

# Chapter 11: Environment and Transport





# Environment and Transport

## 1. Introduction

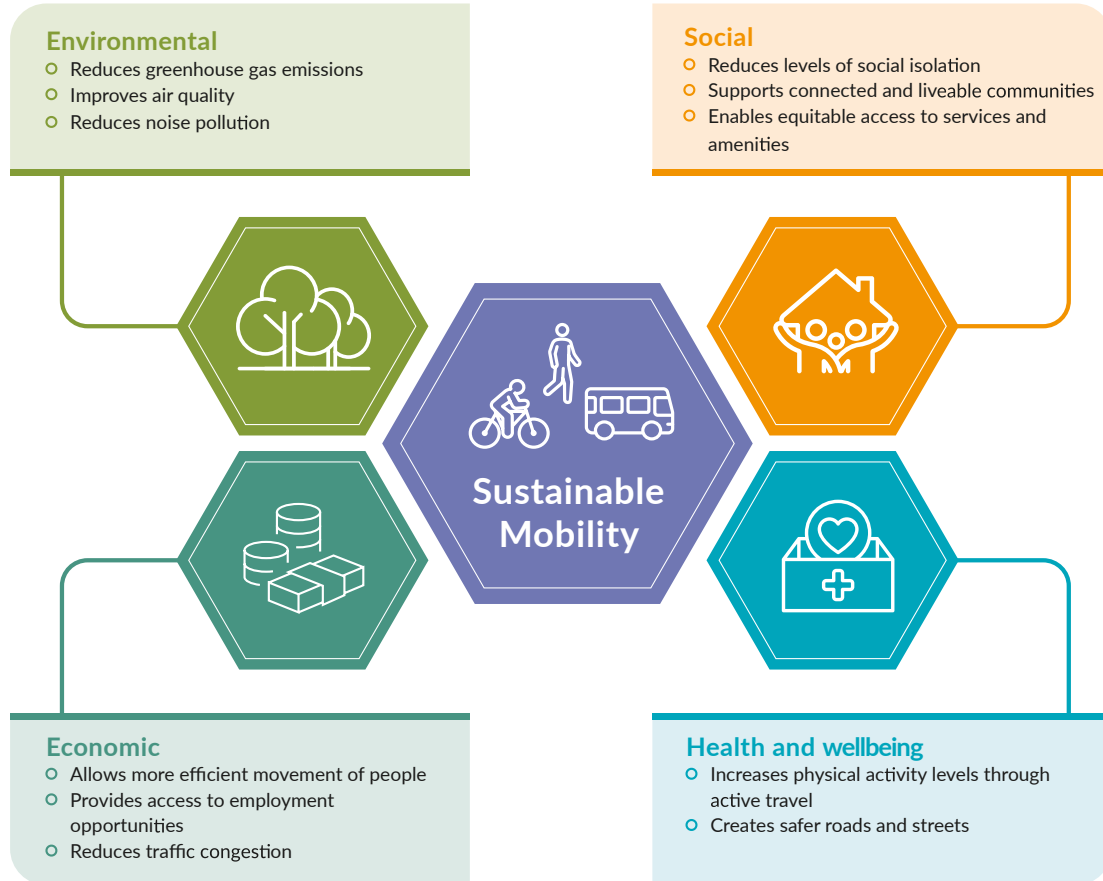
Our transport networks connect us to activities such as employment, recreation, retail and education. A sustainable, accessible and efficient transport system is not only important for wellbeing but also has a key function in trade and the economy.

The transport sector is a major consumer of energy and material resources and a source of environmental pollution, particularly of greenhouse gases, other air pollutants and noise. A sustainable transport network (Figure 11.1) is a vital attribute of any country and is characterised by low environmental pressures and by win-win outcomes for human health and wellbeing and for cleaner, quieter towns and city centres.

In 2022, the Organisation for Economic Co-operation and Development (OECD) conducted one of the most comprehensive evaluations of the Irish transport system ever undertaken (OECD, 2022). The report indicated that, in order to achieve Ireland's climate goals in the transport sector, systemic change would be required; a similar recommendation was made in an earlier iteration of this report, albeit at a more general level (EPA, 2020). The type of systemic change outlined in the OECD report is a rebalancing of urban space to favour active and public modes of transport and to reduce the reliance on electric cars to decarbonise the sector.

This chapter describes how the demand for transport is linked to urbanisation and economic development, discusses the impact of the sector on the environment and explores the policies needed to ensure a sustainable transport sector.

**Figure 11.1** Benefits of sustainable mobility



Source: DOT, 2022



## 2. Demand for mobility

Internationally, cities that have a well-functioning, frequent and reliable transport system tend to be densely populated with mass transport options serving large numbers of people. Ireland has a population density of 72 people per square kilometre, which is 2.5 times less than the European Union (EU) average (World Bank, 2023). The greatest concentration of population is in Dublin city and its suburbs, with almost 25% of the country's population in that area (CSO, 2023a). Our

regional cities (Cork, Limerick, Galway and Waterford) account for just over 9% of the population, whereas 29.5% of the total population lives in rural areas (CSO, 2023a). In Dublin, the high population density leads to a greater demand for public transport and more services being provided than in other areas (CSO, 2023a). This, in turn, increases the share of public transport in total trips taken in Dublin. For example, buses were used for 7.8% of all journeys in Dublin, compared with only 2.7% in areas outside Dublin (CSO, 2022). The OECD assessment of Ireland's transport systems (OECD, 2022) is outlined in Topic Box 11.1.

### Topic Box 11.1 OECD assessment of Ireland's transport system

In 2022, the OECD published a comprehensive assessment of Ireland's transport system and its current trajectory (OECD, 2022). One specific objective was to determine if Ireland was on course to reach its goals to reduce the carbon footprint of the transport sector. The report identified that Ireland's transport system currently encourages car use and is unfit to enable the country's move to meet its climate goals. The OECD concluded that aiming to decarbonise the transport system via reducing emissions from private vehicles is unlikely to lead to substantially different patterns of behaviour or to achieve the rapid emission reductions needed for climate change mitigation. Three elements were suggested as the source of car dependency and high emissions: induced demand, urban sprawl and the erosion of active and shared transport modes.

Policies with high potential include road space reallocation. The report noted that on-demand shared services and communication campaigns to address car-centric mindsets are only being implemented on a small scale in Ireland. Policies to reallocate road space include street redesign and improved management of public space; spatial planning focused on creating proximity; and mainstreaming shared mobility. The study suggested that Ireland is already paving the way for this process by proposing policies to reallocate road space and mainstream on-demand sharing services while increasing awareness of the need to address car-centric mindsets. It recommended better enforcement of planning regulations to ensure that all developments promote settlements with easy access to transport links and include a network of safe walking and cycling routes.



### Overall demand

One of the difficulties in reducing emissions from transport is that the demand for transport is constantly increasing. The country has returned to normality after the COVID-19 pandemic (Topic Box 11.2), and recent figures show that the demand for public transport and the volume of traffic on our roads is increasing to record levels.

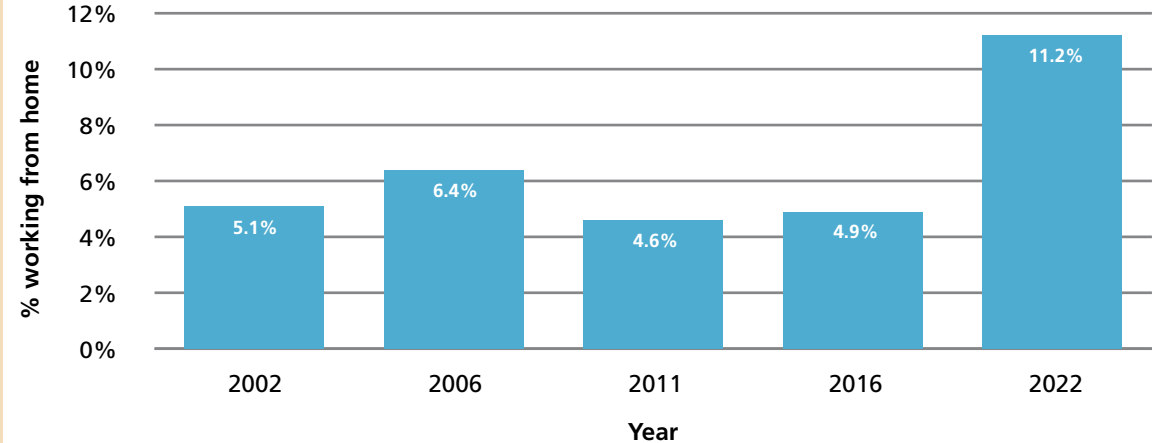
#### Topic Box 11.2 COVID-19 impacts on mobility demand

The transport sector, and transport movement patterns, were directly affected by the COVID-19 pandemic. Decreases in car traffic volumes of around 30% between 2019 and 2020 were due to lockdowns and reduced travel. A partial recovery was observed in 2021 and the traffic volume increased further in 2022, almost reaching pre-pandemic levels.

Provisional road transport emissions figures for 2023 were 0.3% higher than in 2022, which may suggest a stabilisation of emissions, despite the vehicle fleet increasing by 3%. Road transport emissions in 2023 were approximately 4% below pre-COVID emissions in 2019 (EPA, 2024a). With regard to freight transport, starting from June 2020, volumes of heavy goods vehicle (HGV) traffic generally surpassed those of 2019 (CSO, 2023b). Since then, the volumes of HGV traffic have grown steadily each year by a few per cent.

The COVID-19 pandemic is having several long-lasting impacts on the sector. Those who were able to work from home between 2002 and 2016 accounted for about 5% of the workforce whereas the 2022 Census showed that over 11% of employees were working from home five days a week (CSO, 2023c) (Figure 11.2). Recent research suggests that home working is an option that the public wish to continue, and this will result in changes in commuting patterns and a reduction in transport-derived air pollutant emissions (Stefaniec *et al.*, 2024).

