

Challenge 1; Transport

Transport is the single largest emitter after agriculture, with private cars accounting for 20% of Co. Cork's energy demand in 2018, emitting 719 ktonne of CO₂ (11%)

- How might Co. Cork reduce its reliance on petrol / diesel?
- What can be done to encourage people to try new or different forms of transport?

Co. Cork 2018 Vehicle Stock	No. of vehicles ^[1]	Avg. km per year ^[1]	Avg. kWh / km	Private Cars	No. of vehicles ^[1]	Avg. km per year ^[1]	Avg. kWh / km
Private cars	257,933	16,748	0.665	Diesel	137,574	20,323	0.648
Freight				Petrol	115,340	12,634	0.694
Light goods vehicles^[2]	37,866	19,946	1.314	Hybrid	4,761	13,252	0.46
Heavy goods vehicles^[2]	4,155	45,068	2.621	EV	258	13,252	0.15

Example calculations

The average commute in Cork City is 8.53 km [3]. That will equate to;

$$8.53 \times 2 \times 5 = 85.3 \text{ km per week or } 85.3 \times 47 \text{ (work weeks in a year)} = 4,009.1 \text{ km per year}$$

So for every person that switches to cycling instead of driving, the associated CO₂ savings are as follows;

Diesel car –

$$4,009.1 \text{ km} \times 0.694 \text{ kWh / km} = 2,597.9 \text{ kWh / year}$$

$$2,597.9 \text{ kWh} \times 0.264 \text{ kgCO}_2 / \text{kWh} = 685.86 \text{ kg CO}_2$$

$$4,009.1 \text{ km} / 20,323 \text{ km} = 19.5\% \text{ savings}$$

Petrol car –

$$4,009.1 \text{ km} \times 0.648 \text{ kWh / km} = 2,782.32 \text{ kWh / year}$$

$$2,782.32 \text{ kWh} \times 0.252 \text{ kgCO}_2 / \text{kWh} = 701.14 \text{ kg CO}_2$$

$$4,009.1 \text{ km} / 12,634 \text{ km} = 31.3\% \text{ savings}$$

The average commute in the County is a lot longer than the city at 18.06 km [1]. Some of these journeys are likely difficult to replace with cycling or walking. However, for every petrol car that switches to an electric vehicle, the annual reduction is currently;

$$12,634 \text{ km} \times 0.694 \text{ kWh / km} \times 0.252 \text{ kgCO}_2 / \text{kWh}^* = 2,242 \text{ kg CO}_2$$

$$13,252 \text{ km} \times 0.15 \text{ kWh / km} \times 0.3754 \text{ kgCO}_2 / \text{kWh}^* = 757 \text{ kg CO}_2$$

$$2,242 - 757 = 1,485 \text{ kg CO}_2$$

**provided in supplementary information*

Useful sources of information

[1] [Transport Omnibus 2018 - Road Traffic Volumes](#)

[2] [Irish bulletin of driver statistics 2019](#)

[3] [Census of Population 2016 – Profile 6 Commuting in Ireland](#)

[Results from 2016 Census for Co. Cork](#)

[CSO National Travel Survey 2019](#)