



The Future of the Internal Combustion Engine

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Introduction

The future of the engine seems on the brink of extinction, with the introduction of BEV's (Battery Electric Vehicles) the end of the Engine seems imminent. With legislation's being put in place in the EU to stop the sale of new Petrol/diesel powered vehicles is forcing manufacturers to reduce and even stop producing combustion engines all together.

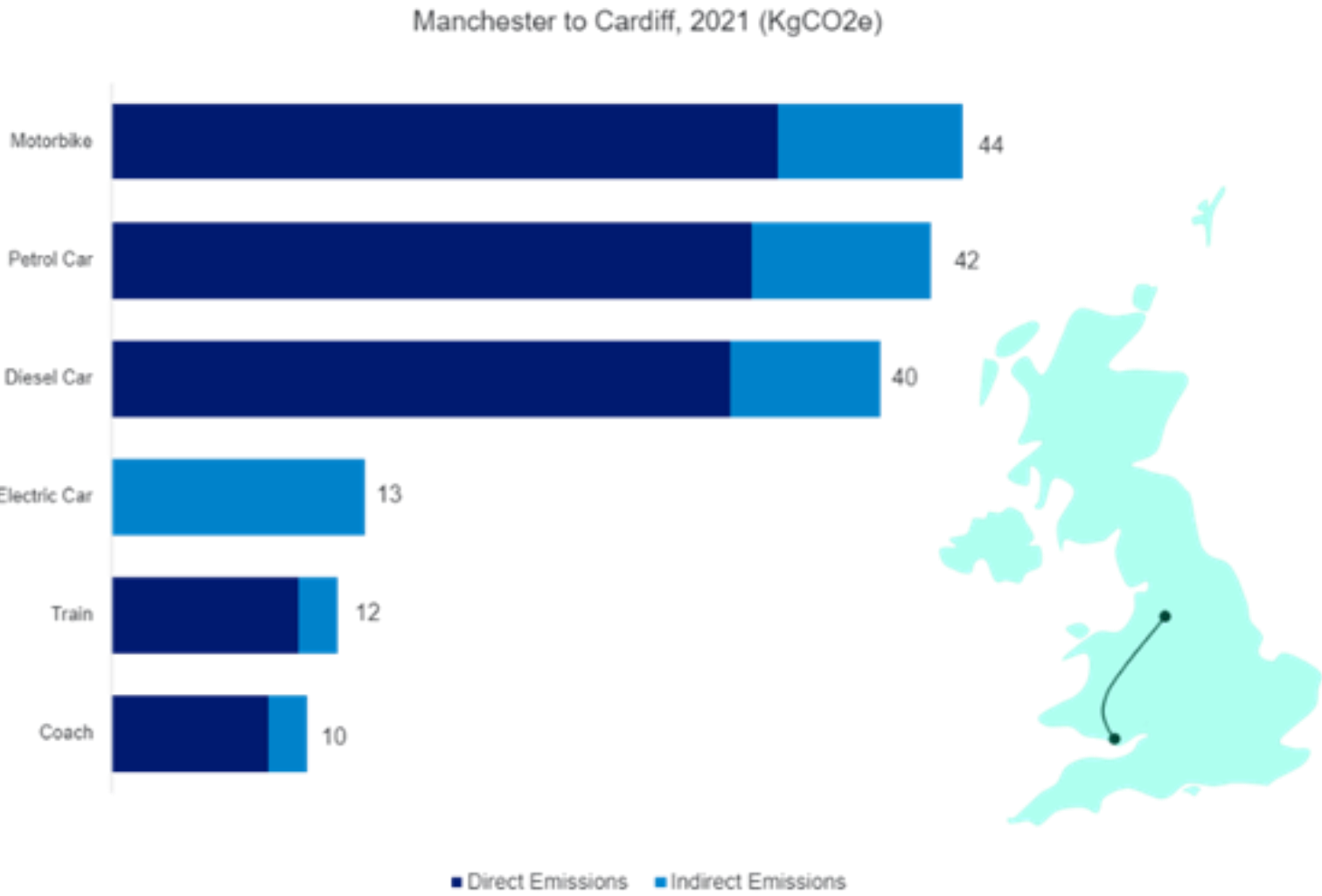
The engine has been used for many years in almost every road car, race car, HGV, motorcycles, etc, over these years there have been significant developments in technology making it highly efficient, despite this they still release harmful gases into the environment. But very recently there have been companies put massive resources into alternative fuel for these engines to make them more ecofriendly and more sustainable overall.

Background

The government have put in new regulations saying that all L category vehicles (cars and motorcycles) must have zero emissions at the tail pipe by 2035. With new emissions targets this is what the automotive industry needs to deal with and the only option to meet these regulations is to use BEV's, which to most, seems to be the end of the internal combustion engine.

With this, it leaves no room for carbon neutral synthetic fuels, as they still have emissions but is offset by the fact, we can use those emissions to generate fuel. Hydrogen seems to be a last effort, but it still has emissions, mostly consisting of water, it is not mentioned in the new regulations that by emissions there only including harmful gases.

Synthetic fuels have a promising future despite them not currently following regulations, we have companies making carbon neutral fuels which still release some carbon emissions but use filtered carbon out of the atmosphere to make it, meaning there is no more added carbon.



Comparison between different modes of transports emissions released on a road between Manchester and Cardiff, proving diesels are even today better for the environment. This is from gov.uk.



Timeline of the old regulations and the new dates of which they are banning the sale of new fossil fuelled vehicles



From Autovista24.
EV owners on average travel further than traditional car owns.

