



The Future of the Combustion Engine – The Fossil Fuel Ban 2035 & the Alternative Fuel Solutions.

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Introduction

The future of the internal combustion engine has now been determined, as the fossil fuel ban will now be effective from 2035. The information displayed in this technical poster will outline the possible alternatives arising from this instrumental change.

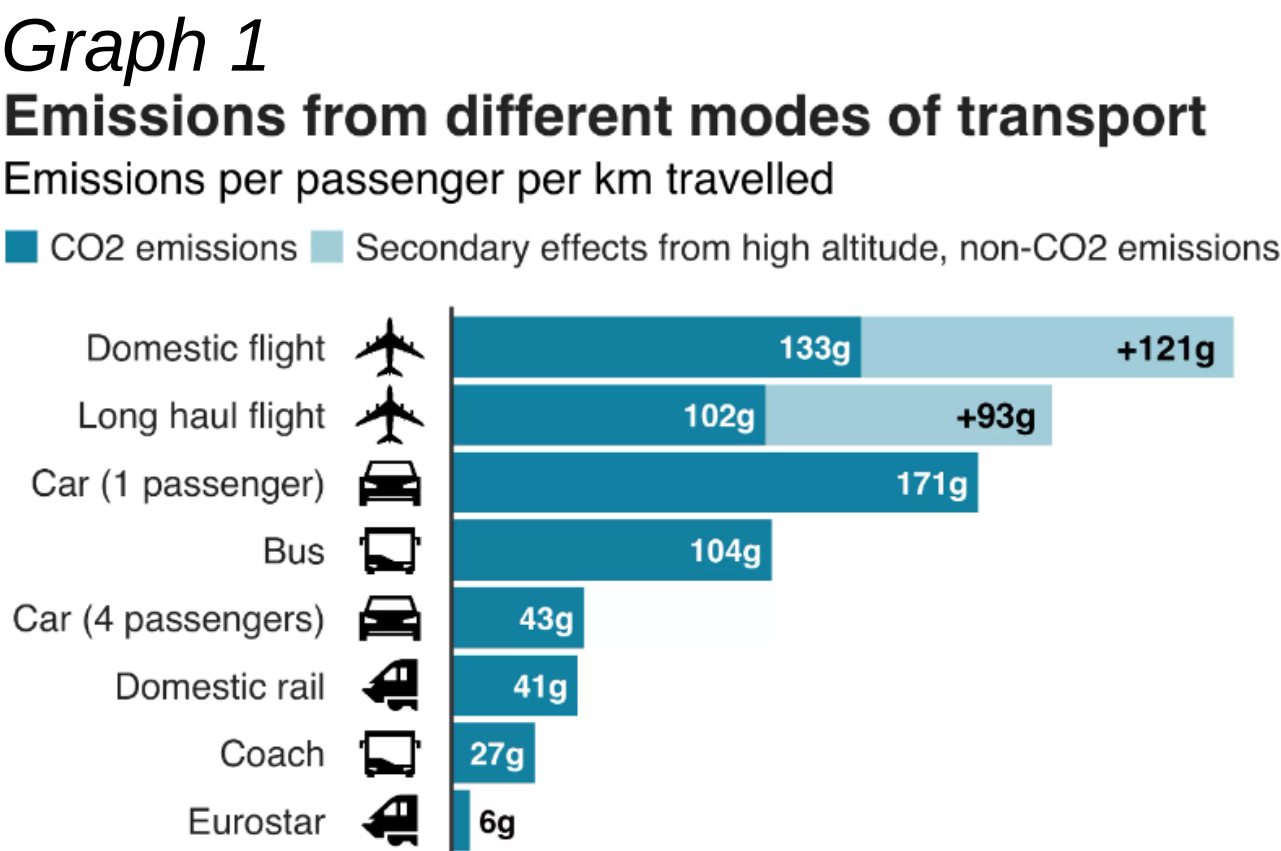
Background

The debate on the future of the combustion engine has come about as a result of the acceleration of climate change and the diminishing supplies of fossil fuels. This has resulted in the UK government bringing in the ban on all sales of ICE's by the year 2035, recently moved from 2030. [1]

As well as the ban coming in to play, the decision on a replacement for fossil fuels has also caused much debate.

The initial thoughts were that electric vehicles were the solution. However, there has been evidence in recent years that there have been issues with the running and maintenance of this type of vehicle as well as the cost of the manufacturing process.

