review work arises from a commitment in the *Programme for a Partnership Government*[1] to review public transport policy "to ensure services are sustainable into the future and are meeting the needs of a modern economy". The public consultation is designed to give stakeholders, interested parties and the general public the opportunity to reflect on the information and analysis in the papers, to share their views, and to contribute to the development of a Sustainable Mobility Policy Statement.

Sustainable Mobility can be described as linking people and places in a sustainable way by supporting:

- comfortable and affordable journeys to and from work, home, school, college, shops and leisure;
- travelling by cleaner and greener transport and;
- a shift away from the private car to greater use of active travel (walking and cycling) and public transport (e.g. bus, rail, tram).

All elements of sustainable mobility (public transport, cycling, walking) are being considered in the policy review. Each background paper includes a number of questions to generate ideas about the extent to which the present approach to sustainable mobility is working well, the areas which are not, and future priorities.

This background paper sets out to examine the previous and current role of active travel modes (walking and cycling) in the context of the wider transport network. An evaluation of the Smarter Travel Areas funding programme, commissioned by the Department of Transport, Tourism and Sport and conducted by AECOM consultants, is also being published as part of this review of active travel in Ireland.

Participants are not confined to answering the suggested questions below and are invited to offer any other contribution they wish to make. It is recommended that submissions are confined to circa 2,500 words or less.

2.1	Given the trends highlighted in Section 5, what should the focus be in terms of infrastructure delivery?
2.2	How can we best deliver an integrated package of focused behavioural change measures and infrastructure in order to achieve change?
2.3	Is greater consideration needed in future active travel policy to increase walking as a transport mode? If so, what measures should be considered?
2.4	What additional measures can be introduced to encourage multi-modal journeys?
2.5	Which recommendations of the *Ex Post Evaluation of the Smarter Travel Areas* should be prioritised for action?

1 Structure of the paper

The purpose of this paper is to review the previous and current role of active travel modes (walking and cycling) in the context of the wider transport network while raising some issues for consideration in developing future policy.

Section 2: **Definition of active travel** seeks to define active travel and set out the range of benefits associated with active travel.

Section 3: **Institutional arrangements around active travel** examines the institutional arrangements around the investment in, and the delivery of, active travel supports including the role of Government Departments and implementing agencies. It also looks at European Union and international programmes which have a role in both policy making, funding and implementing projects that support a shift to active travel modes.

Section 4: **Review of relevant policies that influence active travel** provides a high-level summary of policies that influence active travel use, specifically a review of active travel policy both at national and sectoral levels.

Section 5: **Active travel trends** highlights trends in active travel in recent years in both urban and non-urban areas and looks at mode shares and journey purpose for active travel journeys.

Section 6: **Motivational factors in active travel** considers a number of motivational factors that can influence active travel choices including behavioural change, climate change, health and safety. It also looks at the gender gap in cycling participation in Ireland.

Section 7: **International case studies** shows a few international examples of active travel promotion and modal shift. It considers active travel infrastructure, behavioural change initiatives and socio-economic influences, and identifies some of the policies and measures that underpinned the success (or failure) of these intervention types.

Section 8: **Conclusions and matters for consideration** summarises the issues identified in the paper for consideration in the development of future policy.

Alongside this paper, and as part of the overall review of sustainable mobility, a separate report is also being published which evaluates the specific impacts observed as a result of the Smarter Travel Area funding programme in Limerick, Dungarvan and Westport between 2012 and 2016.

2 Defining active travel

2.1 Definition of active travel

It is useful to consider what is meant by the term "active travel" as there are various definitions in use internationally that differ slightly from one another. For the purposes of this paper, active travel is defined as travelling with a purpose using your own energy. Generally this means walking (including all users of footpaths) or cycling as part of a purposeful journey. Increasingly, non-motorised scooters are also being used for urban transport, especially by school children, and this would also be considered as active travel. Thus, walking as part of a commute to work, cycling to the shop or scooting to school are all considered active travel, whereas walking or cycling for purely leisure purposes is not. It is also often the case that active travel can be seamlessly built into everyday life as part of normal daily routines.

Occasionally, "active travel" or "active transport" can be used in place of "sustainable transport" or "sustainable mobility". Walking and cycling are indeed considered to be sustainable modes; however, sustainable transport/mobility is generally considered to be a more wide-ranging definition that covers active travel as well as public transport such as buses, light rail and heavy rail.

2.2 Active travel infrastructure vs. Greenways

Active travel infrastructure is considered to be infrastructure that enables commuters to travel "actively" on their daily commute. It includes amongst other things footpaths, on and off road cycling routes, pedestrian and cycle friendly junctions and roundabouts. In the recently published *Strategy for the Future Development of National and Regional Greenways*[2], greenways are defined as "*a recreational or pedestrian corridor for non-motorised journeys, developed in an integrated manner which enhances both the environment and quality of life of the surrounding area. These routes should meet satisfactory standards of width, gradient and surface condition to ensure that they are both user-friendly and low-risk for users of all abilities*". Thus, while greenways are primarily focused on those participating in walking and cycling for leisure purposes, they can be utilised by those engaged in active travel, particularly greenway infrastructure located in urban environments.

2.3 Benefits of Active Travel

Active travel has a range of benefits associated with it, including reducing congestion in urban areas through providing an alternative to the private car. However, there are a wide range of multi-disciplinary benefits also associated with active travel, and/or increasing active travel's modal share, such as:

- **Environmental:** reduced levels of carbon emissions and greenhouse gases; improved air quality levels in towns and cities including lower levels of harmful particulates; reduced noise levels due to lower vehicle volumes / speeds; reduced environmental impacts due to reduced levels of energy and materials used in car manufacturing.

- **Health:** improved levels of fitness and public health generally from increased activity. Improved air quality in towns and cities as a result of traffic management measures and reduced car volumes.

- **Safety:** increased levels of cycling tends to lead to lower accident rates for cyclists overall through a "safety in numbers" effect, although there are alternative views that the effect is more properly described as "numbers through safety"[3]. Increased levels of active travel can also stimulate the increased provision of quality footpaths and cycle paths by public authorities, further increasing safety generally.

- **Economic:** increased active travel usage can lead to reduced congestion levels and improved accessibility in urban areas. The space and infrastructure required for large numbers of pedestrians and cyclists are often significantly more economical to provide when compared to the costs associated with new roads or railways, for example.

- **Social:** increased provision for active travel modes can drive improved transport equity. Although environmental considerations are increasingly at play in consumer choices about transport, it is still the case that low levels of private car ownership and use can be an indicator of lower income levels. Increasing the provisions for active travel modes can improve accessibility and mobility for lower income groups, while improved active travel infrastructure (e.g. high quality footpaths) can also increase accessibility for people with mobility impairments or disabilities.

3 Institutional arrangements around active travel

3.1 Introduction

The institutional arrangements around the investment in, and the delivery of, active travel supports are made up of:

1) Government Departments, which provide the broad policy context, and aggregate funding allocations;
2) Implementing agencies which draft and implement strategies and action plans; and
3) European Union (EU) and international programmes which have a role in both policy making, funding and implementing projects that support a shift to active travel modes.

3.2 Government Departments

3.2.1 Department of Transport, Tourism and Sport

The Department of Transport, Tourism and Sport (DTTAS) is the principal Government Department with responsibility for active travel.

The Department develops national level policies in all areas of sustainable mobility, including active travel, and, as detailed in Section 4, developed Smarter *Travel – A Sustainable Transport Future*[4] and the *National Cycling Policy Framework*[5].

DTTAS provides aggregate level of funding to its agencies, including in the area of active travel infrastructure provision to the National Transport Authority (NTA) and Transport Infrastructure Ireland (TII), as well as funding some specific programmes itself such as the national cycling training programme.

DTTAS also has responsibility for road safety legislation and works closely with the Road Safety Authority (RSA) in that regard. Road safety legislation regulates the use of our roads for all road users through prohibitions and restrictions including those directed at intoxicated driving and other road user behaviours.

3.2.2 Department of Health

Healthy Ireland, an agency of the Department of Health, provides the national framework for action to improve the health and wellbeing of people living in Ireland. It incorporates such initiatives as the *National Physical Activity Plan*[6] and the *Healthy Workplaces Plan*[7] which all feed into and play a vital role in the development and promotion of active travel.

3.2.3 Department of Housing, Planning and Local Government

The Department of Housing, Planning and Local Government has statutory and policy responsibilities in the area of local government and planning and these matters are influential in enabling active travel. The Department is also responsible for the administration of Government's Urban Regeneration and Development Fund, one of four new funds announced by Government as part of *Project Ireland 2040*[8], and which is funding a number of active travel projects across different local authorities.

3.2.4 Department of Rural and Community Development

The Department of Rural and Community Development is responsible for the administration of two funding programmes which both have potential relevance to the promotion of active travel and certainly have relevance to the promotion of walking and cycling generally. The Department is responsible for the Rural Regeneration and Development Fund, which is similar to the previously referenced Urban Regeneration and Development Fund and targeted at towns and villages with fewer than 10,000 residents. The Department also oversees the Outdoor Recreation Infrastructure Scheme which helps support the development and maintenance of walking and cycling trails across the country.

3.3 Implementing agencies

3.3.1 National Transport Authority (NTA)

Among a broad set of responsibilities across the transport area, the NTA has certain statutory objectives and functions in relation to the promotion of active travel and the delivery of certain types of cycling infrastructure.

The NTA developed and published the *National Cycle Manual*[9] in 2011 and the *Greater Dublin Area Cycle Network Plan* in 2013, and it has worked with local authorities in other major cities in the development of their cycling network plans also. In addition, the NTA is currently working with all local authorities in the major cities in relation to the development and/or implementation of metropolitan transport strategies and related infrastructure. As part of *Project Ireland 2040*, these metropolitan area transport strategies are intended to provide the strategic backdrop to the increased levels of investment now available and will also shape the development of BusConnects programmes in the cities, which will deliver significantly improved active travel infrastructure as well as a transformation of bus networks and services.

The NTA supports the delivery of improved cycling infrastructure in the cities through two principal programmes which are funded by DTTAS– the "cycling and walking" programme and the "sustainable urban transport" programme.

Furthermore, under the *Climate Action Plan 2019 to Tackle Climate Breakdown*[10], there is a provision made for the establishment by the NTA of a Cycling Project Office, to develop a 5-year strategy and implementation plan for cycling infrastructure. This Office will be established by the end of 2019.

3.3.2 Transport Infrastructure Ireland

Transport Infrastructure Ireland is responsible for the delivery of roads and light rail infrastructure. As part of its delivery of roads infrastructure, TII works to a set of detailed guidance documents and standards as published on its website. These include the requirement that active travel infrastructure is provided as part of all Type 2 and Type 3 single- and dual-carriageway road schemes. In addition TII has also published standards in relation to Rural Cycleway Design (Offline) which is similarly available to view on its website.

3.3.3 An Taisce and Smarter Travel team

An Taisce and the Smarter Travel team within the NTA are tasked with the delivery of two behavioural change programmes. The Green Schools Travel Programme aims to influence active travel to and from schools and the Workplace and Campus Travel programme aims to convert students and employees to use active travel modes. These programmes are funded by DTTAS.

3.3.4 Cycling Ireland

Cycling Ireland is primarily funded by DTTAS, along with other organisations including the Road Safety Authority and Healthy Ireland to deliver a national cycle training programme, Cycle Right.

3.3.5 Local authorities

Local authorities work closely with the NTA (plus An Taisce and Smarter Travel team) and TII in delivering infrastructure that supports active travel and additionally invest some of their own resources into its delivery.

3.4 Other relevant active travel funding and policy programmes

3.4.1 Ireland's European Structural and Investment Funds Programmes 2014 to 2020[11]

The European Regional Development Fund has sustainable urban development as one of its priorities, through support for integrated strategies to tackle the economic, environmental, climate and social challenges of urban areas.

The specific objectives of Priority Five are to revitalise, regenerate and improve the urban environment in designated urban centres as well as to support low carbon sustainable, multimodal urban mobility, such as active travel related projects.

The Designated Urban Centres Grants Scheme is managed by the Northern and Western Assembly, and the Southern Regional Assembly. A total of €80 million is available under the scheme to local authorities for the designated growth centres to support projects and programmes in their areas.

3.4.2 INTERREG

INTERREG is a suite of programmes supported by the European Regional Development Fund to stimulate cooperation between regions in the European Union.

The INTERREG initiative is designed to strengthen economic, social and territorial cohesion throughout the European Union, by fostering the balanced development of the continent through cross-border, transnational and interregional cooperation.

Ireland and Northern Ireland are currently partners in the North South cross-border INTERREG VA (2014-2020) programme[12]. Cross border sustainable travel is one of the thematic areas selected for funding under INTERREG VA and the programme is currently supporting the development of a number of active cross-border travel-related projects in the border region of Ireland and Northern Ireland. This includes the Multi Modal Hub in the former Waterside Railway Station in Derry which will bring integrated and convenient services to encourage more active

travel in the region along with the North West, Carlingford Lough and Ulster Canal greenways, which will bring almost 80km of new walking and cycling infrastructure to the region.

3.4.3 Pan-European Programme

Supported by the United Nations Economic Commission for Europe (UNECE) and the World Health Organisation (WHO), the Pan – European Programme (PEP)[13] is a policy platform that seeks to encourage transport policy makers and urban planners to consider the health and environmental impacts of transport and address them through shared policy approaches.

A cycling master plan for member states, of which Ireland is a member, is being developed. The overall objective of the master plan is the promotion of cycling to improve the quality of life on a pan-European level and to establish cycling as an equal mode of transport.

In order to achieve the objective, the following specific targets have been set to be delivered by 2030:

- Increase cycling in every country;
- National Cycle Policy developed, adopted and implemented in the PEP members; and
- Increase safety for cyclists in the PEP member states by halving the number of fatalities and serious injuries.

3.5 Active travel infrastructure delivery

As stated in Section 3.3, the NTA works with local authorities in the development of transport strategies and the delivery of associated infrastructure.

An outline of the planning and development system is available in *Background Paper 6: Land Use Planning and Transport Planning*. In terms of the delivery of active travel infrastructure, there are three principal development methods which are summarised below:-

- A "Part 8" development;
  Typically development carried out by a local authority is referred to as a "Part 8" development. This reference relates to Part 8 of the Planning and Development Regulations 2001 (as amended), which sets out the procedure for carrying out such developments. These developments can include works related to cycling infrastructure, and also include works such as the construction of houses, roads, swimming pools, public toilets etc.

  For "Part 8" developments it is the elected members of the relevant local authority that decide to grant or refuse permission.

- A "Section 38" development;
  For minor works relating to issues such as traffic calming or minor road improvements, local authorities, acting as the road authority may utilise a "Section 38" development under Section 38 of the Road Traffic Act 1994 (as amended).

  Section 38 of the Act permits a road authority, in the interest of the safety and convenience of road users, to provide such traffic calming measures including footpath

and cycle track improvements as they consider desirable in respect of public roads in their charge. For "Section 38" developments it is the elected members of the relevant local authority that decide whether or not to implement such a development.

Within the Greater Dublin Area (GDA), the NTA has a statutory power to pursue such developments itself if it is to enhance public bus services or improve facilities for cyclists. The NTA must however consult with the relevant road authority prior to exercising that power.

- A "Strategic Infrastructure Development"

  The Planning and Development (Strategic Infrastructure) Act 2006 amended the Planning and Development Acts to provide for a new class of development known as "strategic infrastructure development".

  There are distinct statutory provisions governing different categories of strategic infrastructure development and these are referred to below:

  - The development would be of strategic economic or social importance to the State or the region in which it would be situate;
  - The development would contribute substantially to the fulfilment of any of the objectives in the *National Planning Framework (NPF)* or in any Regional Spatial and Economic Strategy in force in respect of the area or areas in which the development would be situate;
  - The development would have a significant effect on the area of more than one planning authority.

Development by certain public authorities (including a local or road authority) that requires an Environmental Impact Assessment also qualifies to be considered as a strategic infrastructure development. Strategic infrastructure developments are considered and decided upon by An Bord Pleanála in line with the statutory framework established by the aforementioned Act.

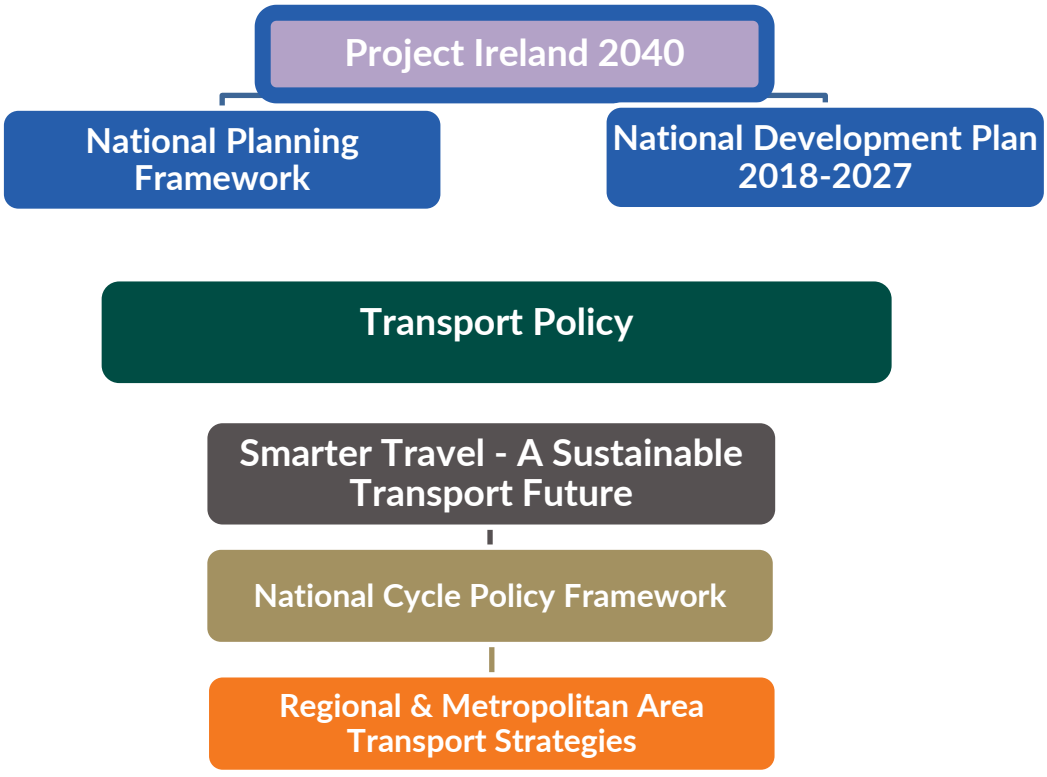
4 Review of relevant policies that influence active travel

Summary

- *Project Ireland 2040* includes investment in active travel infrastructure under a number of National Strategic Outcomes.
- DTTAS has significantly enhanced funding available to support the development of active travel infrastructure under the BusConnects programme of investment in all major cities.
- *Smarter Travel – A Sustainable Transport Future* has been the overarching policy guiding smarter and sustainable transport development in Ireland and aimed to reduce private car use, ensure alternatives to the private car are available and improve fuel efficiency.
- *Smarter Travel* also commits to the publication and implementation of a *National Cycle Policy Framework* as well as initiatives to create a culture of walking in Ireland.
- Each of the three Regional Assemblies are required to develop a Regional Spatial and Economic Strategy in which a Regional Transport Strategy must be put forward.

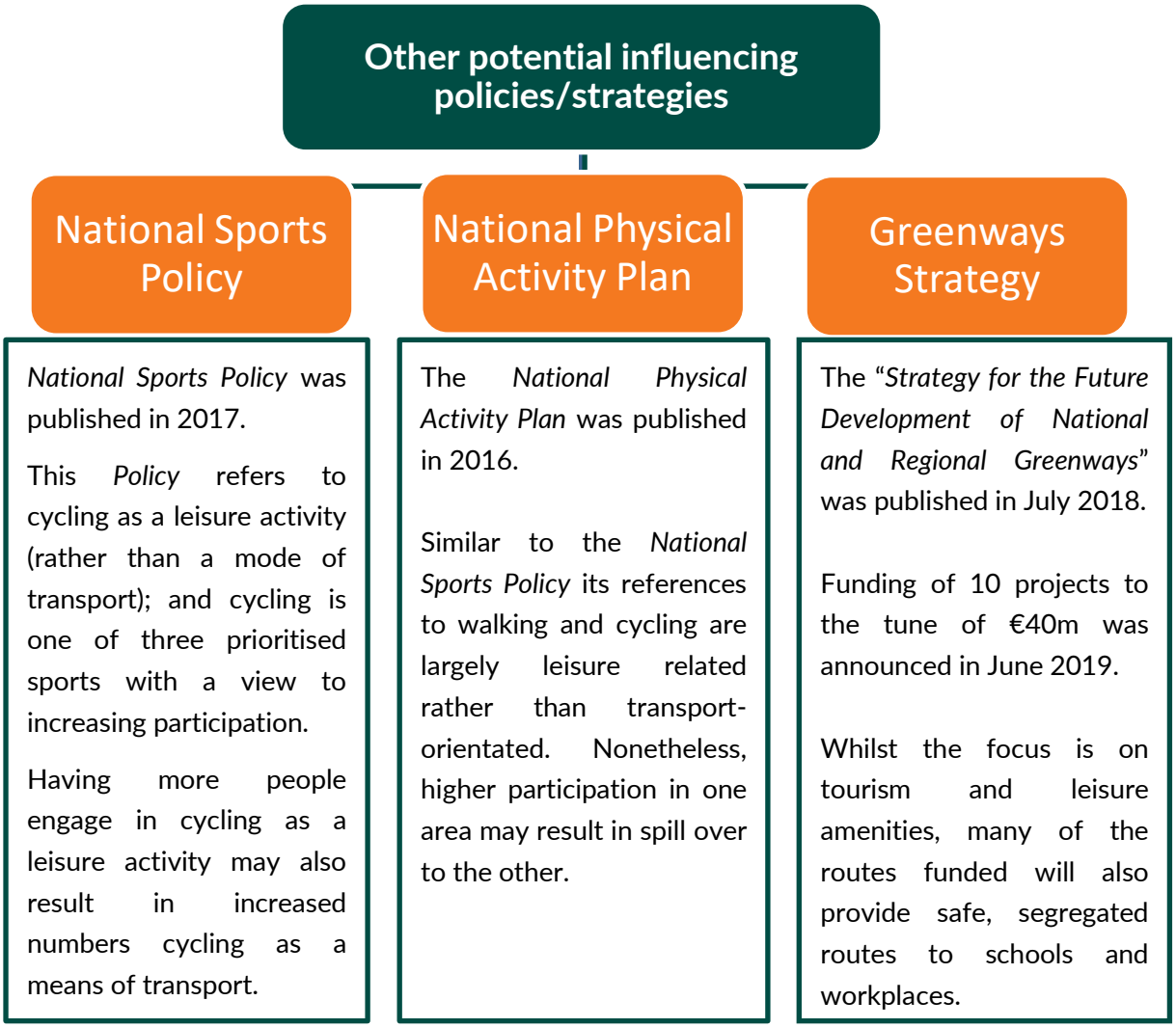
4.1 Introduction

This Section provides a high-level summary of the relevant policies that influence active travel use, specifically a review of active travel policy both at national and sectoral levels.