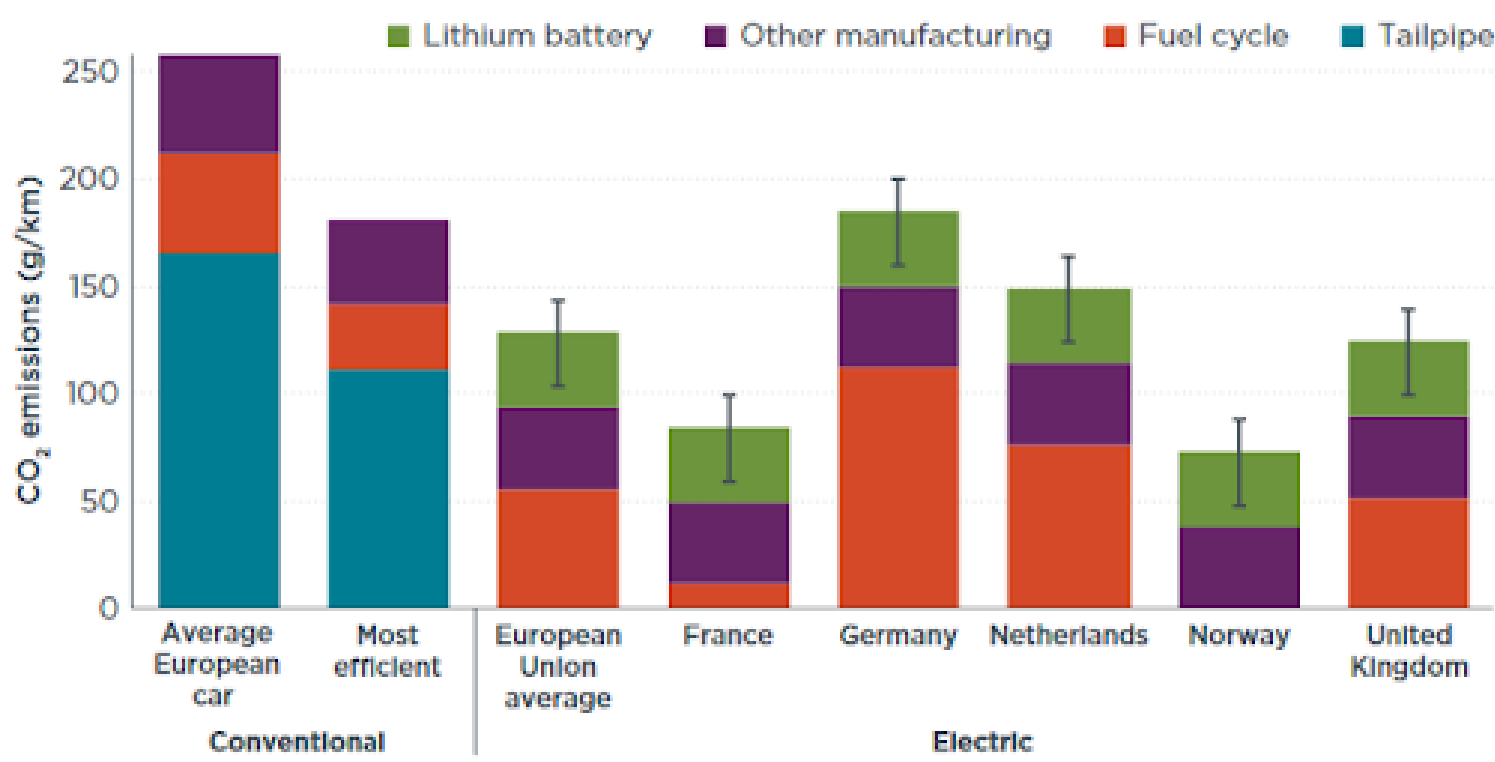


Figure 1. Life-cycle emissions (over 150,000 km) of electric and conventional vehicles in Europe in 2015.

From University of Minnesota. Compares the emissions from EV's versus conventional vehicles.

Discussion

The heavy vehicle industry has been left out because their no way near practical with the number of batteries required for them to travel the same distances. That is not to say that the new date is any better either many manufacturers have said they may not meet the deadline set because demand outweighs what they can provide in the space of 8-9 years.

Motorcycles are also affected, where all new motorcycles sold must have zero emissions at the tail pipe, this is unrealistic for a few reasons, currently there are very limited options for electric motorcycles on the market, and second motorcycles are vehicles for pleasure, riders going road trips for a weekend isn't uncommon, electric bikes prohibit this because of the time it takes to recharge and the range the batteries provide.

According to a yearly statistic report from gov.uk, diesel vehicles a currently producing less CO2 emissions than petrol vehicles in a year. This is no coincidence, as diesel vehicles are more environmentally friendly than petrol vehicles, this is because perception has a massive part to play in this, manly from companies scamming emissions testers to meet Euro 5, persuaded people to believe they are much worse than petrol's for the environment.

Conclusion

In conclusion, the engine may have a future where they either reach zero emissions at the tail pipe, or where regulations accommodate an alternative solution like the synthetic fuels. For now, BEV's will be the only way for new vehicles. Diesels have a promising future as they have potential to reach near zero emissions.

Certain industries simply do not allow space to acquire BEV's, like the motorcycle industry, this may not be the case though as there simply is not a market for electric bikes. The heavy vehicle industry has not been included in the latest iteration of the regulations because they are simply not practical.

References

(Owen Williams, 02/24)
(Gov.uk, transport and environment statics)

