Secretariat paper: 'Setting the Scene'

Where are we now?

Transport is a major source of greenhouse gas emissions in Ireland. Total CO_2 emissions from transport grew by +133% between 1990 and 2017 (see Figure 1). Transport is the second largest emitter in Ireland, behind agriculture, at 19.8% of the national total emissions (12 $MtCO_2$ in 2017), and 27.1% of the non-ETS emissions that make up the 2020 and 2030 targets. Transport CO_2 emissions are dominated by private car at 52%, followed by road freight at 19% (see Figure 2).

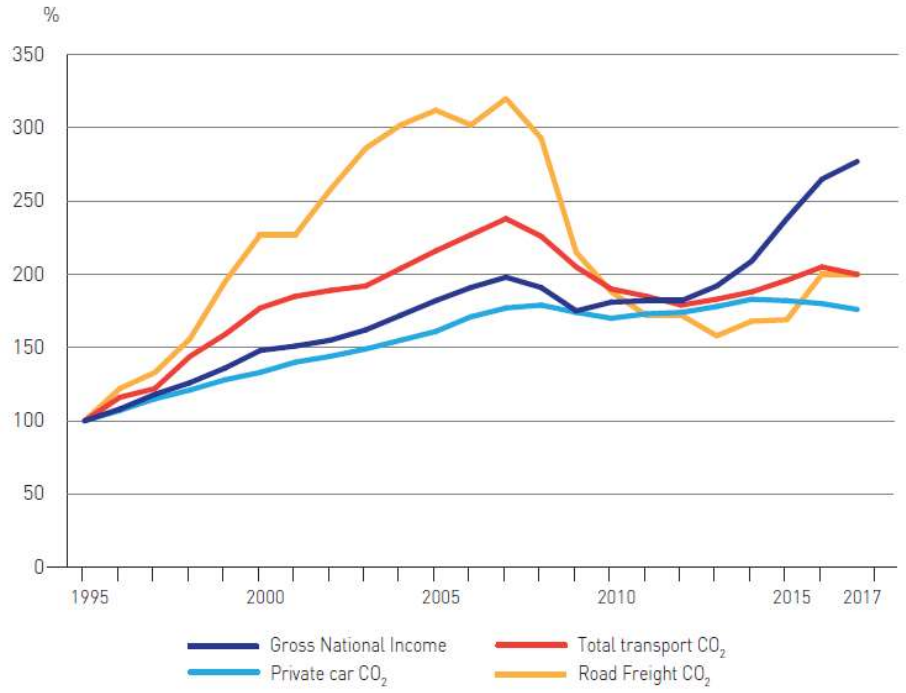

Figure 1. *Trends in the economy and in transport CO_2 CCAC Annual Review 2019.*

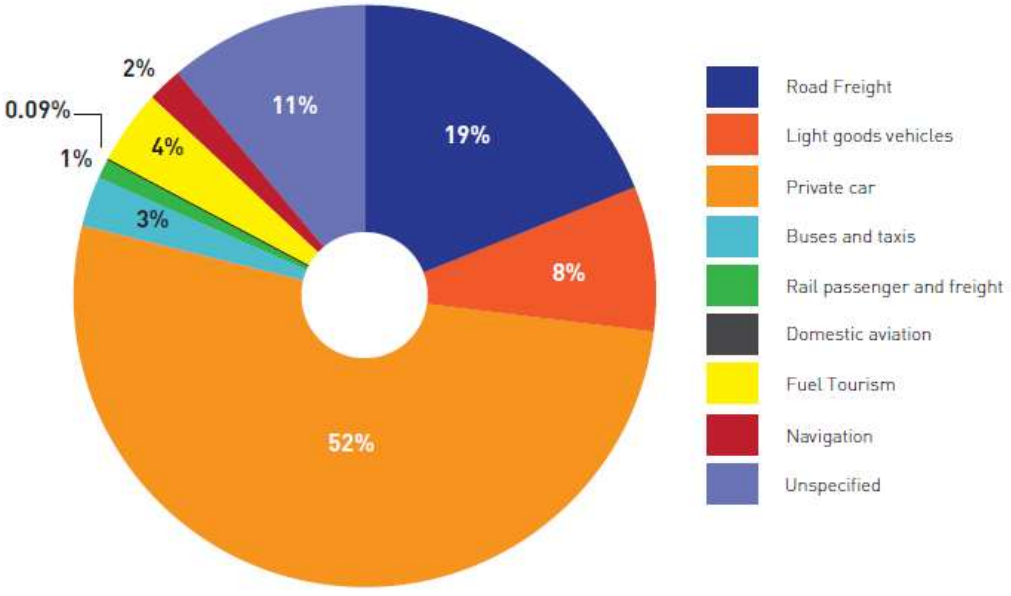

Figure 2. *Modal shares in Irish transport CO_2 emissions in 2017 CCAC Annual Review 2019.*