The policies listed above are those which directly impact upon active travel as defined in Section 2 of this paper; however, there are other potentially influencing policies and strategies which seek to increase participation levels in walking and/or cycling for purposes other than active travel

such as the *National Sports Policy*[14], the *National Physical Activity Plan* and the *Strategy for the Future Development of National and Regional Greenways* as previously mentioned.



4.2 Project Ireland 2040

Project Ireland 2040, which was launched in February 2018, sets out the Government's policy on spatial planning and infrastructure development over the period to 2040. Active travel is a feature of the two overarching policy documents – the *National Planning Framework*[15] and the ten-year *National Development Plan (NDP) 2018-2027*[16].

Investment in active travel infrastructure will support the realisation of a number of National Strategic Outcomes (NSOs) as identified in *Project Ireland 2040*, namely:

- NSO 1 – Compact Growth
- NSO 3 – Strengthened Rural Economies and Communities
- NSO 4 – Sustainable Mobility
- NSO 7 – Enhanced Amenity and Heritage
- NSO 8 – Transition to a Low Carbon and Climate Resilient Society

Development of strategic cycling networks is referenced as a key growth enabler for each of the five major metropolitan areas – Cork, Dublin, Galway, Limerick and Waterford – and funding for the development of those networks is available through both DTTAS administered funding programmes and the Urban Renewal and Regeneration Fund.

Project Ireland 2040 states the Government's objective to "*ensure the integration of safe and convenient alternatives to the car into the design of our communities, by prioritising walking and accessibility to both existing and proposed developments, and integrating physical activity facilities for all ages.*"

To support the realisation of this ambition, DTTAS has significantly enhanced funding available to support the development of active travel infrastructure under the BusConnects programme of investment in all major cities. A separate strand of approximately €365 million over the period 2018 to 2022 is also available through the programmes that specifically support cycling and walking and sustainable urban transport programmes. Additional funding is also available under both the Urban and Rural Regeneration and Development Funds.

4.3 Climate Action Plan 2019

In June 2019, the Government published its *Climate Action Plan 2019 to Tackle Climate Breakdown*. The *Plan* sets out the actions to ensure Ireland becomes a world leader in responding to climate breakdown and includes a number of specific actions relating to cycling which are referenced below.

Empowering Modal Shift and Sharing Economy in Transport	
Action No.	***Action Description***
91	Undertake an expansion of cycling infrastructure through the establishment of a "Cycling Project Office" within the National Transport Authority and develop an implementation plan.
95	Develop and implement cycle network plans for all major cities.
97	Commence full implementation of the National Cycle Policy Framework

The cornerstone of the *Plan* is analysis which determines the most cost-effective technology pathway to reduce emissions in line with Ireland's decarbonisation targets. The mitigation potential of the electricity, transport, built environment, industry and agricultural sectors was assessed, building upon existing policies and setting new actions to accelerate national emission reduction. Furthermore, a new climate governance structure has been established under the *Plan* to ensure accountability and encourage sustained decarbonisation. A fuller discussion of the *Climate Action Plan 2019* is provided in *Background Paper 3: Climate Change Challenge*, which is also being published as part of this public consultation.

4.4 Smarter Travel – A Sustainable Transport Future

4.4.1 Overview

Smarter Travel – A Sustainable Transport Future was published by Government in 2009 and has been the overarching policy guiding smarter and sustainable transport development in Ireland. *Smarter Travel* was developed to guide policy until 2020 and the sustainable mobility policy programme, of which this paper forms part, is designed to review *Smarter Travel* in order to develop a new policy framework for the coming years.

Smarter Travel set out four principal themes:

1. Reduce distance travelled by private car by focusing population and employment growth in urban areas, combined with fiscal measures to encourage behavioural change;
2. Ensure alternatives to the car are more widely available, through improved public transport, cycling and walking;
3. Improve the fuel efficiency of motorised transport through improved fleet structure, energy efficient driving and alternative technologies; and
4. Strengthen institutional arrangements to deliver the *Smarter Travel* targets.

These four principal themes were supported by a total of 49 actions to be delivered over the lifetime of the policy and an overview of the current implementation status of those individual actions is being published alongside the nine background papers for public consultation.

Action 15 of *Smarter Travel* relates to cycling and commits toward the publication and implementation of a *National Cycle Policy Framework (NCPF)* that will address issues such as –

- The creation of traffic-free urban centres to facilitate cycling;
- Investment in a national cycle network with urban networks given priority;
- Cycle training for schoolchildren; and
- Integration of cycling with other transport modes, e.g. carriage of bicycles on public transport.

Action 16 relates to walking and outlines a number of proposed initiatives designed to create a culture of walking in Ireland. These include –

- The creation of larger traffic-free areas in urban centres;
- Providing safe pedestrian routes;
- Improving the surface quality of footpaths;
- Introducing 30 km/h zones in central urban areas where appropriate; and
- Publication of a national walking policy.

Smarter Travel was an ambitious policy and published at the effective mid-point of the then capital investment programme known as *Transport 21*. Implementation of the policy was estimated to cost a total of €4.5 billion with funding subject to "*prevailing economic and Budgetary parameters*". The first phase of implementation was focussed on the establishment of the new institutional arrangements relating to public transport planning and regulation, which resulted in the establishment of the National Transport Authority.

Of course the "*prevailing economic and Budgetary parameters*" referenced in *Smarter Travel* were extremely restrictive due to the economic and financial crisis which occurred at that time. The total voted expenditure of DTTAS decreased by 46% between 2009 and 2013 for example, while the total voted capital expenditure over the same period went from €2.4 billion to €944 million.

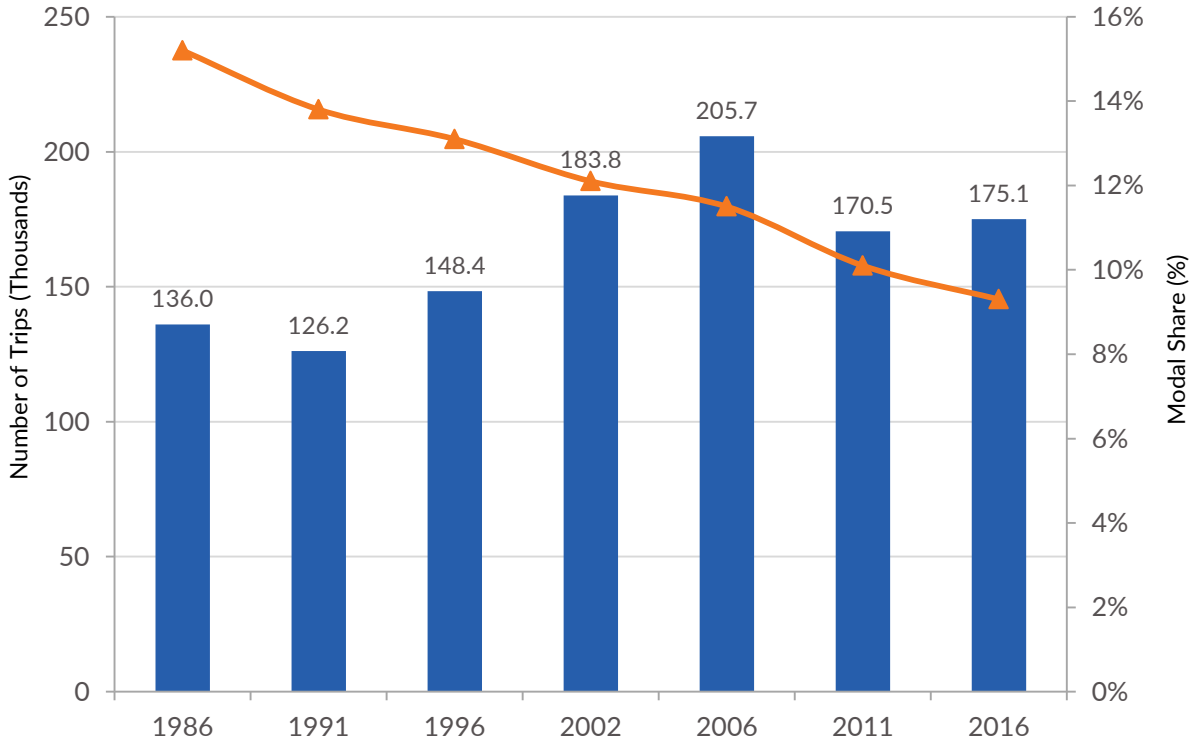
Funding remained extremely constrained in the years that followed and significant increases have only been possible in the most recent Budgets. Consequently, the funding available over most of the period of *Smarter Travel's* lifecycle was much more restricted than envisaged at the time of its development.

4.5 Walking

Walking is an important part of many people's daily commute and in Census 2016, 9% of people stated that walking was their primary means of travel to work. Reflective of the analysis provided in Section 5 of this paper, there is a significantly higher modal share in more densely populated areas such as Dublin city (20%), Cork city (20%) and Galway city (16%).

Figure 4.1 shows the total number of people walking to work nationally over the period 1986 to 2016, as well as the modal share over the same period. While there has been an increase in the total numbers of people walking to work over the period, the modal share of walking as the primary means of transport to work has decreased.

Figure 4.1: Commuting trips to work by walking 1986 to 2016



Source: CSO Census

Smarter Travel stated Government's commitment to creating a culture of walking in Ireland and outlined a number of potential initiatives which might be considered.

An important development since publication of *Smarter Travel*, and the *National Cycle Policy Framework*, was the finalisation of the *Design Manual for Urban Roads and Streets*[17] (known as *DMURS*) in 2013. *DMURS* applies to the design of all urban roads and streets (i.e. roads and streets with a speed limit of under 60 km/h) and it seeks to re-examine the street to create walkable, cycleable and public transport orientated communities. A recent report by the OECD/International Transport Forum[18] stated that –

> "*greater walkability in cities will not be achieved one street at a time, but through comprehensive strategic planning in urban transport design regarding the locations of employment, transport hubs, education sites, sports and leisure sites, health care sites and retail location. Urban planning activities should also prioritise density, connectivity and destinations when seeking to increase pedestrian opportunities.*"

As noted in *Smarter Travel*, there is a strong convergence between walking as a recreational activity and walking as a means of active travel. Sport Ireland (a State body operating under the aegis of DTTAS) supported by Healthy Ireland and Mountaineering Ireland, has developed the *Get Ireland Walking*[19] initiative, the ambition of which is to create "*a vibrant culture of walking throughout Ireland*" and looks to support people to choose to walk more often for recreation, health and transport as part of their everyday life.

Many infrastructure and regulation issues relating to walking are led by local authorities. Initiatives have been taken in many urban centres across the country in terms of developing and implementing improved public realm strategies, better wayfinding and, as in Dublin recently, reducing waiting times for pedestrians at junctions.

Recent research conducted in Ireland highlights the positive response to improvements in pedestrian infrastructure in terms of the numbers of those likely to choose walking as a means of transport, particularly within the GDA. These findings require consideration to inform future policy priorities[20].

Funding is available from DTTAS, through the NTA, to support the delivery of improved pedestrian infrastructure for the purposes of active travel, while local authorities have also been successful in securing funding through both the Urban Regeneration and Development Fund and the Rural Regeneration and Development Fund.

In the United Kingdom, Transport for London (TfL) published its *Walking Action Plan: Making London the world's most walkable city* in July 2018[21]. The report found that walking had been undervalued in transport policy even though nearly a quarter of trips made by Londoners were made by foot.

This report cited that barriers to walking include:

- not having enough time;
- too much traffic, and traffic travelling too fast;
- personal security reasons;
- having other ways of travelling that work better;
- streets not pedestrian friendly;
- not being fit enough;

- road danger concerns; and
- having a disability.

In addressing these identified barriers, TfL's *Action Plan* put forward four main target areas for action:

1. Building and managing streets for people walking;
2. Planning and designing for walking;
3. Integrating walking with public transport; and
4. Leading a culture change.

4.6 Cycling

As committed to under Action 15 of *Smarter Travel*, the *National Cycle Policy Framework (NCPF)* was published in 2009 with a view to creating "*a strong cycling culture in Ireland*".

The overarching target set by the *NCPF* was to have 10% of all trips to work made by bicycle by 2020. The modal share of cycling as a means of commuting to work was recorded at 2% in Census 2006, which was the most recent Census conducted at the time of the development of *NCPF*.

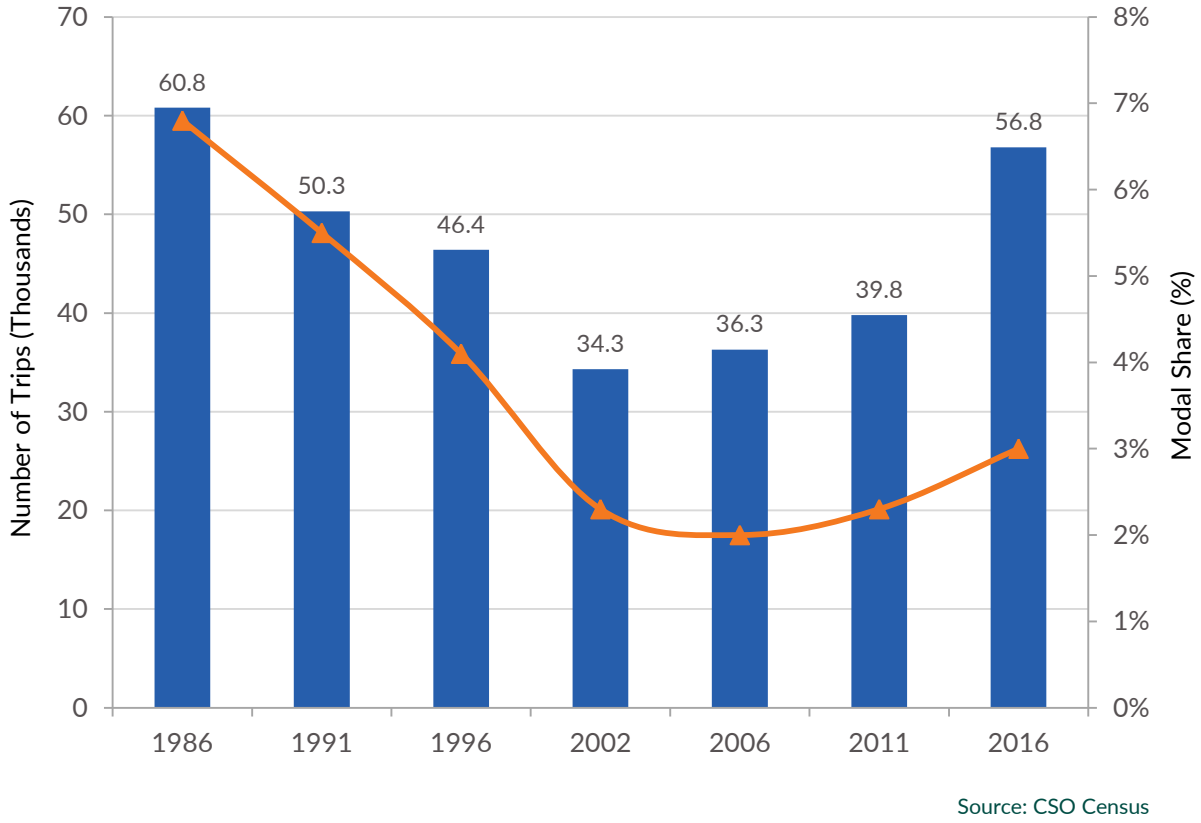
In order to support realisation of this ambitious target, the *NCPF* set out 19 objectives and 109 individual supporting actions covering both "hard" measures (e.g. infrastructure provision) and "soft" measures (e.g. education, communication). Appendix 1 provides an overview of the implementation status of each of the 109 actions of the *NCPF*.

Census 2016 is the most recent census which allows for comparison with the overarching target set by *NCPF* in 2009 and which used Census 2006 as its baseline. In terms of the absolute numbers of people commuting to work both Censuses are relatively similar with 1.88 million commuters in 2016 and 1.89 million commuters in 2006. The numbers of people choosing to cycle to work recorded a 56% increase over the period with 56,837 people cycling in 2016 as compared to 36,306 in 2006.

However, in terms of overall modal share, cycling's increase has been much more modest with Census 2016 recording a 3% share for cycling in terms of commuting.

Figure 4.2 shows the total number of people cycling to work nationally over the period 1986 to 2016, as well as the modal share over the same period. As can be seen from this figure, the total numbers of people cycling to work in 2016 is approximately the same as in 1986; however, the modal share in 2016 is below that recorded in 1986.

Figure 4.2: Commuting trips to work by bicycle 1986 to 2016



Source: CSO Census

Two thirds of those cycling to work in 2016 are recorded as living within Dublin city and suburbs and in that region the modal share is higher at 7.5% of commuters. Further analysis of active travel trends can be found in Section 5 of this paper.

4.7 Regional/Metropolitan Area Transport Strategies and Active Travel

Under the new land use planning arrangements introduced by *Project Ireland 2040*, the three Regional Assemblies are each required to develop a Regional Spatial and Economic Strategy (RSES). In developing those Strategies each of the Assemblies also puts forward a Regional Transport Strategy which covers all modes, including active travel modes. As the RSES are adopted the various local authorities will then begin making revised local development plans and local area plans which must all be aligned with the national and regional planning frameworks already adopted.

The five metropolitan areas – Cork, Dublin, Galway, Limerick and Waterford – will each develop a Metropolitan Area Strategic Plan and similarly each of those metropolitan areas has, or will, develop a metropolitan area transport strategy. These transport strategies consider all modes of transport, including the active travel modes of walking and cycling, and provide the strategic backdrop to proposed transport investment in the cities over a 20 year period.

For the GDA there already exists a statutory framework within which transport planning is undertaken and with which relevant land use plans must be consistent. *The Transport Strategy for the Greater Dublin Area 2016 to 2035*[22] was developed by the NTA and approved by the Minister of Transport, Tourism and Sport in 2016. The *Strategy* provides for a number of initiatives to

enhance the walking environment for pedestrians including the development of a strategic pedestrian network plan. The *Strategy* incorporates the GDA Cycle Network Plan which proposes to expand the urban cycle network to over 1,485 kilometres in length across primary, secondary and greenway routes.

Waterford's Cycle Network Plan was published in 2014, while the Waterford City and County Council also published an *Urban Renewal Scheme* for the city centre in 2015. Development of a Metropolitan Area Transport Strategy is scheduled to commence this year.

In Galway, the local authorities adopted the *Galway Transport Strategy*[23] in 2016. The *Strategy* incorporates a Cycle Network and Infrastructure Development strategy and Public Realm proposals.

In 2014 Limerick City and County Council published the *Limerick 2030*[24] plan which is an economic and spatial plan for the city and outlines planned improvements to the city's public realm and pedestrian infrastructure. In 2017 the Council published the *Limerick Metropolitan Cycle Network Study*[25] and it is expected that the study will be incorporated into the *Limerick – Shannon Metropolitan Area Transport Strategy* which is currently under development.

In May 2019, Cork City Council and Cork County Council, in co-operation with the NTA, published a draft *Cork Metropolitan Area Transport Strategy*[26] for public consultation. The draft *Strategy* contains proposed measures in relation to both walking and cycling in the city and largely incorporates the *Cork Cycle Network Plan*[27] which was published by both Councils in 2017; however, there have been some revisions and additional primary routes included.

Funding for the implementation of Metropolitan Area Transport Strategies is available through DTTAS' voted expenditure, as administered by the NTA, while public realm improvements can also access funding through *Project Ireland 2040's* Urban Regeneration and Development Fund.

5 Active travel trends

Summary

- Data from the CSO's National Travel Survey shows that the shares of walking and cycling journeys in total journeys have been relatively stable between 2012 and 2016.
- Active travel mode shares are slightly higher than average in densely populated areas and slightly below average in thinly populated areas.
- The distribution of journey purpose for walking journeys in 2016 is generally more similar to that of private car journeys than that of journeys by cycling or public transport.
- On average, over 50% of cycling journeys are for the purpose of work, though sample sizes for these journeys outside Dublin city are limited.

5.1 Introduction

This Section highlights trends in active travel in recent years in both urban and non-urban areas and looks at mode shares and journey purpose for active travel journeys.

5.2 Current and past levels of active travel use

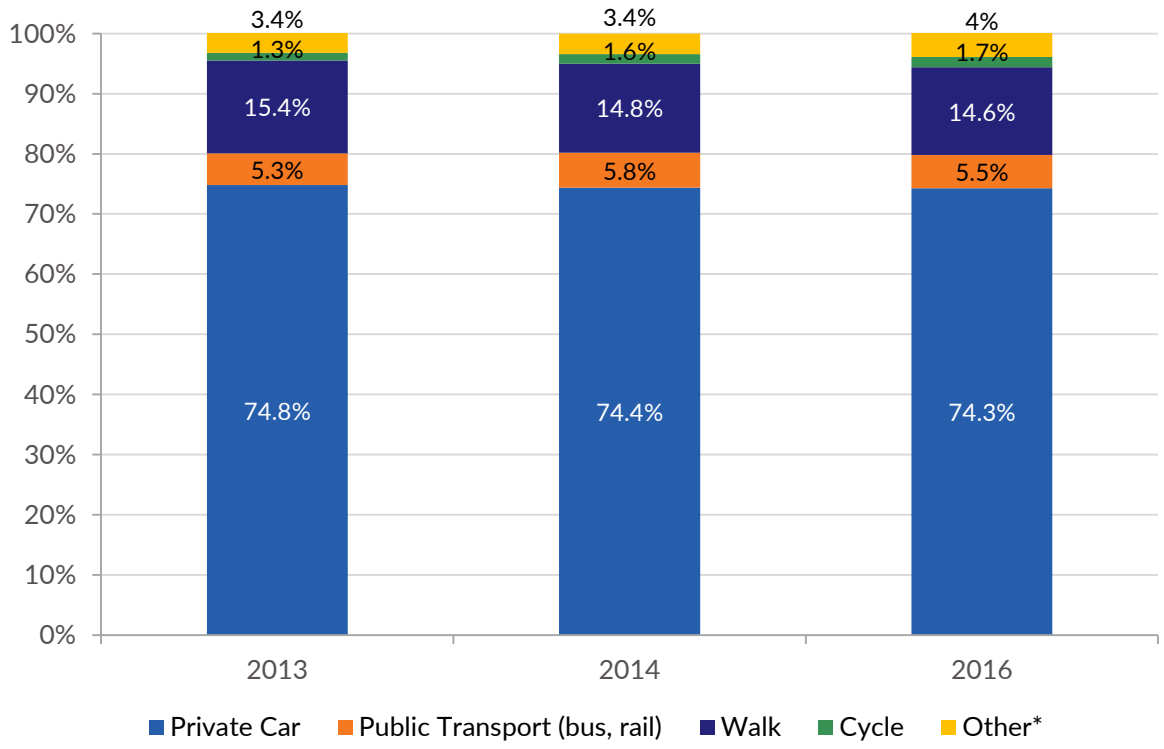
Data on travel patterns was collected from a representative sample of Irish households as part of the Central Statistics Office's (CSO) Quarterly National Household Survey (QNHS) in 2012, 2013, 2014 and 2016. The National Travel Survey (NTS) was not a panel (i.e. following the same respondents over multiple years) but rather involved a different cohort of respondents each year. The analysis first focuses on the shares of total journeys made using active travel modes, broken down by population density into densely populated (urban areas), intermediate (towns) and thinly populated (rural) areas.

