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Government of Ireland

## Spending Review 2023

# Adopting a Well-being Approach to Assessing Climate Action in The Transport Sector

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This paper has been prepared by IGEES staff in the Department of Transport. The views presented in this paper do not represent the official views of the Department or Minister of Transport.



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## Executive Summary

### Overview

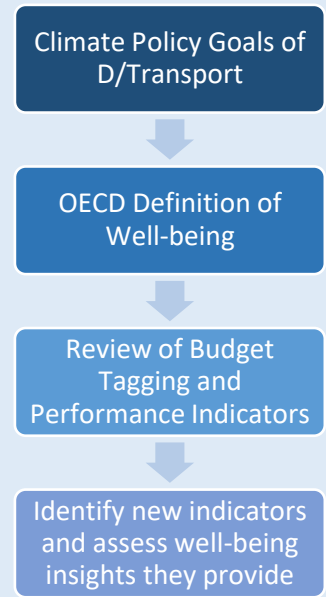
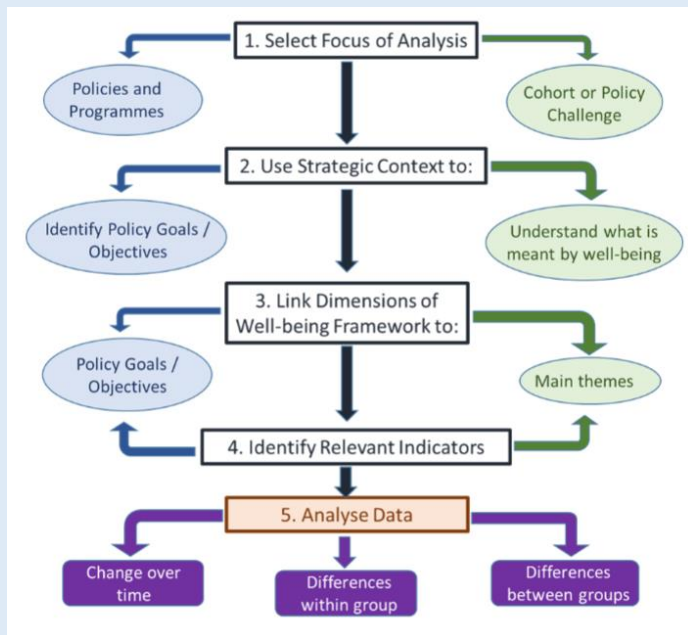
This spending review examines the application of the Well-being Framework in the specific context of examining climate policy in the transport sector. The spending review recognises that the Organisation for Economic Co-operation and Development (OECD) has played a key role in informing climate policy in Ireland, for example the OECD's report *Redesigning Ireland's Transport for Net Zero* informed development of the transport chapter of the Climate Action Plan 2023. This paper adopts the OECD's well-being lens approach to assessing climate policy and examines how performance indicators tracked by the Department could be amended to place a greater focus on the well-being impact of climate policy interventions.

### What is Well-being?

Adopting a well-being approach to measuring societal progress involves movement away from viewing GDP, or other aggregate economic indicators, as the primary measure of growth in society and moving to a more holistic approach. The Department of the Taoiseach has led the development of a Well-being Framework, which is a commitment under the Programme for Government. It includes eleven dimensions of well-being, which capture the areas that matter most to Irish citizens, such as housing, skills, work, health and community. Transport has both direct and in-direct impacts on well-being, for example it impacts well-being directly through improvements in road safety and indirectly through reductions in Greenhouse Gas emissions. However, transport can also serve as a cross cutting enabler of well-being influencing a variety of dimensions of the well-being framework, this is because it provides accessibility to opportunities and amenities such as employment, education and healthcare which enable people to live meaningful lives.

### Methodology

The methodology adopted in this paper applies a five-step framework developed by the Department of Public Expenditure NDP Delivery and Reform (DPENDR) (see diagram) to assess well-being impacts of public policy. Under this framework the Department of Transport's current climate policy was chosen as the focus of analysis. This is because decarbonisation is a priority for the department and 95% of its gross voted expenditure had a direct impact on climate policy goals. The OECD provided the definition of what is meant by well-being in this context. The results of a budget tagging exercise were used to link the existing expenditure sub-heads of the department to dimensions of the well-being framework. This also allowed for the identification of gaps where new indicators were required. The paper then examines how existing publicly available data sources could be used to fill these gaps and provide additional insights on well-being.



**Conclusions**

Sustainable Accessibility

The OECD noted that mobility is a poor proxy for well-being, the report recommends that the goal of the transport system should be sustainable accessibility. This considers not just the travel time but the proximity of users to amenities which they wish to access. In collaboration with colleagues in the National Transport Authority (NTA) the Public Transport Accessibility Levels (PTALs) tool was adapted to assess accessibility within the Greater Dublin Area as an example. Other outputs from the Central Statistics Office (CSO) and the NTA’s National Household Travel Survey were also examined for their potential to provide insights on sustainable accessibility.

Transport Affordability

Using CSO data to monitor the share of a household budget spent on transport services can help assess the distributional impacts of transport cost changes on households.

Safety

Examining the number of active travel users as a proportion of total road fatalities can provide important insights on the well-being impact of walking and cycling interventions. The use of perception of safety measures when using public transport services also offers important well-being insights for transport users.

Air Pollution

Improvements in local air pollution are often cited as a co-benefit of climate policy interventions. Monitoring air quality in our urban centres will provide important insights on the broader well-being impacts of climate policy measures in the transport sector.

This paper recommends that current indicators tracked in the Revised Estimates for Public Service (REV) Public Service Performance Reports be updated to place a greater emphasis on well-being. These indicators will also help to inform monitoring strategies of the Department of Transport such as the Climate Action Plan, the Sustainable Mobility Policy and the National Demand Management Strategy. The findings of this paper will support the review and update of the national Well-being Framework in three to four years’ time as planned by the Department of the Taoiseach.

## 1. Introduction

This paper will review of how well-being is assessed within the transport sector. Specifically, it will focus on the area of climate policy and the land-transport sector, as policy in this area has been informed by the adoption of a well-being approach. The transport sector also accounts for 19%<sup>1</sup> of Ireland's greenhouse gas emissions and decarbonisation is a key priority for the Department. Another reason for focusing on this area is that expenditure in programmes related to decarbonisation, public transport, active travel and roads investment accounts for over 95% of gross expenditure by the Department in 2023<sup>2</sup>. The paper will provide an overview of Ireland's Well-being Framework and examine how it currently tracks well-being within the transport sector. It will proceed to examine how currently available public data sources could be used to provide additional key performance indicators to assist the Department in monitoring the well-being impact of expenditure, in particular in relation to programmes which will have a climate impact. The results of this paper will provide insights into how to improve the assessment of the well-being impact of expenditure which could be used as part of the budgetary process, the Revised Annual Estimates process and within the Public Service Performance Reports to provide policy makers and the citizens with greater levels of detail about interventions well-being impact over time.

### 1.1 Methodology and Limitations

This paper adopts a framework developed by the Department of Public Expenditure NDP Delivery and Reform (DPENDR) to assess the well-being impact of public policy interventions. In this paper the analysis will focus on the well-being impact of climate policy and expenditure related to these areas. Expenditure in the Department will be mapped against the existing 11 dimensions of Ireland's Well-being Framework, using the results of a budget tagging exercise conducted by DPENDER and the Department of Transport. The paper will use recommendations from the OECD, who have been leaders in championing the adoption of a well-being approach, to examine how additional indicators could be developed using publicly available data to help monitor the well-being impact of climate policy interventions, in areas such as sustainable accessibility, transport affordability, safety and local air pollution. These indicators will be drawn from publicly available data from the Central Statistics Office (CSO), the National Transport Authority (NTA), Transport for Ireland (TFI), the Road Safety Authority (RSA), Environmental Protection Agency (EPA) and the Organisation for Economic Co-

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<sup>1</sup> <https://www.epa.ie/our-services/monitoring--assessment/climate-change/ghg/latest-emissions-data/>

<sup>2</sup> Revised Estimates for Public Services (2023) <https://assets.gov.ie/244538/26edc78f-49db-454f-817f-b27a40d030bc.pdf>

operation and Development (OECD). These indicators will also be briefly analysed to provide a current assessment of well-being in the transport sector.

There are limitations to this analysis which should be considered when interpreting the recommendations, these include infrequent data collection in the case of indicators based on CSO Census data. For self-reported such as walk times to amenities reported under the NTA's National Household Travel Survey data, this data may be subject to respondent biases. Novel indicators such as the NTA's Public Transport Accessibility Levels (PTAL) are also used in this analysis. It is important to note that this data is included for illustrative purposes only and that the PTAL tool is still being refined by the NTA to adopt its scoring to an Irish context.

## 2. Well-being Framework

### 2.1 Defining Well-being

Assessing the well-being impact of public policy interventions has begun to gain prominence both internationally and in Ireland in recent years. The focus on well-being has emerged in response to a recognition that tracking indicators such as economic growth, while useful, does not provide a holistic view of all of the goals that we intrinsically value as a society. In 2013 the OECD defined well-being as "good mental states, including all of the various evaluations, positive and negative, that people make of their lives and the affective reactions of people to their experiences<sup>3</sup>." The OECD's definition is intended to be broad and take into account the factors which "affect", a person's emotions typically at a point in time, and "eudaimonia", which relates to finding meaning in life, which are often cited within the literature on well-being.

Ireland's approach to assessing well-being is based on that of the OECD, and the Capability Approach advocated by Dr. Amartya Sen. Evaluated through this lens, well-being is seen as an enabler of a person's capacity to live a meaningful life. In the absence of enablers there is a public policy rationale to help provide the opportunities for people to change their lives when opportunity may have been denied as a result of poverty or deprivation.

### 2.2 A Well-being Framework for Ireland

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<sup>3</sup> OECD (2013) OECD Guidelines on Measuring Subjective Well-being <https://www.oecd-ilibrary.org/docserver/9789264191655en.pdf?expires=1702631125&id=id&accname=guest&checksum=B8C0EA9629F3F08C9AFCC508337A3B91>

The development of a Well-being Framework for Ireland fulfils a commitment under the *Programme for Government, Our Shared Future*<sup>4</sup>, to introduce a more holistic approach to how government resources are allocated. The specific commitments were to:

- Develop a set of well-being indices to create a well-rounded, holistic view of how our society is faring.
- Develop a balanced scorecard for each area of public policy, focused on outcomes and the impact that those policies have on individuals and communities.

As a result of the commitments set out in the Programme for Government, the CSO were engaged to develop an initial dashboard of well-being indicators and an Interdepartmental Working Group was established to advance the development of a well-being framework. As a result of these workstreams two subsequent reports were published.

The First Report on a *Well-being Framework for Ireland*<sup>5</sup> was published in July 2021. This report noted that macroeconomic indicators at the time failed to take account of aspects such as distributional outcomes, or people's lived experiences with the stated vision being "enabling all our people to live fulfilled lives now and into the future". The conceptual framework and first well-being dashboard<sup>6</sup> was designed to be reflective of the OECD's "How's life" model. This introduced the concept of tracking well-being across a number of dimensions, or areas which had a significant impact on societally well-being.

The second report, *Understanding Life in Ireland: The Well-being Framework*<sup>7</sup>, refined the conceptual framework in light of feedback from a public consultation. One of the findings of the consultation of particular interest to this paper, was that there was a perception that infrastructure and specifically public transport were areas which were seen as missing or under emphasised within the first iteration of the framework.

The *Programme for Government* also notes that following the development of the well-being framework there is a need to "ensure that it is utilised in a systematic way across government policymaking at local and national levels, in setting budgetary priorities, evaluating programmes and reporting progress. This will be an important complement to existing economic measurement tools".

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<sup>4</sup> Programme for Government: Our Shared Future (2020) <https://www.gov.ie/en/publication/7e05d-programme-for-government-our-shared-future/>

<sup>5</sup> First Report on Well-being Framework for Ireland (2021) <https://www.gov.ie/en/press-release/fb19a-first-report-on-well-being-framework-for-ireland-july-2021/>

<sup>6</sup> CSO Well-being Information Hub (2023) <https://www.cso.ie/en/releasesandpublications/hubs/p-wbhub/well-beinginformationhub/>

<sup>7</sup> Understanding Life in Ireland: The Well-being Framework (2023) <https://assets.gov.ie/260026/1dc8a216-7cd7-412a-87d3-10dcf0310789.pdf>

This paper will support this commitment by adapting the framework to the specific context of assessing climate policy in the transport sector and using it to provide insights in this policy area.