Figure 11.2 Percentage of people working from home, 2002–2022



Source: Compiled from data in CSO, 2023c

Another element of remote working that received a boost during the COVID-19 pandemic was an increase in remote working hubs. Research has demonstrated that those using a remote working hub could avoid 1.126 tonnes of carbon dioxide (CO<sub>2</sub>) emissions by using one of these hubs for three days a week for a year (Caulfield and Charly, 2022).



**How we move.** Recent data show that almost three-quarters (74%) of those who participated in the *National Household Travel Survey 2022* (NTA, 2023a) reported living within a 15-minute walk of a shop. The majority of those surveyed live within a 15-minute walk of a pub or restaurant (67%), a bus stop (67%), a chemist/pharmacy (60%) or a post office (55%). Half reported living within

a 15-minute walk of a doctor's surgery (50%). The results presented in Table 11.1 demonstrate that the majority of the population is within a 15-minute walk of many major amenities. However, the results highlight that, in rural parts of Ireland, where approximately one-quarter of the population lives, the majority of people are not within a 15 minute walk of any of these amenities.

**Table 11.1** Proportion (%) of people living within a 15-minute walk of amenities, nationally and by region

AMENITY	NATIONAL	RURAL AREAS	DUBLIN CITY AND SUBURBS	GREATER DUBLIN AREA	CORK, GALWAY, WATERFORD AND LIMERICK	LARGE URBAN TOWNS	OTHER URBAN DISTRICTS
Shop	74	38	97	88	97	92	91
Pub or restaurant	67	37	91	79	82	72	85
Bus stop	67	28	98	87	95	82	77
Chemist or pharmacy	60	16	93	80	90	74	79
Post office	55	23	80	70	75	58	78
Doctor's surgery	50	14	78	66	74	58	67

Data from the National Household Travel Survey 2022 (NTA, 2023a) in Table 11.2 show the change in transport mode share nationally over the past decade. The results demonstrate that the car is the predominant mode of transport and continues to be used for most trips.



Credit: Failte Ireland

**Table 11.2** National transport mode share (%) in 2012, 2017 and 2022

Transport mode	2012	2017	2022
Car	70	71	69
Walking	20	18	19
Bus/coach	4	5	4
Truck/van	2	1	4
Train/DART/Luas	1	1	1
Cycling	2	3	2
Other	1	1	1

Source: NTA, 2023a

DART, Dublin Area Rapid Transit system; Luas, Dublin tram system

**Table 11.3** Transport mode share (%), nationally and by region, 2022

Transport mode	National	Rural areas	Dublin city and suburbs	Greater Dublin Area	Cork, Galway, Waterford and Limerick	Large urban towns	Other urban districts
Car	69	79	53	61	57	71	73
Walking	19	8	31	25	31	19	19
Bus/coach	4	4	7	5	5	3	3
Truck/van	4	7	1	2	2	3	3
Train/DART/Luas	1	–	2	2	–	1	–
Cycling	2	–	5	3	3	1	1
Other	1	2	1	2	2	1	1

Source: NTA, 2023a

–, not applicable; DART, Dublin Area Rapid Transit system; Luas, Dublin tram system

The data in Table 11.3 demonstrate that in rural Ireland almost 80% of all trips are made by car (NTA, 2023a). The results from the cities demonstrate that car trips account for a lower share of journeys than in rural areas and that walking has a large part to play in cities, accounting for almost one-third of all trips.

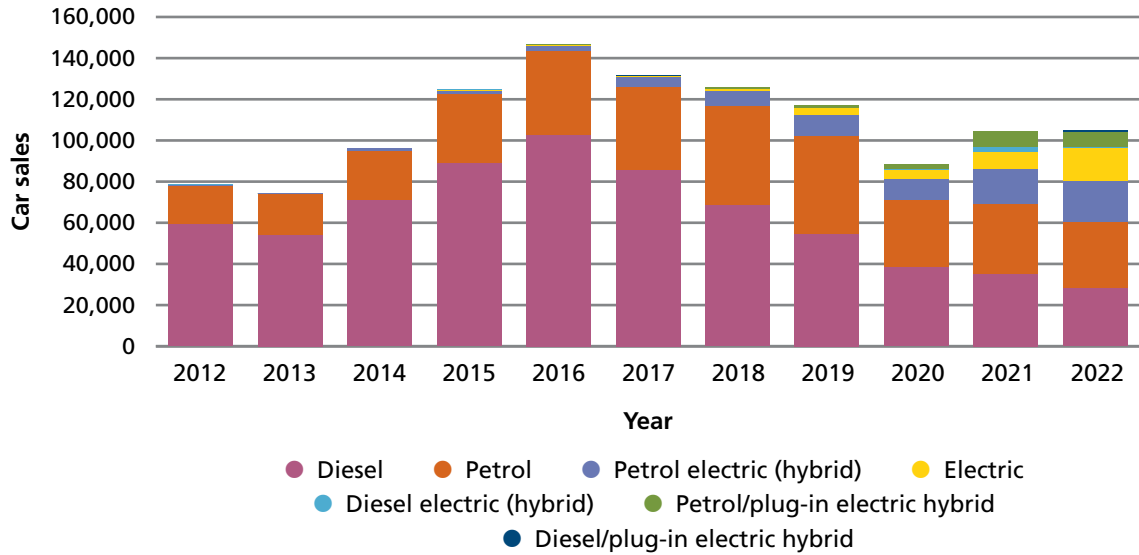
**Our vehicle stock.** On average, 108,585 cars were sold each year between 2012 and 2022 (Figure 11.3) in Ireland. Car ownership levels in Ireland are 458 cars per 1000 people, which is 16% lower than the EU average of 532 cars per 1000 people (Eurostat, 2023a). Public transport use in Ireland is aligned with the EU average (Eurostat, 2023b) and reflects a stable reliance on buses and trains, particularly among third-level students,

among whom the bus is the most common mode of travel to college (25%). These trends may suggest a slow and gradual shift away from car dependency and an increasing preference for sustainable transport options among the younger population.

Two notable changes in the car fleet in the decade 2012–2022 was the increase in sales of electric and hybrid cars (Figure 11.3), while at the same time there has been an increase in sales of sport utility vehicles (SUVs) (Figure 11.4). While the volume of ‘large SUVs’ sold is still small compared with the total volume of cars sold in Ireland, between 2012 and 2022 this category increased by 367%, which may be a cause for concern.

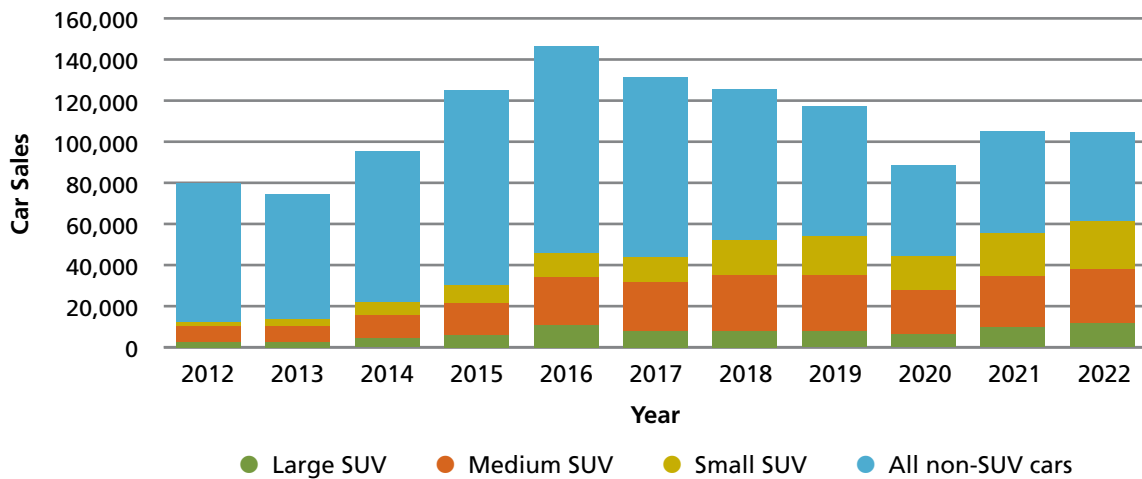


Figure 11.3 Car sales by fuel type, 2012–2022



Source: Compiled from Society of Irish Motor Industry 2023 data

Figure 11.4 Share of SUVs in new car sales, 2012–2022



Source: Compiled from Society of Irish Motor Industry 2023 data

SUVs are characterised by higher fuel consumption because their weight is usually greater than that of standard cars. In 2012, these vehicles made up 16% of new private vehicle sales, and that figure grew to 59% in 2022. In 2022, 15% of all new car sales were fully battery electric (Figure 11.3).

In 2022, there were approximately 72,000 battery electric vehicles (BEVs) and plug-in hybrid electric cars, which was approximately 37% of the Climate Action Plan target for 2025. By the end of 2023, this number had increased to over 121,000 electric vehicles (EVs), accounting for 62% of the Climate Action Plan target for 2025.

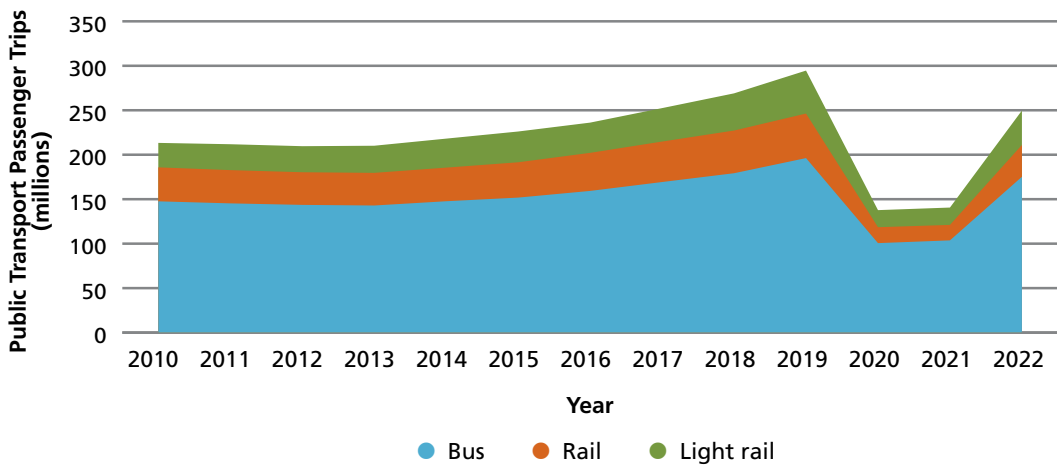


### Public transport

Figure 11.5 illustrates public transport passenger trips from 2010 to 2022. The preliminary figures for 2023 show that more than 308 million passenger journeys were made by public transport, marking a 24% rise in passenger numbers compared with the year before, and

a 5% increase beyond the record previously set in 2019 (NTA, 2024). Bus services consistently account for the largest share of journeys each year, with rail and Luas representing smaller shares.