It is important to note that this data relates to main mode of transport only and therefore the usage of active travel modes may be understated. If their use is primarily in support of the "last mile" (e.g. walking / cycling as the last portion of a person's public transport or car journey, or even the first portion) it may not be considered by the surveyed person to be their "main mode". When examining factors such as the mode share for travel to education, it is important to note that the NTS does not reflect the mode share for the whole student population as the survey only sampled persons aged 18 years and over.

5.3 Mode shares

Figure 5.1 shows the percentage of total journeys made, broken down by the main modal categories from the National Travel Survey. Modal shares are relatively consistent over the time period. Private car dominates with almost 3 out of every 4 journeys made by this mode in 2016. Active travel (walking and cycling combined) makes up around 16.5%, public transport share is steady at around 5.5% and 'other' (e.g. motorcycle, lorry, and taxi/hackney) increased from 3.4% in 2014 to 4% in 2016.

Figure 5.1: Percentage of journeys by mode of travel (full NTS sample) 2013-2016



Source: CSO

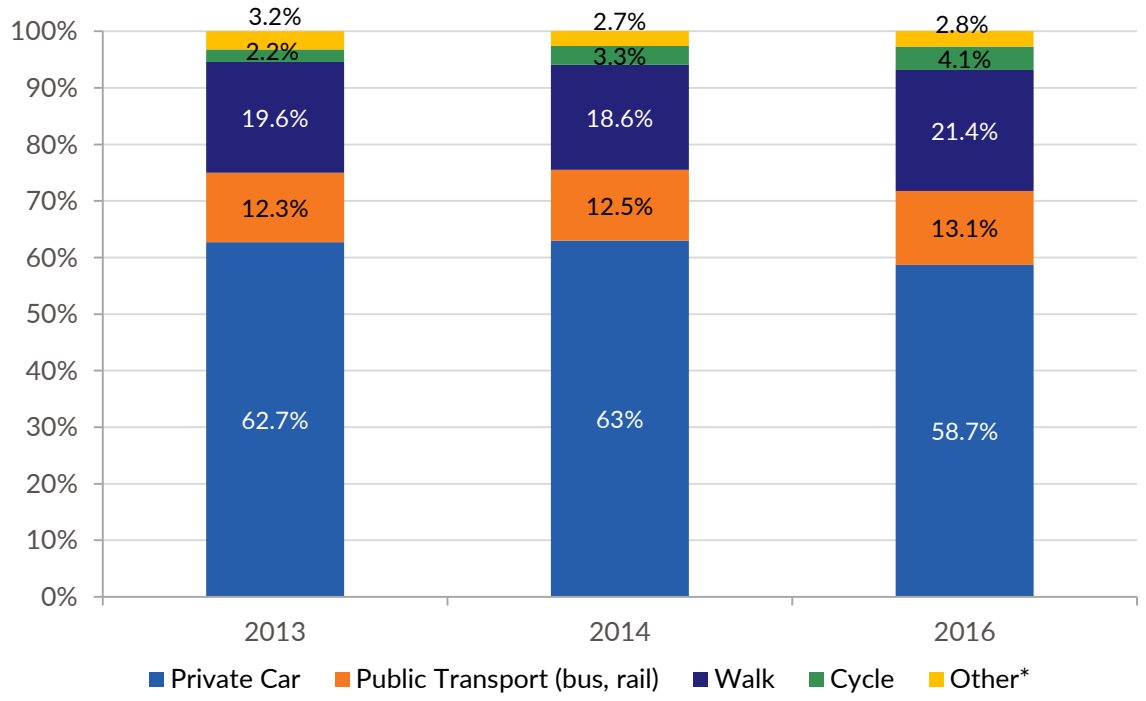
*Includes lorry, van, motor cycle, taxi/hackney and other modes of transport

5.3.1 Consideration of mode share and population size

Figure 5.2 focuses on the modal share in Dublin only. There is a consistently greater modal share for active travel in Dublin than at the aggregate level (Figure 5.1), with the difference starkest in 2016. In Dublin, use of active travel modes increased in that year, with walking accounting for the biggest proportion of this increase. Furthermore, the use of public transport is significantly higher in Dublin than at aggregate level with a shift from private car use.

As shown in Figure 5.3, there is a consistently greater modal share for active travel in densely populated areas than at the aggregate level, with the difference starkest in 2016. In densely populated areas, the use of walking was 2.3% higher and cycling 0.6% higher than at aggregate level. Between 2014 and 2016, the use of active travel modes increased by 1.9% with a shift from private car use to public transport and active travel. In densely populated areas the modal share of public transport is higher and of private car and 'other' modes slightly lower than at the aggregate level.

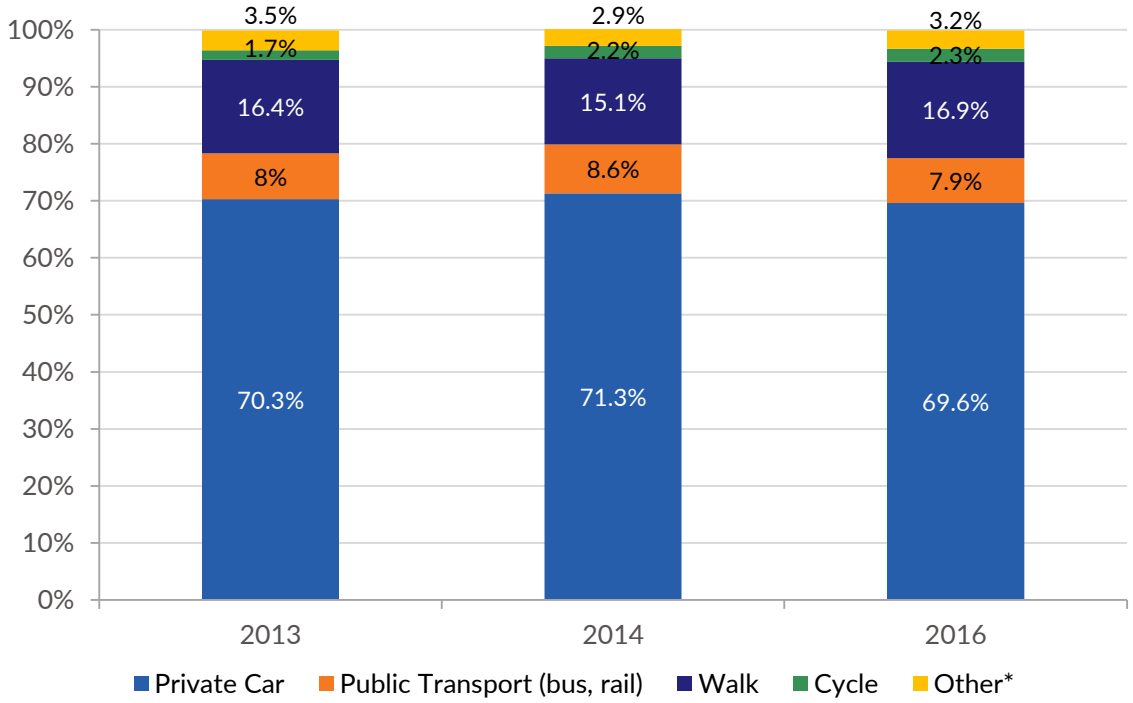
Figure 5.2: Percentage of journeys by mode of travel (Dublin) 2012-2016



Source: CSO

*Includes lorry, van, motor cycle, taxi/hackney and other modes of transport

Figure 5.3: Percentage of journeys by mode of travel (densely populated areas) 2012-2016

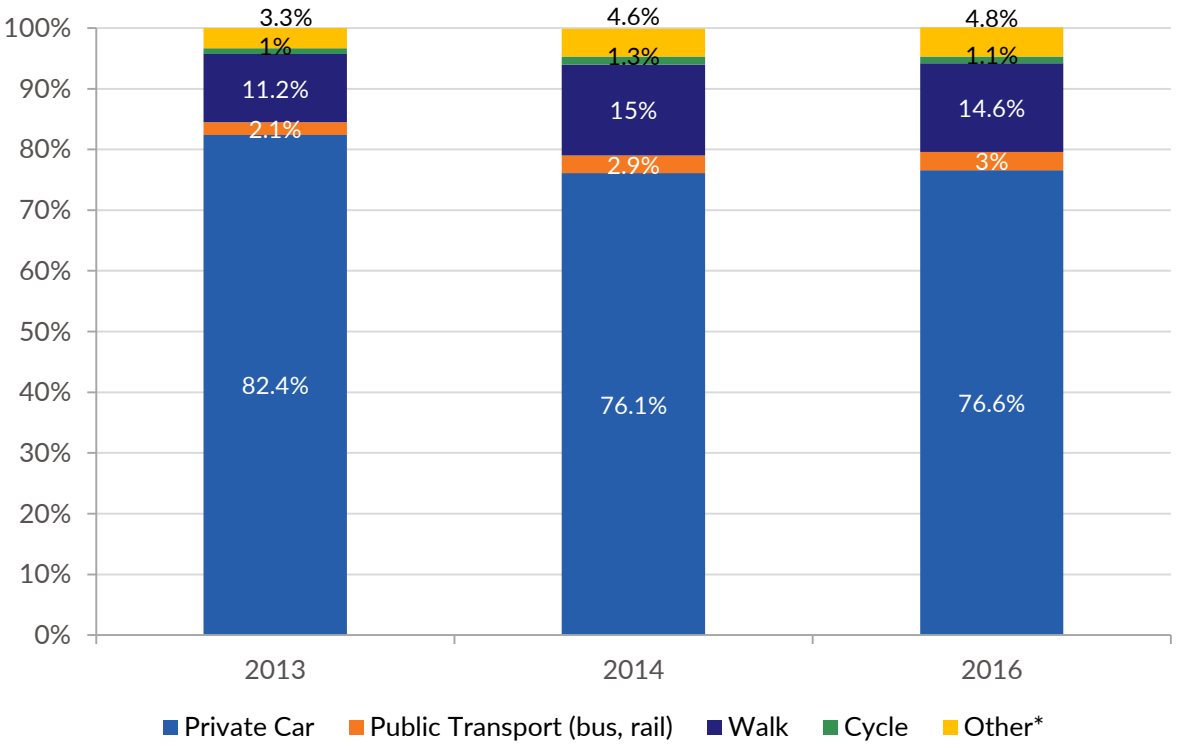


Source: CSO

*Includes lorry, van, motor cycle, taxi/hackney and other modes of transport

As seen in 2013, the private car mode share in intermediate population density areas is greater than the aggregate share, while active travel and public transport shares are less (Figure 5.4). In 2014, the private car and 'other' shares are slightly higher at the expense of public transport with active travel the same; in 2016, private car and 'other' shares are higher, walking shares are identical and cycling shares are 0.6% lower than at aggregate level. Public transport share is 2.5% lower than at aggregate level. Overall for intermediate density areas, the picture is mixed, with active travel mode share 4.5% lower than average in 2013, average in 2014 and 0.6% lower than average in 2016.

Figure 5.4: Percentage of journeys by mode of travel (intermediate population density areas) 2012-2016

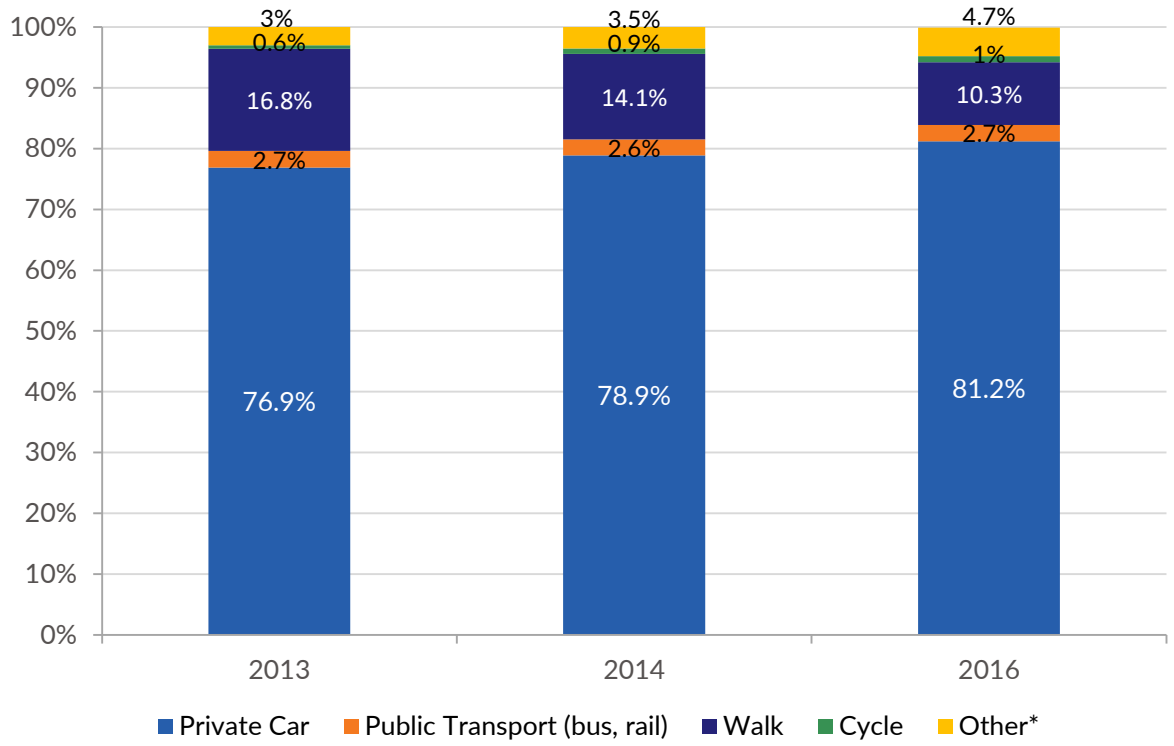


Source: CSO

*Includes lorry, van, motor cycle, taxi/hackney and other modes of transport

Private car mode shares are consistently higher and public transport mode shares consistently lower in thinly populated areas than at the aggregate level (Figure 5.5), which may be due to a higher level of public transport service provision in areas of greater population density. The active travel mode share is lower in 2014, and significantly so in 2016, but is higher than average in 2013 - this may or may not be due to sampling variation from year to year, with the multi-year trend offering the most reliable indication of what the figures are among the entire population in these areas. The 'other' mode share also exhibits mixed behaviour but increases in 2016. The evidence here mirrors that for densely populated areas in that 2016 shows a distinctly different distribution than that of 2013 to 2014, with private car and 'other' mode shares increasing significantly and active travel and public transport shares falling significantly.

Figure 5.5: Percentage of journeys by mode of travel (thinly populated areas) 2012-2016



Source: CSO

*Includes lorry, van, motor cycle, taxi/hackney and other modes of transport

In summary, the combined share of walking and cycling in total journeys is consistently greater than average in Dublin and other densely populated areas. For intermediate density areas, the picture is mixed, with active travel use 4.5% lower than average in 2013, average in 2014 and lower than average in 2016. Active travel mode share in thinly populated areas is in general below average. Between 2013 and 2016, active travel mode share shows a 1% increase in densely populated areas but a fall of 6.1% in thinly populated areas – in both cases the main counterpart category (losing out in densely populated areas, gaining in thinly populated areas) is private car. In recent years, the increase in popularity of e-bikes in other EU Member States is considered to be of importance in extending the journey distance 'reach' of cycling[28].

5.3.2 Mode share in Dublin

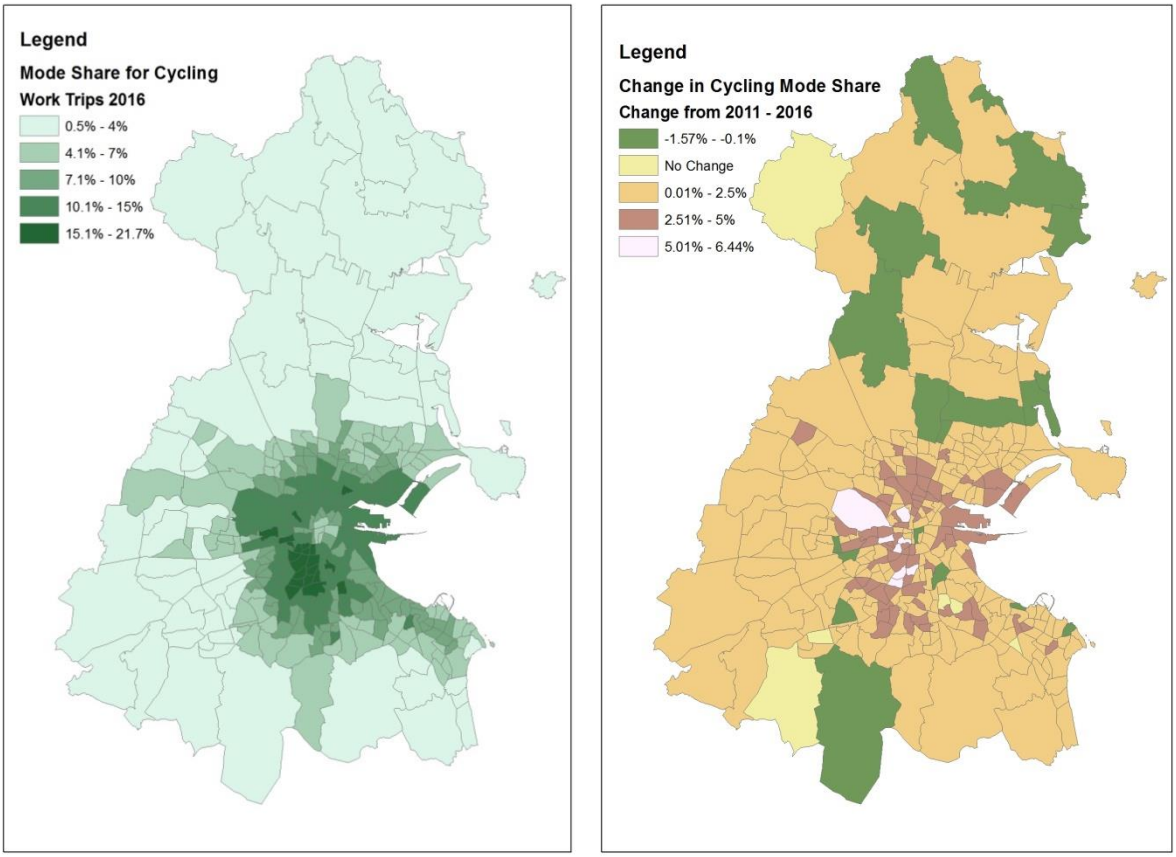
As stated in Section 4, the overarching target set by the *NCPF* was to have 10% of all trips to work made by bicycle by 2020. At a national level, this target has not been met and Census 2016 reports that cycling's modal share for commuting trips to work stands at 3%, which is an increase on that recorded in Census 2006 but is clearly some way off the *NCPF* target.

Two thirds of all cycling trips to work are taken in Dublin where Census 2016 recorded the overall share of cycling in commuting trips at 7.5%, which, while still below the *NCPF* target, is significantly above the national share.

Within Dublin there are areas which exceed the *NCPF* target and cycling has enjoyed strong growth in a number of areas since publication of the *NCPF*. These areas are illustrated in Figure

5.6 which shows Dublin divided into small areas for the purposes of statistical analysis. The figure on the left shows the overall modal share of cycling as means of transport to work as recorded in the *Census 2016 Place of Work, School or College - Census of Anonymised Records* per area, and the figure on the right shows the percentage growth in cycling as a means of transport to work in each area over the period 2011 to 2016.