### 2.3 Overview of Well-being Framework and Dimensions

The CSO developed a set of well-being indicators, to support the ongoing monitoring of well-being in Ireland. These indicators measure well-being across 11 dimensions and report the results in an online dashboard. Transport is not mentioned specifically in any of the dimensions, but following feedback received during the initial public consultation on the framework, the Built Environment aspect of the Housing and Built Environment dimension was amended to reference access to public transport services. While transport is not explicitly referenced in the other dimensions of well-being, as noted above, transport serves as a key enabler of well-being by providing access to amenities which allow people to live meaningful lives. In this regard transport can be seen as impacting a number of dimensions of the framework including Connections, Community and Participation and Work and Job Quality. The transport sector also impacts on the environment, as well as people’s physical and mental health and their subjective sense of well-being.

**Figure 1 – Well-being Framework for Ireland**



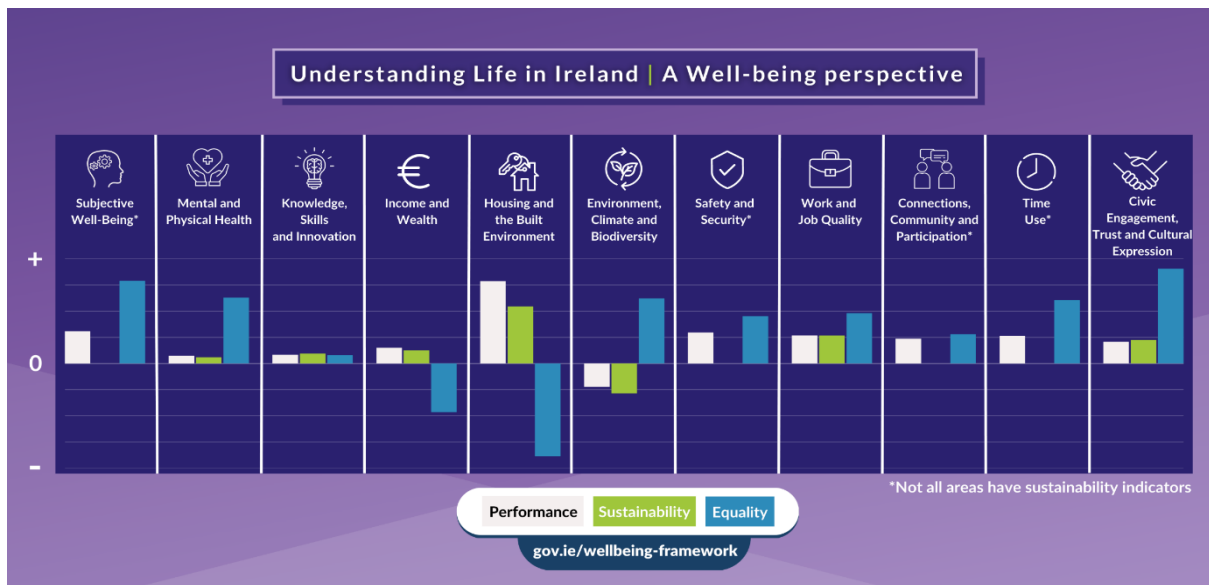
(Source: D/Taoiseach, 2023)

In June 2023 D/Taoiseach published *Understanding Life in Ireland: The Well-Being Dashboard 2023*<sup>8</sup>, which provided an update on Ireland’s progress across the 11 Dimensions of the Framework, by assessing the indicators tracked by the CSO. The report provides a summary of the performance of each dimension against international benchmarks and across the areas of equity and sustainability

<sup>8</sup> Understanding Life in Ireland: The Well-being Framework (2023)

(where indicators are available). The results of this exercise summarised in Figure 2, show that well-being performance against international benchmarks was positive across 10 of the 11 dimensions, with only one dimension, the Environment, Climate and Biodiversity, showing a negative performance. In relation to Sustainability, the Environment, Climate and Biodiversity was also found to be the only dimension of the framework which recorded a negative performance.

**Figure 2 – Well-being Dashboard 2023**



(Source: D/Taoiseach, 2023)

Access to public transport services is a component of the Housing and Built Environment dimension of the framework. However, most of the performance indicators monitored by the CSO in relation to this dimension relate to the quality of housing stock, with the indicator “distance to everyday services” the only one which captures elements related to public transport accessibility. The only other performance indicator monitored by the CSO which directly mentions transport is the number of road deaths recorded under the Safety and Security dimension. As a result, it is difficult to assess the impact which the transport sector has on societal well-being from analysing the existing results of the well-being report and the current suite of indicators alone. This paper will help supplement the national Well-being Framework and dashboard and support the review of the framework which has been committed to in the next three to four years. The next section will explore the relationship between transport and well-being in greater detail.

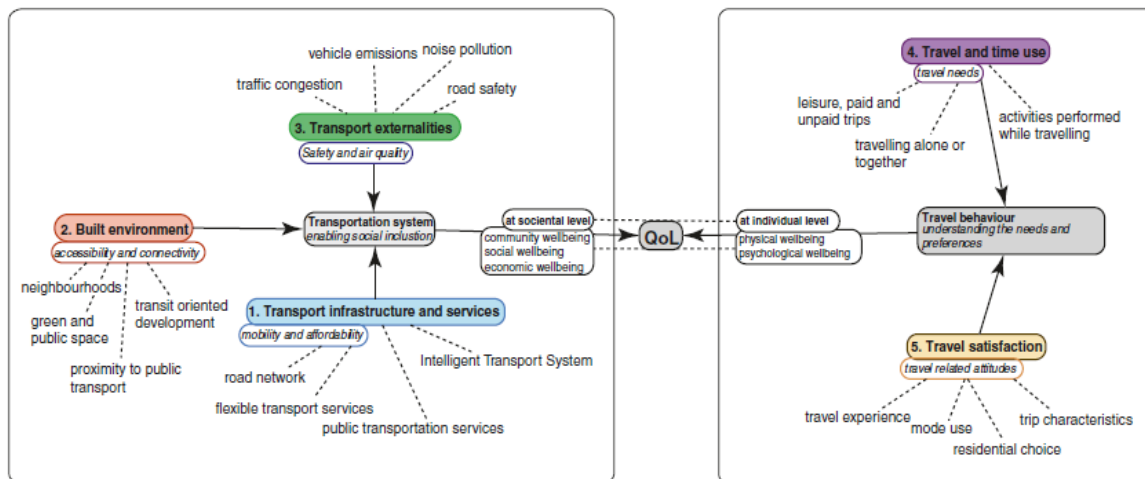
## 2.4 Well-being and the Transport Sector

Having defined well-being in broad terms, it is important to consider the transport sector’s contribution to well-being and how transport can enable people to live meaningful lives. While it may seem difficult to directly connect the provision of transport infrastructure and services to the



dimensions of the Well-being Framework, there are a number of ways which the transport sector can both directly and indirectly impact on individual and societal well-being. Authors such as Chidambaram<sup>9</sup>, and Mouratidis<sup>10</sup>, have modelled how aspects of quality of life are aligned with transport. Figure 3 provides an illustration of how the various aspects of the transport sector can both directly and indirectly impact on individual and social well-being and overall quality of life (QoL).

**Figure 3 – Transport Modes Connection to Aspects of Quality of Life**



(Source: Chidambaram, 2022)

The Housing and the Built Environment dimension of the existing well-being framework is the only one where the transport sector is specifically referenced. Transport directly affects the Built Environment in a number of ways, from shaping land-use and the design of public spaces and neighbourhoods. It also impacts the Built Environment by influencing the proximity of users to transport services and the accessibility and choice of those services. The transport sector also indirectly impacts several other dimensions of well-being. At a societal level, the provision of transport is responsible for a number of negative externalities including road deaths and accidents and the production of greenhouse gases and local air pollution. These impacts relate to the Safety and Security and Environment, Climate and Biodiversity Dimensions of well-being respectively.

In addition to these societal level impacts, the transport sector is also responsible for a number of impacts and quality of life and well-being at the individual level, including time-use. For example, long commutes are linked to lower levels of physical activity, lower job satisfaction, and a reduction in subjective quality of life. The transport sector can also have an impact on the physical and mental

<sup>9</sup> Chidambaram, B., (2022). TRAWEL: A Transportation and Wellbeing Conceptual Framework for Broadening the Understanding of Quality of Life. In *Quantifying Quality of Life: Incorporating Daily Life into Medicine* (pp. 553-581). Cham: Springer International Publishing.

<sup>10</sup> Mouratidis, K., (2021). Urban planning and quality of life: A review of pathways linking the built environment to subjective well-being. *Cities*, 115, p.103229.

health dimension of well-being. By enabling the use of active modes such as walking and cycling, the transport sector can promote physical activity and support positive health outcomes. Another factor which can influence an individual's subjective well-being is their satisfaction with their mode of transport. This depends on a variety of factors including its safety, comfort, and cleanliness.

The transport sector can also contribute indirectly to other dimensions of the well-being framework. By enabling access to key services and amenities such as healthcare, educational and employment opportunities, transport can impact on dimensions such as Connection to Community and Participation, Work and Job Quality, Income and Wealth and Physical and Mental Health. These impacts are evident when considering the transport sector through an accessibility rather than a mobility lens, this concept will be explored in detail in Section 4.

### 3. Well-being Perspective within Public Policy Analysis

In order to examine the application of the well-being framework in practice it is useful to analyse its role in assessing a specific policy area. To support the assessment of well-being in public policy the DPENDR has developed a policy analysis tool<sup>11</sup>. This tool provides a step-by-step guide to analyse the well-being impact within a specific policy area:

- The first stage of the process involves identifying the specific policy challenge or programme which will be evaluated.
- The next step is to use the strategic policy context to understand what is meant by well-being, reviewing relevant national policy documents to provide context on what is meant by well-being in this specific area.
- The third step involves linking the policy goals or objectives to existing dimensions of the well-being framework for Ireland.
- The fourth step is to then identify a set of potential well-being indicators to monitor well-being in that context.
- The fifth and final step is to then analyse the results of these indicators to make inferences as to how well-being has changed over time and identify differences between specific groups or cohorts. The five stages are summarised in Figure 4.

The remainder of this paper will focus on applying this tool to a specific policy area in the transport sector. The focus of this paper will be on climate policy in the land-transport sector. This area has been chosen because achieving our decarbonisation targets is a key national and transport sector specific

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<sup>11</sup> DPENDER (2022) Well-being and Public Policy Utilising a well-being perspective to inform public policy <https://www.gov.ie/pdf/242244/?page=1>

priority. Transport currently accounts for 19%<sup>12</sup> of Ireland's GHG emissions. The Climate Action Plan 2023 (CAP23) provides an emission reduction framework to meet the transport sector target of achieving a 50% reduction in emissions by 2030 (relative to 2018 levels) and achieving net zero emissions by 2050, as set out in the Climate Act and the sectoral emission ceilings<sup>13</sup> agreed by Government. Reports by the OECD on adopting a well-being lens while targeting emissions reductions have played an important role in informing climate policy and the development of the transport chapter in CAP23.

The goals to be assessed are those targeted within national climate policy, while the definition of well-being adopted within this context will be provided by OECD reports on how best to reduce transport emissions and support societal well-being. These policy objectives will be mapped to existing dimensions of the well-being framework through the budget tagging exercise completed by the Department of Transport, which attempted to match expenditure programmes and their accompanying performance targets with dimensions of the well-being framework.

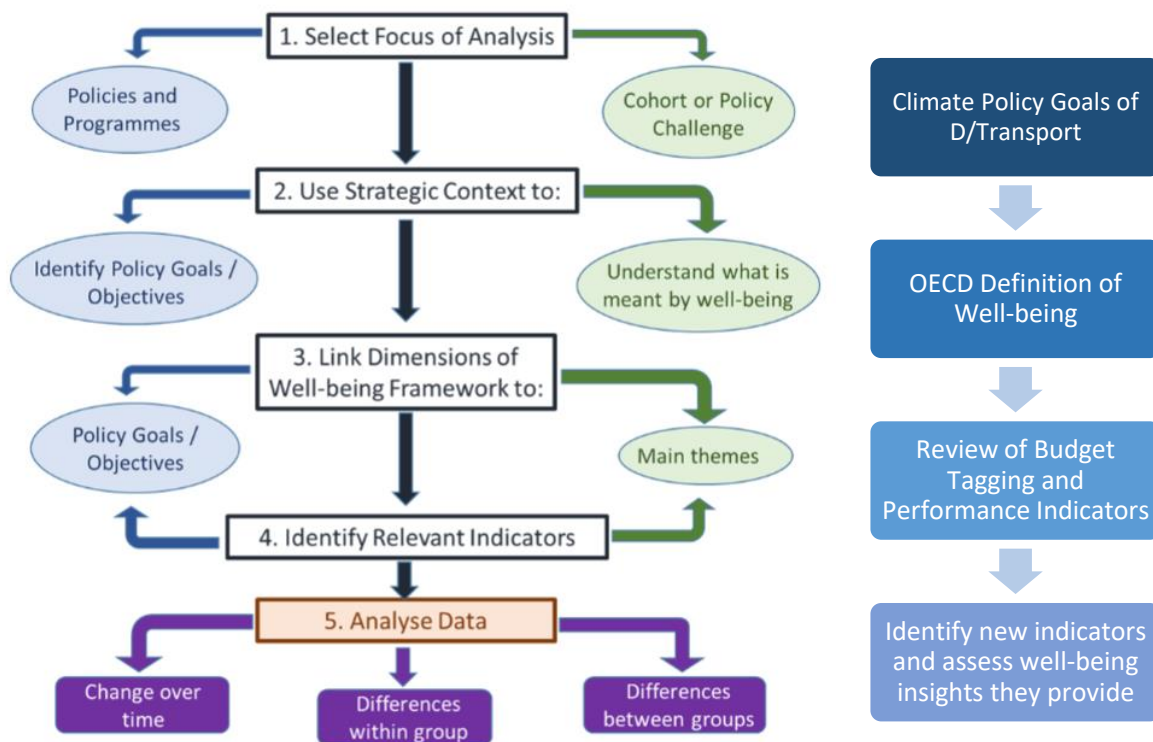
The paper will then proceed to examine the existing set of indicators used to assess climate policy and its well-being impacts within the transport sector and suggest additional indicators which could be used to fill gaps identified by the OECD. Finally, the paper will carry out high-level analysis of indicators which have been identified noting what insights they offer in assessing well-being impacts of programmes.

