

Fuel prices

Despite renewed tensions in the middle east, oil prices remain lower than last year and have just experienced their biggest weekly drop since 2008

The COVID19 crisis will further depress demand and prices in the short term.

Carbon Tax was increased by €6/tonne CO₂e in Budget 2020 and will increase by €6 per year to 2030 (totalling €80/tonne of CO₂ or 373Litre of diesel).

At €1.33/Litre carbon tax is 5cent per litre, by 2030 this will be 21c/Litre

Emissions

Road freight is: 9.2% of Ireland's 2018 CO₂/GHG emissions (that's HDVs and LCVs).

Transport energy use has grown every year since 2012, in 2018 was 24% higher than in 2012. Road freight accounts for 14% of total transport emissions, down by 32.9% vs 2005, car fuel use and emissions are up 10% vs 2005.

Save fuel: Get Paid

- ◆ Upload your Km and Litres via the app <https://www.ftai.ie/ecofleet>
- ◆ Using the app is mandatory for Enprova funding (from Mar'19)
- ◆ Videos to help you upload are available online (feedback welcome)
- ◆ **Sign-up for Enprova** funding to 2030 <https://www.ftai.ie/ecofleet>

Alternative Technology Working Group

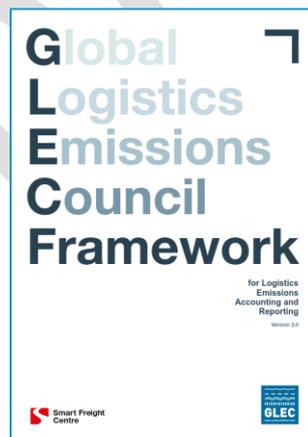
FTAI Alternative Technology group meeting will take place **????**;

- ◆ CNG stations are now open and **???** CNG trucks are operational.
- ◆ **Savings to date** are of the order of 20% in fuel running costs.
- ◆ **A new grant for purchasing CNG vehicles will open** **....**

Sustainable logistics training

14 members have now completed their Smart Transport Manage training with 6 companies to be recognised by SFC Global Logistics Emissions Council for their emissions reduction action plans.

Download these guides from <https://www.smartfreightcentre.org/en/>



Book a training session with FTAI for your team; draft your fuel saving action plan and upload your results quarterly to the app.

New from March 2020: Ask your Local Enterprise Office, Enterprise Ireland or IDA Development Advisor can you avail of **supports for Sustainable Logistics training** (ask for 'GreenSTART').

¹ Briefing prepared by Conor Molloy MSc MCILT and Raoul Empey CEng MIEI for FTAI, March 2020 - a follow-up to 2013- 2019 briefings.

Carbon dioxide (CO₂) Q&A

What is CO₂? Carbon Dioxide is one molecule of carbon and two of oxygen, burning any fossil fuel combines carbon with air to make CO₂. One Litre of diesel weighs .745kg, when combusted with 14 parts air (14:1) it emits 3.17²kg of CO₂ well to wheel (WTW) i.e. including its emissions from drilling, refining, shipping and delivery to final combustion.

As the predominant greenhouse gas (GHG), CO₂ persists for 100 years in the atmosphere and helps to retain heat in our atmosphere; resulting in climate change. Globally and in Ireland, CO₂ is now at 415ppm (Feb'20) up from 411ppm in 2019 and 317ppm in 1960 when measurement started.

CO₂ emissions from transport (SEAI)

2018 showed a reduction in overall carbon emissions, but **Transport and Home Heating increases put Ireland well off target** according to SEAI (March 2020):

- Energy-related CO₂ emissions fell slightly, but not fast enough to achieve target
- Emissions from energy use for transport and heating are increasing
- Transport was responsible for the largest share of energy-related CO₂ emissions in 2018 at 40%, up from 33% in 2005.



Greenhouse Gas (GHG) or CO₂ emissions from transport have increased by 24% since 2012, this growth is primarily from cars, which comprise 40% of total transport emissions, freight is 14% of transport emissions and air travel increased by the fastest amount with an 8% increase in one year (2017 to 2018).

Biofuel content in diesel

This is a complex topic, suffice to say the 8.6% quoted in headlines is actually half that by volume in real terms i.e. 4.3%; as each litre of biodiesel (or FAME) from waste is double counted. When you see 'B5' it means up to 4-6% bio-diesel (usually from used cooking oil) in your diesel supply.

B5

Always remember to **put energy performance first**; a litre of diesel avoided is worth more to your bottom line and your carbon footprint, than a small reduction in GHG/CO₂ from fuel choice.