Figure 5.6: Mode share for cycling, 2016 and change in mode share for cycling 2011-2016



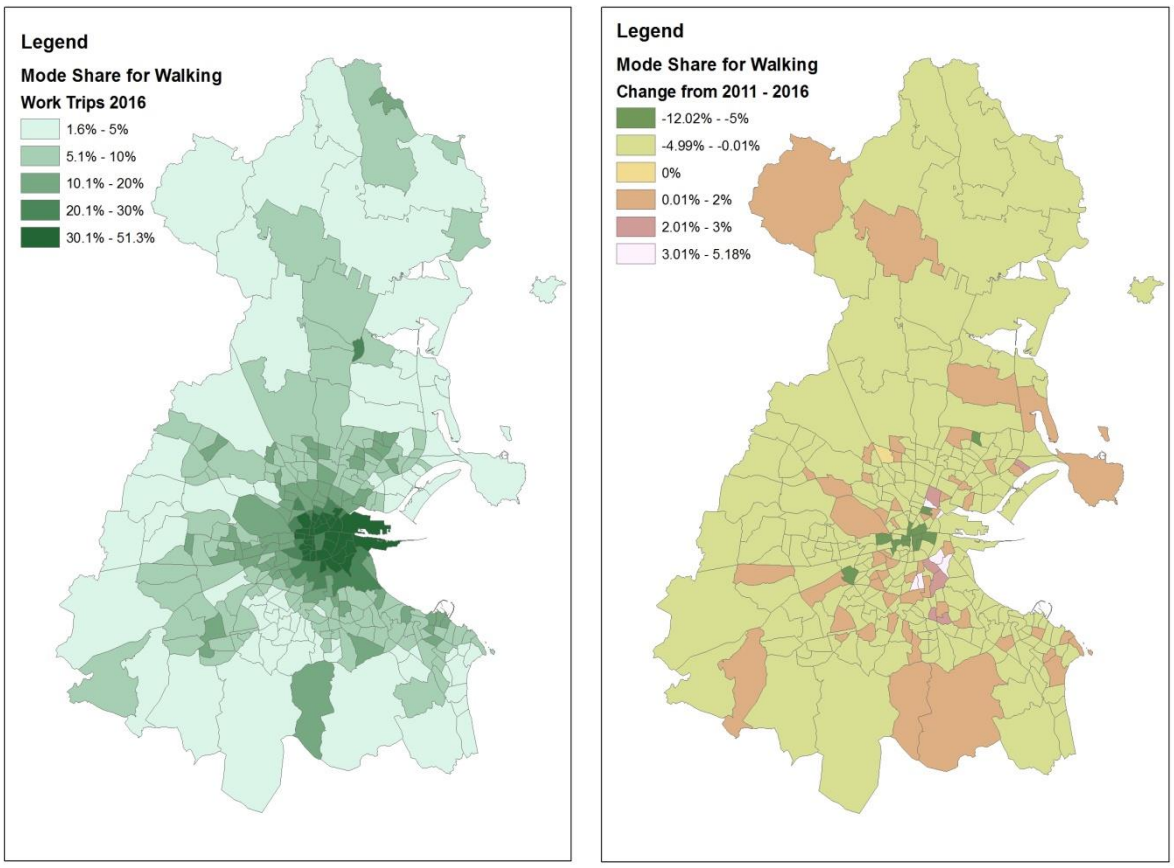
Maps produced by NTA and data sourced from CSO POWSCAR dataset

Over the period 2011 to 2016 there have been a number of infrastructure improvements in certain areas which might be reflected in increased mode share for cycling in areas such as the north-east (Clontarf) and south-east (Grand Canal Cycle Route) of the city.

By way of comparison, Figure 5.7 shows the mode share of walking as a means of transport to work over the same periods.

These maps show high concentrations of walking in city centre locations, with up to 50% recorded in some areas in 2016. In comparison to cycling, the period 2011 to 2016 does show a modal share drop for walking over the period 2011 to 2016; however, in many cases the number of actual trips has increased.

Figure 5.7: Mode share for walking, 2016 and change in mode share for walking 2011-2016



Maps produced by NTA and data sourced from CSO POWSCAR dataset

5.3.3 Journey purpose

This Section examines the percentage distribution of journeys divided into journey purpose and by walking and cycling. As previously mentioned, it is important to note that the National Travel Survey sampled persons aged 18 years and over. When examining the modal share for the purpose of education, the results do not accurately reflect the whole student population. These results are more likely to represent the share of walking and cycling journeys to education by third level students.

Journey purpose by walking and cycling – Dublin

The analysis of journey purpose for this paper focuses on the 2016 available data. For journeys in Dublin, 61% of cycling journeys were for the purpose of work and 5% were for the purpose of education. The modal share of walking in work journeys is comparatively low at 22%. Cycling and walking journeys in Dublin are more closely aligned for the purpose of entertainment and leisure at 16% and 17% respectively (Figure 5.8).

Journey purpose by walking and cycling – densely populated areas

In other cities and urban centres outside of Dublin, the profile of journey purpose for walking and cycling trips is similar to those in the city. The biggest shares for walking journeys are for the purpose of shopping (24%), work (21%) and entertainment/leisure (15%). In cycling journeys, 56% were for the purpose of work, 15% for the purpose of entertainment/leisure and 7.5% for the purpose of education (Figure 5.9).

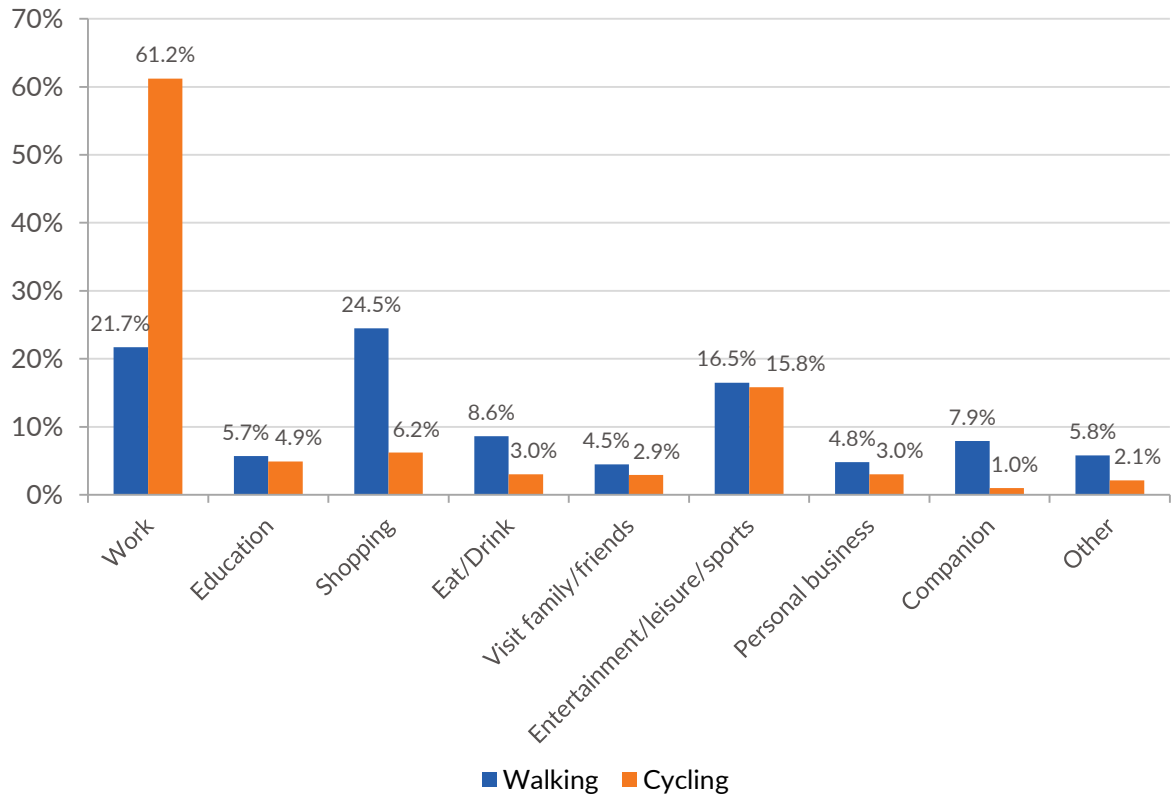
Journey purpose by walking and cycling – intermediate density areas

The journey patterns for walking and cycling are again similar in intermediate density areas. The biggest shares for cycling journeys were for work (52%), entertainment/leisure (17%) and education (13%). For walking journeys, 32% were for the purpose of shopping, compared to just 24% in densely populated areas. 15% of walking journeys were for the purpose of work and 8% were for the purpose of education (Figure 5.10).

Journey purpose by walking and cycling – thinly populated areas

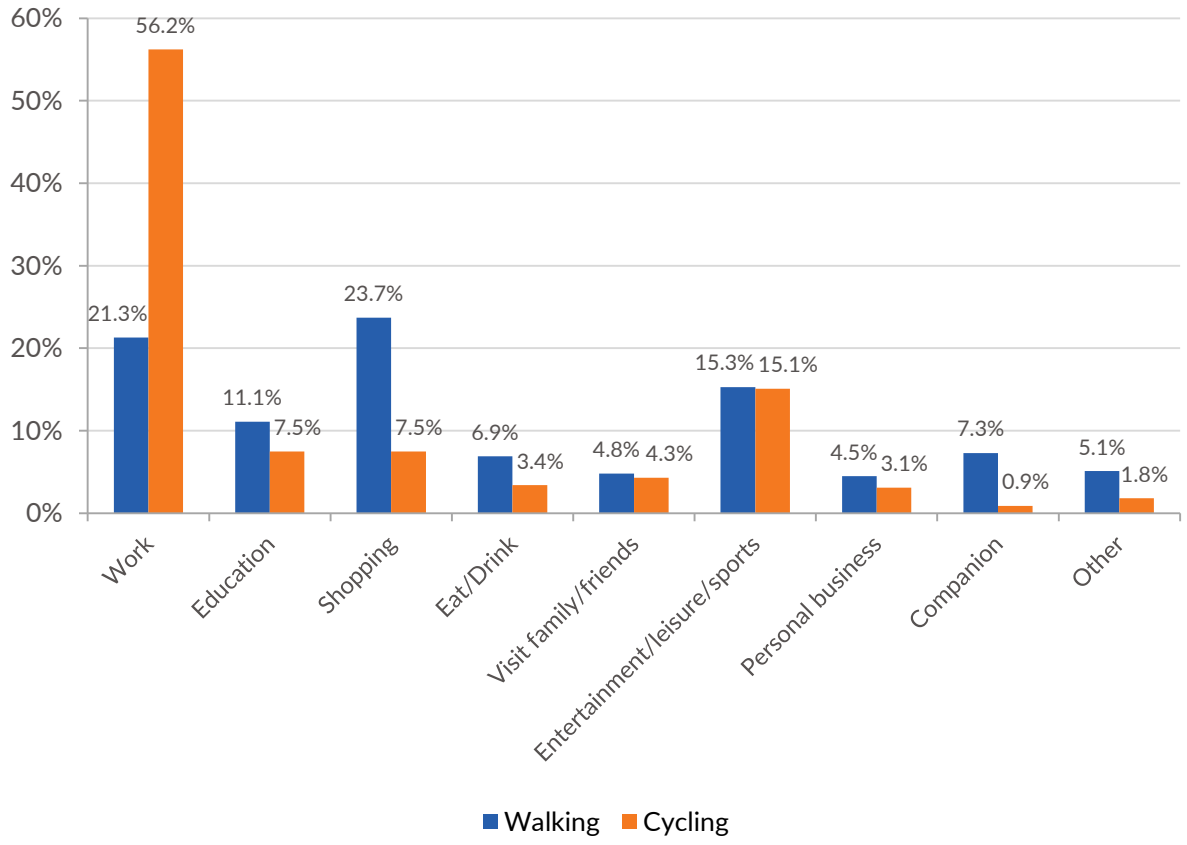
In thinly populated areas, 33.5% of cycling journeys were for the purpose of work and entertainment/leisure. Most notably, 0% of cycling journeys were for the purpose of education with the next biggest share being for the purpose of shopping (13%). For walking journeys, 25.5% were for the purpose of entertainment/leisure and 24% was for the purpose of shopping (Figure 5.11).

Figure 5.8: Journey purpose by active travel in Dublin 2016



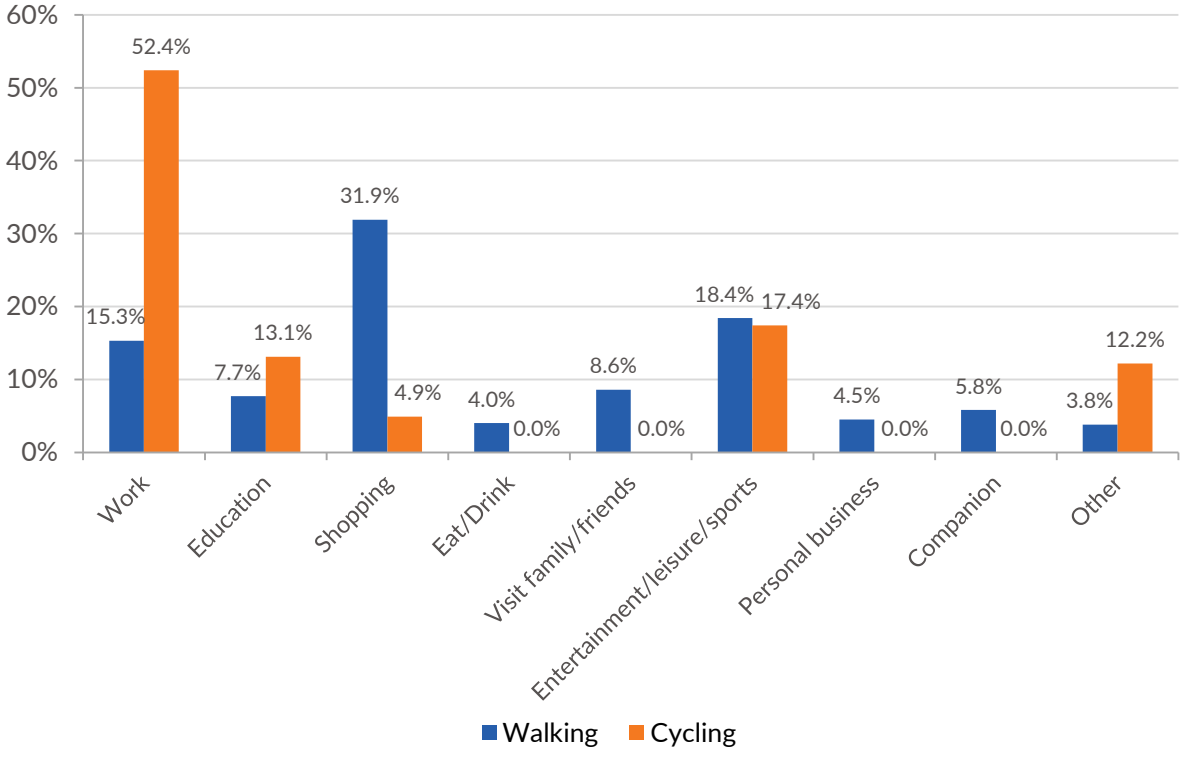
Source: CSO

Figure 5.9: Journey purpose by active travel in densely populated areas 2016



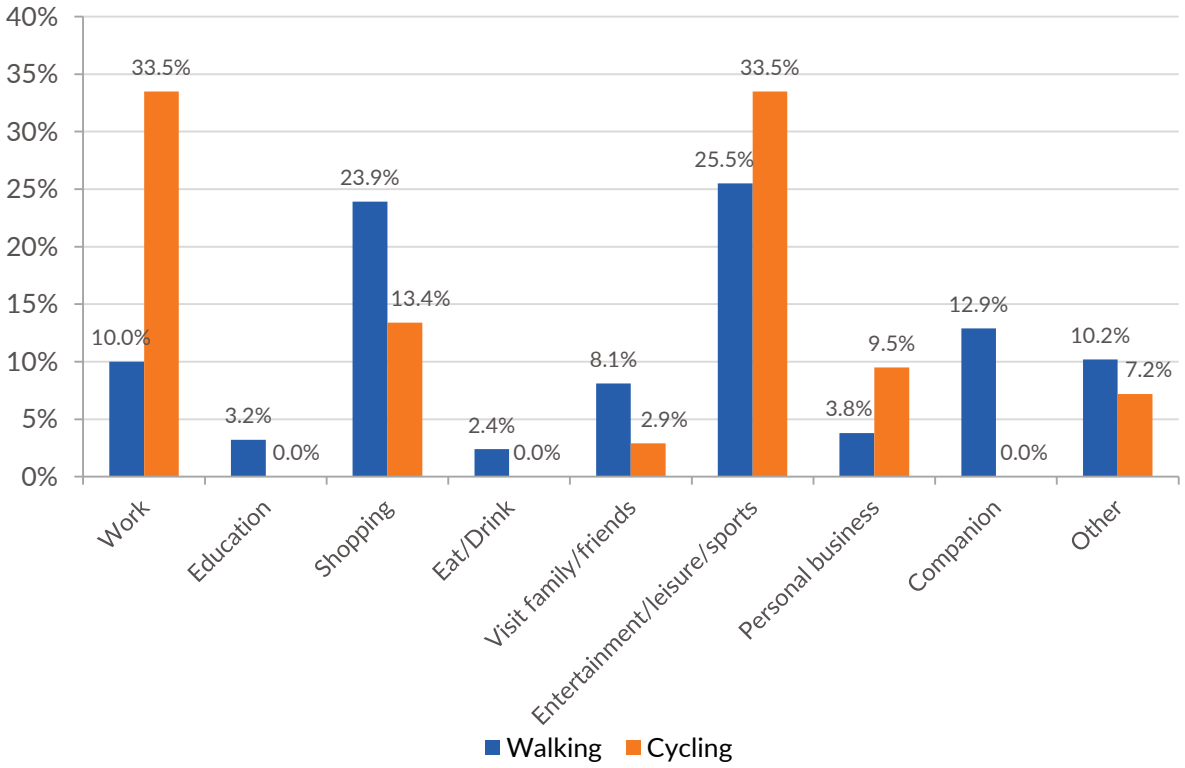
Source: CSO

Figure 5.10: Journey purpose by active travel in intermediate populated areas 2016



Source: CSO

Figure 5.11: Journey purpose by active travel (walking/cycling) in thinly populated areas 2016



Source: CSO

6 Motivational factors in active travel

Summary

- Behavioural change measures used internationally to increase active travel include initiatives such as educational and training programmes typically focused on younger people, as well as safety promotion campaigns and financial incentives.
- Increased active travel has a part to play in mitigating the rise in transport emissions and this potential is greatest in areas of higher population density and where journey distance is relatively short.
- Studies have shown strong health benefits associated with active travel including the risk of heart disease and cancer.
- The issue of safety can be a demotivating factor to encouraging people to switch to active travel modes and providing safe cycling lanes has been shown to increase ridership, particularly amongst females.

6.1 Introduction

This Section considers a number of motivational factors that can influence active travel choices including behavioural change, climate change, health and safety. It also looks at the gender gap in cycling participation in Ireland.

6.2 Behavioural change overview

The *National Mitigation Plan*[29] noted how "*a significant barrier to modal shift relates to behaviour change and encouraging people away from private cars.*"

Research into the area of cycling promotion increasingly highlights the multi-faceted nature of those more successful programmes with a mixture of "hard" (i.e. infrastructure) and "soft" (i.e. behavioural change) type measures introduced[30]. Indeed, the recently completed *Ex-Post Evaluation of Smarter Travel Areas (2018)*[31] noted that "*an integrated package of both infrastructure and behavioural change measures is most likely to achieve modal shift*".

Behavioural change type measures to stimulate the uptake of active travel options include initiatives such as educational and training programmes, typically focused on younger people, as well as safety promotion campaigns or measures (such as traffic-calming e.g. reducing speed limits in urban areas). A number of countries and cities have also introduced some element of financial incentives to promote cycling.

Since 2009 funding has been provided toward a number of behavioural change programmes in Ireland. These programmes include –

- **BikeWeek**: established in 2009, this week-long promotion campaign, funded by DTTAS, facilitated 600 events with over 50,000 participants in 2018.
- **Bike to Work Scheme**: in operation since 2009, this Exchequer-backed tax incentive scheme allows employers to purchase bikes and related safety equipment for employees. Items purchased under the scheme are not a taxable benefit-in-kind (BIK), up to a value of €1,000.

- **CycleRight**: established in 2017, this is the national cycle training standard produced and supported by DTTAS, the Road Safety Authority, Cycling Ireland and augmented by other bodies such as Healthy Ireland, local authorities and An Taisce. The new standard is being rolled out through training programmes in primary schools with the numbers receiving training increasing since 2017 from 15,245 students to an expected 25,000 in 2019.
- **Green Schools Travel**: following a 2 year pilot, the programme has operated nationally since 2007. Funded by DTTAS, the Green Schools Travel Flag has reached over 2,000 schools, 465,000 students and 36,000 teachers in its sustainable travel education programme.
- **Safety campaigns**: the Road Safety Authority runs a number of advertising campaigns in relation to the promotion of cyclists' safety, such as the "Cycle Smart, Cycle Safe" campaign and a recent TV-led campaign in relation to motorists keeping a safe distance from cyclists while overtaking.
- **Smarter Travel Workplaces**: established in 2009, this programme, funded by DTTAS, looks to promote smarter and sustainable travel and is now engaged with 97 large employers with a potential reach of around 105,250 employees.
- **Smarter Travel Campus**: established in 2012 and similar to the Smarter Travel Workplaces, this programme is also funded by DTTAS, and engages with 23 third level institutions with a potential reach of approximately 26,000 employees and 209,000 students.

While behavioural change measures have an important role to play in the overall promotion of active travel, in order to maximise impact it is desirable to ensure a targeted and focused approach and this is something that potentially requires consideration in the Irish context.

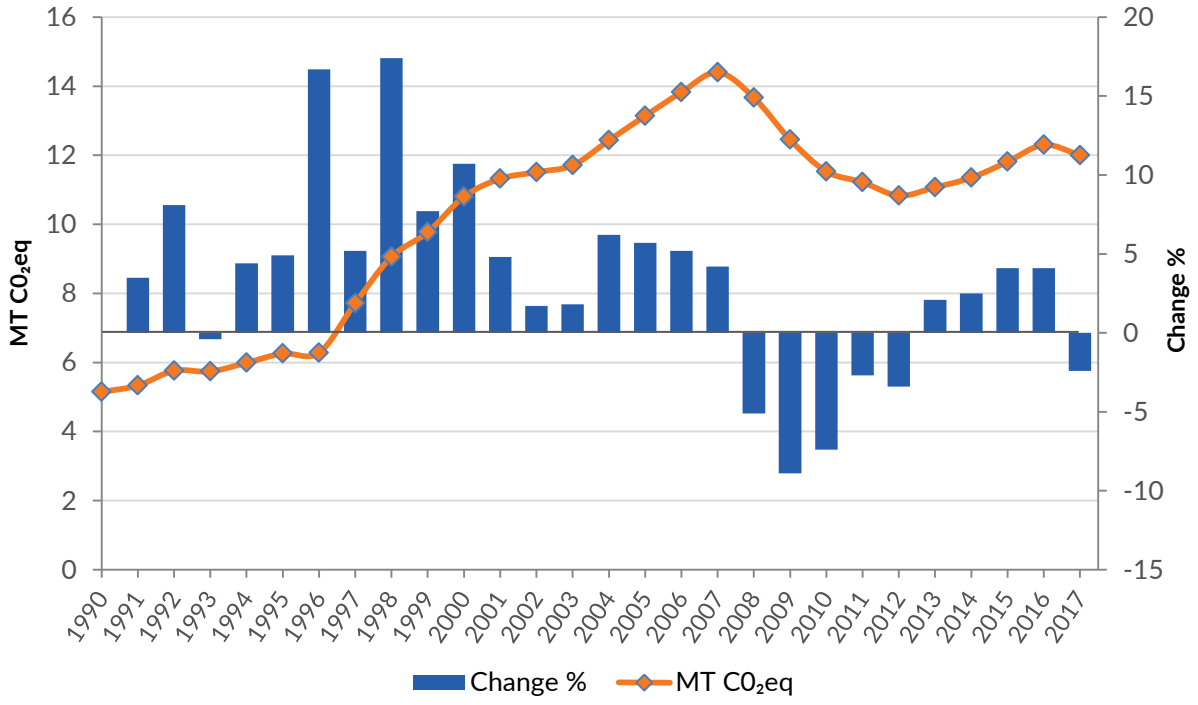
Issues relating to the promotion of cycling generally, including behavioural change, are also being considered as part of the *Get Ireland Cycling* initiative which is being developed by Sport Ireland as part of the *National Physical Activity Plan*, while *Get Ireland Walking* is a similar initiative in relation to walking which published its *Strategy and Action Plan* in 2017.