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<sup>12</sup> EPA (2023) <https://www.epa.ie/our-services/monitoring--assessment/climate-change/ghg/latest-emissions-data/>

<sup>13</sup> Sectoral Emission Ceilings (2022) <https://www.gov.ie/en/publication/76864-sectoral-emissions-ceilings/>

**Figure 4 – Public Policy Well-being Tool and Approach Taken in Paper**



(Source: DPENDR, 2023)

## 4. Applying a Well-being Perspective to Climate Policy in the Land-transport Sector

This section will outline how climate policy has been assessed within the Irish Transport sector. It will provide an overview of the OECD's *Redesigning Ireland's Transport for Net Zero* Report<sup>14</sup>, which recommended that Ireland move away from targets based on enhanced mobility and instead target sustainable accessibility in order to enhance well-being. It will discuss the changes that this has resulted in terms of the transport indicators reported in the Climate Action Plan 2023 (CAP23). This section will proceed to examine a broader set of KPIs captured within the Revised Estimate for Public Services (REV) for Programmes A, B and C which relate to the land-transport sector and discuss the outcome of the recent Well-being Budget Tagging Exercise.

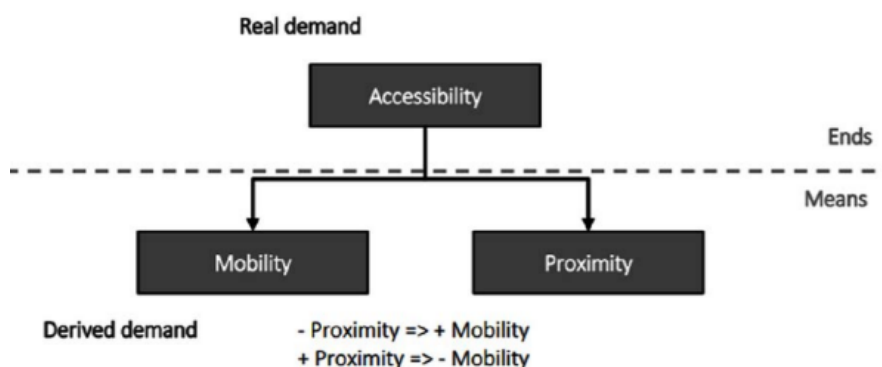
### 4.1 OECD Approach to Measuring Well-being in the Transport Sector

The OECD have been at the forefront of developing a well-being framework and accompanying evaluation methodologies to support the integration a well-being perspective into public policy. In relation to the consideration of well-being within the build-environment and transport sector, two

<sup>14</sup> OECD (2022) *Redesigning Ireland's Transport for Net Zero Towards Systems that Work for People and the Planet* <https://www.oecd.org/publications/redesigning-ireland-s-transport-for-net-zero-b798a4c1-en.htm>

recent OECD publications provide the basis for defining well-being and noting its interaction with climate policy goals. The 2019 report by the OECD *Accelerating Climate Action: Refocusing Policies through a Well-being Lens*, notes the benefits of analysing the impact of climate policies by adopting a well-being perspective, including accounting for synergies and trade-offs such as improvements in air quality or safety which may occur as a result of reducing GHG emissions<sup>15</sup>. A key point made in the report is that mobility has been a proxy indicator for measuring well-being in the transport sector, this in turn is reflected in the use of indicators focused on journey speed, travel times and effectiveness. Demand for transport and mobility is derived demand, meaning that transport users generally engage in travel to access other amenities, rather than for the utility they get from engaging in transport. In this sense, mobility can be thought of as a means rather than an end in and of itself. Access to amenities such as education, employment and healthcare opportunities (accessibility) is the ends which transport users are trying to achieve. Accessibility, defined in this manner, is a function of both mobility and proximity, the physical distance a user is located from their desired destination. This underscores the transport sector’s role as a key enable of well-being by providing access to opportunities and amenities which allow people to lead meaningful lives.

**Figure 5 – Accessibility in relation to Mobility and Proximity**



(Silva and Larsson, 2018 OECD)

Focusing on mobility as a measure of well-being in the transport sector can be problematic for a number of reasons, for example, in many cases, overall transport volumes can be high precisely because access to services and amenities is limited, causing people to travel longer distances and incur higher expenditure on travel, while generating greater CO2 emissions and air pollution. It also ignores the relationship between accessibility and proximity and the interaction between transport and land-use planning<sup>16</sup>. This need for proximity is reflected in concepts such as the ‘15-minute city’ and the

<sup>15</sup> OECD (2019) *Accelerating Climate Action Refocusing Policies through a Well-being Lens*  
<https://www.oecd.org/environment/accelerating-climate-action-2f4c8c9a-en.htm>

<sup>16</sup> OECD (2022) *Redesigning Ireland’s Transport for Net Zero Towards Systems that Work for People and the Planet*  
<https://www.oecd.org/publications/redesigning-ireland-s-transport-for-net-zero-b798a4c1-en.htm>

National Strategic Outcome (NSO) of Project Ireland 2040 to achieve compact growth within our towns and cities. Therefore, while keeping track of transport volumes will still be key to understanding trends in transport sectoral emissions, monitoring mobility alone is insufficient to assess the well-being impact of climate policy interventions within the transport sector<sup>17</sup>.

In 2022 the Irish Climate Change Advisory Council (CCAC) commissioned a report by the OECD with the aim of identifying key recommendations required for the transport sector to meet its 50% sectoral emissions ceiling target by 2030. The preparation of the report involved extensive engagement with a broad range of Irish transport stakeholders and its findings informed the development of the Transport Chapter of CAP23. The final report entitled *Redesigning Ireland's Transport for Net Zero*, concluded that mobility has been used as the primary measure for monitoring well-being in the Irish transport sector<sup>18</sup>. The report found that the current Irish transport system supports high levels of car dependency and that a focus on reducing emissions primarily through the electrification of the existing vehicle fleet was unlikely to result in substantial improvements to well-being, as it left issues of such as accessibility to services and road collisions unaddressed. The report recommended prioritising policies such as road space re-allocation to sustainable modes. In this regard, the report also recommended sustainable accessibility, rather than mobility, be adopted as the primary goal for transport policy. This involves targeting access through sustainable transport modes to amenities such as jobs, healthcare and leisure activities, which is better aligned with adopting an approach to decarbonisation and promotes societal well-being. The report recommends measurement frameworks should be amended accordingly, to assess the provision of sustainable accessibility provided by walking, cycling and public transport<sup>19</sup>.

The OECD Well-being Lens Report set out a number of proposed policy priorities for the transport sector, which are linked with and could support the overarching goal of decarbonisation, while also helping to improve well-being across the various dimensions of the Well-being Framework, and promoting sustainable accessibility. These linkages have been mapped out in Table 1, which also presents the relationship between proposed policy priorities, indicators and dimensions of the Irish and OECD Well-being frameworks.

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<sup>17</sup> Ibid

<sup>18</sup> Ibid

<sup>19</sup> Ibid

**Table 1 - Proposed Well-being Indicators for Transport**

Policy Priority	Proposed Indicators	OECD Well-being dimension	Ireland Well-being dimension
Limiting Climate Change	<ul style="list-style-type: none"> <li>Transport-related CO2 and other relevant GHG emissions such as N2O and CH4.</li> <li>Total and disaggregated data by transport mode, vehicle type and type of user.</li> </ul>	Natural Capital	Environment, Climate & Biodiversity
Enhancing Accessibility	<ul style="list-style-type: none"> <li>Accessibility to frequent public transport services. Share of population without easy walking access to public transport.</li> <li>Absolute accessibility; i.e. # of points of interest available by different modes of transport within different time thresholds.</li> <li>Transport performance.</li> <li>Proximity.</li> <li>% of population with access to a minimum number of points of interest by different transport modes and within different time thresholds.</li> </ul>	Job and earnings. Income and wealth. Housing. Education skills. Work and life balance. Social connections. Health status.	Housing and Built Environment  Income and Wealth Mental and Physical Health  Work and Job Quality Connections, Community and Participation.  Time Use.
Ensuring Affordability	<ul style="list-style-type: none"> <li>Accessibility indicators using cost instead or in addition to time. Share of household income spent in transport</li> <li>Housing plus Transport (H+T) affordability indicators</li> <li>Vulnerability index.</li> </ul>	Income and wealth. Jobs and earnings. Housing.	Income and Wealth
Ensuring Safety and Security	<ul style="list-style-type: none"> <li># of death and serious injuries (relative to total population, travel and # of vehicles) and by severity, age, gender and type of road user .</li> <li>Risk of exposure to crime in transport stops</li> </ul>	Personal security.	Safety and Security
Reducing local pollution	<ul style="list-style-type: none"> <li>Transport-related pollution emissions (PM2.5, PM10, NOx, etc.) measured in real world driving conditions by type and both at national and local level.</li> <li>Indicators linked to health</li> <li>Noise levels (dB).</li> <li>Toxic substance emission and release from transport projects (e.g. heavy metals).</li> <li>Land-use conversion and biodiversity impacts.</li> </ul>	Health status. Environmental quality. Natural resources.	Environment, Climate & Biodiversity  Mental and Physical Health

In section 5 the paper proceeds to examine the existing performance indicators used in the land-transport sector and assess potential improvements that could be made to align more closely with the indicators suggested by the OECD.

#### 4.2 Reforms to the Assessment of Climate Policy in Transport

The Transport chapter of CAP23 was informed by recommendations of the OECD *Redesigning Ireland's Transport for Net Zero* report. Unlike previous CAPs which placed a strong emphasis on achieving

decarbonisation goals through technology improvements, namely through the adoption of Electric Vehicles (EVS) and Biofuels, CAP23 placed an emphasis on achieving the overall goal of a 50% reduction in transport emissions by 2030, through adoption of an Avoid-Shift-Improve framework. This framework aims to mitigate, or *Avoid*, the need to engage in mobility through enhancements in land-use planning and locating amenities closer to users, *Shift* journeys on to sustainable transport modes such as walking, cycling and public transport and finally to *Improve* vehicle and fuel technologies so that mobility which is still provided by private vehicles uses cleaner power sources and fuels to further reduce CO2 emissions.

The shift in emphasis from achieving decarbonisation through technology related improvements to one based on a broader emissions reduction framework, is also reflected in the key performance indicators used in CAP21 and CAP23 respectively which are set out in Table 2. While CAP21 focused on framing targets around absolute vehicle fleet numbers CAP23 refers to vehicle targets as percentages of the total fleet. CAP23 also specifically sets out targets to reduce the number of kilometres travelled by 2030. Both of these approaches are aligned with adopting a sustainable accessibility approach rather than one based on mobility. CAP23 aims to mitigate the need to engage in private car travel as opposed to merely seeking to transfer these journeys to electric powered vehicles. CAP23 also introduces more detailed modal split targets setting out specific growth rates for the number of journeys undertaken by sustainable modes, again this is aligned with adopting a sustainable accessibility approach to monitoring the Plan’s implementation.