**Figure 11.5** Number of passenger journeys by public transport, 2010-2022



Source of data: NTA, 2023b<sup>1</sup>

<sup>1</sup> Estimates for 2023 based on preliminary figures from NTA.





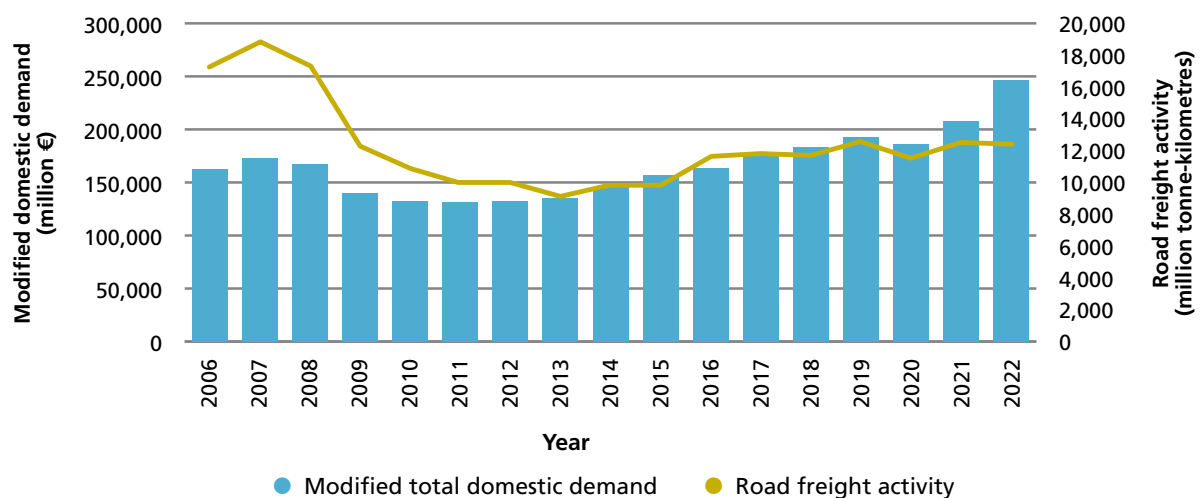
Much of this increase can be ascribed to the introduction and improvement of services under the Connecting Ireland Rural Mobility Plan<sup>2</sup> and the BusConnects Network Redesign.<sup>3</sup> Another factor contributing to this increase is the ongoing improvements in fare and ticketing design, aimed at facilitating easier and more equitable access to services through simplified multimodal and multi-period ticketing, along with fare adjustments made under the National Fares Strategy (NTA and Systra, 2023). Over the last 4–5 years, investment has ramped up significantly, with an unprecedented number of rail projects in planning phases including DART+ West and South West, the Dublin–Navan line (new line), Luas Finglas and MetroLink. Since 2022, there has been a significant increase in rail services provided nationwide on existing rail lines. However, the last new major rail infrastructure project delivered in Dublin was Luas Cross City in 2017, and no new rail network is currently under construction in Dublin.

There have been improvements to the rail network in Cork. The frequency of rail services in the Cork Metropolitan Area was doubled in July 2022, providing a train every 30 minutes to and from Cork and Cobh and Cork and Midleton and every 15 minutes to and from Cork and Glounthaune. Investment is also being made in the Cork Area Commuter Rail programme, which represents the largest investment in the rail network in Cork in the history of the state.<sup>4</sup>

### Freight transport

Economic activity is an important factor driving freight demand, as it is directly correlated with increased consumption and production, subsequently raising the demand for transport of goods. In Ireland, the demand (expressed in terms of the modified domestic demand) and road freight activity (in tonne-kilometres) both experienced disruptions in 2020, probably influenced by the pandemic (Figure 11.6). However, both indicators showed a notable recovery in subsequent years.

**Figure 11.6** Trends in road freight activity and domestic economic activity, 2006–2022



Sources: Compiled from data in CSO, 2023d; CSO, 2023e

<sup>2</sup> [www.nationaltransport.ie/connecting-ireland/](http://www.nationaltransport.ie/connecting-ireland/) (accessed 11 April 2024).

<sup>3</sup> [www.dublinbus.ie/bus-connects-hub](http://www.dublinbus.ie/bus-connects-hub) (accessed 11 April 2024).

<sup>4</sup> [www.irishrail.ie/en-ie/about-us/iarnrod-eireann-projects-and-investments/cork-area-commuter-rail#:~:text=Cork%20Area%20Commuter%20Rail%20Programme%20The%20Cork%20Area,rail%20improvement%20programme%20for%20the%20Cork%20Rail%20Network](http://www.irishrail.ie/en-ie/about-us/iarnrod-eireann-projects-and-investments/cork-area-commuter-rail#:~:text=Cork%20Area%20Commuter%20Rail%20Programme%20The%20Cork%20Area,rail%20improvement%20programme%20for%20the%20Cork%20Rail%20Network) (accessed 30 July 2024).



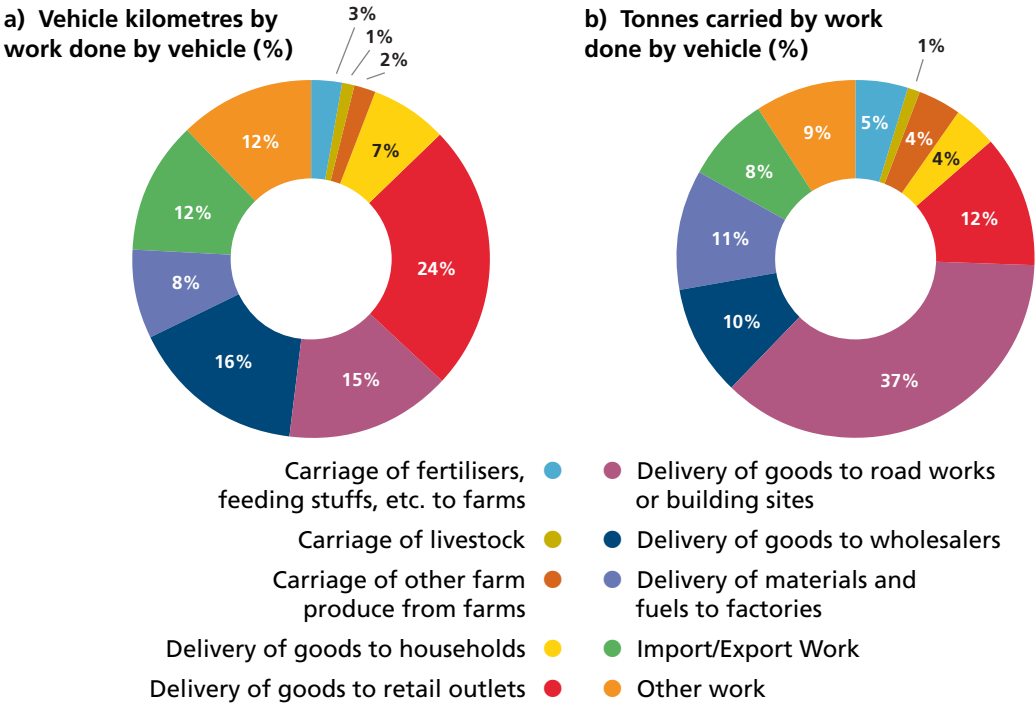
In 2022, the tonnage of goods transported by road saw 6% growth compared with 2021. This represents 3% growth relative to 2019 figures (CSO, 2023d). There was, however, a slight decrease in the distance driven by HGVs (CSO, 2023d). This indicates that, despite higher demand leading to more goods being transported, the distance covered by road vehicles was less.

Compared with other EU countries, Ireland’s road freight transport activity in 2022 is at the lower end of the spectrum at 12.36 billion tonne-kilometres (tkm) (Eurostat, 2023b). The amount of goods handled by rail (76 million tkm) in Ireland is the lowest among European countries with an operational rail network (Eurostat, 2023c).

In 2021, vehicles dedicated to transporting goods to roadworks or building sites handled 37% of the total road freight tonnage (41% in 2022; (CSO, 2023d)), while 40% of the vehicle-kilometres driven were associated with deliveries to retail outlets and wholesalers (Figure 11.7).

Topic Box 11.3 later in this chapter proposes an optimal strategy for freight transport.

Figure 11.7 Shares of work done by delivery vehicles



Source: CSO, 2023d



### 3. Environmental pressures of and impacts from transport

#### Energy consumption

The 2020 State of the Environment Report highlighted that continued growth in energy consumption for transport was a major concern (EPA, 2020). There has been very little decarbonisation of the transport fuel mix to date, with transport CO<sub>2</sub> emissions remaining tightly coupled to energy use. In 2022, the total transport energy demand had rebounded to 95% of pre-COVID (2019) levels (see Topic Box 11.2), with 94.2% of road transport energy demand met by fossil fuels. The years 2022 and 2023 saw record levels of biofuel blended into our petrol and diesel. Using provisional data from 2023, demand for petrol increased by 6.6% but reduced by 1.2% for diesel. In addition, there were significant increases in the volume of biofuel used: bioethanol increased by 41% and biodiesel by 29.5% (EPA, 2024a).