6.3 Climate change

Another potential motivational factor that is encouraging people to switch to active travel is the role both walking and cycling can play in assisting with meeting our climate action challenge.

As noted by the *National Mitigation Plan*, and shown in Figure 6.1 the contribution from transport of CO_2 emissions rose by 130% between 1990 and 2017.

Figure 6.1: Transport sector greenhouse gas emissions 1990 to 2017



Source: Environmental Protection Agency[32]

It is estimated that in 2017 the private car accounted for 52% of transport CO_2 emissions in Ireland[33]. Based on average CO_2 emission data it is estimated that the GDA accounted for a little over one third of the estimated private car emissions in 2017 (Table 6.1). This also highlights a challenge for active travel choices as two-thirds of emissions are therefore from cars outside the GDA where active travel alternatives may not be realistic or feasible for many journeys.

Table 6.1: Analysis of GDA versus non-GDA car Emissions 2015

County	Licenced Cars	Average Annual Kms	CO_2 Emissions (tonnes)**	% of CO_2 Emissions
GDA*	839,542	16,187	2,310,292	36.6%
Non-GDA	1,239,803	19,028	4,010,452	63.4%

Derived from CSO Transport Omnibus 2017
*Counties Dublin, Kildare, Louth, Meath and Wicklow
**Based on average CO2 emissions of 170g/km

The *Climate Action Plan 2019* commits toward a number of specific actions relating to active travel, principally in relation to the development of improved infrastructure through the construction of strategic cycling networks in the major urban centres.

Increased active travel clearly has a part to play in mitigating the rise in transport emissions; however, as outlined in Section 5 of this paper, the potential of active travel is greatest in areas of higher population density – this is likely because journey distance is relatively short. These are important factors in considering the potential impact of future policy interventions.

6.4 Health

An important motivational factor for many people choosing to make active travel part of their daily commute can be the associated health benefits. In Ireland, the *National Physical Activity Plan* notes that "*being physically active is one of the most important steps that people of all ages can take to improve their health and wellbeing*".

The *National Physical Activity Plan* also highlights the costs of physical inactivity to the health, society and economy of Ireland. These costs can be both direct and indirect and can take the form of increased coronary disease, poorer mental health and lower economic output as a result of increased employee illness. Based on research from the World Health Organisation, the *Plan* indicates that the cost to Ireland of physical inactivity could, in a worst case scenario, equate to an approximate value of €1.5 billion per annum.

As stated in the OECD/ITF's report *Cycling, Health and Safety "cycling significantly improves health"* and the health improving effects of walking and cycling are supported by evidence from numerous studies across many countries.

A study of over 250,000 people, carried out by the University of Glasgow and published in the British Medical Journal[34] concluded that cycling to work nearly halved the risk of developing heart disease and cancer and also lowered the risk of premature death from any cause by more than 40%. The people taking part in the research were on average 52 years old and their health was tracked over a period of 5 years. The level of activity leading to this significant change in outcomes is the recommended daily level of 30 minutes of moderate intensity activity.

The *National Physical Activity Plan* states that a considerably high number of Irish people are not reaching the recommended levels of physical activity as recommend in the *National Guidelines on Physical Activity for Ireland*[35]. These *Guidelines* state that adults between the ages of 16–64 should partake in moderate physical activity for at least 30 minutes per day for five days in the week.

Based on analysis of research carried out by the National Travel Survey, there is clearly potential for active travel to become a daily part of many individuals' recommended levels of physical activity. In 2016, 31% of all journeys taken in Dublin were less than 2km and 16.5% were between 2 and 4km. In all regions excluding Dublin, 23% of journeys were less than 2km and 12% were between 2 and 4km. Furthermore, across the country 77.4% of journeys that were 15 minutes or less were carried out by private car as either the driver or passenger, 16.6% of these journeys were carried out by walking and only 1.2% by cycling.

6.5 Safety

The issue of safety and/or perceptions of the issue can obviously be a demotivating factor in terms of encouraging people to switch to active travel modes, particularly cycling.

A noticeable conclusion from the *Ex-Post Evaluation of Smarter Travel Areas* is that "*poor perception of safety is the biggest barrier to increasing cycling mode share*" in the areas studied (Dungarvan, Limerick and Westport).

In 2013 the OECD/ITF report *Cycling, Health and Safety* examined cycling safety across a number of different countries and made recommendations toward improving the safety of cyclists, which the report noted were "*vulnerable road users*". A study on the health impacts of cycling in Dublin stated that "*since traffic collisions are the only significant health risk to cyclists, measures such as traffic calming in residential areas and segregated facilities in urban areas are of particular importance*"[36].

Another OECD/ITF report entitled *Safer City Streets: Global Benchmarking for Urban Road Safety*[37] examined mobility and road safety data from 31 different cities with a view to developing indicators to evaluate, monitor and benchmark road safety outcomes. That report looked at cycling exposure and risk by country and its findings in that regard are shown in Table 6.2.

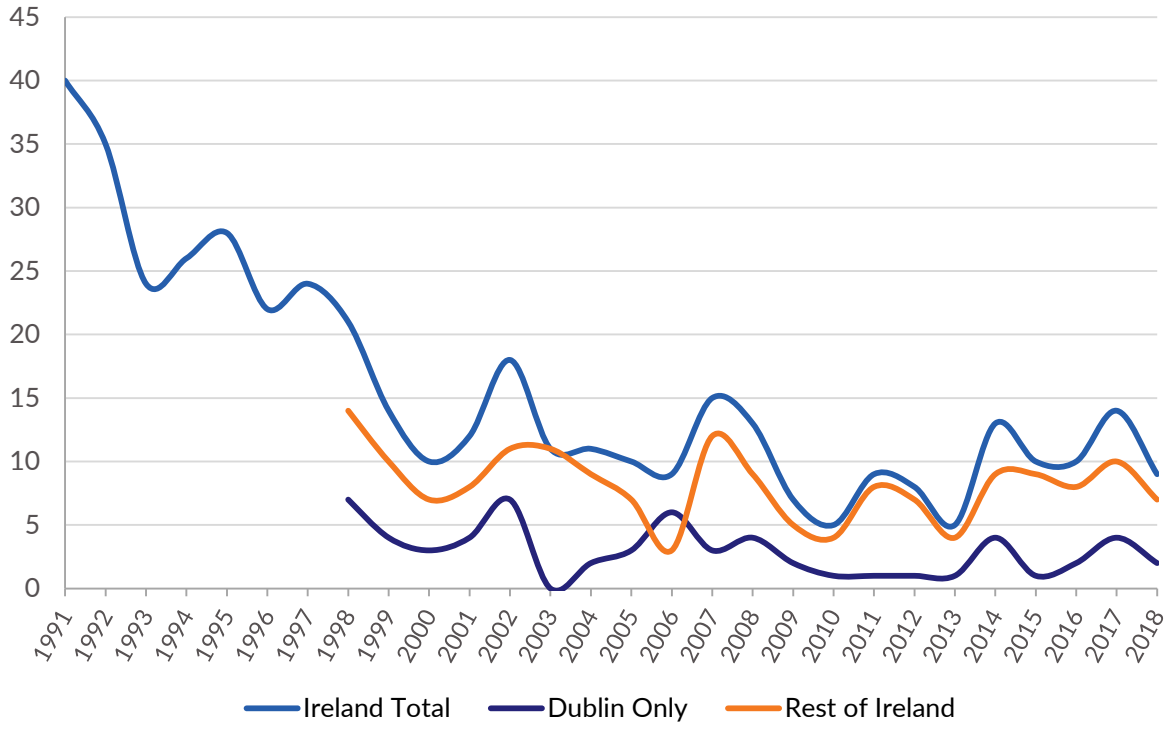
Table 6.2: Cycling exposure and risk by country 2011-2015

Country	Distance cycled per year per inhabitant (km)		Cycling fatalities per year per million inhabitant		Cycling fatalities per billion km cycled
Austria	223	(2014)	5.4	(2011-2015)	24
Belgium	279	(2009)	6.5	(2011-2015)	24
Denmark	547	(2013)	5.0	(2011-2015)	9
Finland	267	(2011)	4.2	(2011-2015)	16
France	88	(2008)	2.4	(2011-2015)	28
Germany	439	(2011-2014)	4.8	(2011-2015)	11
Ireland	103	(2012-2014)	1.9	(2011-2015)	18
Italy	89	(2011-2015)	4.5	(2011-2015)	51
Netherlands	891	(2011-2015)	7.4	(2011-2015)	8
Norway	255	(2014)	2.0	(2011-2015)	8
Sweden	199	(2014)	2.3	(2011-2015)	12
Switzerland	262	(2011-2015)	4.1	(2011-2015)	16
United Kingdom	83	(2011-2015)	1.8	(2011-2015)	21
USA	48	(2009)	2.4	(2011-2015)	49

It is widely acknowledged that issues continue to exist, both nationally and internationally, with regard to the accurate collection of data in relation to the totality of accidents involving cyclists, specifically in relation to non-fatal collisions[38].

In Ireland the primary source of available data is that held by the RSA in relation to fatalities on the public roads. Since publication of the *National Cycling Policy Framework* in 2009 the number of cyclist fatalities on the roads has fluctuated slightly over the period with the lowest numbers recorded in 2010 and 2013 with 5 fatalities in each year, while in 2017, 15 fatalities were recorded before falling again in 2018 to 9 recorded fatalities. It should be noted that these figures include all cycling fatalities (i.e. active travel and leisure) in any given year.

Figure 6.2: Cycling road deaths in Ireland from 1991 to 2018



Note: Provisional figures for 2016-2018
Source: CSO/RSA

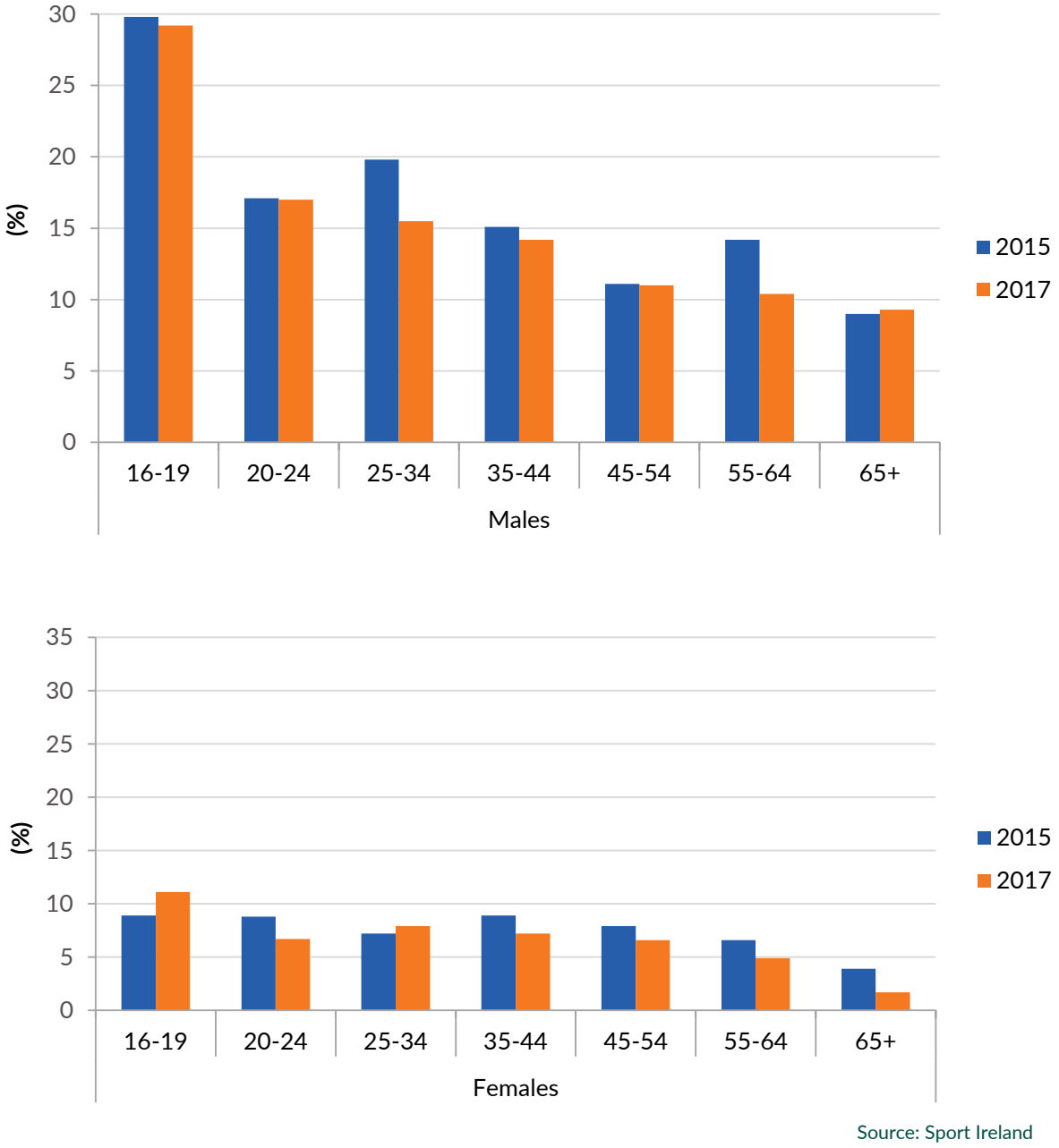
These fatalities can be attributed to a number of factors and it should be noted that fatalities occur in both urban and rural areas and across different road types – national, regional and local. The RSA is currently preparing a report on cyclist fatalities over the period 2008 to 2016 for publication this year, while another RSA report on all cyclist injuries in 2016 will also be published shortly.

6.6 Gender gap

One factor that is particularly noticeable in Ireland in relation to cycling is the higher percentage of males as compared to females who choose to cycle as a means of transport.

Figure 6.3 shows participation rates by gender for those who cycle as a means of transport in 2015 and 2017 as published in Sport Ireland's *Irish Sports Monitor Annual Report 2017*[39].

Figure 6.3: Participation in cycling for transport by gender/age



Source: Sport Ireland

There is a noticeable difference in cycling participation rates recorded between males and females. This difference is not replicated for those walking as a means of transport, where participation rate by gender is relatively similar.

The *Irish Sports Monitor Annual Report 2017* identified that only 6.5% of women cycled regularly for transport, in comparison to 15.2% of men. International research has found that women are more likely to be dissuaded from cycling by factors including car fumes, the inability to bring a bicycle on to public transport and lack of daylight hours in winter[40].

While the data in the graph above considers those aged 16 and up, it may be worth noting that the *Children's Sport Participation and Physical Activity Study*[41] also found a gender gap in the level

of physical activity between those aged 10-18 years with girls being less likely than boys to meet physical activity recommendations.

6.7 Perception about weather

Perceptions of the frequency of rainfall in Ireland can deter the uptake of active travel options. However, Met Éireann has stated that "*only one out of five hourly observations will report measurable rainfall*"[42].

The issue of weather as a potential barrier to some people choosing active travel modes was noted as a consistent theme during research conducted as part of the *Ex Post Evaluation of Smarter Travel Areas*. That research recommended that future behavioural change programmes seek to address the issue of weather as a barrier to change and give appropriate support to address it. Informed messaging about weather incidence and impacts could be of use here.

7 International case studies

Summary

- Modal change is best addressed by a suite of initiatives, with focus on both infrastructural and behavioural change intervention,
- Modal shift can becfk4r influenced by disruptions or significant life events and these are opportunity points for influencing future behaviours and norms.
- Connectivity and permeability (directness of access) are important factors in urban road traffic design in facilitating the promotion active travel usage.
- Monitoring the progress of active travel intervention measures is essential in informing future investments.

7.1 Introduction

This Section of the paper shows a few international examples of active travel promotion and modal shift. It considers active travel infrastructure, behavioural change initiatives and socio-economic influences, and identifies some of the policies and measures that underpinned the success (or failure) of these intervention types.

7.2 Case Study 1: Cycling in Cambridge, United Kingdom

Cambridge has the highest level of cycling in the UK, with one in three residents cycling to work[43]. In terms of typography, Cambridge is a fairly dense and flat city, making it very suitable for cycling. Street structure is varied, with a historic town centre providing a challenge due to limitations of space. The *Cambridge Central Area Access Strategy* states that it is necessary to restrict cycling at all times in the most densely used pedestrian streets but elsewhere to have safe and continuous links.

Between 2008 and 2011, €11 million was invested to provide improved cycle routes and training initiatives, and from 2011 the city has been part of the European funded project called 'Bike Friendly Cities'. A Council policy which uniquely impacts on cycling numbers is the limitation on car parking permits for students. This initiative holds significance in a city that has a student population of approximately 40,000; out of a total population of 123,900[44]. Additional local schemes are outlined in Table 7.1.

Table 7.1: Example of local schemes in Cambridge

Cycle parking and pushchair loan	A free pushchair loan scheme enables people with young children to borrow a pushchair after they have parked their bikes at a number of 'cycle park' locations.
Bikeability Cycle Training	Cycle training for primary school children and adults.
Walkit Mobile App	Walking route planner which gives the quickest walking routes around Cambridge. An additional feature includes detailing the amount of carbon emissions you will save and the number of calories that you will burn on your travels.
City Council Website "Report an issue" function	The Cambridge City Council website includes an online feature which enables people to report issues with road infrastructure, including overhanging vegetation, potholes, street lighting etc.

7.2.1 Monitoring progress

To monitor cycling progress the Council has automatic cycle counters across the city to collect statistics on a daily basis[45]. These were installed as part of Cycle City Ambition (CCA), an aim of which is to review and enhance the planned monitoring of the impacts of cycling investment, collate baseline data from each city, and to make recommendations for future data collection that enable impacts to be measured across the programme.

Cycle City Ambition

The CCA programme is a major investment programme from the Department for Transport (UK) that aims to support cycling through capital investment in eight English cities/city regions: Birmingham, Bristol, Cambridge, Leeds, Greater Manchester, Newcastle, Norwich and Oxford.

In August 2013 funding of £77 million was announced for the CCA programme. Co- funding from the benefitting cities brought total investment to £148 million up to end March 2015.

Source: Cambridge City Council

Case Study Example: Segregated Cycle lanes improve cyclist safety in Cambridge

The Hills Road bridge was a dual carriageway bridge that carries the main traffic link between the city centre and south Cambridge. The bridge carries 8,000 motor vehicles (including 200 bus movements) and 4,000 cyclists per day. This busy route recorded a total of 19 cycling related accidents between 2009 and 2011.

In order to improve cycling safety on this route, Cambridge City Council redesigned this bridge as two cycle lanes and three traffic lanes. The traffic capacity of these junctions was maintained by providing one uphill traffic lane in each direction on the bridge, widened to two downhill traffic lanes on the approach to the traffic signals.

Initially the scheme was introduced as an easily removable trial; however once it was proven to work the final scheme was implemented in 2011. This involved more permanent structures to segregate cycle lanes from traffic lanes.

After its implementation the number of recorded accidents fell to nine between 2012 and 2014. Cambridge also experienced an increase in cycling rates with 54% of adults cycling at least once a week, according to the Active Lives Survey 2016-2017[46], compared to 47% in 2010-2011[47].

Figure 1: Before the scheme

Figure 2: During the trial scheme

Source: Department for Transport (UK)[48]

7.3 Case Study 2: Pedestrians in Lisbon, Portugal

Lisbon's metropolitan area is home to 2.8 million people, with almost 550,000 within the city limits[49]. Over the last number of decades, car use has increased, and a significant portion of the city's narrow streets have been dedicated to vehicle traffic and parking. Consequently, this has resulted in less space for pedestrians.

An additional challenge for this city is also the mobility of its aging population; a high number of pedestrians, 24% of the city's residents, are 65 years or older, and over 90,000 report having difficulty with at least one type of daily activity (e.g., walking or using steps, sight, hearing, etc.).

The *'Lisbon Pedestrian Accessibility Plan'* aims to improve the 'walkability' of the city, by reducing the barriers to walking, adapting existing road design, and raising awareness among pedestrians and road users. One successful measure included reducing pedestrian crossing distances at busy junctions, in order to improve accessibility, safety and social inclusion.

Case Study Example: Alexandre Herculano Street

As part of its participation in the EU funded 'FLOW' project, Lisbon introduced a number of pedestrian-friendly initiatives as part of its *Lisbon Pedestrian Accessibility Plan*.

One such initiative is the work undertaken at the very busy Alexandre Herculano street in central Lisbon. Prior to the initiative, vehicular traffic was prioritised over pedestrians and those crossing the junction on foot were required to do so at a speed measured at 0.51 metres per second, which can be challenging for those with reduced mobility for example.

The works involved re-orientating prioritisation toward the pedestrian through reducing the physical distance required to cross the junction and changing the curve of the pavement.

Since the intervention, the shorter crossing distance allows pedestrians a more leisurely speed of 0.12metres per second. Pedestrians reportedly now feel safer (+18%) and less pressured by drivers to walk faster (-14%). This measure also had a traffic calming effect as drivers now approach the intersections at slower speeds. This has all been achieved with no reported increase in traffic congestion as a result.