**Table 2 - Key Performance Indicators to be achieved by 2030 CAP21 and CAP23**

Area	CAP21 KPI	CAP23 KPI
Vehicle Kilometres	Reduce ICE km by 10%	Reduce total vehicles km by 20% Reduce total Car km by 20%  Reduce “commuting” car km by 20%
Fuel Use	N/A	50% reduction in fuel usage
Sustainable Transport Journeys	125,000 additional public transport and active travel journeys, and the rolling out of sustainable demand management measures	50% increase in daily active travel journeys  130% increase in daily public transport journeys.  25% reduction in daily car journeys  Daily Mode Share: 2018: 72% (car), 8% (PT), 20% (AT) 2030: 53% (car), 19% (PT), 28% (AT)
Escort to Education Journeys	N/A	30% shift to sustainable modes



Fleet Electrification	845,000 with a focus on BEVs 1,500 EV buses and expanding electrified rail services 3,500 low emission HGVs	Private Car Fleet EV share of total passenger car fleet (30%) EV share of new registrations (100%) 845,000 Private EVs 20% EV share of total LGV fleet. 95,000 commercial EVs 30% ZE share of new heavy duty vehicle registrations 3,500 HGVs 1,500 EV buses in PSO bus fleet; Expansion of electrified rail services.
Biofuel Blend	E10 B20	E10 B20

The Performance Indicators set out in CAP23 above, demonstrate how emissions reductions are currently tracked in the transport sector. The next sections will examine how expenditure in the land-transport sector is aligned with the existing dimensions of the well-being framework. The paper will also examine the broader set of performance indicators used to monitor the impact of transport expenditure and potential reforms to place a greater emphasis on well-being and align them more closely with the indicators recommended by the OECD.

## 5. Budget Tagging and Performance Indicators

### 5.1 Well-being Budget Tagging Exercise

Well-being budgeting is an attempt to incorporate a broader set of measures into the budgetary process, which provide a more holistic measure of quality of life in Ireland. This approach recognises that macroeconomic indicators are not necessarily reflective of societal developments and that alternative measures may be required to “capture broader living standards, distributional outcomes, or people’s lived experiences.”<sup>20</sup>

In order to provide more information to citizens on how public money is spent as part of the annual budgetary process, and what well-being objectives different programmes are attempting to address, a well-being budget tagging exercise was carried out by DPENDER with support from the finance divisions of government departments. During this exercise departments were asked to assign dimensions of the well-being framework to specific budgetary subheads. The results were then

<sup>20</sup> First Report on Well-being Framework for Ireland (2021) <https://www.gov.ie/en/press-release/fb19a-first-report-on-well-being-framework-for-ireland-july-2021/>

summarised to provide a breakdown of capital and current expenditure across each dimension of the well-being framework.

The results of the well-being budget tagging exercise for the Department of Transport, in relation to Programmes A, B and C, which related to the land-transport sector, are provided in the Table 3, these are:

- A - Sustainable Mobility - Active Travel and Greenways
- B - Sustainable Mobility - Carbon Reduction and Public Transport
- C - Road Networks and Road Safety

These three sub-heads have been singled out as they related to the land-transport sector and provide investment to achieve the decarbonisation goals of CAP23. Programme A targets the provision of walking and cycling infrastructure, programme B relates to expenditure items including Electric Vehicle (EV) grants, as well as the provision of public transport infrastructure and service. Programme C relates to investment in the road network, therefore it also has an important role to play in achieving our decarbonisation objectives and supporting a number of related well-being outcomes, such as reducing the number of deaths that occur as a result of traffic collisions. Total expenditure across these three programme areas accounted for over 95%<sup>21</sup> of the total gross expenditure allocated to the Department under the revised estimates process in 2023, see Table 3 for details.

**Table 3 – D/Transport Allocation Revised Estimates Process 2023**

Programme	Current €000's	Capital €000's	Total €000's
A- Active Travel and Greenways	2,641	356,024	358,665
B - Carbon Reduction and Public Transport	599,563	1,007,720	1,607,283
C - Road Networks and Road Safety	158,503	1,228,550	1,387,053
D - Civil Aviation	33,669	19,774	53,443
E - Maritime Transport and Safety	99,639	10,186	109,825
<b>Gross Total</b>	<b>894,015</b>	<b>2,622,254</b>	<b>3,516,269</b>

As part of the well-being budget tagging exercise departments were asked to list the first and second dimension of the well-being framework which they felt best aligned with the goals of the specific expenditure sub-head. The results of the results of the budget tagging exercise show the dimensions noted most often were Community Connections and Participation as well as Environment, Climate

<sup>21</sup> Revised Estimates for Public Services (2023) <https://assets.gov.ie/244538/26edc78f-49db-454f-817f-b27a40d030bc.pdf>

and Biodiversity. This is reflective of the significant role which these expenditure programmes play in enabling citizens to actively participate in their communities, in particular in relation to the provision of rural transport services and PSO services which by their definition provide socially beneficial but financially unviable transport services to communities. This also reflects the fact that transport is a significant contributor to Ireland's GHG emissions, and that decarbonisation is a key priority for the department.

The results also show that investment in greenway infrastructure and the decarbonisation programme has been identified as supporting the Mental and Physical Health dimension of well-being. This is in recognition of the co-benefits which are possible through incentivising the use of active modes such as walking and cycling and that the removal of local air pollution is associated improvements in human health, for example adopting a high share of EVs in the national vehicle fleet will support the reduction of a range of local air pollutants such as Nitrogen Dioxide which is associated with a range of adverse health outcomes.

The results show that Programme C has been tagged as supporting improvements in the Time-use and Subjective well-being dimensions. This is presumably because investments in the national and regional road network can often be associated with quicker journey times which in turn could lead to less time spent in heavy congestion and reduced commute times which, as noted above, have been associated with improvements in subjective well-being. Safety and Security has also been cited as a dimension of well-being which will be supported through investment in the road network. This reflects the fact that new investments and protection and renewal expenditure can be targeted to address specific issues related to road safety, such as improving a roads alignment to reduce the risk of collisions. The Work and Job Quality dimension is also listed under sub-head C6 but this presumably reflects the fact that this provides funding to road safety agencies which may result in improvements in job quality as opposed to expenditure in road safety having an influence on access to good quality employment opportunities.

It is notable that Housing and the Built Environment dimension was not identified as being impacted by any of the land-transport programmes. As noted above the Built Environment aspect of this dimension encompasses access to transport services as part of its definition. The reason for this dimension not being identified as being impacted by expenditure in the land-transport sector may be due to its framing as primarily relating to the availability and quality of housing. The link between transport and the built environment is not explicitly set out in the broad summary of the dimensions which was provided to Finance Divisions and policy divisions when assigning the dimensions. It may also be reflective of the fact that targeting sustainable accessibility, as called for by the OECD, is still a

relatively new concept which needs to be embedded within the overall objectives of the transport sector.

**Table 4 – Outcome of the Budget Tagging Exercise for D/Transport**

Strategic Programme	Sub-head	Well-being Dimensions Current Expenditure	Well-being Dimensions Capital Expenditure	Key Impact Indicators
A -Sustainable Mobility Active Travel and Greenways	A3 Active Travel Infrastructure	1. Community, Connections and Participation 2. Environment, Climate and Biodiversity	1. Environment, Climate and Biodiversity 2. Community, Connections and Participation	<ul style="list-style-type: none"> <li>No. of people walking into Dublin City Centre as % modal share of daily trips</li> </ul>
	A4 Greenways	N/A	1. Mental and Physical Health 2. Community, Connections and Participation	<ul style="list-style-type: none"> <li>No. of people cycling into Dublin City Centre as % modal share of daily trips – all modes</li> </ul>
B - Sustainable Mobility - Carbon Reduction and Public Transport	B3 Carbon Reduction	N/A	1. Environment, Climate and Biodiversity 2. Mental and Physical Health	<ul style="list-style-type: none"> <li>Total No. of electric vehicles (ZEVs)</li> <li>Total No. of electric vehicles as % share of vehicle registrations.</li> </ul>
	B4 Public Service Provision Payments	1. Community, Connections and Participation 2. Environment, Climate and Biodiversity	1. Community, Connections and Participation 2. Environment, Climate and Biodiversity	<ul style="list-style-type: none"> <li>% of change year-on-year in public transport numbers:               <ol style="list-style-type: none"> <li>Bus</li> <li>Light rail</li> <li>Heavy rail</li> </ol> </li> </ul>
	B5 Public Transport Investment	N/A	1. Environment, Climate and Biodiversity 2. Community, Connections and Participation	<ul style="list-style-type: none"> <li>% change year on year in operated PSO bus capacity measured in passenger seat kilometres</li> </ul>
C - Road Networks and Road Safety	C3 National Roads Investment	1. Time Use 2. Safety and Security	1. Time Use 2. Subjective well-being	<ul style="list-style-type: none"> <li>Driving Licences (Including Learner Permits) Issued</li> <li>No. of Fatalities recorded on our roads</li> <li>Motor tax receipts processed on the NVDF</li> <li>Alcohol Number of Specimens</li> </ul>

				received under the RTA (Road Traffic Act) <ul style="list-style-type: none"> <li>• Toxicology Preliminary Analyses</li> </ul>
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## 5.2 Performance Indicators in Transport

In addition to recording the outcome of the Budget Tagging exercise, the key impact indicators from the Public Service Performance Report are also provided for each sub-head in the table above. The Public Service Performance Report provides an overview of what is being delivered and the impact this spending is having on society. The latest version of the performance report was published in June 2023. The indicators it includes are a subset of the more comprehensive list of impact indicators tracked by the Department of Transport and reported as part of the Revised Estimates Process (REV). The full list of performance indicators reported in the 2023 REV for Programmes A, B and C is provided in Appendix 1 below.

These indicators can be compared with the ones recommended by the OECD to track the overall well-being impact of the transport sector noted in Section 4 above. For programme A, indicators focus on the share of journeys which take place using active modes such as walking and cycling. The REV contains a broader set of indicators noting the proportion of primary and secondary school students travelling to school by active modes. This is well aligned with the CAP23 target of reducing escort to education journeys by private car. The REV also contains indicators which examine rates of cycling and the perception of safety of cycling by different cohorts including men and women, people with disabilities and younger and older transport user groups. This data is drawn from the NTA’s Walking and Cycling Index<sup>22</sup> which currently only covers Dublin, but there is an action under the Sustainable Mobility Policy to expand the coverage of this survey to the regional cities of Cork, Galway, Waterford and Limerick. The indicators tracked under Programme A are broadly aligned with those suggested by the OECD. Tracking indicators such as perception of safety provides insights into user’s subjective well-being when engaged in walking and cycling and helps identify barriers in uptake.

In relation to Programme B, indicators are divided into three themes, these are:

- Decarbonisation Indicators
- Indicators related to the uptake of Electric Vehicles (EVs)
- Public Transport Capacity and Geographical Distribution Indicators

<sup>22</sup> <https://www.nationaltransport.ie/news/bike-life-dublin-2021-walking-and-cycling-index/>

Decarbonisation indicators track the total level of GHG emissions within the transport sector as well as the share of biofuels in the petrol and diesel fuel mix. The number of EVs on Irish roads and their proportion of the total fleet is also captured under the REV and performance report. Tracking the share of EVs as a proportion of the national fleet rather than just their absolute number is aligned with the approach adopted in the CAP23 and the OECD report which informs it, which notes the need to shift away from metrics which promote greater levels of mobility, for example through increasing the total size of the car fleet. In addition to monitoring GHG emissions, it would be helpful to track local air pollutants as these pollutants Nitrogen Dioxide (NOx) are associated with a range of adverse health outcomes which are likely to undermine well-being in both the Mental and Physical Health and the Environment, Climate and Biodiversity dimensions of well-being.

A number of performance indicators are provided to assess the provision of public transport services. These relate to the modal share of public transport users, as well as the relative change in patronage over the last year. Average journey travel times are also reported for a number of intercity and commuter rail journeys. When these performance metrics are compared to those recommended by the OECD it is apparent that while they do a good job in capturing mobility demand and performance, through metrics on speeds and usage, there is scope to improve their focus on sustainable accessibility. The indicators do not provide a sense of the level of accessibility public transport services provides or the ease with which good quality and high-frequency public transport services are available to users. Public transport indicators would also benefit from the addition of perception of safety indicators similar to those used in the active travel. Broader metrics such as indicators to assess the affordability of transport services are also absent.

Road safety indicators include number of road fatalities as well as indicators related to the processing of motor tax records and penalty point notices. In order to help assess the well-being impact of climate interventions, it would be useful to also report the number of active travel and vulnerable road user deaths recorded on Irish roads each year.

## 6. Developments in Data Sources

Data from a number of the performance indicators discussed above provide insights into well-being trends are only available at irregular reporting intervals, for example data on modal share is drawn from the Census which is only carried out once every five years. While this has been supplemented by more regular surveys such as the CSO's National Travel Survey and the NTA's National Household Travel Survey (NHTS), the lack of a consistent annual data source for certain indicators has hampered the ability to analyse trends in travel patterns. In order to address this issue, the NTA have committed to carrying out their NHTS on an annual basis. This is a comprehensive survey of transport users which

applies a travel diary approach, to note the trip making patterns of all household members over the age of four. This provides a rich data source which will be updated on an annual basis which should allow more up to date analysis of trends in data and factors impacting well-being in the Irish transport sector.