The oil industry is looking at ways to increase biofuel content whilst maintaining performance. **Hydrotreated Vegetable Oil (HVO)** is a leading contender to replace the FAME bio-diesel added to our fuels in Ireland: HVO features a high cetane number i.e. it improves performance, and can be mixed with diesel up to 80-100%. **Why can't you buy HVO now?** Its expensive to make, the feedstocks are limited and the hydrogen needs to come from renewable sources, in short its complicated, but HVO does offer a bridge fuel from diesel to zero emissions vehicles in the 2020s.

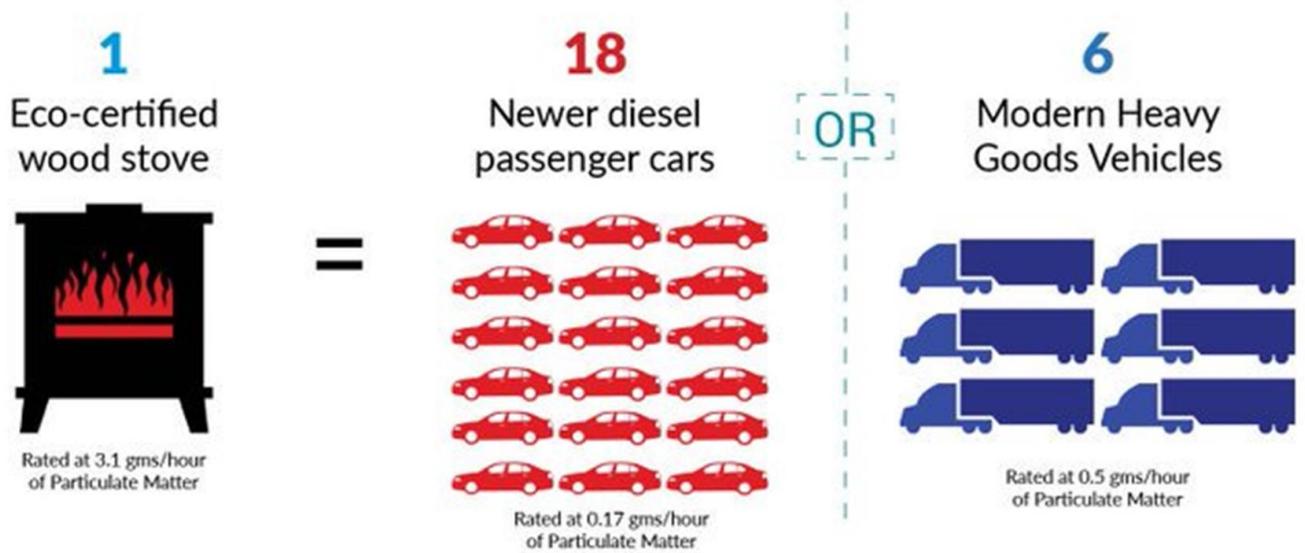
² 3.17kg is the Global Logistics Emissions council factor for road diesel well to wheel emissions.

³ In Ireland we use 2.68kg of CO₂/Litre final energy i.e. the fuel you pay for at the pump (tank to wheel)



Air Quality Emissions, Parts Per Million

Particulate Emission (PM) limits compared, this graphic got a lot of attention in our 2019 training, reproduced here for your information. It is based on the UK Air Quality Expert Group annual report 2017 (fuller details below).



Data from: "Potential Air Quality Impacts from Biomass Combustion", Air Quality Expert Group (UK), 2017

Figure 1 https://uk-air.defra.gov.uk/assets/documents/reports/cat11/1708081027_170807_AQEG_Biomass_report.pdf