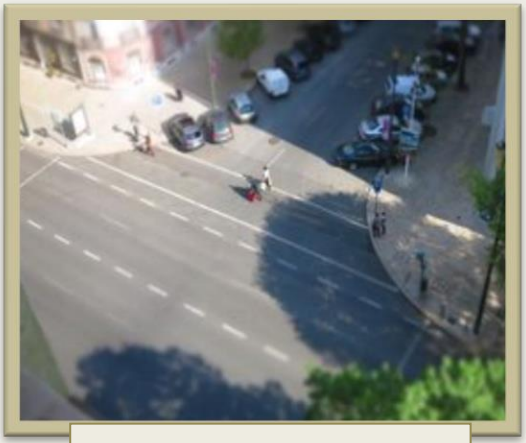


Figure 1: Before intervention

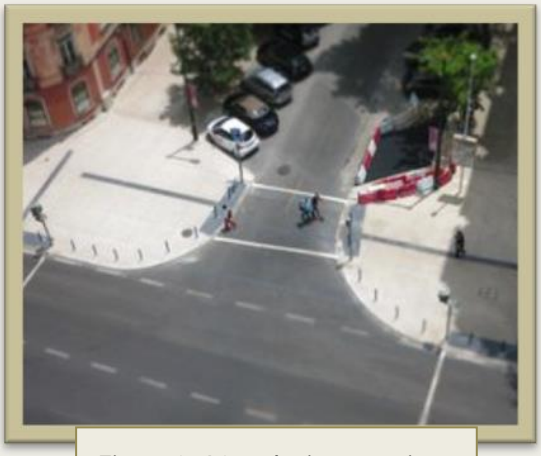


Figure 2: After the intervention

Source: Civitas Flow Project

7.4 Case Study 3: Cycle superhighways in Copenhagen, Denmark

Good, Better, Best is the name of Copenhagen's bicycle strategy for the period 2011 to 2025[50]. The strategy's goal is to make Copenhagen the world's best bicycle city and it aims to build upon the impressive growth in cycling numbers already achieved within the city, where the number of cyclists in the city centre now exceeds those using the private car[51].

As noted in the strategy "*there is no one route to an increased modal share for bicycles. A broad array of initiatives must be put in place*". One of the initiatives planned over the period of the strategy is to further increase the number of "cycle superhighways" in the wider capital region.

Case Study Example: Expansion of Cycle Superhighways

Since 2012 almost 150 kilometres of new cycle superhighways have been constructed across the Copenhagen capital region and the network now consists of approximately 167 kilometres across the wider region.

The purpose of these cycle superhighways is to increase the numbers of those cycling from outlying areas of the Copenhagen region into the city centre. While the numbers of cyclists within the centre has surpassed the numbers driving, outlying areas of the wider city region have seen increased numbers of private car usage.

The ambition for the cycle superhighway network is to provide 45 routes and 746 kilometres of superhighways by 2045 across the 23 municipalities, all clearly marked with their own unique orange "C" sign and adhering to a common quality with air pumps, safer intersections, and traffic lights timed to average cycling speed as part of the overall infrastructure.

Source: ***Office for Cycle Superhighways*** (2018)

8 Conclusions and matters for consideration

This paper has identified a number of issues for consideration in the development of a policy in relation to active travel mode.

Section 4 set out the various policies and strategies which influence, directly or indirectly, active travel in Ireland. It noted the strong policy support for active travel at all levels of national, regional and local policy frameworks and referred to the increased funding that is now being made available through DTTAS funding programmes and other programmes such as the *Project Ireland 2040* Funds.

This Section highlighted the importance of walking as a mode of transport and referred to recently published research in Ireland which indicated the very positive response to improvements in pedestrian infrastructure in terms of the numbers of people choosing to walk.

Appendix 1 reflects on the implementation of the 109 individual actions under the *NCPF*. Progress has been achieved against many of those actions; however, it must be acknowledged that implementation of others has been slower than anticipated or has not occurred as originally envisaged. Funding for the delivery of *NCPF* was, like most areas of public expenditure over the same period, negatively impacted by the economic and financial crisis. This had a significant impact on the expected delivery of proposed cycling infrastructure improvements, which is recognised as being of particular importance.

Section 5 highlighted trends in active travel in recent years in both urban and non-urban areas and looked at issues such as mode shares and journey purpose. The analysis noted that – as would be expected - the share of active travel modes is consistently greater than average in more densely populated areas, potentially due to shorter journey distances. In recent years, the increase in popularity of e-bikes in other EU Member States is considered to be of importance in extending the journey distance 'reach' of cycling. This Section also noted that there are a number of areas in Dublin with a cycling mode share above the 10% target set by the *National Cycling Policy Framework* in 2009. These trends are potentially important considerations in relation to determining future priority areas for infrastructure development.

Section 6 examined behavioural factors in relation to the promotion of active travel. In line with the recommendations of the *NCPF*, a number of on-going behavioural change programmes were introduced since 2009 and remain active and the importance of such programmes is well recognised. It was also noted that research conducted as part of the evaluation of the Smarter Travel Areas programme, highlighted the importance in ensuring a targeted and focused approach to behavioural change programmes and this is an area that may require consideration in the years ahead. Reference was also made to the proposed *Get Ireland Cycling* initiative and its potential in raising awareness of cycling generally. An important and informative conclusion of the *Ex Post Evaluation of Smarter Travel Areas* was that the biggest barrier to increasing cycle mode share was people's poor perception of its safety as a transport mode. Section 6 also reiterated the existence of a pronounced gender gap among those who do choose to cycle as a means of commuting with the numbers of males far exceeding the number of females.

Section 7 considered a number of examples of international best practice in facilitating and promoting both walking and cycling. The case studies and the examples highlighted therein show both the positive change that can occur through investment in active travel and also the multi-faceted nature of some of the interventions underpinning that change. A common feature of each of the case studies was the importance of improved infrastructure, whether for cycling or walking, and this resonates with a similar finding in the *Ex Post Evaluation of the Smarter Travel Areas* here in Ireland.

Since the publication of *Smarter Travel* in 2009 there has been an important shift in how active travel is considered and reflected within both transport and land use policy. Although the actual numbers of people choosing active travel modes has risen in recent years in Ireland, this has taken place against the backdrop of strong growth in population, employment levels and travel demand. The proportion of people choosing active travel modes as their primary mode of transport to work has remained static at approximately 12% across the country. Underneath that headline mode share, there are differences observed between walking and cycling with substantial increases in the numbers of people choosing to cycle recorded over the period, off-set to some extent by a decrease in the numbers of people walking to work (albeit an increase was recorded in Census 2016 as compared with the previous Census).

As noted within this paper, the potential of active travel is greatest in urban areas with higher population densities and where journey distance and duration is relatively short, although potential exists to extend the 'reach' of cycling through the emergence of e-bikes and the development of largely segregated cycling infrastructure to the outer suburbs under BusConnects. This reflects the importance *Project Ireland 2040* attributes to better integration of land use policy and transport policy to ensure housing, employment, services and schools are located in a manner which are mutually reinforcing and support the development of sustainable, active travel centred communities.

The *Ex Post Evaluation of the Smarter Travel Areas*, which was commissioned by DTTAS, provides a comprehensive evaluation of the impact of active travel initiatives in an Irish context in three different settings and contains a number of issues for consideration in terms of possible lessons for future programmes. That evaluation is published alongside this paper as part of the overall sustainable mobility policy review programme.

Appendix 1: National Cycle Policy Framework Actions – Implementation Status

Each is categorised using a Red – Amber – Green (RAG) status update to signify current implementation status –

- Red means minimal or no substantive progress;
- Amber indicates some substantive progress; and
- Green indicates substantive progress or on-going implementation.

National Cycle Policy Framework					
Objective		**Actions**		**Implementing Agencies**	**Progress**
Design & Traffic Management					
1	Support planning & design of towns in cycling/pedestrian-friendly way	1.1	**Planning Guidelines** We will ensure that all planning guidelines and strategies support cycling promotion as a stated objective. This will be at the levels of National Spatial Strategy, Regional Planning Guidelines, Development Plans and Local Area Plans.	DHPLG + LAs	Regional Planning Guidelines (RPGs) were updated in 2010 and therefore the principles of the *NCPF* (and more generally those of *Smarter Travel - A Sustainable Transport Future*) were incorporated within them by the then Regional Authorities. Lower level plans were updated as required following the making of those RPGs. More recently the *National Planning Framework* has an explicit National Policy Objective (NPO 27) in relation to the prioritisation of cycling and walking, as well as specific reference to the development of strategic cycling networks in our major cities and the development of greenways in more rural areas. Regional Spatial and Economic Strategies (RSESs) are being prepared by the three Regional Assemblies and lower level plans will be updated in line with the new RSESs. The Office of the Planning Regulator now has a statutory role in this area.

National Cycle Policy Framework					
Objective		Actions		Implementing Agencies	Progress
		1.2	**Additional Planning Guidelines and Instruments** We will examine the success of additional planning guidelines and instruments such as the (non-statutory) Integrated Framework Plans for Land Use and Transportation (IFPLUTS), (statutory) Strategic Development Zones (STZs) and master planning as devices to facilitate producing cycling friendly (urban) planning. On the basis of this examination, we will ensure that the most successful tool is used more extensively so as to ensure that future developments are planned in a cycling-friendly way.	DTTAS + DHPLG + LAs	While a variety of planning guidelines and instruments produced over the period (e.g. SDZ masterplans, Integrated Framework Plans for Land Use and Transportation) incorporated active travel friendly planning, no examination of the "most successful tool" was conducted as per the *NCPF* action. Land Use and Transportation Studies (LUTS) have been implemented in several counties, (Cork, Offaly, Dun Laoghaire Rathdown, Wicklow). More recently, the NTA/TII have evolved a new approach to the integration of land use and transportation planning - Area Based Transport Assessment (ABTA) – which is being piloted in a number of counties.
		1.3	**Policies concerning the locating of retail, commercial, schools & colleges** We will ensure that development plans favour the locating of retail outlets (and other important destinations) in areas that are serviceable by non-motorised modes.	DHPLG + LAs	County Development Plans and Retail Strategies all include policy requiring a sequential approach to the location of major retail developments, favouring town and city centre locations which are most accessible via public transport and cycling.
		1.4	**Urban Design** We will produce design guidance similar to the UK "Manual for Streets" (MfS) to assist planners, transportation consultants, architects and other design professionals in "the art of making places for people". We recognise that national guidance documents should firmly situate the design of roads and streets within urban design. The MfS	DHPLG	The *Design Manual for Urban Roads and Streets (DMURS)* was published in 2013. This policy document provides comprehensive design guidance in relation to reducing vehicular speeds and encouraging pedestrian and cycle centred streets.

National Cycle Policy Framework					
Objective		Actions		Implementing Agencies	Progress
			document emphasises the role of streets as social spaces, where people come first. The new Irish guidance that is required will cover not only the design of residential streets but town/city centres and mixed use areas.		
		1.5	**Cycling Demonstration Towns** We will develop "Cycling Demonstration Towns" showing best practice in cycling-friendly urban planning, urban design and traffic engineering. This will include the retrofitting of existing impermeable / poorly connected developments. Such schemes will take place following studies of the experiences of UK Cycling Demonstration towns and other European Cycling Cities (such as Odense, Denmark). The CDT's developed can showcase all interventions positive for cycling, not just those at a "high level" (i.e. planning level).	DTTAS	Smarter Travel Areas Programme was launched in 2012 to pilot a range of sustainable travel measures to achieve modal shift from private car to more sustainable travel modes such as walking and cycling. An evaluation of the Smarter Travel Areas programme is published as part of this review.
		1.6	**Existing Development Layouts** We will develop a national programme of remedial works to enhance the layout of housing estates with a focus on creating a network of attractive back-street routes closed to motor traffic but available for use by child cyclists and less confident adult cyclists	DHPLG + LAs, NTA	Funding is available under the Sustainable Urban Transport Programme in relation to major urban cities to fund remedial works that are identified by local authorities; however, there is no "national programme" as specifically referenced in the *NCPF* action. The NTA published the *Permeability Best Practice Guide* in 2015 which was circulated to planners and engineers nationwide. The NTA provides funding for the retention and creation of linkages within urban areas for people to walk and cycle from their

National Cycle Policy Framework					
Objective		Actions		Implementing Agencies	Progress
					homes to key destinations such as shops, schools and local services. In addition, from 2012 DTTAS provided funding to over 20 towns for the provision of sustainable travel measures.
		1.7	**Development Plans, Local Area Plans and National Cycle Policy Framework** We will ensure that that all Development Plans are reviewed by DHPLG so as to ensure that they are consistent with the objectives and policies of the *NCPF*. We will ensure that the development plans contain objectives to produce local cycling policies. The content of the policies should be informed by best international practice. Such cycling policies would from part of Local Transport Plans (see 2.2) We will produce specific guidance for local authorities for inclusion in Development Plans on effective means of enabling direct cycle routes / accessibility through new developments and enabling connectivity to shops, schools and other facilities such as public transport stations/stops.	DHPLG + DTTAS	Cycle network plans are in place for all 5 major cities and are (or will be) incorporated into relevant Metropolitan Area Transport Strategies. The *National Cycle Manual* published in 2013, has provided best-practice guidance for local authorities for integrating cycling infrastructure to the Development Plan-making process. See Action No. 1.1 above. The Office of the Planning Regulator now has a statutory role in this area.
		1.8	**Planning & Development Act 2000** Schedule 1 to the Planning and Development Act 2000 lists the purposes for which objectives may be indicated in the Development Plan. Point 2 refers to the	DHPLG	On-going implementation though the statutory development plan and local area plan policies. Incorporation into statutory planning guidelines under s.28 of the Act.

National Cycle Policy Framework					
Objective		**Actions**		**Implementing Agencies**	**Progress**
			promotion of sustainable settlement and transport strategies in urban and rural areas. We will re-examine this point and, if necessary, to expand it to refer specifically to cycling. Furthermore, we will emphasise cycling in an updated version of the publication "Development Plans, Guidelines for Planning Authorities", DHPLG June 2007. This will facilitate specific policies in Development Plans.		
2	Ensure urban roads and traffic management are cycling friendly	2.1	**Design Philosophy** We will ensure that when designing for cyclists (and other vulnerable road users), the design philosophy followed will be that as encapsulated in the "Hierarchy of Measures" as described above. This design philosophy must inform the development of any Local Transport Plans that are developed. See 2.2.	DTTAS + LAs	The *National Cycle Manual* and the *DMURS* both reflect the "hierarchy of measures" as referred to in the specific Action. There can be instances where particular schemes receive exemption from *DMURS* requirements and there remain legacy issues with existing roads and streets.
		2.2	**Local Transport Plans (LTP)** We will examine the merits of introducing "Local Transport Plans" (LTP's) as instruments to ensure that more cycling-friendly policies and strategies are developed at the local level. Should any bicycle policy audits be carried out, these must inform the LTP.	DTTAS + DHPLG	Pilot of the Area Based Transport Assessment (ABTA) process (see Action 1.2), was intended to establish and give expression at the local level, to integrated land use and transport planning policies and objectives. The NTA has produced guidance (2019) on "Area Based Transport Assessments (ABTAs), in association with TII. These will facilitate the development of LTPs. In addition, the NTA has piloted a number of local urban studies (Navan 2030, Bray Environs, Newbridge) that fulfil the LTP objectives.

National Cycle Policy Framework					
Objective		Actions		Implementing Agencies	Progress
		2.3	**Through Traffic** We will support local authorities in removing through-traffic from urban centres and school routes through, amongst other measures, the provision of a national programme of ring-roads and town / village by-passes. As these are built, other measures to make the town centre more bicycle friendly should be introduced: environmental traffic cells, bridge / road closures, removal of spare lanes at signalised junctions, dismantling of one-way street systems, removal / modifications of roundabouts etc.	DTTAS + LAs	Local authorities have been supported in the realisation of this Action; however, the issue is an on-going one.
		2.4	**HGV Strategies** We will require local authorities to develop Heavy Goods Vehicle (HGV) Management Strategies for every town in the country. We will consider a ban on the movement of HGVs on routes to schools / other specific routes with mixed traffic between 08.30-09.30 and 15.00-17.00.	LAs	There is no overarching requirement as per specific *NCPF* Action; however, a number of local authorities (including most of the cities) have introduced HGV strategies within their areas.
		2.5	**Audits of Existing Infrastructure** We will carry out audits of existing urban infrastructure to assess the quality of the cycling routes using an agreed set of criteria. This would include not only existing dedicated cycling facilities but all of the other elements of the roads infrastructure used by cyclists – roundabouts, one-way streets, road	DTTAS supporting LAs	Audits were undertaken in all five cities as part of the development of their cycle network plans and audits were also undertaken on the three Smarter Travel Area towns that received funding.

National Cycle Policy Framework					
Objective		Actions		Implementing Agencies	Progress
			narrowings, narrow traffic lanes (in the context of the development of the Quality Bus Network etc).		
		2.6	**Remedial Measures** We will carry out remedial measures on existing cyclist-unfriendly urban roads with a special focus on roundabouts, multi-lane oneway streets and road narrowing schemes. Without addressing the difficulties posed by high capacity, high speed roundabouts in urban locations – and particularly those between residential areas and schools - it will be very difficult to encourage more of the public to cycle.	LAs	Remedial measures have been carried out on existing cyclist-unfriendly roads in many local authority areas as per the *NCPF* Action; however, clearly this is a very broad Action and remains on-going with funding available under relevant programmes.
		2.7	**Future Schemes** We acknowledge that the designs of many of the roundabouts, one-way street systems and off-road cycle tracks that have been constructed over the last number of years are not cyclist friendly. We will ensure that new design guidance is in place before supporting local authorities in constructing future schemes.	DTTAS	Various guidance material (*NCM*, *DMURS*, *Traffic Signs Manual)* has been published, NTA require that schemes they fund comply with their guidelines.
		2.8	**Demand Management** We will use demand management measures to make cities and town centres relatively more attractive for cyclists (and public transport users). These will be included in Local Transport Plans.	LAs	There have been some measures introduced in some local authority areas. The *Climate Action Plan 2019* commits toward examining "the role of demand management measures in Irish cities, including low emission zones and parking pricing policies" and DTTAS will commission such a study

National Cycle Policy Framework					
Objective		Actions		Implementing Agencies	Progress
					by end 2019 in line with this commitment.
		2.9	**Urban Cycle Networks** We will develop cycle-networks as part of wider cyclist-friendly local traffic plans / traffic management plans in all urban areas. The use of the concept of "cycle network" will not imply that the routes forming it will only consist of linked cycle-lanes and cycle tracks (as was the original interpretation of much of the network in Dublin). Instead the design philosophy will be based on the "hierarchy of measures" as described above with the focus being on the reduction of vehicular speeds, ensuring that all junctions are cycling friendly etc. We will ensure that designs are created with the principal aim of preserving cyclist momentum. We will also ensure that designs will provide for a safe passing distance of 1.5m between motorised vehicles and bicycles. We will also underline the need for designers to cycle all routes for which they are producing designs.	DTTAS + LAs	Cycle network plans have been published for the Greater Dublin Area (2012), Galway (2016), Limerick (2017), Cork (2017) and Waterford (2014). These plans have, or will be, incorporated within any relevant Metropolitan Area Transport Strategies. Funding for construction of cycle infrastructure was constrained in the years following the publication of the *NCPF* due to the economic and financial crisis and it is only in the most recent Budgetary cycles that increased funding has been made available to support physical development of these network plans.
		2.10	**Sutton to Sandycove Scheme** We will complete the Sutton to Sandycove (S2S) cycleway / promenade. This 22km continuous facility will act as a commuting route as well as a world class recreational and tourist route. It will be a	DHPLG	Northside sections of the route have been largely completed; however, progress on the Southside sections has been a lot slower than anticipated with design work on-going in relation to a number of areas. Previously known as the 'Sutton to Sandycove (S2S)', this route has been incorporated into the *Cycle Network Plan* for the Greater Dublin

National Cycle Policy Framework					
Objective		**Actions**		**Implementing Agencies**	**Progress**
			flagship project for the capital.		Area as the "East Coast Trail".
		2.11	**Experiments** We will provide support to carrying out "new experiments" in road design, traffic management and use of space in urban areas. For example, we will examine the work of Hans Mondermans in the Netherlands and his experiments of creating shared spaces without the use of traffic signs and lines and traffic lights etc. - now also being carried out in Kensington High Street, London - or the work of David Engwicht from Brisbane and his street party approach to traffic calming. Such experiments would be carried out by multidisciplinary local authority teams.	LAs	Funding is available to support pilot projects; however, the specific examples referenced in the *NCPF* are not common. A number of experimental projects were supported to pilot the delivery of innovative initiatives e.g. cyclist detection equipment at junctions, "Orca" protection cycle lanes and safety mirrors at junctions.
Infrastructure: rural, schools, maintenance, signage					
3	Provide designated cycle network, esp. for visitors/recreation	3.1	**National Cycle Network (NCN)** We will construct the National Cycle Network (NCN) as identified in the 2007 Strategy for the Development of Irish Cycle Tourism. We will ensure that the Regional Authorities will incorporate the appropriate policies into the Regional Planning Guideline so as to facilitate in the implementation of the National Cycling Network.	DTTAS, TII, Fáilte Ireland + LAs	DTTAS provided funding to develop the *National Cycle Network* through two funding programmes launched in 2013 and in 2014 extending until 2016. The *NCN* has been largely superseded by the Department's *Strategy for the Future Development of National and Regional Greenways* published in July 2018 and the ongoing development of Euro Velo 1 and Euro Velo 2 which is led by Sport Ireland.
		3.2	**Expansion of NCN** We will carry out further research and	DTTAS + LAs	

National Cycle Policy Framework					
Objective		Actions		Implementing Agencies	Progress
			surveying work in order to expand the network to include rural recreational routes around urban areas and to connect major urban areas. We will pay special attention to the opportunities of using both the extensive disused rail network and canal / river tow-path networks as cycling / walking routes. In expanding the network, we will examine the recent UK experiences of the construction of their networks.		
		3.3	**Hard Shoulders and Contiguous Areas** We will examine the idea of using the hard shoulders and the contiguous space of roads with an arterial character as part of the National Cycle Network. We will ensure that those hard shoulders have the same maintenance and drainage standards applied to them as to the rest of the carriageway.	DTTAS + TII	This action was not significantly advanced. See Action 3.1 and 3.2 also.
		3.4	**Upgrading of National Roads** In regard to the upgrading of national roads, we will ensure that any such proposals do not impact negatively on the safety and perceived safety of the roads for cyclists.	DTTAS + TII	TII require cycle/pedestrian facilities to be provided as part of all Type 2 and Type 3 Single Carriageway and Type 2 and Type 3 Dual Carriageway national road schemes.
4	Provide cycle lanes, parking and training to/in schools	4.1	**Safe Cycling Routes** We will provide safe cycling routes to all primary and secondary schools and third level colleges by 2020. An audit will be carried out of every school / routes leading	DTTAS + LAs	As part of the Green Schools programme audits are carried out in participating schools and infrastructure improvements works have been carried out on approaches to various educational centres across the country. In a number of cities and larger towns, audits have been conducted by

National Cycle Policy Framework					
Objective		Actions		Implementing Agencies	Progress
			to the school from residential areas.		local authorities. However, the *NCPF* action "to provide safe cycling routes to all primary and secondary and third level colleges by 2020" will not be completed.
		4.2	**Low Speed School Environs** We will ensure that by 2020 the environment in the immediate vicinity of schools is a safe and attractive low speed (30kph) environment with speed limits strictly enforced, and drop-off by car within a given distance restricted.	DTTAS + LAs	As per Action 15.2 status update, special speed limits are provided for in legislation and all schools have been informed of that fact. Implementation is a matter for local authorities and many now stipulate special speed limit zones around schools.
		4.3	**Green Schools Programme** We will expand the Green Schools Programme to all schools in the State by 2020. We will encourage all Boards of Management of Schools to develop school travel plans that maximise the use of the bike, walking and public transport. Such plans would also include consideration for the phased opening times of schools, and a relaxation of the obligation for female school students to wear skirts.	DTTAS + DES	The Green Schools Programme is open to any school; however, it should be noted that participation is a matter of choice for the individual school.
		4.4	**Cycling Training** We will monitor the success of the cycling training programmes already provided by some local authorities (such as Dublin City Council) and, if appropriate, expand these to all schools by 2020. (See also Objective 11.1)	DTTAS + DES	As per Action 11.1 status update, Cycle Right was launched in 2017 and coverage has expanded in each of the years since then. In 2019 approximately 25,000 primary school children will receive training with further expansion planned in the coming years.