To achieve the substantial behavioural change targeted in CAP23, the Department of Transport is undertaking a multi-faceted, multi-year climate action and sustainable mobility communications and engagement strategy. In order to get a baseline of current public attitudes towards sustainability mobility and issues related to the decarbonisation of the transport sector, the Department of Transport partnered with the polling company Red-C to carry out a survey that assess transport users' attitudes to a range of issues. This includes willingness to engage in sustainable mobility initiatives as well as barriers and enablers that would facilitate this. One of the key aims of the surveys, which will run twice yearly, is to monitor the success of the various deliverables under the engagement strategy as well as actions under CAP23 and the Sustainable Mobility Policy. In addition, the survey can also be used to monitor some of the well-being impacts of proposed climate policy interventions. Potential indicators include monitoring the number of respondents reporting barriers to engaging in active travel and use of public transport, and assessing if attitudes change over-time as a result of the provision of additional infrastructure or services. The survey also allows for results to be analysed across different cohorts of the population based on region or other demographics. Some of the key insights from this survey have been published ahead of a national advertising campaign that commenced in August 2023.

## 7. Potential Well-being Indicators

This section will examine the potential to use existing data sources which are already publicly available to track indicators related to well-being in the land-transport sector and support the monitoring of well-being impact climate policy interventions. The headings below are based on the potential indicators identified by the OECD to monitor well-being impact of climate policy in the transport sector. They are also informed by the data gaps identified in the assessment of the well-being budget tagging exercise and through the assessment of performance indicators in the previous sections. In addition to identifying data gaps this section will also provide some high-level analysis of the well-being insights offered by these potential indicators.

### 7.1 Sustainable Accessibility Indicators

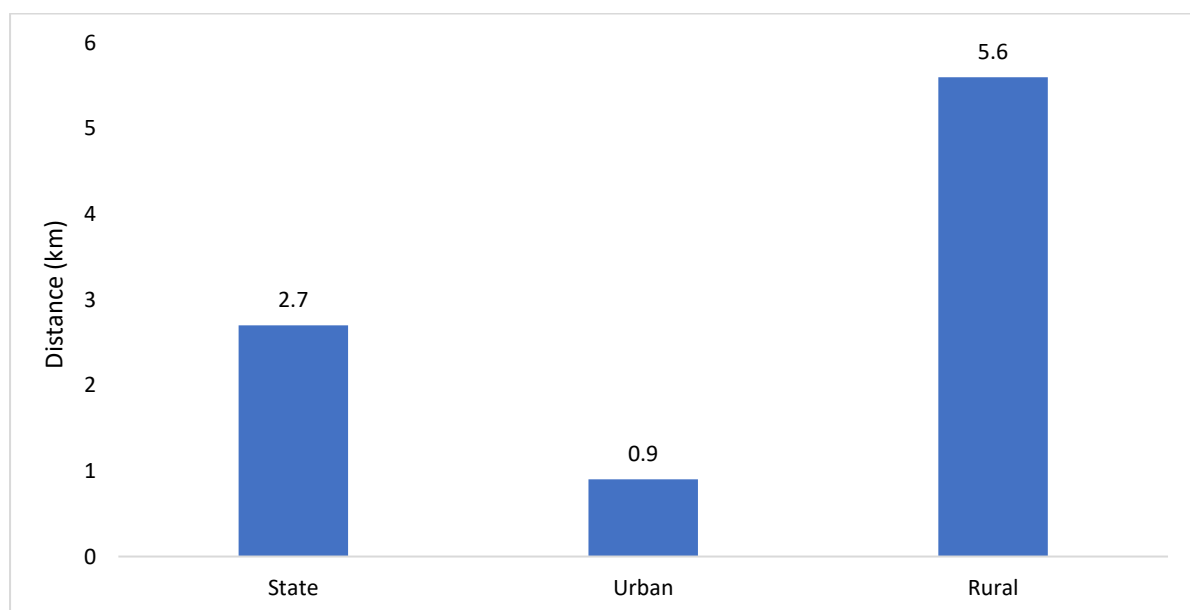
As identified by the OECD, monitoring the impact of interventions on sustainable accessibility, is core to being able to accurately assess the well-being impact of climate policy interventions. As outlined in Section 4 above, accessibility relates to the concepts of physical proximity or the location of a

transport user close to amenities which they wish to access as well as mobility which relates to factors such as the amount of time it takes to complete a journey. As noted in Section 5 above current performance indicators tend to focus on journey travel times and do not account for the spatial proximity of users to amenities. It is important to note that the concept of Sustainable Accessibility is closely related to the interlinkage between transport and land-use planning. Therefore, addressing issue such as fostering greater levels of density in our urban areas and supporting planning interventions such as the 15-minute city/town, as targeted within the National Planning Framework (NPF) are beyond the scope of just the transport sector to address, but will require close engagement with the Department of Housing, Local Government and Heritage (DHLGH) and Local Authorities.

### 7.1.1 Distance form Public Transport Services

In order to assess well-being under the Housing and Built Environment dimension of the well-being framework the CSO tracks the Average Distance to Everyday Services. This indicator refers to the average distance of residential dwellings to everyday services in Ireland such as schools and hospitals and provides insights on the differences in service accessibility within urban and rural areas. This indicator also provides information on the average distance of households to their nearest bus stop. The results of this indicator, which are set out in Figure 6, shows that the average distance for a house to the nearest public transport stop was 2.7km. While this metric was significantly lower for urban areas and higher for rural areas. This is in line with the provision of public transport services in more densely populated urban centres.

**Figure 6 – Average Distance of residential dwelling from Bus Stop**

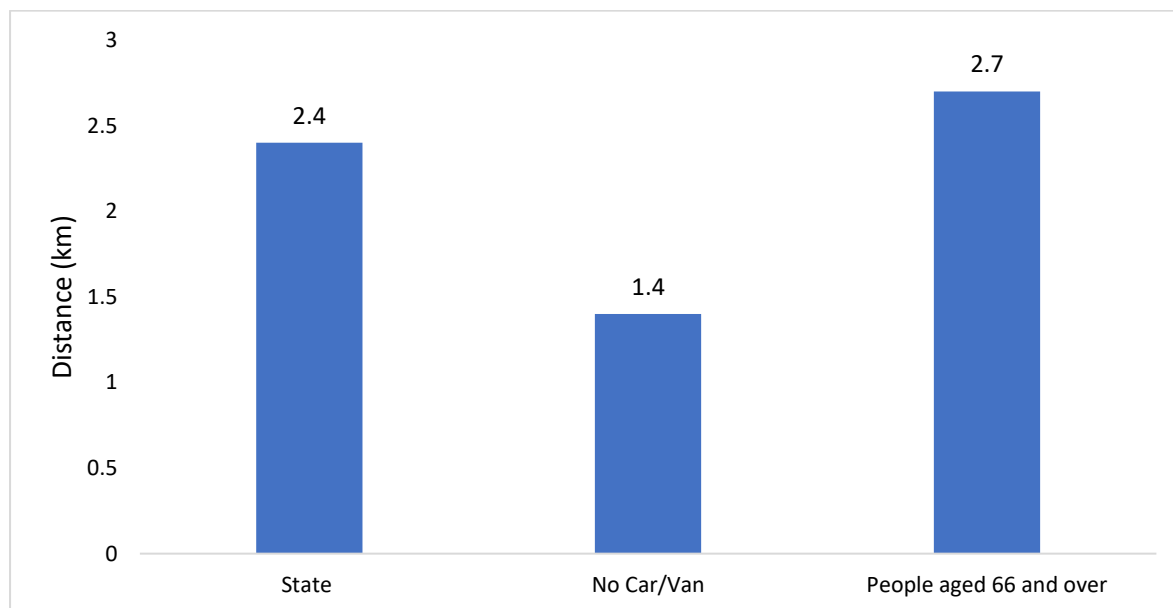


(Source: CSO, 2019)



Separately, the CSO in conjunction with Transport for Ireland (TFI) conducted an examination of the share of the population located within a variety of distance-based catchments from public transport stops, (Luas, Train and Bus stops), it also assessed the frequency of services provided at those stops. Results are based on the 2016 Census and the TFI Network in 2019. In addition to providing information on the national average distance to access public transport services, this metric also provides insights for specific cohorts of the population such as for the distances households who do not own a car or van, or older people aged 66 and over, have to travel to access public transport services. These indicators show that on average older people tend to be located further away from public transport services compared to the population as a whole. While households who do not own a private car or van tend to be located nearer to public transport services. This has important implications for monitoring well-being as ensuring that transport is accessible to older population cohorts and those who may not have access to alternative private transport modes is vital in ensuring a just transition.

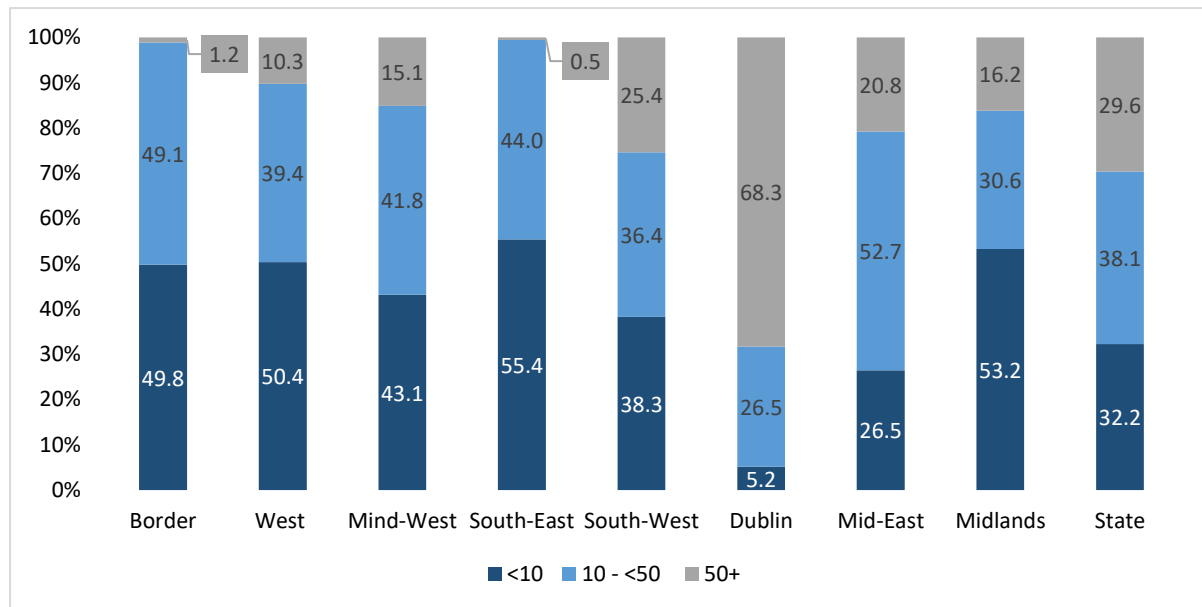
**Figure 7 – Average Distance from Public Transport Stop**



(Source: CSO, TFI, 2019)

An important aspect of sustainable accessibility is the degree to which transport users can access reliable and frequent sustainable transport modes. Results based on an analysis of the CSO and TFI data are reported at the County and city level, but for illustrative purposes have been presented at the NUTS 3 Regional level of disaggregation in Figure 8.

**Figure 8 - % Public Transport Services Per Day at Nearest Public Transport stop by Region**



(Source: CSO, TFI, 2019)

These results indicate that the percentage of the population reporting access to frequent public transport modes is the highest in the Dublin region and lowest in the Border region which includes Cavan, Donegal, Leitrim, Monaghan and Sligo. While this is not a surprising result, given that urban areas tend to have greater frequencies of public transport services due to higher population densities, it does provide useful information on the availability of high-frequency services across different regions. This indicator could be used to track the extent to which the level of access to frequent public transport services changes in response to the provision of public transport infrastructure and services. These metrics could be used in conjunction with passenger usage data to monitor the impact of Connecting Ireland and rural transport services.