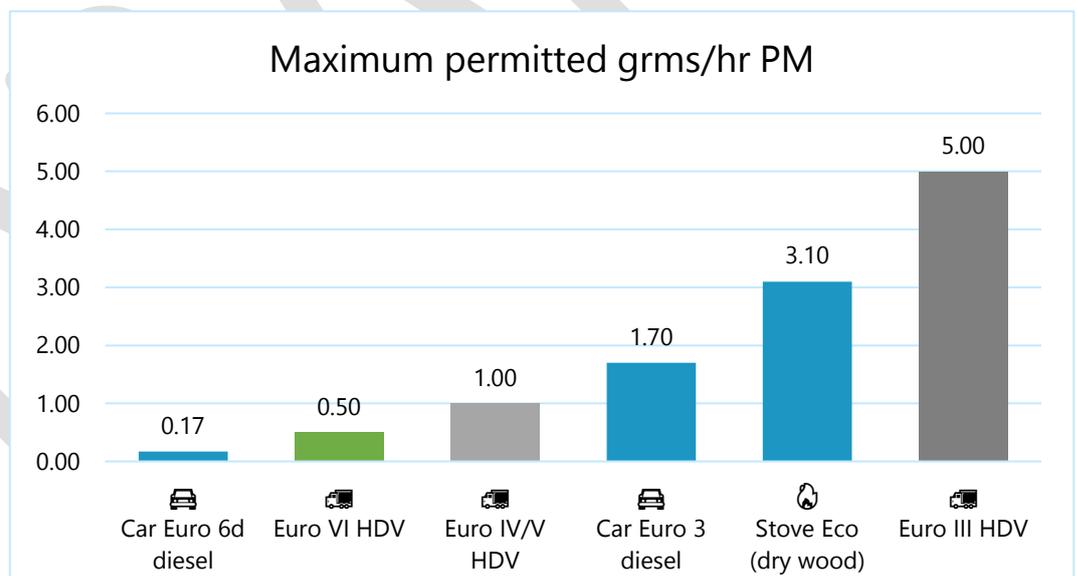
What's the difference between CO₂, NO_x and PMs? All are products of combustion.

PM or Particulate Matter

is usually measured in microns hence PM_{2.5}, PM₁₀ etc. There may be some scepticism about these PM figures so we reproduce the full limit figures right.

Nitrides of Oxygen NO_x

are a product of efficient combustion i.e. the higher the combustion efficiency the higher the NO_x (generally speaking).



Euro VI engines are more efficient than Euro V and significantly more efficient and cleaner than Euro III.

Zero emissions commercial vehicles

Electric Commercial vehicle choices are still narrow, but **An Post** now make zero emissions deliveries in Ireland's cities, with 220 electric vans and 750 electric vehicles expected on the fleet by the end of 2020. **Renault** have [announced series production of their electric D series trucks](#) >>



GHG Conversion factors

Smart Freight Centre have published the **Global Logistics Emissions Council standard for Greenhouse gas (GHG) reporting** which **standardises the GHG questions** for customers (shippers) and members (hauliers/carriers). The factors used below are well to wheel (WTW), the factors used in past publications were Tank to wheel (TTW).

Fuel / energy type (1L Diesel = 10.169 kWh in Ireland)	Unit price (2019)	€ Price /kWh	Conversion Efficiency	Delivered Cost/kWh (motive power)	kg CO ₂ e/kg of fuel	Reduced NOx and PM's	Available	Issues
Electricity (Lithium-ion battery, night rate - SEAI Commercial Cost Comparison Jul-19)	€ 0.08	0.08	0.80	0.10	0.379 ^[2]	✓	Ubiquitous	Grid connections
Diesel DERV (EN590) Euro III-V 4-6% Biofuel by volume in Ireland	€ 1.33	0.13	0.20	0.66	3.80	✗	Widely	Poison to marine life, expensive to clean up
Diesel DERV (EN590) Euro VI 4-6% Biofuel in Ireland	€ 1.33	0.13	0.21	0.62	3.80	✓	Widely	
Compressed Natural Gas (CNG) 100% gas engine HPDI ^[1]	€ 0.75	0.06	0.20	0.30	3.07	✓	Limited	Lighter than air, but 20x CO ₂ GWP (slippage)
Liquefied Natural Gas (LNG) 100% LNG, no mix with diesel ^[1]	€ 1.00	0.08	0.20	0.40	3.62	✓	On-site	
BioLNG 100% LNG, no mix with diesel.	TBC	TBC	0.20	TBC	1.04	✓	On-site	
BioDiesel from wastes e.g. 100% HVO 9.109 kWh/L	€ 1.60+	0.18	0.21	0.70	1.92	✓	TBC	Can be blended with diesel
Renewable Hydrogen (UK price for hydrogen from methane using waste wind & solar electricity, compressed at 700 bar)	TBC	0.29	0.80	0.36	0.00	✓	Pilot supply	Invisible flames
1) CNG & LNG offer a pathway to hydrogen fuel cells - potentially the best option where payload matters (we'll know by 2025). 2) electricity CO ₂ e per kWh varies by year (2018)				Price/kWh ÷ Combustion or Conversion Efficiency	Well to Wheel from GLEC Framework 2019			