Internal combustion engine passenger cars, despite their share of total demand decreasing from 59.4% in 2012 to 49.1% in 2022, continue to account for just under half of the energy consumption by road transport (Figure 11.8). Light-duty vehicles exhibit minimal fluctuations in their share of energy consumption. Figure 11.8 shows a decreasing trend in the share of energy consumption for buses, from 9.4% in 2012 to 8.1% by

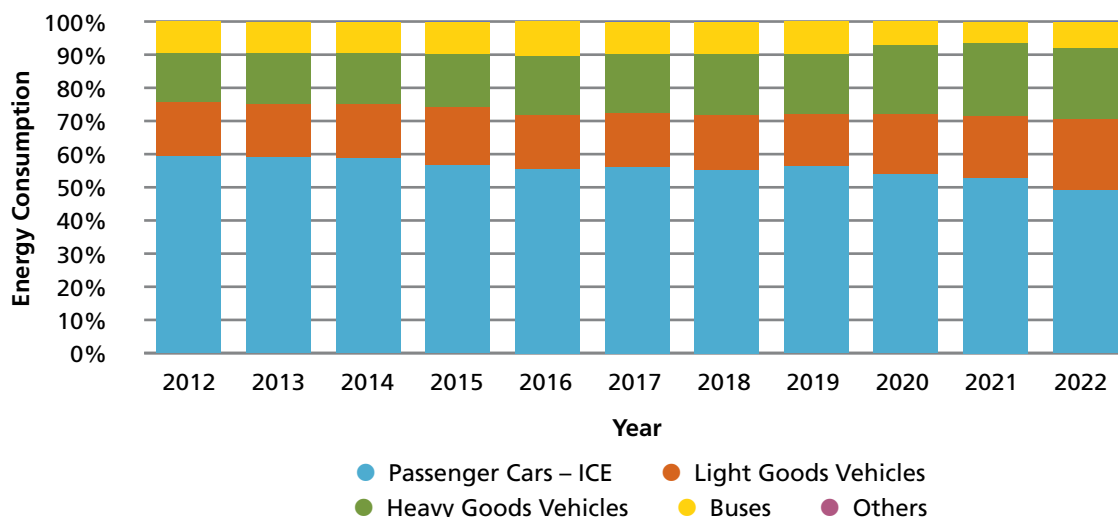
2022. This could suggest improvements in the efficiency of buses, a reduction in bus use or a shift to other modes of transport.

The increase in the proportion of energy consumption attributed to HGVs, from 14.9% in 2012 to 21.2% in 2022, suggests an increase in the volume of goods transported or a change in the usage patterns of these vehicles. It could be because of significant improvements in the fuel efficiency of other vehicle categories, especially passenger cars. As passenger cars have become more fuel efficient and their relative share of energy consumption has decreased, the share accounted for by HGVs appears larger by comparison, not necessarily because these vehicles have become less efficient or more numerous but because other categories are using less energy relative to HGVs.

#### Greenhouse gas emissions

In 2023, the transport sector was responsible for 21.4% of Ireland's greenhouse gas (GHG) emissions, highlighting the sector's considerable contribution to the country's overall emissions profile. Road transport accounted for 94.8% of these emissions (Figure 11.9).

Figure 11.8 Breakdown of energy consumption by each mode of road transport, 2012–2022

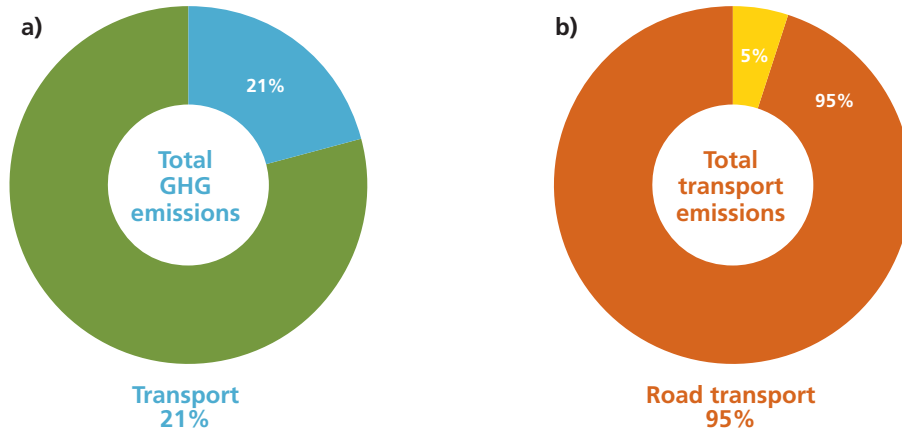


Source: EPA, 2024a

Note: Other modes of road transport accounted for 0.1% each year, 2012-2022



**Figure 11.9** Proportion of Ireland’s total greenhouse gas emissions from a) the transport sector and b) the proportion of these from road transport, 2023

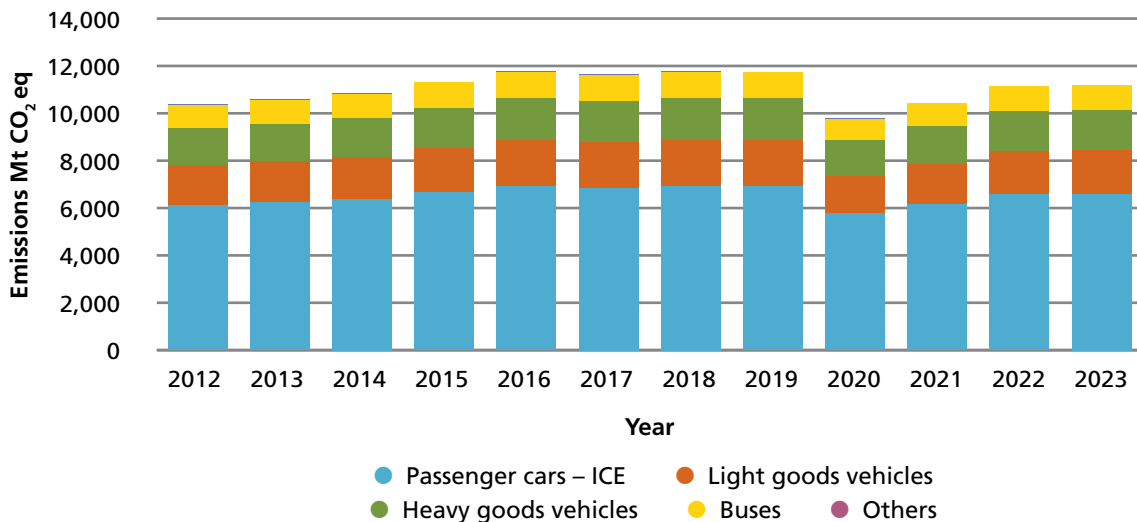


Source: Adapted from Climate Action Plan (DECC, 2024)

GHG emissions from road transport decreased as a consequence of the pandemic but have been on the rise since 2021, reaching 11.19 Mt CO<sub>2</sub> eq (megatonnes of CO<sub>2</sub> equivalent) in 2023 (EPA, 2024a) (Figure 11.10), as transport and economic activity recovered in the

post-pandemic period. Passenger cars accounted for 49% of emissions, with their share of total emissions gradually declining over the last decade from 59% in 2012. Emissions from freight road transport constituted 40% in 2022 (Figure 11.10).

**Figure 11.10** Breakdown of emissions by mode of road transport, 2012–2023

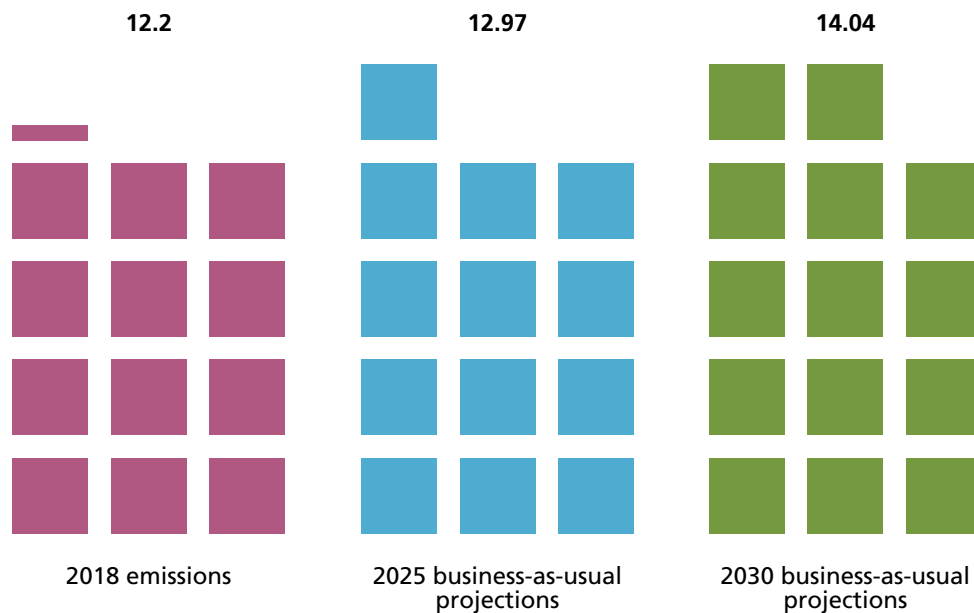


Between 1990 and 2023, the transport sector had the greatest overall sectoral increase in GHG emissions at 129.2%, from 5.1 Mt CO<sub>2</sub> eq (megatonnes CO<sub>2</sub> equivalent) in 1990 to 11.79 Mt CO<sub>2</sub> eq in 2023, with road transport emissions increasing by 133.6%. Fuel combustion emissions from transport accounted for 9.2% and 21.4% of total national GHG emissions in 1990 and 2023, respectively. Emissions from road

transport were relatively stable during the period 2015–2019, at an average of 11.6 Mt CO<sub>2</sub> eq but reduced to 9.8 Mt CO<sub>2</sub> eq in 2020 due to COVID-19 travel restrictions. However, with the easing and ending of travel restrictions in 2021 and 2022, road transport emissions rebounded to 10.4 Mt CO<sub>2</sub> eq and 11.1 Mt CO<sub>2</sub> eq, respectively.