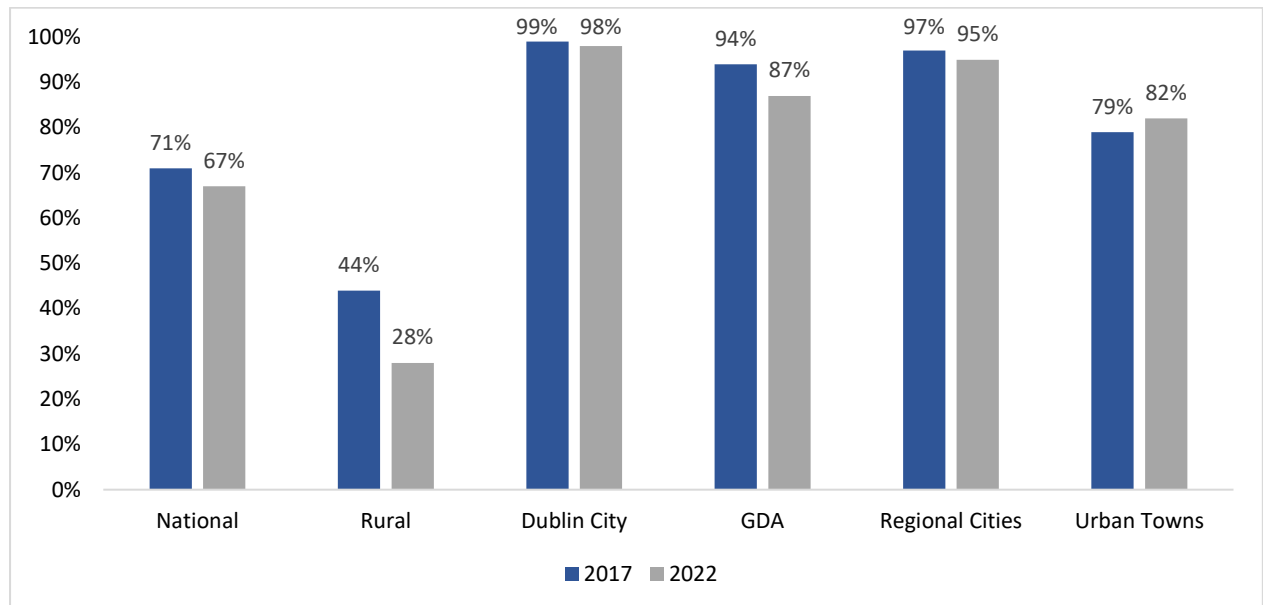
There are some potential challenges associated with the use of these indicators, including their reliance on Census data as an input, meaning that data on settlement patterns could only be fully updated every five years. However, a potential option would be to hold the population profile as noted in the Census constant, and to update the data on the provision of new public transport stops and services provided by TFI on an annual basis. This would provide a useful indicator to assess the overall level of accessibility across the public transport network as well as offering insights into specific population cohorts such as older, rural or car dependent households which can help in assessing the efficacy of specific policy interventions and monitoring their well-being impact.

### 7.1.2 Walking Accessibility Indicators

Another potential measure of accessibility is provided by the NTA's NHTS. The survey includes a question on the amenities located within a 15-minute walk of the respondents home, including a shop,

doctor or bus stop. The number of respondents reporting living within 15-minutes of a bus stop provides a measure to assess access to public transport services across different regions. Figure 9 presents the results for the 2017 and 2022 surveys.

**Figure 9 - % of Respondents within a 15-minute walk of a Bus Stop**



(Source: NTA NHTS, 2017, 2023)

Figure 9 shows that while there is little change in most of the areas there is a significant fall in the proportion of rural residents reporting that they live within a 15-minute walk of a bus stop from 44% in 2017 to 28% in 2022. This indicator uses self-reported data and as such may be subject to respondent error. However, it could be used to provide a high-level indication of the perceived ease of accessing the public transport network experienced across the country, which is an important factor to consider when attempting to incentivise behavioural change away from private car travel and towards sustainable transport modes. As noted above the NHTS will now be undertaken on an annual basis which should allow for regular comparison of any changes as a result of policy interventions.

### 7.1.3 Public Transport Accessibility Levels

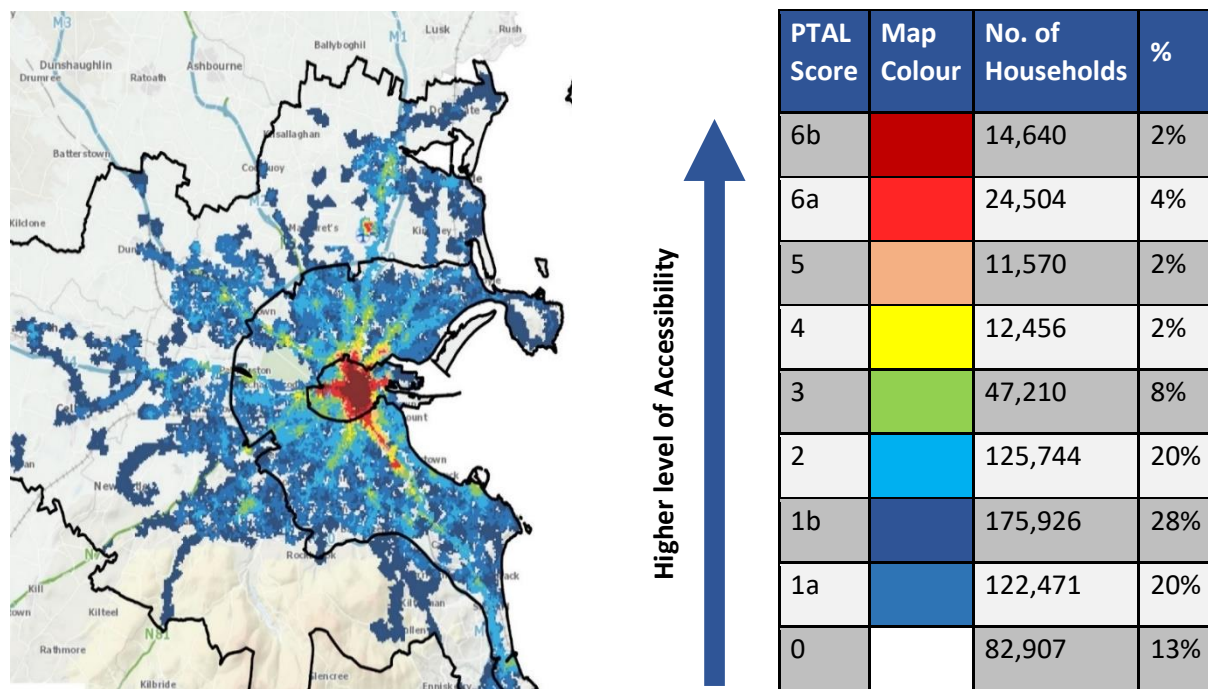
While the indicators discussed above provide an indicative sense of the level of sustainable accessibility provided by investments in public transport and active travel infrastructure and services, they have issues such as the use of self-reported data, or infrequent reporting periods. There is therefore a need for an indicator based on observed data, which is updated on a regular basis to provides insights into the level of sustainable accessibility provided by the transport network. A potential source of this indicator is the Public Transport Accessibility Levels (PTAL) tool. This tool was

initially developed by Transport for London (TfL) to assess the level of accessibility provided by the transport network and is currently being adopted for an Irish context by the NTA. The PTAL tool measures the connectedness of an area combining the walking/cycling journey time to a public transport stop and the level of service at that stop.

The calculation of the PTAL involves inputting data on the existing walking and cycle network, average and standard wait times at the transport stop, drawn from the Transport for Ireland Journey Planner data, which will be updated on an annual basis. The result is an index which assigns a colour based on the level of access to the public transport system within a specific 100m x 100m grid square, which can then be reported as in heat map. The accessibility score ranges from 0 to 6b with higher scores denoting a greater level of accessibility. When interpreting the results of the PTAL calculations it is important to note that public transport stops which are served by a greater number of services are more likely to receive a higher PTAL score. Therefore, a street or area with a greater number of public transport services may score higher than one with fewer high frequency services. It is also important to note that this system of scoring reflects the methodology used by TfL and the NTA is currently working on updating it to align more closely with the level of service available across the Irish transport network.

The results of PTAL analysis can also be used to provide insights on the level of accessibility provided by an entire transport network. Figure 10, shows a sample PTAL output for the Dublin Metropolitan Area. The PTAL output can also be combined with other data sources to provide insights on the level of public transport accessibility currently available across the network. For example, the table and map below were generated by using the An Post GeoDirectory of household locations. It shows the number of households recorded within each PTAL band.

**Figure 10 – Sample PTAL Output Dublin Metropolitan Area**



(Source: NTA, An Post GeoDirectory, 2023)

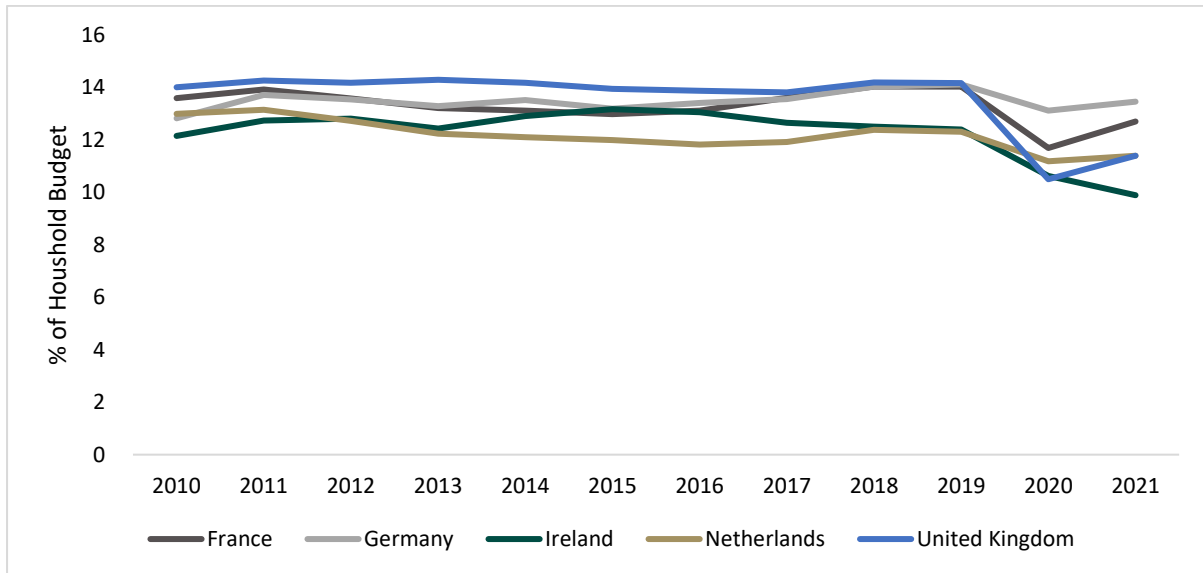
While this is only a sample output, it demonstrates that the PTAL tool can be used to provide insights about the level of accessibility within a specific transport network. Given that the intention is to update the PTAL data on an annual basis, there is the potential to use PTAL scores as an ongoing indicator to be included in the REV and the Public Service Performance Report. Similar analysis could also be prepared for the regional cities of Cork, Galway, Waterford and Limerick. These indicators could be used to monitor the level of access to the public transport network, by tracking if the number of households or individuals in higher PTAL bands increases over time. This information could support monitoring well-being by providing an estimate of the level of sustainable accessibility across the network and help evaluate the impact of interventions such as major investments in public transport infrastructure or services. PTAL has the advantage of capturing the level of accessibility of the walking and public transport network within a single indicator. The fact that PTAL can be combined with other data sources, such as CSO Census data, means that there is also potential to assess the level of accessibility for different groups within society, such as different age cohorts or income deciles, which could support monitoring the well-being impact across a number of other dimensions of the well-being framework.

## 7.2 Affordability Indicators

In order to enhance well-being it is important to ensure that sustainable modes are affordable to all transport users. This can be assessed through examining the proportion of total household expenditure spent on transport over time. The OECD reports the percentage of a household budget

spent on transport, which includes expenditure on private vehicles and operational expenditure on personal transport equipment.