The Intergovernmental Panel on Climate Change Assessment Reports have noted the challenge of the growth in transport emissions globally, and its drivers (IPCC, 2007; IPCC, 2014). Key drivers include growth in income and population, social and cultural factors, costs and prices and patterns of spatial and infrastructure development. Globally these combined drivers have both increased absolute demand for passenger mobility, and also directed it towards increased individual and motorised transport. Freight is subject to similar drivers that have manifested in increased physical trade in goods. In some countries this has been directed towards road and also lower load capacities, which can evolve from logistical practices such as Just In Time delivery.

These emissions driving forces are more pronounced in Ireland. High national income and population growth have manifested in high passenger and freight mobility demand. Decades of dispersed pattern spatial development, and a priority on infrastructural investment in roads have led to emissions intensive transport patterns, and risks of 'lock-in'. Ireland's rank in transport emissions per capita in the EU illustrates the scale of the challenge of deep decarbonisation of transport.

Table 1: *Most recent transport emissions data (2017) and per capita rank by Member State in the EU 28*

Rank	State	tCO_2 per capita
1	Luxembourg	10.06
2	Austria	2.71
3	Slovenia	2.70
4	**Ireland**	**2.38**
5	Belgium	2.30
-	**EU average**	**1.76**

Compiled from EU Emissions Database for Global Atmospheric Research (EDGAR) 2018

Where are we going?

The EPA 2019 projections suggest that even with additional measures coinciding with a high oil price acting to dampen emissions, in its 'with additional measures' (WAM) policy projection, emissions will peak at 12.7 $MtCO_2$ in 2020, remaining more than 10 $MtCO_2$ in 2040. This policy projection includes 500,000 EV and increased biofuels. Under its 'with existing measures' (WEM) projection emissions increase to 12.7 $MtCO_2$ in 2040. These projections do not include the new Climate Action Plan 2019 which will feature in the EPA's 2020 projections.

Table 2: *EPA 'With Additional Measures' projection for transport to 2040 in $MtCO_2$ (EPA, 2019)*

1990	2005	2016	2017	2020	2030	2040
5.2	13.1	12.3	12	12.7	11.9	10.1

Where do we need to go?

Ireland's 2020 target is to achieve a 20% reduction of non-Emissions Trading Scheme (non-ETS) sector emissions on 2005 levels. The 2030 target under 'Effort Sharing' is a 30% reduction of emissions from 2005 levels by 2030. Both periods have binding annual limits.

Ireland's national transition objective, in the 'National Policy Position' and the Climate Action and Low Carbon Development (LCD) Act 2015, is to 'transition to a low-carbon, climate-resilient and environmentally sustainable economy by 2050'. This is separated into two branches; to reduce CO_2 emissions in three key sectors – electricity generation, the built environment and transport – by 80% by 2050, relative to 1990 levels, and seeking 'carbon neutrality' for agriculture, land use and forestry. These targets are not legally binding.

Irish policy targets have tended to follow EU developments. A future EU Council decision to meet the Paris Agreement by pursuing a 1.5C prompt a move from -80% to net zero. In 2019, key developments in Ireland included the Report of the Joint Committee on Climate Action, the declaration of a 'climate emergency', and the publishing of a new Climate Action Plan for all sectors. This plan includes proposals for new transport policies and measures, enhanced governance arrangements, carbon budgeting and sectoral targets and a new Climate Action Bill. The Climate Action Plan details a target of 950,000 EV's by 2030, some provisions to increase density of new development (which will reduce the rate of low-density development but will not eliminate it), and some measures to promote a marginal increase in active and public transport journeys by 500,000 by 2035. If successfully implemented, the proposed policies and measures could potentially assist in meeting the 2030 target. However, it is not clear that these measures are sufficient to establish the deep reduction trend required to 2050, particularly with expected strong growth in the key drivers of income and population.

The EPA WAM 2019 projects an average annual reduction in emissions of 0.8% per annum to 2040. Assuming a drop in transport emissions of -80% of 1990 levels by 2050 would require an average reduction of -4.2% p.a. Reducing emissions to 0 in 2050 would require an average reduction of -4.5% p.a. Changing to a transition pathway will require fundamental and significant policy change (CCAC, 2019). Given the importance of the sector in Effort Sharing, and the difficulty in reducing emissions, The Council has prioritised transport for the 2019-2020 work programme and proposed a Special Focus chapter in the 2020 Annual Review.