**Figure 11.11** Estimated transport sector greenhouse gas emissions under a business-as-usual scenario. Units expressed as Mt CO<sub>2</sub> eq



In 2023, transport sector GHG emissions increased slightly by 0.3% compared with 2022, although they remained below pre-COVID levels at 11.2 Mt CO<sub>2</sub> eq. This small rise in emissions is in the context of a 6% increase in both 2021 and 2022 as transport sector emissions rebounded following the ending of COVID-19 travel restrictions. Despite this rebound, transport emissions in 2023 were still 4.3% below pre-COVID levels (EPA, 2024a).

It is projected that emissions from HGVs and light goods vehicles will account for 52% of total transport emissions by 2030 and 87% by 2050 as a result of growth in goods services and a reduction in emissions from passenger transport (EPA, 2024b).

Emissions from freight transport via maritime shipping, rail and inland waterways are significantly lower than those from freight carried by HGVs (EEA, 2021). In 2023, Ireland’s international marine navigation emissions totalled 0.4 Mt CO<sub>2</sub> eq, a 1.4% decrease from 2022 (EPA, 2024a). These emissions are not included in Ireland’s total emissions figure.

In the case of international aviation, total emissions in 2023 were 3.43 Mt CO<sub>2</sub> eq with only a small fraction of those attributed to transport of cargo (EPA, 2024a).

The National Transport Authority (NTA) has estimated that transport emissions would grow from 12 Mt CO<sub>2</sub> eq in 2018 to 14 Mt CO<sub>2</sub> eq by 2030 if no action was taken to curb them (Figure 11.11)

Ireland has identified measures aimed at reducing transport emissions by 50% by 2030 (as against 2018) in its Climate Action Plan. Staying within carbon budgets and sectoral emissions ceilings is required by law and is Ireland’s contribution to curbing climate change. While practices such as enhanced levels of hybrid and remote working that were established during the pandemic may have disrupted some linkages between transport and economic activity, the strong rebound in transport demand and associated 6% growth in transport emissions witnessed in 2022 reflects the rapid return to economic growth, full employment and continued population growth in Ireland.

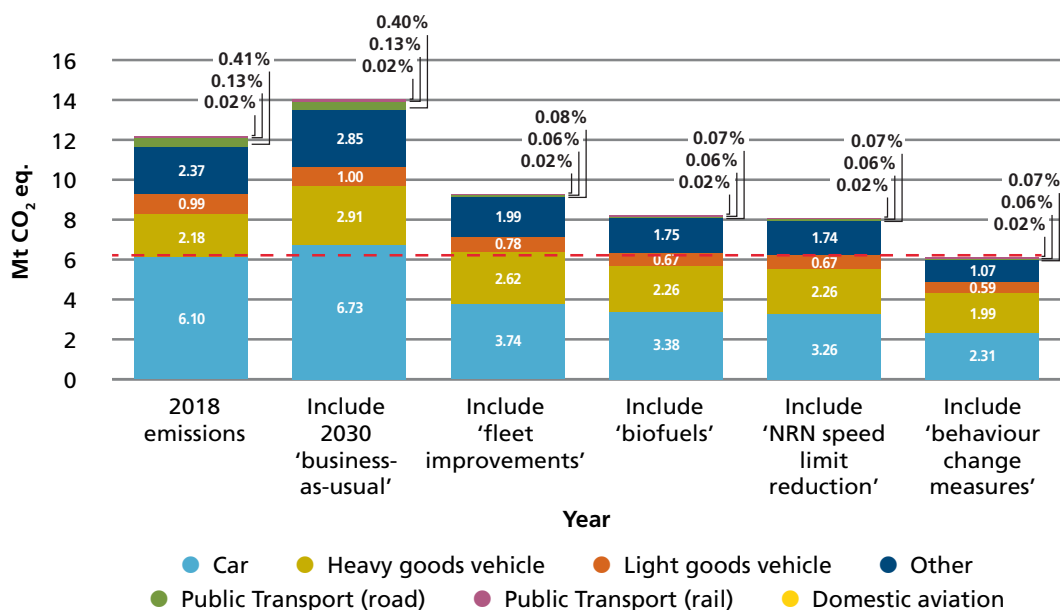
About two-thirds (64.1%) of the first sectoral carbon budget was expended in the period 2021–2023. While this level could be consistent with the sector complying with its carbon budget to 2025, it would require a consistent decrease in emissions from the level in 2023 in both 2024 and 2025. Over the period to 2025, the capacity to deliver large-scale mitigation measures by providing major new public transport (PT) infrastructure and services, or by significantly shifting the composition of the vehicle fleet to zero-emission alternatives, is limited. Environmental Protection Agency (EPA) projections show a potential cumulative 5-year overshoot of approximately 1 Mt CO<sub>2</sub> eq of the sector’s first carbon budget by 2025 if further corrective action is not taken. Furthermore, EPA projections for the second carbon budget period suggest that this level of overshoot continues over the 2026–2030 period,



leading to a cumulative projected deficit of approximately 5 Mt CO<sub>2</sub> eq relative to the sector's 37 Mt CO<sub>2</sub> eq carbon budget for the 2026–2030 period. The NTA has modelled the potential effectiveness of various measures in attaining a 50% reduction in transport sector emissions by 2030 to examine the potential impacts

for the climate action plans (Figure 11.12). Overall, the modelling identified that fleet improvements (e.g. a move to BEVs) along with enhanced use of biofuels could yield substantial benefits. It was, however, clear from the modelling that a reduction in emissions of over 2 Mt CO<sub>2</sub> eq will need to come from behaviour changes.

**Figure 11.12** Predicted reduction in carbon dioxide emissions, 2018–2030 (pathway to a 50% reduction by 2030)



Source NTA, 2023c

### Emissions of air pollutants from transport sources

The transport sector has substantial negative impacts on the environment and human health. The majority of the emissions to air from transport in Ireland arise from diesel and petrol consumed by private cars and HGVs.

Transport is one of the key sectors covered under the National Emission Reduction Commitments Directive ((EU) 2016/2284), which aims to reduce emissions of certain atmospheric pollutants (for more detail, see Chapter 2).

In Ireland, transport (and mainly road transport) is the second biggest source of nitrogen oxides (NO<sub>x</sub>), contributing approximately 34.8% of the total in 2022 and is a smaller contributor of particulate matter (12.5%) (EPA, 2024c). As many transport emissions occur close to people in our towns and cities, they are of particular concern from a human health perspective. This issue is covered in more detail in Chapters 2 and 14.

Transport emissions accounted for 2.6% of total national emissions of non-methane volatile organic compounds, mainly from exhaust and fugitive releases from petrol vehicles.

Road transport saw a decline in NO<sub>x</sub> emissions of 25.6 kt, or 44.2%, between 2008 and 2022 due to the economic recession initially and improvements in vehicle technology in later years. The COVID-19 restrictions had a significant impact in 2020 and 2021 (EPA, 2024c).

Ireland's emission reduction commitment for 2030 is set as a percentage reduction on 2005 emission levels; for NO<sub>x</sub> the reduction was set at 69% by 2030 under the NEC Directive. Projections of NO<sub>x</sub> emissions for all years to 2030 suggest that Ireland will comply with these emission reduction commitments (EPA, 2024c).



In addition to the five key air pollutants to which NEC Directive emission reduction commitments apply, the EPA's air pollutant emissions report also highlights the trends in emissions of other pollutants such as carbon monoxide, lead, dioxins and polycyclic aromatic hydrocarbons (EPA, 2024c).

Emissions of most of these pollutants have greatly decreased since 1990 because of measures such as banning leaded fuel, the introduction of catalytic converters and the move away from solid fuel for residential heating. The general trend in emissions of these pollutants is downwards, and the EPA reported that the changes in the age structure of the national vehicle fleet have had a positive impact.

### Impacts of air pollutants on the quality of the air we breathe

The European Environment Agency estimates that there are in excess of 1600 premature deaths in Ireland every year (EEA, 2023) due to poor air quality from causes including cardiovascular disease and respiratory illnesses. Diesel vehicles are implicated in causing roughly 70 of these deaths and a loss of 3.8 years of healthy life across the affected population (Gallagher *et al.*, 2021). Further research suggests that prohibiting older diesel vehicles and ceasing their sales from 2025 could halve NO<sub>x</sub> and PM<sub>2.5</sub> emissions by 2030 (relative to 2015 figures), thereby preserving 300 years of healthy living and generating savings of €43.8 million (Dey *et al.*, 2018). Figure 11.13 highlights the historical trends in NO<sub>x</sub> emissions.

In 2019, there was an exceedance of the annual permissible limit value for nitrogen dioxide at one monitoring station (St John's Road West) in Dublin. There were no other exceedances recorded elsewhere for nitrogen dioxide or any other air pollutant during 2019. The breach obliged the relevant local authorities to prepare an air quality plan to identify the root causes and formulate measures to address the exceedance by the end of 2021. The resulting plan set out 14 measures to address the issue. One key measure set out in the plan was the integration of a '15-minute neighbourhood' concept in city and county development plans developed for Dublin local authorities in their 2022–2028 development plans.<sup>5</sup>

Transport is not causing any ongoing breaches of current air quality standards, and there were no exceedances of air quality standards recorded at any monitoring station in the national ambient air quality monitoring network in 2020, 2021 or 2022. As outlined in Chapter 2, achieving Ireland's ambition, set out in the Clean Air Strategy, to move to tighter air quality guidelines will be extremely challenging but will have a significant positive impact on health.

### Environmental noise

Environmental noise in our towns and cities is increasing, and excessive noise from transport sources is a health risk, with effects on sleep and cardiovascular and metabolic function, in addition to the nuisance caused. Exposure to noise from road traffic, railways, aircraft and industry is estimated to cause 10,600 premature deaths each year in Europe (EEA, 2022). It is estimated that 18.4 million people experience chronically high

<sup>5</sup> [www.dublincity.ie/sites/default/files/2021-12/dublin-region-air-quality-plan-2021.pdf](http://www.dublincity.ie/sites/default/files/2021-12/dublin-region-air-quality-plan-2021.pdf) (accessed 30 July 2024).



levels of annoyance due to noise pollution from transport. At the same time, 5.5 million people are estimated to experience chronically high levels of sleep disturbance (EEA, 2022). The EU Zero Pollution Plan sets a target of reducing the share of people chronically disturbed by transport noise by 30% by 2030 compared with 2017, the reference year (EC, 2021).