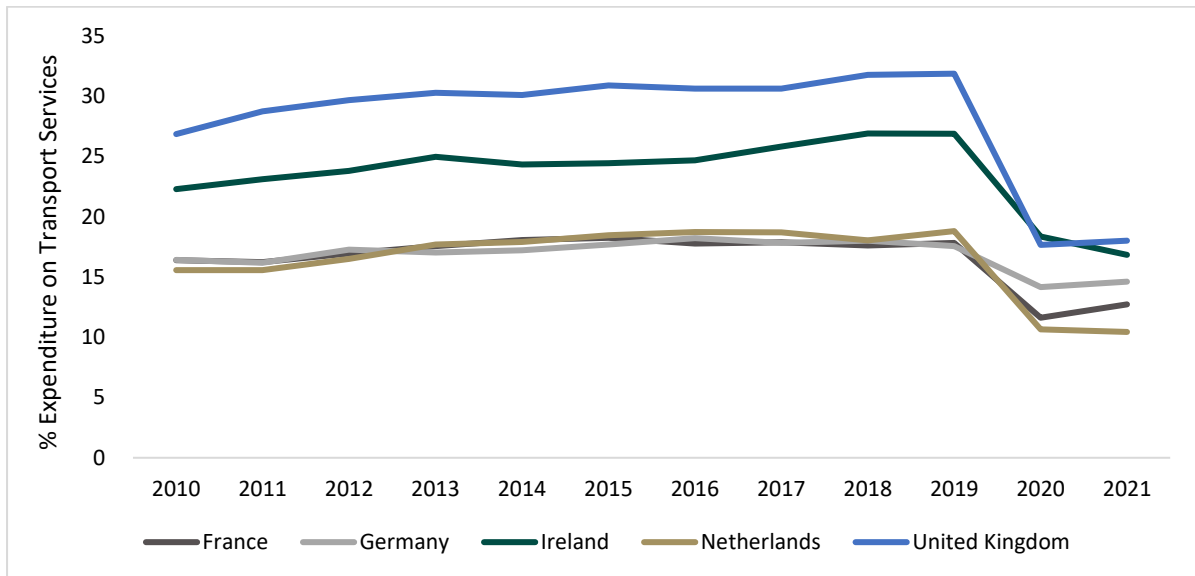
**Figure 11 - % of Household Budget Spent on Transport Selected OECD Countries**



(Source: OECD, 2021)

Analysing these figures shows that for this metric Ireland is broadly in line with a number of peer countries averaging just over 12% of the household budget being spent on transport per annum over the period 2010-2021. A steep decline in transport expenditure is evident in the years 2020 and 2021 across all countries as a result of the Covid-19 pandemic and the introduction of lockdown measures including significant restrictions on private mobility.

**Figure 12 - % Share of Household Expenditure on Transport Services as a Total of Transport Expenditure Selected OECD Countries**

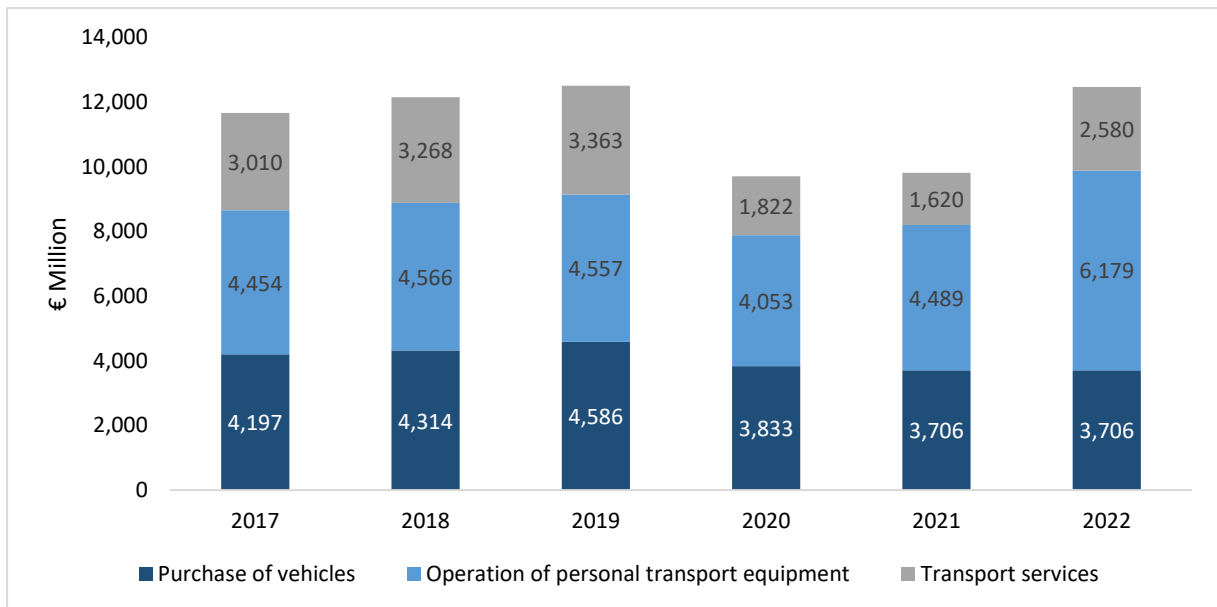


(Source: OECD, 2021)

The OECD also provides data on the proportion of household expenditure which is spent specifically on transport services such as the purchase of bus and rail tickets. This data shows that a greater proportion of Irish transport expenditure was spent on transport services compared to other peer countries, only the UK is recorded as spending a greater proportion of transport expenditure on transport services over the period 2011-2021.

This indicator can be used to provide useful insights on the affordability of the transport system. Provisional data from the CSO, illustrated in Figure 13 below, shows the household consumption spent on transport each year and its components. What is notable is that although total transport expenditure in 2022 has rebounded to approximately the same level as prior to the pandemic, the share of expenditure on transport services has fallen considerably from an average of 27% of total transport expenditure over the period 2017-2019 to 21% in 2022. Conversely, the share of expenditure on operation of personal transport equipment has increased from 37% over 2017-2019 to 50% in 2022. This may be reflective of policy interventions such as the public fare reduction and external drivers such as the significant increase in fuel costs experienced in recent years. These trends demonstrate the potential use of this indicator to track the impact of policy over time, compare Ireland to international benchmarks and assess the well-being impact of schemes designed to ensure that transport, and specifically sustainable mobility, remains affordable to households over time.

**Figure 13 – Personal Consumption on Transport**



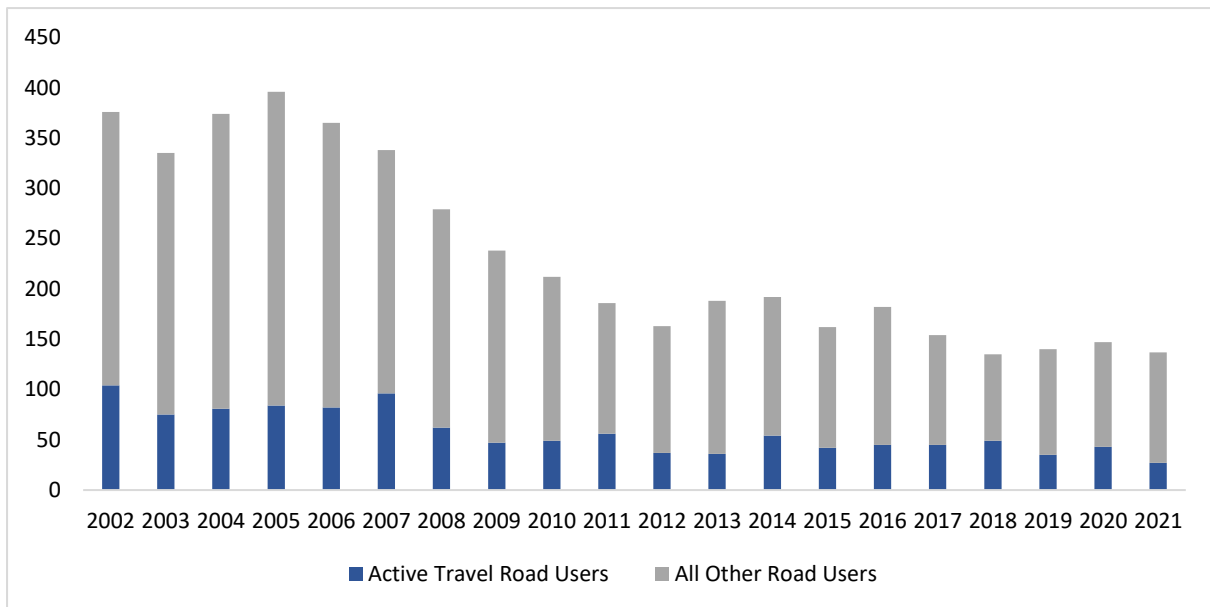
(Source: CSO, 2023)

### 7.3 Safety Indicators

Road safety is another important determinant of well-being within the transport sector. Currently data on the number of road fatalities per year is captured by the Road Safety Authority (RSA) and reported as an indicator under the Safety and Security dimension of the CSOs well-being dashboard. This indicator is also used to assess the performance of investment in the road network. However, as more road-space is reallocated to active travel, in order to achieve the walking and cycling modal shift targets set out in CAP23, and in order to support the monitoring of well-being when assessing the performance of Programme A, which relates to the provision of cycling and walking infrastructure, it may be useful to highlight the number of walking and cycling deaths or serious injuries, that occur on Irish roads. These deaths could be reported as a proportion of the total number of fatalities.



**Figure 14 – Road Fatalities by Type of Road User 2002 – 2021**



(Source: RSA, 2022)

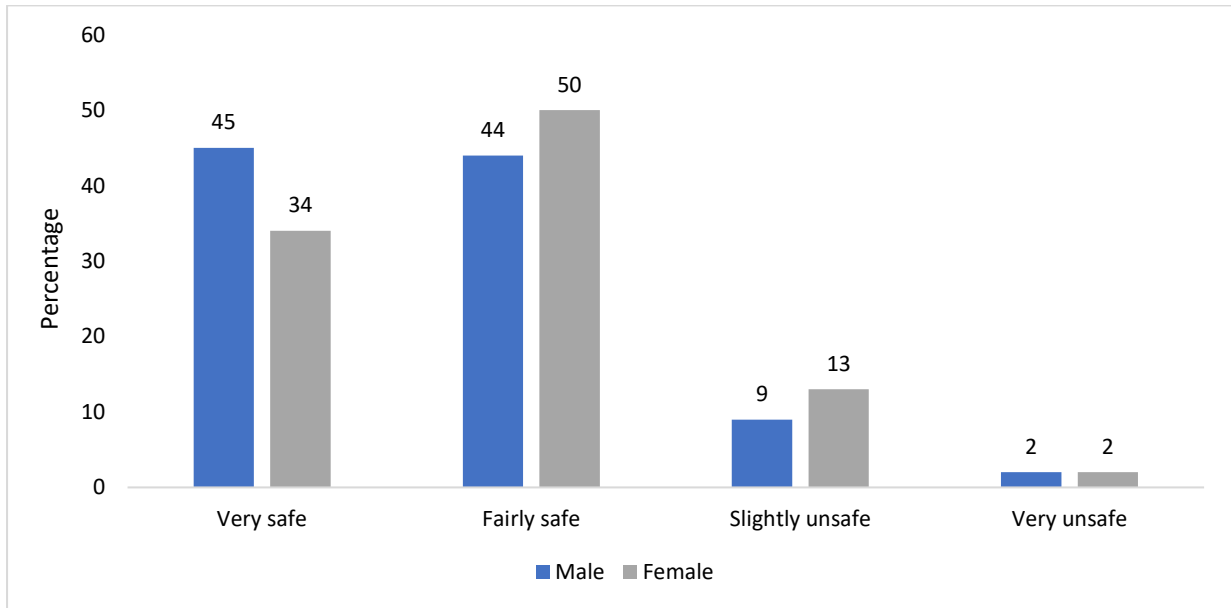
Figure 14 above illustrates that a substantial proportion of deaths recorded over 2002-2021 have been pedestrian deaths. While the number of total road fatalities has decreased in the last twenty years, the proportion of Active Travel Road User deaths has stayed in the same range of between 20% to 30% of all road users. By reporting on the proportion of active travel fatalities the Department of Transport can acknowledge trends in fatalities in a sub-group of road users which is important not only due to the tragic loss of life of the individuals involved but also because of the future needs and ambitions of the Department of Transport to decarbonise transport sector.

While monitoring adverse safety outcomes such as the number of road deaths, provides useful information to support monitoring of well-being, it is also important to assess factors which contribute to subjective well-being when traveling. One of these factors is perception of safety when using a transport service. The Transport Infrastructure Ireland, “Traveling in a Woman’s Shoes” Report found that creating a safer traveling environment and improving the perception of safety was particularly important for encouraging more women to engage in sustainable mobility. The report stated 34% of women have said that feelings of insecurity when traveling have stopped them from going out on occasion (compared to 24% of men)<sup>23</sup>. The same research revealed that 81% of transport users think that on average women can feel more unsafe on public transport compared to men. The NTA conducts a survey of public transport users as part of their annual customer satisfaction survey. The survey

<sup>23</sup> Travelling in a Woman’s Shoes Understanding women’s travel needs in Ireland to inform the future of Sustainable transport policy and design NTA 2020.