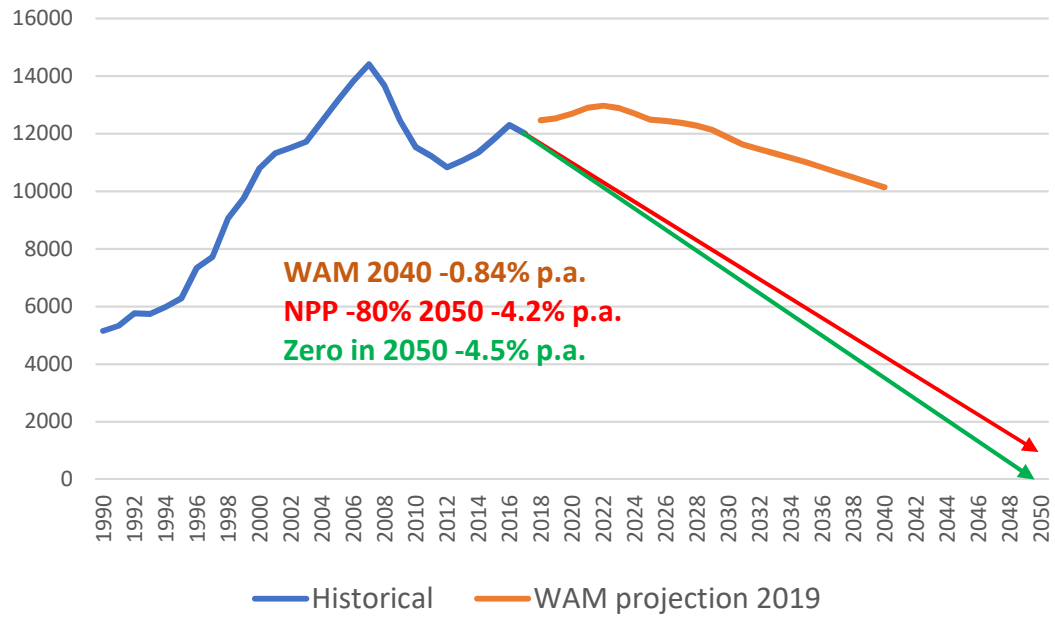

Figure 3. *Historic and future transport emissions from 1990 to 2050 in ktCO₂.* **Data:** *EPA (2019)*

What are the options?

Energy and carbon efficient transport, by alternative drive trains and biofuels, are identified as important approaches to meet targets and decarbonise transport. Behavioural measures can also assist in pushing efficiencies and reducing transport demand. Carbon taxes may be useful to prevent rebound as efficiency improves, and investment is a key driver and enabler of alternative pathways (IPCC, 2014). However, the IPCC have also recommended that systemic change is necessary for an optimal approach to low-carbon transition. This conclusion is strengthened in Ireland's case when considering growing income and population driver, in tandem with the variety of other policy objectives required of transport e.g. access, mobility, productivity, safety, and health. The IPCC Assessment reports suggest that while efficiency is necessary it is not sufficient (IPCC, 2007; IPCC 2014). An 'Avoid-Shift-Improve' (ASI) approach seeks 'avoided demand', such as through increased spatial density, 'shift' to active and public modes and finally 'improvement' for energy and carbon efficiency through behaviour and technological change.

Applying an ASI approach would have implications for policy and governance (NESC, 2019), both short and long-term strategy needs and for investment patterns. Developing long-term strategy is key and must include, but also go beyond, efficient technology and behaviour. This is achieved by considering different development pathways that embody alternative spatial patterns and demand reductions and consider the transformation of mode composition, to also include high active and public transport scenarios. This has implications for the form of modelling and analytical support provided. The feasibility of these different pathways, and their associated economic, social and environmental implications, are key inputs to decision-making on the appropriate long-term strategy for transport.

A range of strong and mutually-supportive policies will be needed for the transport sector to decarbonise and for co-benefits to be realised (IPCC, 2014). This includes both regulatory and pricing approaches, and requires cross-departmental policy integration, particularly of spatial planning, transport and infrastructure investment. In addition to association with deep emissions reductions, ASI also presents opportunities for distinct co-benefits and policy synergies, and ultimately a platform for a more cost-effective and just low-carbon transition of transport.