Chapter 4 describes in greater detail that just over 1 million people in Ireland are estimated to be exposed to noise levels from road traffic above the reporting thresholds set in the Environmental Noise Directive (2002/49/EC). For major rail infrastructure and the major airport, the number of people exposed to noise levels above the reporting thresholds were 85,100 and 12,600, respectively.

Technical measures to reduce noise exposure, such as the use of low-noise road surfaces or low-noise-generating tyres, have their limitations. Reducing demand and encouraging a major modal shift to walking, cycling and using public transport is a long-term goal as we move to more integrated spatial and transport planning. In this context, mobility planning will need to take account of designated quiet areas that will be defined in the noise action plans currently being prepared by local authorities. These plans are due to be completed in 2024.

### Impacts on ecosystems and biodiversity

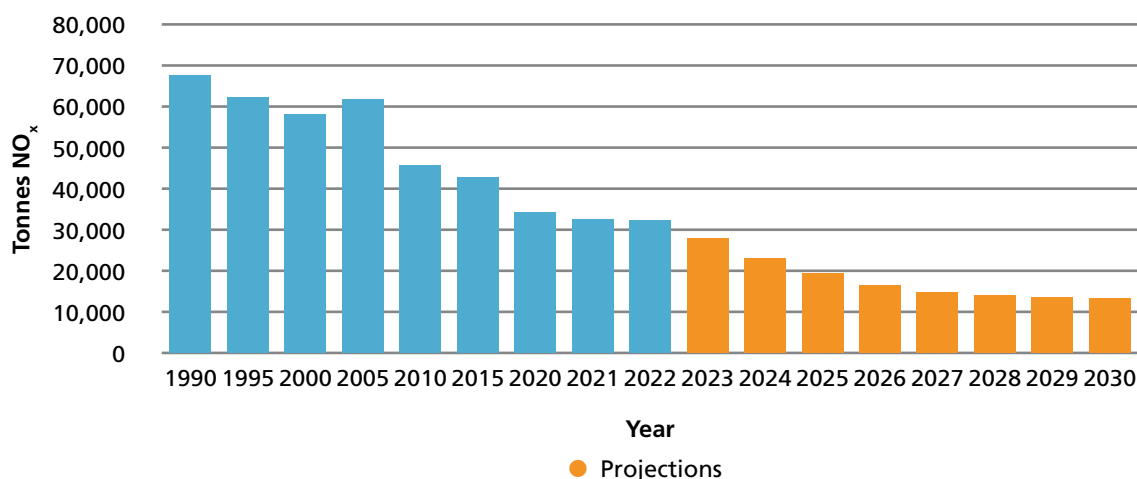
Transport can have significant negative impacts on ecosystems and biodiversity in different ways, including altering the quality and connectivity of habitats and creating physical barriers to the movement of animals between habitat areas or to the growth of plants.

NO<sub>x</sub> deposited on land can drive the loss of sensitive species and in water bodies contribute to eutrophication.

Terrestrial noise has an impact on wildlife, as animals are stressed by noisy environments. A literature survey by Shannon *et al.* (2016) found that terrestrial wildlife start to react to noise at levels of about 40 decibels. An EU modelling study indicates that the level of underwater noise from shipping increased between 2014 and 2019, with the largest contribution from container ships, followed by tankers and general cargo ships.

The built environment, which includes all artificial surfaces such as buildings, roads and pavements, is an outcome of urbanisation and impacts the natural environment. The increase in artificial surfaces has been detrimental to the environment because of the loss of biodiversity caused by changes in land use, pressure from infrastructure, including roads, and air and noise pollution.

Figure 11.13 Trends in nitrogen oxide emissions for transport sector, 1990-2022, and projections to 2030



Source: EPA, 2024c





## 4. Responses

As outlined above, transport has an impact on the environment via air pollution, noise and GHG emissions (see Chapters 2, 3, 4 and 14).

Responses to transport issues to date have centred on reducing emissions of GHGs to mitigate ongoing climate change. These responses will have co-benefits in reducing air pollution and environmental noise but will not fully address these environmental issues. The remainder of this section will consider those responses at EU and national levels.

### Policy responses

Table 11.4 provides a summary of the most relevant policy documents related to transport in Ireland. The annual Climate Action Plan acts as the key policy document in the area related to decarbonisation. Its annual review of the sector provides direction in terms of policy and progress in reducing emissions.

**Table 11.4** Summary of current transport policy

POLICY	YEAR	OVERVIEW
Climate Action Plan (Department of the Environment, Climate and Communications)	Annual plan	The plan sets out pathways to reduce emissions in the transport sector by 50% by 2030. The plan uses the avoid–shift–improve framework to realise these emission reductions.
Dublin, Cork, Galway, Limerick and Waterford Metropolitan Area Transport Strategies (National Transport Authority)	Multiple years	Each of the five cities and their surrounding regions all produce transport strategies. These strategies outline the steps required to provide sustainable mobility.
Moving Together: A Strategic Approach to the Improved Efficiency of the Transport System in Ireland (Department of Transport)	2024	This draft strategy provides a range of demand management options for reducing emissions, including air pollutants, and noise exposure. The draft makes 35 key recommendations to enable a more efficient transport system in Ireland.
National Electric Vehicle Charging Infrastructure Strategy 2022–2025	2023	This strategy presents the pathway and practical steps for the delivery of a national electric vehicle charging network.
National Road EV Charging Network Plan	2023	This plan is the first part of the National EV Charging Plan and focuses on and provides a roadmap for the development of en-route EV charging.
Universal Design Guidelines for EV Charging Infrastructure	2023	The guidelines provide clear direction to all those involved in the manufacturing, procurement, installation and operation of the electric vehicle charging infrastructure.
Ireland’s Road Haulage Strategy 2022–2031	2023	The first-ever government strategy dedicated to the haulage and road freight sector focuses on measures to help the sector move to a low-carbon future.
Renewable Transport Fuel Policy 2023–2025	2023	This sets out Ireland’s policy pathway for achieving a renewable transport fuel supply that meets national Climate Action Plan biofuel targets and EU renewable energy obligations.



POLICY	YEAR	OVERVIEW
National Sustainable Mobility Policy (Department of Transport)	2022	The policy establishes a strategic framework for active travel (walking and cycling) and public transport to 2030 to assist Ireland in meeting its climate commitments.
Five Cities Demand Management Study (Department of Transport)	2022	This study focuses on the five cities in Ireland and how travel demand management measures could be incorporated to reduce emissions and congestion and improve air quality. It was a key input to the draft strategy Moving Together (see above).
National Investment Framework for Transport in Ireland (NIFTI)	2021	A strategic framework to guide future investment in Ireland's land transport network. It aligns with the broader goals of Project Ireland 2040 and aims to support sustainable development and decarbonisation.

### Avoid–shift–improve in an Irish context

Technology-orientated efficiency improvements alone will not be sufficient to achieve the very substantial and urgent reductions in environmental pressures that are required. Instead, there is a need to complement incremental improvements to established systems with other measures addressing the scale or patterns of consumption. The following section describes some of the key 'avoid–shift–improve' actions that have potential in the Irish context.

#### Avoidance actions

*Spatial planning.* Compact development principles advocate higher population densities, mixed land use combining residential, commercial, recreational and other spaces, street connectivity, access to destinations by public transport, walking and cycling, and having public transport nodes within optimal distance of trip origins and destinations (Moriarty *et al.*, 2023). Some of the principles of compact living that overlap with proximity planning were tested in Irish urban areas, and several interventions are proposed in the work of Andersen (2021). By concentrating development, compactness helps preserve open spaces, agricultural land and natural habitats while also reducing infrastructure costs and the environmental impacts associated with urban expansion (Figure 11.14). The draft update to the National Planning Framework has set a target of at least 40% of all new housing to be built within existing built-up areas of cities, towns and villages (Government of Ireland, 2024). Increasing the attractiveness of brownfield over greenfield sites is important to meet the targets

outlined in the National Planning Framework. This can be achieved by introducing green spaces and maintaining public spaces well rather than other interventions, such as a vacancy tax, which has been only partially effective (OECD, 2022). Land use is further discussed in Chapter 5.

A transport-orientated development (TOD) working group was established in December 2021 under the Government's Housing for All plan to consider opportunities for TOD in major urban centres to support compact growth, achieving climate action objectives and housing delivery. The working group published a report on TOD opportunities in Dublin<sup>6</sup> in June 2023.

6 [www.gov.ie/en/publication/0b532-opportunities-for-transport-orientated-development-tod-in-major-urban-centres-dublin-study/](http://www.gov.ie/en/publication/0b532-opportunities-for-transport-orientated-development-tod-in-major-urban-centres-dublin-study/) (accessed 31 July 2024).