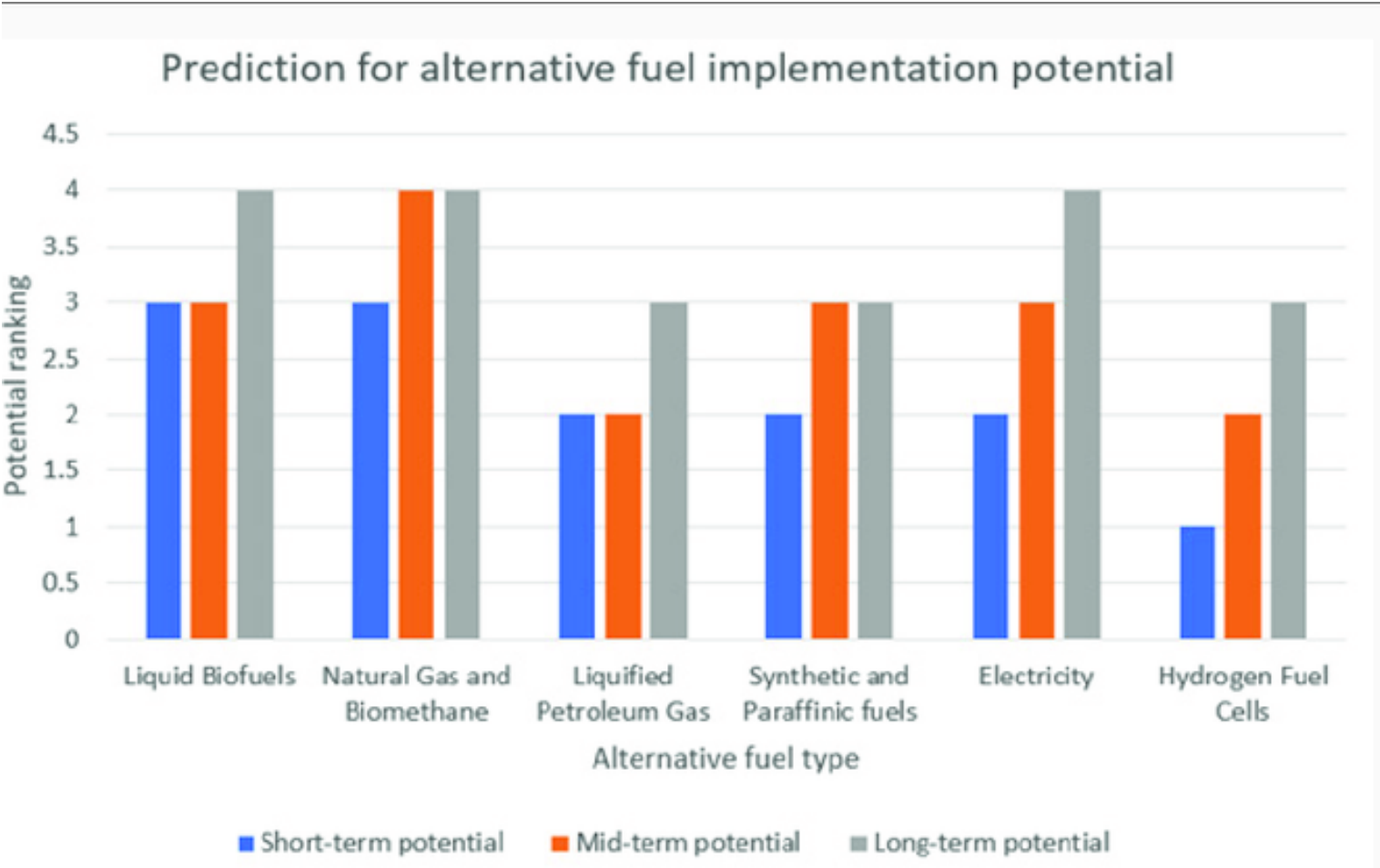
As there are other fuel alternatives, aside from electric, the debate has widened to include these ways of powering vehicles, all with the ultimate aim of creating a sustainable and uninterrupted future, in time for the ban in 2035. In the EU it is likely that electric will lead the way followed closely by hydrogen and E-fuels. [2]



[3] The most popular alternative fuel solutions consist of:

- Hybrid Electric Vehicles – HEV
- Plug in Hybrid Electric Vehicles – PHEV
- Electric – EV
- Biofuels
- Hydrogen Fuel Cell Vehicles – FCV
- Natural Gas Vehicles – NGV

Graph 2 - The following graph represents the predictions for alternative fuel uptake potential, created in 2022.



Impact on and Importance to Industry

The effects on industry are two-fold, there are the effects on the manufacturers of the vehicles as well as the effects as a result of the alternatives chosen.

Manufacturers of EV cars preparing for the initial deadline of 2030 have now got to re-evaluate their business model to ensure longevity of their business after accounting for the imminent changes.

Another consideration would be the Energy companies who have rolled out the installation of charging points. These companies now have longer to prepare for the deadline and hit their targets for full UK coverage.

Fig 1. UK Charge points as of March 2024.