National Cycle Policy Framework					
Objective		**Actions**		**Implementing Agencies**	**Progress**
5	Maintain cycle lane surfaces	5.1	**Indicators** We will ensure that the indicators / standards for the quality of road surfaces, take into account the needs of cyclists.	DTTAS	Standards are set out in guidance manuals such as *DMURS/TII Road Design*.
		5.2	**Maintenance to Standards** We will ensure that all road surfaces are maintained to the standards developed in 5.1 above.	DTTAS	Local authorities are responsible for maintenance on the majority of roads in the country, additional assistance has been provided at national level.
		5.3	**Reinstatement by Contractors** We will work with local authorities to assess the current consequences for contractors who do not reinstate the roads to an agreed standard. We will increase penalties, where necessary.	DTTAS	This action was not significantly advanced.
		5.4	**Off-road Cycle Track Maintenance** We will encourage use by local authorities of special equipment to maintain / sweep off-road cycle tracks / cycleways. This could include the purchase of vehicles with in-built GPS systems which note the exact location of potholes etc. and which automatically relay this information back to the roads authority maintenance section (such as the system used in Odense, Denmark).	DTTAS + LAs	Local authorities do maintain off-road cycle tracks; however, the use of specialised equipment as referenced in the *NCPF* Action is not common.
		5.5	**Pothole Hotlines** We will provide support for introduction of	DTTAS + LAs	fixyourstreet.ie is the online national local authority reporting facility as developed by South Dublin County Council.

National Cycle Policy Framework					
Objective		Actions		Implementing Agencies	Progress
			"emergency hotlines" in all LAs to enable the (cycling) public to report potholes / inadequate reinstatement of roads, broken glass on the road etc.		
		5.6	**Lighting of Cycleways** We will ensure that any dedicated cycling routes which are developed which are away from the main public carriageway are well lit where appropriate.	DTTAS + LAs	Where it is deemed appropriate, lighting has been provided on cycleways in many local authority areas.
6	Ensure cycle network is properly signposted	6.1	**Signposts** We will ensure that as the urban and rural cycle networks develop, sign-posting is provided to the standards developed as part of the Strategy for the Development of Irish Cycle Tourism. The signs will include directional signs, warning signs as well as interpretation panels for routes.	DTTAS + LAs, Fáilte Ireland	This Action was particularly targeted at recreational and tourist cyclists and these issues are addressed as part of the development of greenways under the *Greenways Strategy*.
		6.2	**Cycling maps** We will support the production of cycling maps both for rural and urban contexts. Such maps can also include useful information such as details of local bicycle shops, guarded bicycle parking facilities (as they are provided) etc	DTTAS + LAs	The Transport For Ireland Cycle Planner App provides information on the best cycling routes for trips in the Cork, Dublin, Galway, Limerick and Waterford city areas. Maps have been produced (and will be produced) for greenways as developed under the *Greenways Strategy*.
7	Provide secure parking for bikes	7.1	**National Guidance on Cycle Parking** We will develop national guidance on cycling parking provision. This will include details of	DTTAS + DHPLG	The *National Cycle Manual* provides extensive guidance on cycle parking standards and design specifications. Other national guidance such as the *Sustainable Urban Housing: Design Standards for New*

National Cycle Policy Framework					
Objective		Actions		Implementing Agencies	Progress
			the best types of facilities for different locations depending on security, space and cost requirements. It will also include guidance to all local authorities indicating what are suitable levels of cycling parking for different types of developments. This guidance must be incorporated into the revision of their next Development Plans		*Apartments* (2018) also includes guidance for Planning Authorities on cycle parking.
		7.2	**Compliance with Planning Conditions on Cycle Parking** We will ensure that local authorities check that developers comply with planning permission conditions regarding the provision of cycling parking facilities.	DHPLG + LAs	Compliance with planning conditions is enforced by local authorities. This is an ongoing practice as part of general compliance with planning conditions attached to planning permissions.
		7.3	**Existing Developments** We will encourage employers to provide cycling parking facilities at existing developments.	DTTAS + LAs	This Action is implemented through the Smarter Travel Workplaces Programme although it must be noted that participation in the Programme is voluntary.
		7.4	**Guarded Bicycle Parks** We will create strategically located high-capacity guarded bicycle parking facilities in city centre locations so that commuters can leave bikes safely in the city. These could, potentially, be located on the ground floor of city centre multi-story car parks, some of which are located in the centre of environmental traffic cells.	DTTAS + LAs	Cycle parking provided in Drury Street multi-story car park in 2018. Some local authorities along with private operators are providing secure bicycle parking at various locations.

National Cycle Policy Framework					
Objective		Actions		Implementing Agencies	Progress
		7.5	**Bicycle Stations** We will examine schemes whereby customers could pay a modest fee to have their bikes kept safe and dry, and a parking attendant could park and fetch bikes (similar to leaving coats in a cloakroom). Ideally these buildings could evolve into bicycle stations with showers, lockers, changing rooms, and could sell basic equipment like lights, bells, reflective materials, bicycle baskets and pannier bags as well as cycling maps etc. See also objective 9 below. The best known example is Munster, Germany. We will also consider a scheme where customers could also pay for the use of these facilities by an annual subscription which could, in turn, be subject to tax credits. The scheme could start in major urban areas and develop to include all towns and major shopping centres.	DTTAS + LAs	This action was not significantly advanced.
		7.6	**Mobile Cycle Parking Facilities** We will ensure that local authorities provide mobile guarded bicycle parking facilities to let for special events, e.g. football matches, open-air festivals, village fairs etc. (See example from World Cup final in Berlin in 2006 in which mobile bicycle parking facilities were used.) - Proceedings from Velo-city, Munich 2007.	LAs	Some progress has been achieved by a small number of local authorities.

National Cycle Policy Framework					
Objective		**Actions**		**Implementing Agencies**	**Progress**
		7.7	**Tackling Bicycle Theft and Vandalism** We will develop a national strategy to tackle bicycle theft in collaboration with stakeholders. This is likely to include cycling organisations, local authorities, An Garda Síochána, bicycle shops, lock manufacturers, insurance companies, producers of parking equipment etc. Such a strategy is likely to include recommendations on the need to develop a national register / database of bikes, publications aimed at cyclists advising them on how to / where to lock bikes, specific policies dealing with abandoned bicycles etc.	DTTAS, An Garda, LAs, bike shops/ groups, insurance companies, lock companies, etc	An Garda Síochána has produced advice on bicycle theft prevention. Some local authorities, along with organisations and private companies offer advice and practical solutions to deter bicycle theft and aid bicycle recovery.
Public transport & urban cycling					
8	Ensure proper integration between cycling & public transport	8.1	**Safe Routes to PT Stations** We will require local authorities to provide safe and attractive cycling routes to PT stations / stops in collaboration with the PT operator. This might include, for example, the creation of a new entrance or route across lands owned by the PT agency / provider.	DTTAS with CIÉ + LAs	This is a very broad Action as it refers to public transport 'stations / stops' and it is not the case that all 'stations / stops' have 'safe and attractive cycling routes'.
		8.2	**Cycling Parking at all PT Stations** We will audit every intercity, sub-urban rail, (future Metro), DART, LUAS and bus station to assess existing and potential cycling parking provision and will support the construction of suitable cycling parking	DTTAS with CIÉ, TII + LAs	Audits have been carried out as per specific Action of most public transport stations; however, the provision of adequate parking at stations remains challenging.

National Cycle Policy Framework					
Objective		Actions		Implementing Agencies	Progress
			facilities at each station. This will include cycle parking stations that may be guarded with staff, CCTV, swipe cards etc. and will be based upon best international practice. We will ensure that at the planning design stage of all future PT projects, there is proper provision made for quality cycle parking facilities. The cycling parking design guidance produced at 7.1 above will include all the necessary technical advice on the design of such facilities at train stations.		
		8.3	**Bicycle Stations** We will provide, as a pilot project to begin with, bicycle stations at rail station(s) or major public transport hubs. Bicycle stations are guarded indoor bicycle parks with a capacity of from several hundred's up to several thousands. Mainly targeted at commuters with season tickets, they offer long opening times (before the arrival of the first train until after the last train), sales of new and second hand bikes, accessory sales, same day repair service and bike rental. Cf. Example in Munster, Germany.	DTTAS + Iarnród Éireann	This action was not significantly advanced.
		8.4	**Bicycles and Intercity Rail** We will ensure that intercity trains have proper provision for the carriage of cycles	DTTAS + Iarnród Éireann	This action was not significantly advanced and capacity on intercity rail fleet is 2 bikes per 3-car set. The issue will be considered in current fleet

National Cycle Policy Framework					
Objective		Actions		Implementing Agencies	Progress
			over and above the currently proposed "maximum of 2 bikes per train". This may require the retrofitting of rolling stock with flip-up seats. We will ensure that the specification of all rolling stock not yet ordered provides for the carriage of bikes.		expansion proposals.
		8.5	**Bicycles and Sub-Urban Rail** We will permit the carriage of bikes on DART and other suburban rail services at off-peak times and on counter peak services at peak hour, following a more detailed study which will recommend suitable devices / facilities for the proper restraining of bikes on the trains. This will include all future Metro plans in Dublin (or anywhere else they may be planned).	DTTAS + Iarnród Éireann	Folding bicycles are permitted on commuter rail and bicycles are also permitted during off-peak hours; however, there has been no "detailed study" as referred to in the specific Action.
		8.6	**Bicycles and LUAS** We will provide for the carriage of bikes on LUAS when services are of a frequency and at a capacity that allows for it. i.e. when it is considered possible to carry bikes on carriages when they do not interfere with the capacity for pedestrians.	DTTAS + TII	Bicycles are not permitted on Luas although folding bicycles are permitted.
		8.7	**Bicycles and Intercity Buses** We will examine the existing conditions of carriage of bikes on intercity buses – both public and private – and develop specific	DTTAS, Bus Éireann + private operators	Availability on Bus Éireann Intercity buses is subject to room and there is a charge; capacity is very limited.

National Cycle Policy Framework					
Objective		Actions		Implementing Agencies	Progress
			policies to improve the service. This will include having operators provide clear information on the conditions of carriage of bikes.		
		8.8	**Bicycles on Urban Bus Services** We will support the development of a pilot project for the carriage of bikes on urban bus services comparable to what is currently used on buses in Canada and US.	DTTAS and Dublin Bus	No pilot scheme has occurred. Folding bicycles generally permitted.
		8.9	**Bikes and Ferries / Ports** We will carry out a study examining a range of issues under this heading. This could include: (i) Availability of / need for safe and well sign-posted routes to and from ports (both for employees in ports / cycling tourists); (ii) Facilities at ports (cycle parking etc.); (iii) Availability of / need for clear information on what ferry companies at each port take bikes, costs, conditions of carriage etc. Information to be available on-line and at port. (iv) Availability of / need for cycling maps etc. at ports showing visitors how to get to city centres / other local centres. (v) Encouraging ferry companies to	DTTAS and LAs and Port Companies	No study carried out as per specific Action.

National Cycle Policy Framework					
Objective		**Actions**		**Implementing Agencies**	**Progress**
			facilitate the carriage of bikes.		
		8.10	**Bikes and Planes / Airports** We will carry out a study examining a range of issues under this heading. This could include: (i) Availability of / need for safe and well sign-posted routes to and from airports (both for employees in airports / cycling tourists); (ii) Facilities at airports (cycle parking, areas for dismantling bikes, bike boxes etc.); (iii) Availability of / need for clear information on what airlines at each airport take bikes, costs, conditions of carriage etc. Information to be available on-line and at airport; (iv) Availability of / need for cycling maps etc. at airports showing visitors how to get to city centres / other local centres.	DTTAS and Airport Authorities	No study carried out as per specific Action.
9	Provide public bike in cities	9.1	**Provide Public Bikes in Cities** We will provide municipally-run "public bike" facilities in all cities above 100,000 population such as the O-ve bike scheme in the Netherlands. We will examine and closely monitor the Public Bike System that is due to be launched in Dublin in 2009, as well as	DTTAS + LAs	Public bike schemes operating in Cork, Dublin, Galway and Limerick with a scheme to be established shortly in Waterford. In recent years, new dock-less schemes have commenced in various local authority areas also.

National Cycle Policy Framework					
Objective		**Actions**		**Implementing Agencies**	**Progress**
			studying the systems from abroad before developing Irish versions.		
			Cycling Promotion		
10	Improve & promote image of cycling through events, ads, etc	10.1	**Campaigns to change the image of cycling** We will examine best international practice in devising campaigns specifically to change the image of cycling. Since there are much fewer women than men cycling (especially during the teenage years) campaigns need to focus on this target group. We will develop a range of national and local campaigns aimed at countering the poor image of cycling. These will be carried out in collaboration with other partners etc. We will develop a range of national and local promotional campaigns selling the wider benefits of cycling: freedom, the fastest way of getting around, sociability of cycling, lack of running costs, health benefits, ecological benefits. A national campaign could, perhaps, be fronted by a well-known public figure.	DTTAS + Dept. of Health	There are various campaigns currently undertaken (see Actions 11.4 and 12.6 status updates) as well as the nationwide Bike Week (see Action 10.2) in relation to the promotion of various aspects of cycling. This specific Action would include those campaigns but also includes aspects which are possibly not currently captured.
		10.2	**Bike Week** We will organise an annual National Bike Week. There may also be the possibilities of incorporating the Bike Week into the existing "Sustainable Energy Week" promoted by Sustainable Energy Ireland or "Mobility Week" promoted by European Commission. There is also an embryonic "Bike Week"	DTTAS + LAs	Bike Week was established in 2009 and takes place annually with events organised across the country.

National Cycle Policy Framework					
Objective		Actions		Implementing Agencies	Progress
			being developed by the Mater and Temple Street hospitals. The Bike Week could also encompass Bicycle Festivals, as have been organised on a voluntary basis in Dublin or more professionally abroad - e.g. The Cornwall Festival of Cycling, Bicycle Film Festival (which travelled around the world: San Francisco, London, Edinburgh etc.) plus a similar bicycle film festival in Tillburg, Netherlands.		
		10.3	**Competitions** We will organise competitions to raise awareness of the importance of cycling in special target groups – e.g. the most cyclist-friendly employer / school / college / PT station etc.	DTTAS	This Action is addressed through competitions organised as part of the Green Schools Programme and the Smarter Travel Workplace and Smarter Travel Campus programmes.
		10.4	**Information** We will produce useful information for cyclists / potential cyclists. This could include: ▪ cycling maps; ▪ online journey planners for the different cities; ▪ online weather information (linking it with Met sites for example) ▪ "How not to get your bicycle stolen" information leaflet; We will investigate the idea of creating and	DTTAS	The Transport For Ireland Cycle Planner App provides information on the best cycling routes for trips in the Cork, Dublin, Galway, Limerick and Waterford city areas. Maps have been produced (and will be produced) for greenways as developed under the *Greenways Strategy*. However, it is acknowledged that the concept of a possible "Cycling Portal" as described in the *NCPF* has not progressed.

National Cycle Policy Framework					
Objective		Actions		Implementing Agencies	Progress
			running a "Cycling Portal". This could be a one-stop-shop for anyone seeking information on cycling. Possible content could include news (about events, new legislation etc.), advice, bicycle registration, discussion boards, facility to enable cyclists to report potholes etc. to relevant local authority, classified section.		
		10.5	**Targeting Employers and Employees** We will support companies / other organisations above a certain threshold to produce mobility management plans Guidance will have detailed reference to the range of interventions that can used to promote cycling. This could build on the lessons learnt from the "One Small Step" campaign.	DTTAS	Smarter Travel Workplace programme established and on-going.
		10.6	**Targeting Third Level Students** We will develop special campaigns / initiatives aimed at the target group of third level students.	DTTAS / DES + LAs	Smarter Travel Campus programme established and on-going.
		10.7	**Targeting Shoppers** We will develop special campaigns / initiatives aimed at the target group of shoppers.	DTTAS / DHPLG + LAs	Some local authorities have undertaken such campaigns/initiatives. The NTA undertook a survey of Dublin City Centre visitors in late 2014.
		10.8	**Targeting Family / Recreational Cyclists** We will develop special targeted campaigns	DTTAS / Fáilte Ireland / LAs	These campaigns are largely conducted as part of promotional activity in relation to greenways /

National Cycle Policy Framework					
Objective		**Actions**		**Implementing Agencies**	**Progress**
			initiatives aimed at the target group of family / recreational cyclists.		activity tourism generally.
		10.9	**Targeting Visitors** We will support Fáilte Ireland in developing and implementing its Strategy for the Development of Irish Cycle Tourism (See also Objective 3).	DTTAS / Fáilte Ireland / LAs	
		10.10	**Sports Cycling** We will support the development of all aspects of sports cycling. This would include: ▪ Road cycling – leisure and racing; ▪ Mountain-biking – leisure and racing; ▪ Track racing; ▪ Bicycle Polo; ▪ Other aspects of the sport. We will work closely with Cycling Ireland (CI) in the development of specific strategies.	DTTAS + Sport Ireland	This Action has been advanced through Cycling Ireland / Sport Ireland with significant progress over the period in relation to the number of registered participants in sports cycling.
Training: cyclists & drivers					
11	Improve cyclists standards & behaviours	11.1	**National Cycling Training Programmes for School Pupils** We will assess the experiences of those Irish local authorities that have run cycling training programmes and we will also examine the National Curriculum of the leading European	DTTAS / DES, RSA	Cycle Right was launched in 2017 and coverage has expanded in each of the years since then. In 2019 approximately 25,000 primary school children will receive training with further expansion planned in the coming years.

National Cycle Policy Framework					
Objective		Actions		Implementing Agencies	Progress
			countries in this area. This will inform and lead to the development of a national curriculum on cycling training for primary schools. Such a curriculum is likely to include desk-based (theory), school-yard based and graded road-based cycling training. (This would include cycling along quieter residential streets and busier roads in mixed traffic). This should emphasize issues such as correct road positioning for cyclists, an awareness of the blind spots on HGVs, etc. It should also include basic bicycle maintenance. We will ensure that every child will receive cycling training using this new curriculum.		
		11.2	**Training Instructors** We will develop a curriculum for the training of cycling instructors and train the number of instructors that are required to oversee the curriculum.	DTTAS + RSA	Cycle Right has training programmes for trainers.
		11.3	**Adult Cycling Training** We will develop and organise a service to provide cycling training for adults returning to cycling and those who never cycled before.	DTTAS + RSA	The RSA is currently working with its partners Cycling Ireland to introduce Cycle Right Training for Adults, a pilot programme was undertaken in 2018 which will inform future programme development.
		11.4	**Awareness Campaigns** We will organise campaigns on: (i) promoting greater courtesy by cyclists	RSA	Awareness and safety campaigns are continually run by RSA.

National Cycle Policy Framework					
Objective		**Actions**		**Implementing Agencies**	**Progress**
			towards other road users; (ii) wearing of lights, reflective gear etc. on bikes.		
12	Improve motorist standards & behaviours, esp. safety needs of cyclists	12.1	**Rules of the Road (ROTR)** We will ensure that in the next revising of the ROTR, there will be a significant module of how to interact with cyclists - focusing on, for example, passing out cyclists and leaving adequate space, plus interactions between modes at junctions.	DTTAS / RSA	ROTR revision 5/2015 and revision 6/2018 addresses this specific action.
		12.2	**General Driver Instruction** We will ensure that the curriculum developed for driving instructors/ students includes a greater emphasis on how to interact safely with cyclists. It will include promoting a greater awareness of not encroaching into cycle lanes and cycle boxes (advanced stop lines) etc.	DTTAS / RSA	The Essential Driver Training and Initial Basic Training for motorcyclists programmes introduced in 2011 address this specific action.
		12.3	**Buses** We will pay special attention to the training needs of bus drivers since bicycles and buses both occupy bus lanes and interact closely with one another in this space. We will examine the training curriculum and course followed by bus drivers and ensure that it caters properly in helping trainee drivers understand how best to safely interact with cyclists. We will examine best international practice in the provision of training for bus	DTTAS / RSA, Bus Éireann, Dublin Bus + private operators	This action is addressed by the RSA's Certificate for Professional Competence curriculum (Driver CPC), while additional measures are in place in both Dublin Bus and Bus Éireann.

National Cycle Policy Framework					
Objective		Actions		Implementing Agencies	Progress
			drivers.		
		12.4	**Heavy Goods Vehicles (HGVs)** We will review the training curriculum for driving heavy goods vehicles given the disproportionately high number of heavy goods vehicles involved in cyclist (and pedestrian) accidents.	DTTAS / RSA	This action was addressed was by the Certificate for Professional Competence curriculum (Professional Truck Drivers) published by the RSA in 2013.
		12.5	**Cyclops Mirrors on HGVs** We will investigate the feasibility of providing incentives to encourage the retrofitting of Cyclops mirrors to the older vehicle fleet within a specified time period. This may be explored through the Insurance Industry Federation.	DTTAS	S.I. No. 457 of 2011, Road Traffic (Driving Mirrors – Additional Requirements for Heavy Goods Vehicles) Regulations 2011 mandate the fitment of Class VI (front /Cyclops) mirrors to HGV's with a DGVW (Design Gross Vehicle Weight) exceeding 7500kg.
		12.6	**Awareness Campaigns** We will develop campaigns for all drivers - for example: (i) to explain why it is important to tackle urban speeding - e.g. If you speed, you are making it difficult for others to choose to cycle or walk thus exacerbating congestion; (ii) to promote greater courtesy by motorists towards cyclists; (iii) advising motorists of the legal requirement to yield to cyclists at roundabouts and at other locations.	RSA	Awareness and safety campaigns are continually run by RSA.