Figure 11.14 Multiple benefits of compact development



Source: Bibri *et al.*, 2020; reproduced under the terms of the Creative Commons CC BY 4.0 licence ([creativecommons.org/licenses/by/4.0](https://creativecommons.org/licenses/by/4.0))

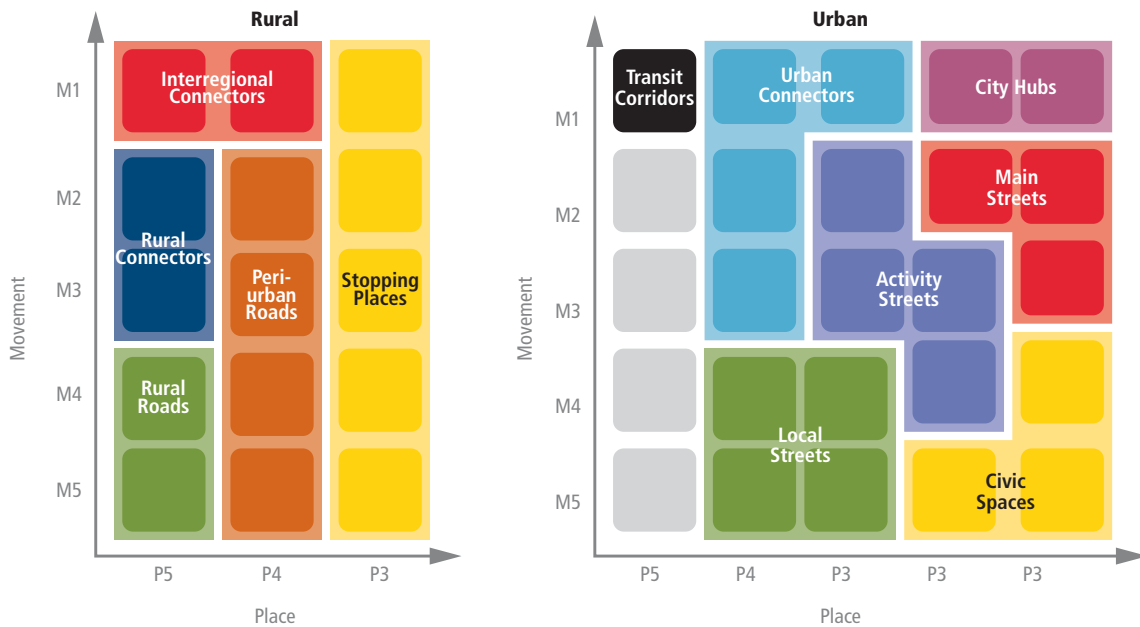
*Reallocation of street space.* The reallocation of road space is critical in supporting sustainable modes of transport, especially walking and cycling, and has been found to contribute positively to achieving equity, wellbeing, a thriving local economy and climate action targets (Douglas *et al.*, 2023). However, interventions for reallocating urban space in Ireland are rather fragmented and being introduced incrementally rather than transformatively, as the car-dominant mental model prevents the radical implementation of road reallocation (Egan and Caulfield, 2024).

Pedestrian plans are established for the five cities, with more to follow for regional centres throughout 2024 (DoT, 2024a). The Active Travel Investment Programme has delivered 600 kilometres of walking and cycling paths nationwide, with over 1200 projects progressed or delivered, including the Salmon Weir Bridge in Galway, the Bilberry Greenway in Waterford, and the Mahon Greenway in Cork (DoT, 2024a).

Road space is contested space and thus holistic planning and balancing stakeholder needs is necessary. For instance, the framework proposed by Creutzig *et al.* (2020) balances three perspectives: streets for transport, streets for climate action and sustainability, and streets as places. In another example, using the movement and place framework, the New Zealand government has introduced the One Network Framework, which methodically categorises streets and roads to facilitate targeted actions (Figure 11.15). This allows the redesign of areas to prioritise movement on essential inter-regional roads and enhance place functions that promote walking and cycling on local streets (Waka Kotahi NZ Transport Agency, 2023).



**Figure 11.15** One Network Framework classification of streets and roads in New Zealand



Source: Waka Kotahi NZ Transport Agency, 2023; reproduced under the terms of the Creative Commons CC BY-NC 4.0 licence ([creativecommons.org/licenses/by-nc/4.0/](https://creativecommons.org/licenses/by-nc/4.0/)).

The direct relationship between reallocating road space to people and the improvement of air quality is evident in a number of studies (Hulkkonen *et al.*, 2020; Glazener *et al.*, 2022). The travel restrictions implemented in 2020 to curb the spread of COVID-19 have underscored the clear connection between traffic and nitrogen dioxide levels in ambient air (EPA, 2021). This connection between restricting car traffic and improved air quality is increasingly recognised by Irish policymakers. For example, the Living Streets scheme in Dún Laoghaire is designed to both reduce noise and improve air quality while also encouraging safer travel within its designated areas (DLRCC, 2023). Local evidence from redesigning Blackrock village shows that it increased public space by 25%, reduced car trips by 40% and improved business revenue, air quality and street safety (TU Dublin and DLRCC, 2021).

*Demand management.* The Department of Transport published the *Five Cities Demand Management Study* in November 2021 (DOT, 2021). The study set out to develop an understanding of the drivers of transport demand and how a shift to more sustainable travel in Dublin, Cork, Waterford, Limerick and Galway could be promoted. The study assessed a wide range of measures in terms of their impact in reducing GHG emissions, tackling congestion and improving air quality. This included measures such as reallocating road space from private cars to prioritise walking, cycling and public transport; providing safer walking

and cycling options; and reducing the number of parking spaces. It also included the concept of 15-minute neighbourhoods, where the population can reach the amenities it needs daily by a short walk, cycle or public transport journey. The study, which provided a series of evidence-based demand management recommendations for each of the cities along with a national roadmap for delivery, was a key input to the development of a new national demand management strategy (DOT, 2024b).

The new draft strategy aims to make the transport system more efficient and to alleviate the impacts of car dependency and congestion on the economy, the environment and the health of our society. The strategy, and associated Implementation plan, includes recommendations on developing demand management schemes and updating national guidelines and standards to support road space reallocation measures in particular.

### **Shift actions**

*Active travel.* There are various determinants of the choice between walking and cycling, but trip characteristics and the built environment can be directly or indirectly influenced by policy. For instance, adapting the infrastructure in such a way that saves travel time (e.g. more pedestrian crossings) and creating a mixed land use environment, where residential and other functional areas are combined, can significantly reduce distances, thereby encouraging active travel (Ton *et al.*, 2019).



*Connecting Ireland Rural Mobility Plan.* The NTA's Connecting Ireland Rural Mobility Plan is delivering new rural bus services in towns and villages at a rate of approximately one new service every week, with over 110,000 vehicle-kilometres a week added to the public transport network in 2022 through new services, more frequent services and route extensions. As a result, over 50 settlements were newly connected to the public transport network, facilitating crucial access to health services, education and employment opportunities and reducing reliance on private transport. The key commitments made in Connecting Ireland are as follows:

- 70% of people in rural Ireland to have access to public transport services that provide at least three return trips to the closest large town
- over 100 rural villages to benefit from frequent public transport services for the first time
- over 100 rural areas to benefit from a regular service to their county town for the first time
- over 60 new connections to regional cities from surrounding areas
- an innovative approach to improving mobility for people in remote areas.

*Micromobility.* Encompassing small, lightweight vehicles such as e-scooters, e-bikes and bicycles, micromobility presents a promising solution for sustainable transport in Ireland. These vehicles are designed for short distances of up to 15 kilometres and have the lowest GHG emissions per vehicle-kilometre of any form of urban transport (ITF, 2020). Micromobility has the potential to increase the affordability and sustainability of transport (Kathiresan *et al.*, 2022).

Micromobility can be a good alternative to private cars for trips of 2–5 kilometres and is attractive during congested periods (Liao and Correia, 2022). The results of the National Travel Survey suggest that these modes were used for approximately 2–4%<sup>7</sup> of all trips in 2021 (CSO, 2022a). Among electric micro-vehicles, e-bikes, e-scooters and e-cargo bikes are the most popular (Liao and Correia, 2022). e-Bikes are sometimes seen as an option for the first or last mile of trips made by public transport.

With the right policies and frameworks, micromobility can play a significant role in creating a sustainable, efficient and inclusive transport network in Ireland. Ireland's Road Traffic and Roads Act 2023 sets out the regulations for legal categories of light EVs. For instance, the new legislation regulating e-scooter use (and also e-bikes and e-mopeds) is expected to improve the safety of both e-scooter riders and other road users<sup>8</sup>.

**Improvement actions.** A number of actions are seeking to make the transport system more efficient by reducing the emissions per unit of distance travelled. These include moving to EVs, improved fuel efficiency or blending fossil fuels with biofuels.

*Electric vehicles.* As part of the Climate Action Plan 2024, electric cars (and the associated national EV charging infrastructure strategy<sup>9</sup>) play an important role in achieving climate targets in the transport sector. Fleet electrification targets assume 845,000 private EVs in the fleet by 2030, with a requirement for 30% of BEVs in the total passenger fleet. At the end of 2023, battery electric cars accounted for 4.5% of the passenger car fleet.

New registrations of EVs have grown steadily over time. However, there is uncertainty around achieving the targets, as sales over the last two years show slower growth, and the trends show a preference for SUVs, which consume more energy.

Athlone became the first town in Ireland to have a fully electric bus fleet in 2023. A fleet of 11 electric Bus Éireann buses is expected to carry 10,000 passengers per week and reduce CO<sub>2</sub> emissions by 400 tonnes a year.<sup>10</sup> The introduction of the first 100 double-decker battery electric buses to Dublin city services is almost complete, with 85 of these buses now in service and completion anticipated by the end of 2024. In 2024, the bus network in Limerick is expected to be fully electrified with 34 new electric buses; depot electrification plans are also being progressed in Cork, Galway and Sligo.

*Shared mobility.* The average private car is in active use only 3–4% of the time, and for the remaining time it occupies space parked at home or elsewhere (Government of Ireland, 2021). Simulations for Dublin show that shared mobility services have the potential to replace 20% of private car trips, which translates into a reduction in emissions of more than 20% (ITF, 2018).

7 Electric micro-vehicles are included in either 'cycle' (alongside bicycles) or 'other' modes of travel, making it challenging to determine the exact share of trips.

8 [www.gov.ie/en/campaigns/5e95b-e-bikes-e-mopeds-and-e-scooters/](http://www.gov.ie/en/campaigns/5e95b-e-bikes-e-mopeds-and-e-scooters/)

9 The EU Alternative Fuels Infrastructure Regulation ((EU) 2023/1804) mandates minimum infrastructure requirements on the European transport network.

10 [www.nationaltransport.ie/news/minister-ryan-launches-irelands-first-all-electric-town-bus-service-in-athlone/](http://www.nationaltransport.ie/news/minister-ryan-launches-irelands-first-all-electric-town-bus-service-in-athlone/) (accessed 31 July 2024).