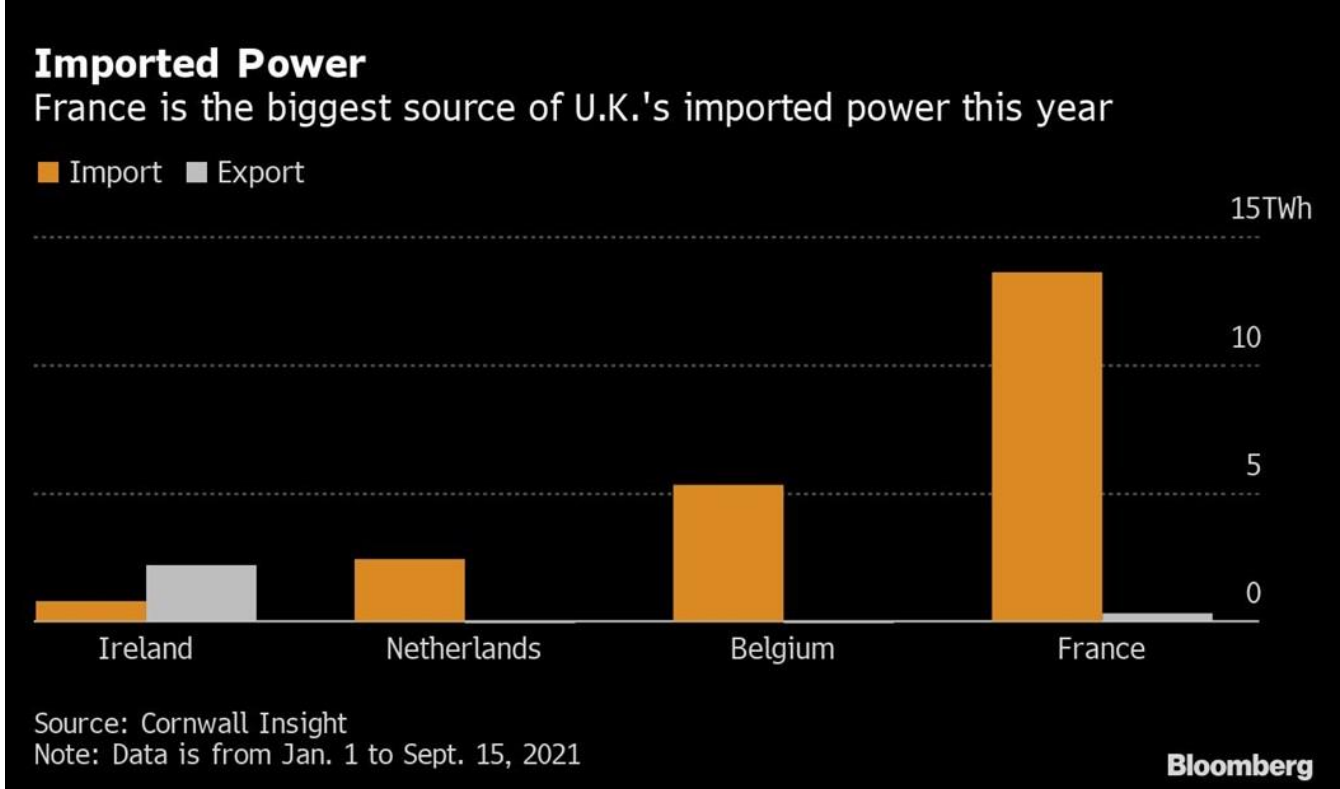


There needs to be more consideration with long haul transportation as they typically cover a lot more distance in a short period of time. Another point is the consideration of the weight of these HGVs, as when they are at maximum load they will weigh much more and use more power.

In relation to the use of electricity and this being the is the most popular route so far, there are considerations that need to be made on how this effects the demand for electricity, how the electric is sourced and the drains on businesses from the likelihood of power outages as a result of the higher demand. Thus, effecting the running of business day to day and potential blackouts.

As the power supply requirements grow in the UK as a results of EV vehicles, there will be more of a need to import power from other countries. This will be considerably more than is currently being imported now.

Graph 3 – Imported Power - UK



Conclusion

In conclusion, it is evident that there are many different paths that could be taken to achieve a greener future. This path may not be as clear as initially thought due to so many contributing factors, as outlined in this technical report. The further we are away from the date of the fossil fuel ban, in 2035, the more time there is to solidify a solution that satisfies all current and potential issues.

Electric is still the front runner, but even that has it's problems and until solved the future is still a little uncertain in regard to an alternative solution to the ICE.

References

Graph 1 - BBC, 24 August 2019, Climate change: Should you fly, drive or take the train?, (Accessed April 16th 2024)

Graph 2 - Research Gate, Samuel Entwistle & Martin Marinov, Civil Engineering Research Journal, March 2022, Decarbonisation of Urban Freight Transport Systems through Alternative Fuels, (Accessed April 16th 2024)

Fig 1 - EV charging statistics 2024, Tracking the growth in charging points across the UK, Jade Edwards, April 5th 2024, (Accessed April 18th 2024)

Graph 3 - Energy Connects, Bloomberg, U.K. Gets Closer to Blackouts After Fire Knocks Out Cable, September 16th 2021, Provided in lecture presentation by Owen Williams 15th February 2024, Future of the Engine 2024

[1] - Auto Express, Chris Rosamond, UK 2035 petrol and diesel ban: what is it and what cars are affected?, 25th September 2023, (Accessed 15th April 2024)

[2] - EURACTIV, Miriam Saenz de Tejada, April 17th 2023, The EU's 2035 Fossil-Fuel Car Ban Explained, (Accessed April 16th 2024)

[3] - Perplexity AI "what are the most popular alternatives to combustion engines?" accessed 19/4/2024

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