National Cycle Policy Framework					
Objective		**Actions**		**Implementing Agencies**	**Progress**
Financial Support					
13	Support/ provide fiscal incentives to cycle	13.1	**Subsidised Bike Purchase** We welcome the Budget 2009 initiative under which, from 1 January 2009, the provision of bicycles and associated safety equipment by employers to employees who agree to use the bicycles to cycle to work will be treated as a tax exempt benefit-in-kind. We will encourage employers to implement the scheme through salary sacrifice arrangements as is envisaged in the Budget 2009 provision and review progress to maximise take-up.	DTTAS	Bike to Work scheme in place and operating successfully.
		13.2	**Cycle Mileage Allowances** We will examine the existing scheme that allows for mileage allowances to be paid to cyclists for business related trips (in the public sector) and work to ensure that the rates paid to cyclists are the same as those paid to drivers. This has symbolic importance as well as a true monetary incentivising value. While it is not possible to direct private organisations to adopt a higher mileage allowance for cycling trips, we will encourage them to do so.	DTTAS + Dept. of Finance	This action was not significantly advanced.
		13.3	**Indirect Tax System** We will investigate possible options of using the indirect tax system to reduce the cost of	Dept. of Finance + Revenue	This action was not significantly advanced.

National Cycle Policy Framework					
Objective		**Actions**		**Implementing Agencies**	**Progress**
			bicycle purchase.	Commissioners	
14	Financial support to implement *NCPF*	14.1	**International Cost Benefit Analysis** There is, in fact, compelling evidence that the benefits of investing in cycling significantly outweigh the costs. We will carry out an assessment of the emerging international studies on valuing the benefits of cycling and apply these to an Irish context. This will include looking at spend per head on cycling provision in different countries.	DTTAS	The *Common Appraisal Framework for Transport Projects and Programmes*, published in 2016, provides parameter values in relation to active travel which must be applied when calculating the benefits of active travel investments.
		14.2	**Continuous Funding** We acknowledge that there needs to be continuous funding of the *NCPF* over the short, medium and long term in order to achieve the broad aim of recreating cycling culture in Ireland. We will provide appropriate levels of, and timely, funding towards the implementation of the *NCPF*.	DTTAS + Dept. of Finance	Funding was extremely constrained in the years following publication of the *NCPF*. Since Budget 2018 and then publication of *Project Ireland 2040* there is now a much improved funding framework in place for active travel.
Legislation					
15	Introduce legislation to improve cyclist safety	15.1	**Review of Legislation** We will carry out a review of Irish road traffic legislation to change the balance in favour of the more sustainable modes such as walking and cycling.	DTTAS	A review of legislation in relation to 'safe overtaking of cyclists' is currently being progressed with other areas being kept under review.

National Cycle Policy Framework					
Objective		Actions		Implementing Agencies	Progress
			Any revision of the legislation should also provide clarity on those aspects of the law relating to cycling, which are perceived to be ambiguous or uncertain. For example: (i) the use of "Flashing LED lights"; (ii) the issues surrounding making it legal for cyclists to overtake on the left; (iii) cycling along canal towpaths, riverbanks and through parks.		
		15.2	**European Hierarchy of Speed Limits** We will consider the adoption of the standard Northern European hierarchy of speed limits with 30kph as the standard limit in core urban areas and with reduced limits applied on residential streets and at large junctions used by vulnerable road users.	DTTAS + LAs	At a legislative level, the issue of "special speed limits" is provided for in Road Traffic Acts and amendments were introduced in both 2010 and 2016 which now allow for 20 km/hr, 30 km/hr and 40 km/hr limits in respect of certain roads as may be designated by local authorities.
		15.3	**Hierarchy of Care** We will explore the concept of "Hierarchy of Care for Road Users" that is used in some Northern European countries to give more vulnerable road users additional legal protection on the roads, and advise on whether a similar system can and should be used in Ireland.	DTTAS	This action was not significantly advanced.
		15.4	**Mandatory Use Regulation** We will revoke the Statutory Instrument that requires cyclists to use cycle tracks where	DTTAS	S.I. No. 321/2018 - Road Traffic (Traffic and Parking) (Amendment) Regulations 2018 amend the Road Traffic and Parking Regulations to clarify that

National Cycle Policy Framework					
Objective		Actions		Implementing Agencies	Progress
			they are provided - Road Traffic (Traffic and Parking) Amendment Regulations, S.I. No. 274 (1998). This regulation is unsatisfactory for a number of reasons: (i) it is clear that the cycling infrastructure that has been constructed to date is often of a poor standard and is poorly maintained, and cyclists are required to use it; (ii) it can force cyclists to be on cycle tracks and (when they are planning on continuing straight ahead) to be on the inside of left-turning vehicles, including Heavy Goods Vehicles; (iii) if a group of cyclists (on a weekend cycle for example) is using a road with an off-road cycle-track alongside it, then they are required to use it – which is not practicable.		only the use of contra-flow cycle tracks and any cycle track in a pedestrianised area are mandatory.
		15.5	**Maximum Speed Display** We will require HGVs (as well as buses and coaches) to display their maximum allowable speed as in most EU jurisdictions.	DTTAS	All new agricultural vehicles are required (from 1 January 2016) to display a speed disc indicating their maximum design speed; however, this does not extend to HGVs and buses/coaches as per *NCPF* Action. All existing agricultural vehicles capable of being driven/drawn at over 40 km/h must also be fitted with a speed disc.
		15.6	**On the Spot Fines** We will extend on the spot fines to infringements by cyclists.	DTTAS + DJE	In 2015 Fixed Charge Notices (FCN replaced on-the-spot fines in 2002) were introduced for several cycling offences, including cycling 'without reasonable consideration' and 'cycling into a

National Cycle Policy Framework					
Objective		**Actions**		**Implementing Agencies**	**Progress**
					pedestrianised street or area other than a cycle track'.
		15.7	**Further Legal Changes** We will introduce / explore other ideas to facilitate cyclists, such as the following: (i) exempting cyclists from no-entry / one-way street restrictions in urban areas; (ii) "logo-only" routes / shared lane road markings such as the California style "shared lane road markings" or equivalent treatments that have been tried in Australia and Scotland and elsewhere. (iii) providing default exemptions of cyclists from restrictions in pedestrianised streets.	DTTAS + DJE	This action was not significantly advanced.
		15.8	**Selling Bicycles with Lights** We will require retailers to sell bicycles fitted with legally compliant lights, with exemptions for particular types of bikes – e.g. specialist lightweight racing bikes or kiddies' bikes.	DTTAS	This action was not significantly advanced.
16	Improve enforcement of traffic laws	16.1	**Urban Speed Enforcement priority** We will give enforcement of urban speed limits greater priority. Should there be difficulties with the enforcement of lower speed limits, consideration will be given to	DTTAS, Gardaí and DJE	Introduction of lower speed limits in urban areas (e.g. 30 km zones) has been accompanied by enforcement measures; however, it is difficult to measure whether enforcement of urban speed limits has been given "greater priority" as per specific *NCPF* Action.

National Cycle Policy Framework					
Objective		Actions		Implementing Agencies	Progress
			alternative means to achieving this aim.		
		16.2	**Enforcement of Other Traffic Laws** We will examine and highlight the barriers preventing an effective enforcement regime for other traffic offences that affect cyclist safety. For example, (i) dangerous driving in (urban) areas; (ii) cyclists running red lights; (iii) illegal parking on cycle tracks; (iv) motor-bikes using bus-lanes etc. This study will link with the wider Road Safety Strategy 2007-2012.	DTTAS, RSA and Gardaí	This action was not significantly advanced.
		16.3	**Bicycle Mounted Gardaí** We will increase the number of bicycle mounted Gardaí. Such an intervention re-inforces the notion that cyclists are an integral part of the city as well as having policing advantages. We will also develop a suitable cycling safety course to be given to all Garda Recruits.	An Garda Síochána	There is no general cycling safety course given to all Garda trainees as part of their recruit training. Specialist training is given to members wishing to be Garda cyclists.
		16.4	**Penalties** We will explore – as part of a wider examination of traffic penalties (and legislative changes) – the scope for amending the penalties for motoring offences against cyclists.	DTTAS	This action was not significantly advanced.

National Cycle Policy Framework					
Objective		**Actions**		**Implementing Agencies**	**Progress**
17	Develop a structure to coordinate all Depts, agencies, etc	17.1	**Oversight of Implementation of the *NCPF*** We will ensure that the Department of Transport will oversee the implementation of the *NCPF*.	DTTAS	DTTAS is lead Department for oversight of *NCPF* implementation.
		17.2	**National Advisory Forum** We will establish a National Advisory Forum of stakeholders to advise the Department on the delivery of the *NCPF*. This could evolve from the many organisations who contributed in the initial consultation phase of the policy research.	DTTAS	This action was not significantly advanced.
		17.3	**Local Authority Cycling Officers** We will require each local authority to assign an officer at an appropriate senior level as a "Cycling Officer". He or she will establish a Cycle Forum and be responsible for overseeing the formulation and delivery of the local cycling policy. This policy must be embedded within wider transportation policies and in the statutory plans. He or she will also be responsible for the upskilling of staff within the local authority so as to ensure that the competencies exist to fully implement the policies.	DHPLG, DTTAS, LAs	This Action is partially implemented through the designation by local authorities of officials (in either full time or part time capacity) as Cycling/ Road Safety /Sports Officer responsible for cycling promotion and policy in the area. This does not align completely with the specific *NCPF* Action
		17.4	**Networks of Cycling Experts** We will facilitate in the creation of networks of cycling experts at all levels – local authority, central government / agencies,	DTTAS	This action was not significantly advanced.

National Cycle Policy Framework					
Objective		**Actions**		**Implementing Agencies**	**Progress**
			virtual networks, academic.		
		17.5	**Optimum Arrangements for Implementation** After an initial period we will review progress, explore options and consider any necessary changes in the arrangements to ensure that the ambition in this policy continues to be realised.	DTTAS	Various elements of the policy are monitored and reviewed on an on-going basis.
		17.6	**Adapted Remit for Existing Agency** We will explore how the NRA could have its remit developed so as to have responsibility for implementing certain elements of the *NCPF* relating to infrastructure.	DTTAS	The NTA's remit was adapted in 2013 (see s44A of the Dublin Transport Authority Act 2008)
18	Provide training/ understanding to designers to help implement *NCPF*	18.1	**Third Level Education** We will work to explore how Irish third level civil engineering / transport planning / urban design departments can offer undergraduates and post-graduates instruction on the safety issues involved in providing for vulnerable road users and, more generally, on planning for the more sustainable modes.	DTTAS, DES	This action was not significantly advanced as per *NCPF* action; however, since publication of *NCPF* the *National Cycle Manual* and *Design Manual for Urban Roads and Streets* have been produced which inform any relevant third level courses in the area.
		18.2	**Centre of Knowledge** We will support the development of a centre of knowledge in planning for cycling (perhaps in one of the universities or within a Research Department of the Road Safety	DTTAS	This action was not significantly advanced.

National Cycle Policy Framework					
Objective		Actions		Implementing Agencies	Progress
			Authority). We will examine examples from abroad in which such centres have been created. Such an Irish centre would concentrate the knowledge developed around the country and it could liaise closely with universities and research institutes abroad as well as the Department of Transport.		
		18.3	**Training of Professionals** We will organise training workshops / sessions for all design professionals in understanding and using the new guidance produced. We will also stipulate that all local authority roads engineers and any engineer wishing to tender for government road contracts should be required to have taken an approved cycling skills course, together with a course on cycling friendly infrastructure design.	DTTAS & LAs	There has been, and continues to be, training offered to professionals as documents such as the *National Cycle Manual* and *Design Manual for Urban Roads and Streets* are produced / refreshed.
		18.4	**New Cycle Guidelines Manual** We will produce new Design Guidance to supersede the existing Cycle Guidelines Manual / Traffic Management Manual produced by the Dublin Transportation Office to reflect best international practice and latest thinking on creating a cycling friendly infrastructure. We will ensure that the new guidance developed is consistent with new guidance	DTTAS, NTA	*National Cycle Manual* published by the NTA in 2011 and the *DMURS* was jointly published by then D/Environment, Community and Local Government and DTTAS in 2013.

National Cycle Policy Framework					
Objective		Actions		Implementing Agencies	Progress
			on Urban Design Policy (Policy 1.4) and informs a revision of the Design Manual for Roads and Bridges and other relevant guidance and standards.		
		18.5	**Annual Conference on Cycling Planning** We will organise an annual conference on cycling planning / promotion that will bring together experts from the academic, private, public and voluntary sectors with the aim of sharing experiences and the latest research in providing for cyclists. It will also provide an opportunity to assess progress in implementing an *NCPF*.	DTTAS	This action was not significantly advanced.
		18.6	**International Collaboration** We will provide support for the further training of relevant engineers / planners / policy measures through sending them to international conferences and training events / workshops such as the Velo-city Cycling Planning conference.	DTTAS	This action was not significantly advanced.
		18.7	**Virtual Network of Experts** We will examine the UK experiences of developing a "Cycling Planning" virtual network / group of cycling planning experts with a view to establishing a similar network in Ireland, or perhaps linking with that group. Again the purpose of this is to raise the level of understanding of cycling engineering /	DTTAS	This action was not significantly advanced.

National Cycle Policy Framework					
Objective		Actions		Implementing Agencies	Progress
			safety / planning issues.		
		18.8	**Irish Best Practice Database** We will support the creation of a "best practice" database of Irish examples of cycling friendly designs, schemes, initiatives etc. This database could link with and draw upon European best practice databases such as BYPAD and Velo-Info, ELTIS etc.	DTTAS	This action was not significantly advanced.
19	Evaluate cycling policy/monitor progress	19.1	**Monitoring Framework** We will develop a monitoring framework to measure progress in achieving specific 19 objectives and many policies. The policy indicators will have a qualitative and quantitative dimension.	DTTAS	This action was not significantly advanced.
		19.2	**Indicators** We note that the two important indicators are: (i) numbers of cyclists/modal share. (ii) numbers of cycle accidents of different severities. We will develop systems to closely monitor trends in these two indicators in all urban and rural areas.	DTTAS	There are published CSO data sources in relation to the numbers of cyclists/modal share which are utilised; however, there is an acknowledged deficit in relation to data as regards the "number of cycle accidents of different severities".
		19.3	**Accident Reporting** We recognise that there is an under-reporting of accidents to the Gardaí but that	DTTAS + LAs + RSA	There are monthly meetings between An Garda Síochána and the RSA in relation to data exchange; however, no system has been developed as per

National Cycle Policy Framework					
Objective		Actions		Implementing Agencies	Progress
			hospitals pick up on many accidents involving cyclists, We will develop and implement a system that correlates between the databases. This will feed into the work carried out by the RSA.		*NCPF* action to "correlate" between hospital databases and AGS databases.
		19.4	**Study of Cycle Accidents** We will commission and produce a detailed analysis of all fatal / serious cycle accidents over (an approximate) 10 year period 15.	DTTAS + RSA	RSA are currently preparing a report on cyclist fatalities over the period 2008 to 2016 for publication. Another RSA report looking at all cyclist injuries in 2016 is also scheduled for publication this year.
		19.5	**User Satisfaction Surveys** We will arrange other surveys that are deemed necessary such as user satisfaction surveys (every two years).	DTTAS	This action was not significantly advanced; however, there are various surveys undertaken by various agencies.

Acronyms

CCA	Cycle City Ambition
CSO	Central Statistics Office
DES	Department of Education and Skills
DHPLG	Department of Housing, Planning and Local Government
DMURS	Design Manual for Urban Roads and Streets
DTTAS	Department of Transport, Tourism and Sport
ERDF	European Regional Development Fund
EU	European Union
GDA	Greater Dublin Area
LA	Local Authority
NCPF	National Cycle Policy Framework
NSO	National Strategic Outcome
NTA	National Transport Authority
NTS	National Travel Survey
PEP	Pan-European Programme
QNHS	Quarterly National Household Survey
RSA	Road Safety Authority
RSES	Regional Spatial and Economic Strategy
SME	Small and Medium-Sized Enterprises
TfL	Transport for London
TII	Transport Infrastructure Ireland
UNECE	United Nations Economic Commission for Europe
WHO	World Health Organisation

References

[1] Government of Ireland, *A Programme for a Partnership Government*, (2016) (Available Online)
[2] Department of Transport, Tourism and Sport, *Strategy for the Future Development of National and Regional Greenways*, (2018) (Available Online)
[3] OECD / ITF, *Cycling, Health and Safety*, (2013) (Available Online)
[4] Department of Transport, Tourism and Sport, *Smarter Travel – A Sustainable Transport Future*, (2009) (Available Online)
[5] Department of Transport, Tourism and Sport, *National Cycle Policy Framework*, (2009) (Available Online)
[6] Department of Transport, Tourism and Sport/Department of Health, *National Physical Activity Plan*, (2016) (Available Online)
[7] McAvoy, H., Bergin, D., Kiernan, R., Keating, T. (2018) *Consultation on the development of a Healthy Workplaces Framework for Ireland: A report prepared for the Department of Health.* Dublin: Institute of Public Health in Ireland (Available Online)
[8] Government of Ireland, *Project Ireland 2040*, (2018) (Available Online)
[9] National Transport Authority, *National Cycle Manual*, (2011) (Available Online)
[10] Government of Ireland, *Climate Action Plan 2019 to Tackle Climate Breakdown*, (2019) (Available Online)
[11] https://eufunds.gov.ie/
[12] https://www.seupb.eu/iva-overview
[13] https://thepep.unece.org/
[14] Department of Transport, Tourism and Sport, *National Sports Policy 2018-2027*, (2018) (Available Online)
[15] Government of Ireland, *National Planning Framework*, (2018) (Available Online)
[16] Government of Ireland, *National Development Plan 2018-2027*, (2018) (Available Online)
[17] Department of the Environment, Community and Local Government / Department of Transport, Tourism and Sport, *Design Manual for Urban Roads and Streets*, (2013) (Available Online)
[18] OECD / ITF, *Policy Priorities for Decarbonising Urban Passenger Transport*, (2018) (Available Online)
[19] Sport Ireland, *Get Ireland Walking: Strategy and Action Plan 2017 to 2020*, (2017) (Available Online)
[20] Carroll, P., Caulfield, B., Ahern, A. (2019); Modelling the potential benefits of increased active travel, Transport Policy, vol. 79
[21] Transport for London, *Walking action plan – Making London the world's most walkable city*, (2018) (Available Online)
[22] National Transport Authority, *Transport Strategy for the Greater Dublin Area 2016-2035*, (2016) (Available Online)
[23] Galway City Council and Galway County Council, *Galway Transport Strategy*, (2016) (Available Online)
[24] Limerick City and County Council, *Limerick 2030 – An Economic and Spatial Plan for Limerick*, (2014) (Available Online)
[25] Limerick City and County Council, *Limerick Metropolitan Cycle Network Study*, (2017) (Available Online)
[26] National Transport Authority and Cork City Council / Cork County Council, *Cork Metropolitan Area Draft Transport Strategy 2040*, (2019) (Available Online)

[27] Cork City Council / Cork County Council, *Cork Cycle Network Plan* (2017) (Available Online)
[28] Ministry of Infrastructure and Water Management, *Cycling Facts*, *Netherlands Institute for Transport Policy Analysis*, (2018) (Available Online)
[29] Department of Communications, Climate Action and Environment, *National Mitigation Plan*, (2017) (Available Online)
[30] Caulfield, B. (2014), Re-cycling a city – Examining the growth of cycling in Dublin, *Transportation Research Part A* 61, pp. 216-226
[31] AECOM, *Ex-Post Evaluation of Smarter Travel Areas*, (2018)
[32] EPA, *Ireland's Final Greenhouse Gas Emissions 1990-2017*, (2019) (Available Online)
[33] SEAI, *Energy in Ireland 2018*, (2018) (Available Online)
[34] Torjesen, Ingrid (2017); Cycling to work has substantial health benefits, study finds, BMJ 2017; 357 :j1944
[35] Department of Health and Children, *The National Guidelines on Physical Activity for Ireland*, (2014) (Available Online)
[36] Doorley, R., Pakrashi, V., Ghosh, B. (2017); Health impacts of cycling in Dublin on individual cyclists and on the local population, *Journal of Transport and Health*, vol. 6, pp.420-432
[37] OECD / ITF, *Safer City Streets: Global Benchmarking for Urban Road Safety* (2018) (Available Online)
[38] Short, J. and Caulfield, B. (2014); The Safety Challenge of Increased Cycling, *Transport Policy*, vol.33, pp. 154-165
[39] Sport Ireland, *Irish Sports Monitor Annual Report*, (2017) (Available Online)
[40] Heesch et al. (2012) *Gender differences in recreational and transport cycling: a cross-sectional mixed methods comparison of cycling patterns, motivators, and constraints*. International Journal of Behavioral Nutrition and Physical Activity 2012, 9:106
[41] Woods, C.B., Tannehill D., Quinlan, A., Moyna, N. and Walsh, J., *The Children's Sport Participation and Physical Activity Study* (2010); Dublin City University and The Irish Sports Council, Dublin, Ireland (Available Online)
[42] Met Éireann, *What we measure* (Available Online)
[43] Cambridge City Council, *Cycling and walking schemes* (Available Online)
[44] www.cambridge.gov.uk/2011-census
[45] Sustrans, *Cycle City Ambition Monitoring Plan*, (2015) (Available Online)
[46] Department for Transport, *Walking and Cycling Statistics, England: 2017* [Statistical Release] (Available Online)
[47] Statistical tables produced by UK's Department of Transport on walking and cycling, (2012) (Available Online)
[48] Department for Transport, *Wide cycle lanes on Hills Road Bridge, Cambridge*, (2016) (Available Online)
[49] Instituto Nacional De Estatística, *Censos 2011 Resultados Definitivos – Portugal* (Available Online)
[50] City of Copenhagen, *Good, Better, Best – The City of Copenhagen's Bicycle Strategy 2011 to 2025*, (2011) (Available Online)
[51]Office for Cycle Superhighways, *Cycle Superhighways: Capital Region of Denmark*, (2018) (Available Online)

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