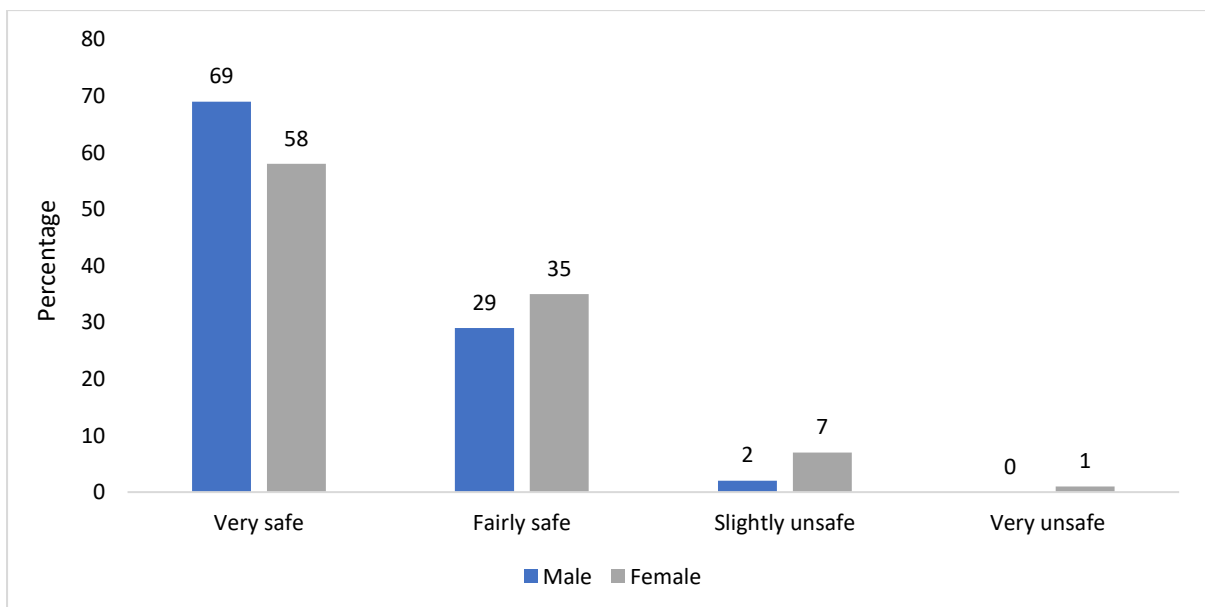
monitors user satisfaction across Bus, Luas and Inter City rail connections. One of the areas the survey examines is users' perception of safety. The survey measures the users' feelings of safety during the journey and asks respondents about their feelings of safety when waiting at the transport stop and while walking to and from the transport stop.

**Figure 15 - Feelings of Safety on Board a Luas Tram by Male and Female Gender**



(Source: NTA Customer Satisfaction Survey 2022)

**Figure 16 - Feelings of Safety When Waiting for a Bus by Male and Female Gender**



(Source: NTA Customer Satisfaction Survey 2022)

The survey also enables the assessment of differences in the feeling of safety between groups, including between men and women. Figures 15 and 16 above demonstrate the difference in perception of safety recorded between men and women when traveling by different modes. The ability to monitor in detail the differences in feelings of safety between groups will be vital in ensuing equality of access to transport services. Monitoring this indicator can help ensure that any issues of perception of safety are addressed over time to support achieving better well-being outcomes and enable greater levels of modal shift to public transport.

#### 7.4 Local Air Pollution Indicators

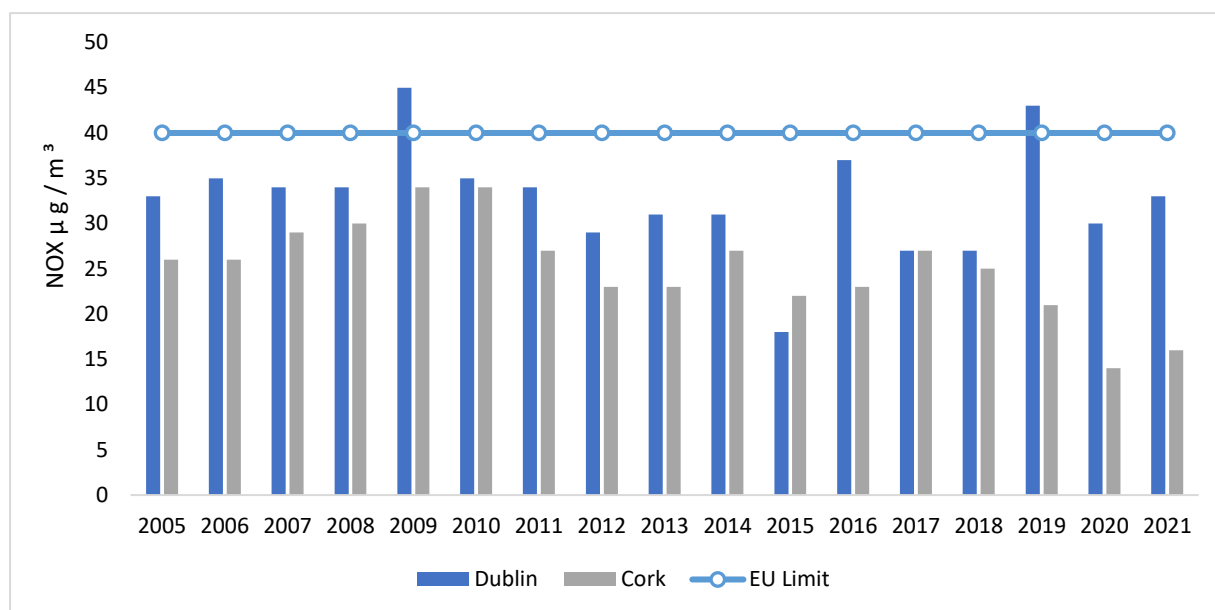
A potential co-benefit that arises as a result of decarbonisation is a reduction in air pollution. Improvements in air quality are also associated with improvements in the Environment, Climate and Biodiversity and Mental and Physical Health dimensions of the Well-being Framework. However, this is not always the case. For example, the use of diesel fuel is associated with lower GHG emissions but generates a greater amount of local air pollution than the use of petrol. The EPA monitors local air pollution in urban centres. These air pollutants are associated with a number of adverse health outcomes, as noted by the Health Service Executive (HSE) the adverse health effects vary by length of exposure to the poor air quality environment<sup>24</sup>.

Nitrogen Oxides (NOx) is a local air pollutant associated with transport emissions in urban centres. Exceedances of the EU limit for NOx were recorded in Dublin in 2019, but emissions were below the EU limit in 2020 and 2021. The Clean Air Strategy of 2023 notes that pollutants such as Nitrogen Oxides (NOx) are associated mainly with transport in urban areas. Tracking NOx emissions in urban centres will provide the Department of Transport insights into well-being and the impact of policy measures which aim to decarbonise public transport and improve local air quality.

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<sup>24</sup> HSE (2023) Health Effects of Air Pollution  
[https://www.hse.ie/eng/services/list/5/publichealth/publichealthdepts/env/health-effects-of-air-pollution.html#:~:text=Particles%20\(PM10%2C%20PM2.,those%20suffering%20from%20heart%20disease.](https://www.hse.ie/eng/services/list/5/publichealth/publichealthdepts/env/health-effects-of-air-pollution.html#:~:text=Particles%20(PM10%2C%20PM2.,those%20suffering%20from%20heart%20disease.)

**Figure 17 - NOx due to Traffic Dublin, Cork**



(Source: EPA 2022)

## 8. Conclusion and Recommendations

This paper has provided a summary of how well-being is currently assessed within the transport sector using the Well-being Framework. It has also used the example of the assessment of the well-being impacts of climate policy within the transport sector to evaluate how well-being is currently monitored through existing performance indicators as part of the REV and performance budgeting process. The paper has examined new potential indicators which could be adopted in the areas of sustainable accessibility, transport affordability, safety and local air quality in line with best practice recommended by the OECD to support monitoring of the well-being impact of climate policy measures within the transport sector. It has also provided a brief assessment of what these indicators reveal about existing well-being of transport users and assessed their potential to be used to track the well-being impacts of policy measures.

Measuring sustainable accessibility as opposed to mobility helps take account of the relationship between transport and land-use planning and also recognises transport’s role as a key enabler of well-being by providing access to a range of amenities and opportunities which allow people to live meaningful lives including access to jobs, healthcare and education.

Affordability indicators provide important insights on if cost is acting as a barrier for citizens to access transport services. While the Department already tracks road fatalities, shifting the focus to those involving vulnerable road users such as pedestrians and cyclists can help provide insights on the well-being impact of active travel investments. Monitoring passengers’ perception of safety when using

public transport service can also provide an understanding of factors which impact individuals' subjective well-being.

Improvements in local air pollution are often cited as a co-benefit of climate policy interventions. However, they are not always complementary, for example the use of diesel fuel results in lower GHG emissions but is associated with greater local air pollution than using petrol. Monitoring air quality in our urban centres will provide important insights on the broader well-being impacts of climate policy measures in the transport sector.

The results of this paper provide insights into how to improve the assessment of the well-being impact of expenditure which could be used as part of the Budgetary Process, the Revised Annual Estimates process and within the Public Service Performance Reports to provide policy makers and the public with greater levels of detail about interventions well-being impact over time.

These indicators can also provide useful insights to help monitor the outcomes of ongoing policies and measures including the Climate Action Plan, Sustainable Mobility Policy and National Demand Management Strategy which is currently under development. The findings of this paper will support the review and update of the Well-being Framework in three to four years' time as planned by the D/Taoiseach.

## Appendix 1 - Performance Indicators for Programmes A, B and C Monitored Under the REV

A Sustainable Mobility Active Travel and Greenways	B Sustainable Mobility - Carbon Reduction and Public Transport	C Road Networks and Road Safety
No. of people cycling nationally as % modal share of daily trips	<u>De-carbonisation indicators</u> Total carbon emissions in transport sector ktCO <sub>2</sub> eq	Total national distance driven by private cars (kms)
No. of people cycling in Dublin City Centre as % modal share of daily trips	% biofuel in fuel mix	Number of Motor Transactions processed on the NVDF
No. of people walking in Dublin City Centre as % modal share of daily trips	<u>EV indicators</u> Number of registered electric SPSVs	Motor Tax Receipts processed on the NVDF
Percent of children who walk or cycle to primary school	Number of vehicles registered for LEVTI Scheme	Vehicle Change of Ownership notices issued
Percent of children who walk or cycle to secondary school	Total number of electric vehicles (ZEVs)	Driving Licences (including Learner Permits) issued
Proportion of Dublin Metropolitan Area residents who think cycling safety in their local area is good	Total no. of electric vehicles as % share of national fleet	Penalty Point Notices Issued
Proportion of women in the Dublin Metropolitan Area who think cycling safety in their local area is good	<u>PT Capacity and Geographical Distribution Indicators</u> % change year on year in public transport numbers by mode Bus Light Rail Heavy Rail	No. of Fatalities recorded on our roads
Proportion of men in the Dublin Metropolitan Area who think cycling safety in their local area is good	% Change year on year in operated PSO bus capacity measured in passenger seat kilometres	Alcohol Number of Specimens received under the RTA
Proportion of people aged 16-25 in the Dublin Metropolitan Area who think cycling safety in their local area is good	% change year on year in operated PSO heavy rail capacity measured in passenger seat kilometres	Toxicology Preliminary Analyses
Proportion of people aged 66+ in the Dublin Metropolitan Area who think cycling safety in their local area is good	% change year on year in operated PSO light rail capacity measured in passenger seat kilometres	Preliminary Breath Testing Number of Devices Supported
Proportion of people with a disability in the Dublin Metropolitan Area who think cycling safety in their local area is good	Average intercity journey times by rail in minutes*	Preliminary Drug Testing Number of Devices Supported
	Average commuter journey times by rail in minutes*	Confirmatory Toxicology Testing
		Evidential Breath Testing

<p>Proportion of residents in the Dublin Metropolitan Area who cycle at least once a week</p> <p>Proportion of women who cycle at least once a week in Dublin Metropolitan Area</p> <p>Proportion of men who cycle at least once a week in Dublin Metropolitan Area</p>	<p>Average speed by rail in km/h*</p> <p>% change year-on-year in public transport passenger numbers on PSO</p> <p>No. of public transport passengers on PSO services (% change on previous years) - Iarnrod Éireann -Dublin Bus PSO -Bus Éireann PSO -Luas -Other PSO Services (tendered PSO bus services) -Rural transport programme</p> <p>No. of public transport passenger journeys on Commercial Bus services (% change on previous years)</p>	
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### Quality Assurance process

To ensure accuracy and methodological rigour, the author confirms they have engaged in the following quality assurance process;

**Internal/Departmental**

- Other internal divisions/sections
- Peer review (networks, seminars, conferences etc.)
- Line management

**External**

- Spending Review Subgroup / Technical Review Group
- Other Government Department
- Peer review (IGEES network, seminars, conferences etc.)
- External expert(s)

**Other** (relevant details)

**Author** (in line Department etc.) has circulated draft paper to relevant Vote in DPENDPR and consulted same **OR** author (in DPENDPR / Votes) has circulated draft paper to relevant line Department and consulted same.

Management Board sign off.



The bottom of the page features a decorative design with overlapping geometric shapes in various shades of blue. A dark blue shape forms the base, with a medium blue shape overlapping it from the left, and a bright blue shape overlapping it from the right. The top edge of these shapes is jagged and irregular.

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