

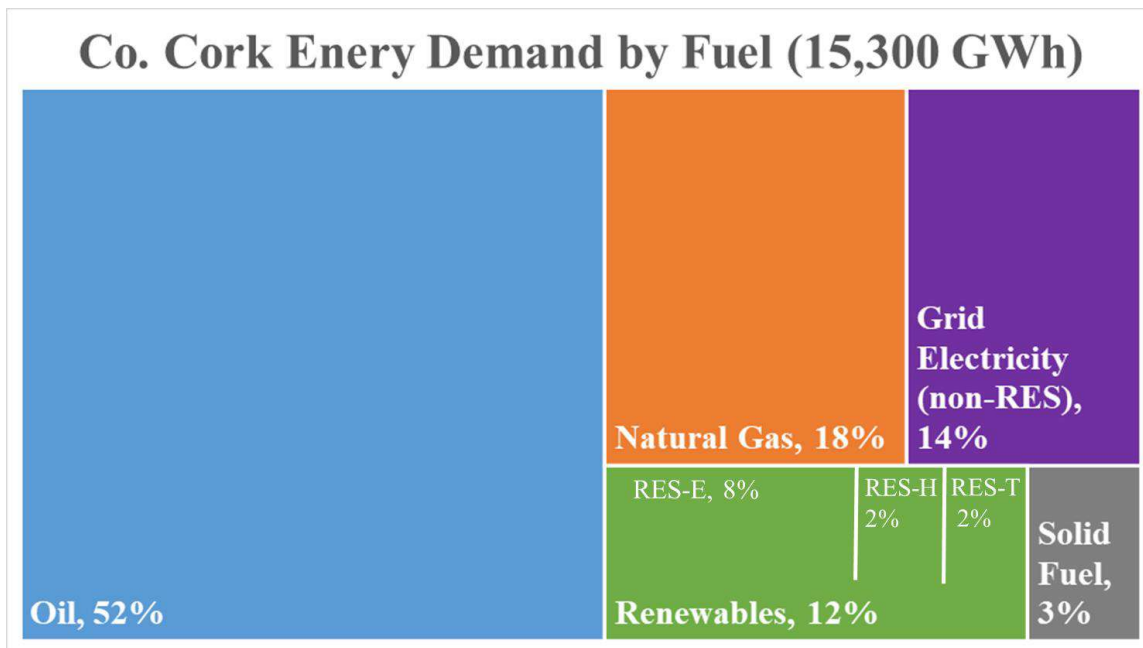
Challenge 3; Renewable energy

In 2018, Co. Cork residents and businesses spent around **€1 billion on imported fossil fuels**, with €845 million on oil (heating oil, LPG, petrol, diesel) and €140 million on natural gas.

- What renewable energy technologies would be most suitable for your area?
- What fossil fuels could this replace?

Nationally, we have been very successful at decarbonising our electricity sector. In fact in 2019, Ireland had the largest share of on-shore wind energy in the world at 32.5% of our electricity^[1]. Building on this success, the current Government ambition is that by 2030 we will have an electricity grid that is 70% renewable^[2]; thanks to a huge growth in on / off-shore wind and solar PV. This helps us reduce emissions from private cars and home heating if these become electrified with electric vehicles and heat pumps.

However; at the moment electricity is only 20% of our total energy demand, some things (like large road vehicles or industrial heat) can't be electrified, and the wind / sun aren't always available, so what other alternatives?



Example calculations

6 Solar PV panels for a home – $6 \times 285W \times 10\% \text{ (capacity factor)}^{[3]} \times 8,7060 \text{ (hours in a year)} = 1,498 \text{ kWh}$

Savings – $1,498 \text{ kWh} \times 0.375 \text{ kgCO}_2/\text{kWh}^* = 562 \text{ kg CO}_2$ & $1,498 \text{ kWh} \times 0.2369 \text{ €/kWh}^* = €355$

On the residential information sheet, the example calculation shows the savings from installing a heat pump. An alternative option would be to inject biogas into the gas grid and thus reduce its carbon intensity^[4]

At 20% renewable gas on the grid - $0.205 \text{ kgCO}_2/\text{kWh} \times 0.8 = 0.164 \text{ kgCO}_2/\text{kWh}$

CO₂ saving per average home - $108 \text{ m}^2 \times 95 \text{ kWh/m}^2 \times (0.205 - 0.164) \text{ kgCO}_2/\text{kWh}^* = 421 \text{ kgCO}_2 \text{ per year}$

*provided in supplementary information

Useful sources of information

[1] [REN21; Renewables 2020 - Global Status Report](#)

[2] [All of Government Climate Action Plan 2019](#)

[3] [All-Island Generation Capacity Statement 2019-2028](#)

[4] [Gas Networks Ireland, the Future of Renewable Gas in Ireland](#)