Domestic transport behaviour

In 2013 the transport sector accounted for the largest share of emissions (35%) and largest share of final energy consumption (40%) in Ireland.[6] Each of us travelled an estimated 13,000 km per year in 2013, excluding trips abroad. About 83% of this distance was by car or motorcycle, 4% was by rail, 10% by bus, 2.5% on foot, and 0.5% by bike.[7]

The rate of change in the distance travelled by each person (passenger-km) in the levers is driven by GDP and population growth, cost of travel, urbanisation and urban planning, and flexible working arrangements.[8]

Trajectory 1

Trajectory 1 assumes that by 2050 each of us travels 1200 km or 9% more than today. Current trends in distance travelled per capita continue with growth slowing over time as car ownership has a gradually weakening relationship with income. The share by mode of transport stays the same. Occupancy rates in cars fall as single person driving becomes more prevalent.

Trajectory 2

Trajectory 2 assumes that by 2050, each of us travels 7% more than we do today. Greater flexibility in working hours and increased use of teleconferencing are offset by rebound effects in non-commuter travel. Slightly less travel is by road and slightly more is by foot, bicycle and bus. The share of distance travelled is 79% by road, 4% rail, 13% bus, 3% foot and 1% by bike. Occupancy rates in cars and other vehicles stay the same.

Trajectory 3

Trajectory 3 assumes that by 2050, each of us travels 7% more than we do today and that there is a shift away from cars towards public transport and bicycles: 74.4% road, 4.6% rail, 16% bus, 3% foot, and 2% bike. One in 20 car trips are shared with one extra person.

Trajectory 4

Trajectory 4 assumes that in 2050 each of us travels approximately the same distance as we do today despite sustained economic growth. Increased use of local services and alternatives to commuting such as teleconferencing and flexible working arrangements are encouraged. There is a big shift away from the car: 70% road, 5% rail, 17% bus, 3% foot, and 5% bike. One in 10 car trips are shared with one extra person, cycle use increases to rates observed in the Netherlands, and rail passenger travel distance more than doubles (including impact of population growth).

Interaction with other choices

We can power Ireland's cars, buses and trains by biofuel rather than diesel or petrol, or rely on electricity or hydrogen fuel cells. In the 2050 Calculator, the technology used and hence the emissions created is influenced by how much transport is electrified, how much electricity is decarbonised, and how much bioenergy is available for transport.

Table 1. Assumptions on distance travelled and the split of how that distance is travelled.

	2013	2050 T.1	2050 T.2	2050 T.3	2050 T.4
Km travelled/ person/ yr	12,900	14,000	13,800	13,800	12,900
% of km by:					
Walking	2.5%	2.5%	3.0%	3.0%	3.0%
Pedal cycles	0.5%	0.5%	1.0%	2.0%	5.0%
Cars, Vans, and Motorcycles	83.2%	83.2%	78.8%	74.4%	70.0%
Buses	9.9%	9.9%	12.9%	15.9%	16.9%
Railways	3.8%	3.8%	4.2%	4.6%	5.0%
Domestic air travel	0.05%	0.05%	0.05%	0.05%	0.05%

Figure 1. Passenger transport energy demand (TWh/yr).

Note: Zero Emission lever at Trajectory 1 (20% PHEV, 2.5% EV) and Battery or Fuel Cell lever at Trajectory A