The simulation does not assume that vehicles are electric; thus, supplying electric shared mobility options could cut emissions even further (ITF, 2018). Another study shows that the introduction of shared cars in Dublin, assuming a certain level of uptake and that all vehicles would be electric, could save emissions of 84 kt CO<sub>2</sub> eq annually (Rabbitt and Ghosh, 2016). The Yuko scheme in Dublin was found to decrease emissions and reduce car ownership (Caulfield and Kehoe, 2021). Over recent years the number of shared bike schemes across the country has grown substantially. Each of the five cities in Ireland now has a shared bike scheme, and many of the larger towns across the country are introducing similar schemes.

In addition to systems already available, such as docked or dockless e-bikes and e-scooters, new solutions such as e-mobility hubs are being tested. The hubs centralise the availability of various forms of micromobility and electric cars, often interconnected through a unified digital platform. Such solutions are currently being tested in Ireland in projects including eHUBS (Interreg NWE, 2023), TRACT (SEAI, 2023a) and ROBUST (SEAI, 2023b).

*Freight transport.* A particularly difficult challenge for decarbonising the transport sector has been encountered in the haulage and heavy goods road freight sector, which, together with emissions from the light commercial vehicle fleet, accounts for 43% of total transport emissions. Collectively, the commercial goods fleet comprises over 385,000 commercial vehicles (as at end December 2021), of which approximately 40,000 are HGVs, which are heavily reliant on diesel fuel for their operation (Topic Box 11.3).

### Topic Box 11.3 Freight transport

#### Integrating road, rail and maritime freight transport

The optimal strategy for freight transport is to integrate road freight, rail and maritime transport and to shift economic incentives to favour rail freight (OECD, 2021). The *All-Island Strategic Rail Review* (DoT and DfI, 2024) and earlier Rail Freight 2040 Strategy (Irish Rail, 2021) propose to integrate rail in more pronounced ways into existing freight corridors. The rail review (DoT and DfI, 2023) aims to increase rail freight's share of total freight transport to 10%, from a current historical low of below 1% of total tonne-kilometres. The proposed recommendations include creating a sustainable first mile–last mile access system for Dublin Port, lowering track access charges for freight services, enhancing rail connections to major ports, and establishing a network of inland terminals near major cities on the rail network. The estimated reduction in emissions resulting from these changes is not known. Nevertheless, Irish Rail estimates show that rail freight produces 76% less emissions per tonne-kilometre than road transport even if not electrified (Irish Rail, 2021), and thus the savings are likely to be substantial. This is a long-term plan and it will be important to monitor and evaluate progress to ensure effective and timely delivery.

#### New last-mile delivery options

For the last mile of delivery, e-cargo bikes, which are designed for transporting heavy loads, are equipped with an electric battery to reduce the physical strain on the rider. Given that a substantial amount of the transport of goods by HGVs occurs within urban areas, identifying an alternative such as e-cargo bikes is crucial for reducing traffic congestion. These bikes are versatile and suitable for various urban freight needs, including postal deliveries (Topic Box 11.4), food and drink deliveries, and essential service maintenance (Blazejewski *et al.*, 2020).

Internationally, e-cargo and cargo bikes are commonly used for last-mile deliveries, moving goods from city hubs, micro-hubs or directly from local businesses to customers (Büttgen *et al.*, 2021; Katsela *et al.*, 2022). A recent simulation for Padua suggests that using e-cargo bikes for last-mile deliveries could reduce costs by 27–45% and emissions by 71–79% and also shorten delivery times in the case of e-cargo bikes (Ceccato and Gastaldi, 2023). Research indicates that infrastructure improvements, such as segregated cycling lanes that can make deliveries by e-cargo bikes more efficient than vans and trucks, are expected to increase uptake. Other infrastructure improvements include better parking facilities and improved access for cargo bikes (Sherriff *et al.*, 2023).



### Topic Box 11.4 Transitioning to sustainable transport

An Post, as the operators of one of the largest fleets in the country, has a responsibility to ensure that it is reducing the carbon footprint of its vehicles. With a presence in every community, An Post is able to help create a cleaner, greener society by spreading awareness and leading by example.

In 2018, An Post began transitioning its fleet to EVs and committed to replace its last-mile vehicles with EVs wherever possible. There are now over 1100 EVs in the fleet, including the first 7.5-tonne e-truck in Ireland as well as over 160 e-trikes for shorter routes.

An Post's journey to a sustainable transport model extends beyond vehicle acquisition to include:

- the development of Ireland's largest private charging network of over 1300 chargers, including two public-access fast chargers for customers at the Carlow and Wexford delivery service units
- the use of hydro-treated vegetable oil for its HGVs as an interim solution.

An Post is committed to investing further in sustainable transport, expanding and adapting its last-mile EV fleet as it shifts from being a letter-focused to a parcel-focused business. It remains on track to meet its target of transitioning 50% of the fleet to alternative fuel sources by 2025.

An Post is an active member of a number of leading national and European networks, including the Alliance for Logistics Innovation in Europe,<sup>11</sup> Climate Group<sup>12</sup> and Hydrogen Ireland.<sup>13</sup>



Source: An Post

### Integrated response

Volume 4 of the recently published Ireland's Climate Change Assessment (Moriarty *et al.*, 2023) supports the call for systemic change in the transport sector. The necessary change must occur within the structure of the transport system, rather than only targeting symptoms such as traffic congestion. This entails shifting

the focus of the transport system's goals from mobility to accessibility. The need to integrate spatial, urban and transport planning provides leverage for redesigning the current system and the avoid–shift–improve framework can help prioritise actions so that proximity redesign ('avoid') is placed at the forefront, followed by supporting the shift to sustainable transport modes ('shift').

11 [www.etp-logistics.eu](http://www.etp-logistics.eu) (accessed 31 July 2024).

12 [www.theclimategroup.org/ev100-members](http://www.theclimategroup.org/ev100-members) (accessed 31 July 2024).

13 [hydrogenireland.org/?sfw=pass1727261097](http://hydrogenireland.org/?sfw=pass1727261097) (accessed 31 July 2024).



## 5. Areas for focus

### Increasing demand for transport

In 2023, we saw increasing numbers of vehicles on our roads, a record demand for public transport and an increase in the demand for freight. Together with our increasing population, these factors will all make reaching our emission reduction targets in the transport sector very difficult to achieve.

### Capacity constraints

Extensive plans exist for developing new public transport infrastructure, including MetroLink, DART+ programme, Luas extension in Dublin, light rail for Cork, BusConnects for Dublin, Cork, Galway, Waterford and Limerick, and active travel infrastructure right across the country. Achieving the volume of construction required to deliver this infrastructure by the end of the decade will be a monumental task. Many large transport projects have faced planning delays, and their timeline for construction and delivery in the late 2020s to mid 2030s means that they are unlikely to deliver substantial decarbonisation of the sector over the rest of this decade.

### Emissions rising

In 2023, we saw GHG emissions stabilise in comparison to 2022, and it appears that the benefits and savings from existing policies and measures are just keeping pace with the drivers pushing emission levels upwards.

### A growing private transport fleet

The make-up of car fleets in Ireland is following the international trend towards larger and heavier vehicles. Almost 80% of the vehicles sold in 2023 were reliant on fossil fuels,<sup>14</sup> with sales of new cars up 16% on 2022. These vehicles will be in Ireland's car fleet for at least another decade, locking in their emissions and making it increasing difficult to decarbonise this sector.

### Grid capacity to facilitate heavy goods vehicle charging

A key concern is getting charge into depots to allow low-cost overnight HGV charging. EV trucks are commercially available and the cost is supported by a state grant – but private and public uptake is likely to remain low until a charging infrastructure is in place.

### Long-term ability to adapt

The current trajectory in the uptake of electric cars could see us reach our Climate Action Plan targets for 2025. However, the targets for 2030 are very ambitious, and obstacles such as the supply of electric cars, the availability of charging infrastructure and a potential plateau in sales may put this target in jeopardy. Equally, there are concerns about the supply of feedstock required to produce the amount of biofuel required in our targets.

14 [www.simi.ie/en/news/121-850-new-car-registrations-in-2023-electric-cars-up-45](http://www.simi.ie/en/news/121-850-new-car-registrations-in-2023-electric-cars-up-45)





### 6. Conclusions

The transport sector is a major consumer of energy and material resources, and it is a source of environmental pollution, particularly GHGs, air pollutants and noise. A sustainable transport network is a vital attribute of any country, as it reduces pressure on the environment and results in cleaner, quieter towns and city centres.

The OECD has noted that aiming to decarbonise the transport system in Ireland via improvements in private vehicles is unlikely to lead to substantially different patterns of behaviour or achieve the rapid emission reductions needed for climate change mitigation. To achieve Ireland's climate goals in the transport sector requires systemic change. Such change requires deep integration of spatial, transport and transition planning to implement measures that deliver compact development and to expand the active and public transport infrastructure to achieve the modal shift needed to overcome the dominance of the private car.

An internationally accepted policy approach for changing transport systems is the hierarchy of the avoid–shift–improve framework. This includes implementing measures to reduce the frequency and distance of trips (avoid); moving towards more environmentally friendly modes of transport, such as walking, cycling or using public transport (shift); and promoting efficient fuel and vehicle technologies, including EVs (improve). For Ireland, while elements of the framework are in place, there is a need to accelerate this approach if we are to decarbonise the transport sector and meet our challenging environment and climate targets.



## Key chapter messages

- 1.** The transport sector is a major consumer of energy and material resources and is a source of environmental pollution, particularly greenhouse gases, air pollutants and noise.
- 2.** A sustainable, accessible and efficient transport system is not only important for the environment and wellbeing but is also a key enabler for the economy.
- 3.** High-level integration between land use planning and transport planning is needed to achieve more compact development, incentivise a move away from private cars, and move trips to rail, bus, cycling and walking. Shifting to these modes is an essential part of a sustainable and climate-neutral transition for the transport sector.





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