



**RHA NOx Emission Assessment
August 2020**

Road Haulage Association

11 August 2020

v.1

Introduction

1. In 2017, 2018 and 2019 the RHA published papers detailing how the NOx emissions from lorries have been changing. This included estimations of how much NOx emissions will continue fall, up to 2025.
2. The United Kingdom is now emerging from the profound shock caused by the global Covid-19 pandemic, and is considering how to recover in coming months and years. Ministers recognised haulage as a key “economic enabler” during the pandemic. The political rhetoric is focussed on promoting a “green recovery”.
3. The RHA supports a sustainable approach to recovery. Such an approach requires the right policy frameworks in place to balance economic, social and environmental well-being. Transport, the movement of freight and road haulage, drives economic well-being. Policymakers need to continue to support the economy and investment while creating a sustainable recovery.
4. In terms of freight transport, policy makers must ensure that:
 - the road space works for all;
 - the ability to move goods efficiently and cost-effectively is unimpeded, and;
 - business can be confident when investing in equipment and infrastructure.
5. The RHA believes the Government needs to use well-designed regulatory standards which observe these principles, with new requirements phased in appropriately as technology permits. This approach will be the best way to support a sustainable recovery that works well for society, the environment and the economy.

Amending the Clean Air Zones

6. The RHA is seeking a change to the existing approach to Clean Air Zones to take account of the impact of Covid-19 and the continued improvement in the NOx emissions from road haulage.
In summary, we are calling for:-
 - the implementation of all Clean Air Zones to be delayed until at least 2022;
 - no charges to be levied on any lorry less than 12 years old when Clean Air Zones are implemented,;
 - obligations to be placed on authorities to reduce road traffic congestion in identified hot spots through targeted road traffic management initiatives;
 - auto payment systems for operators to be introduced alongside the auto-fine systems proposed, where charges are introduced.

Progress, Emissions continue to fall

7. Hauliers have already taken great strides to clean up NOx emissions. This has been achieved through the introduction of the very effective Euro VI standards for lorries put on the road since the beginning of 2014. This paper provides the RHA's estimation of the changes to NOx emissions between 2013 and 2025, based on the expected composition and use of the HGV fleet in Great Britain.
8. The data (figure 1) shows that, alongside the extra £1.9bn investment required to meet Euro VI vehicle standards, **the HGV sector has reduced NOx emissions by at least 59% since 2013**¹. If no further policy action was taken at all, the RHA estimates that the reduction in NOx from lorries would have been over 80% by 2025.

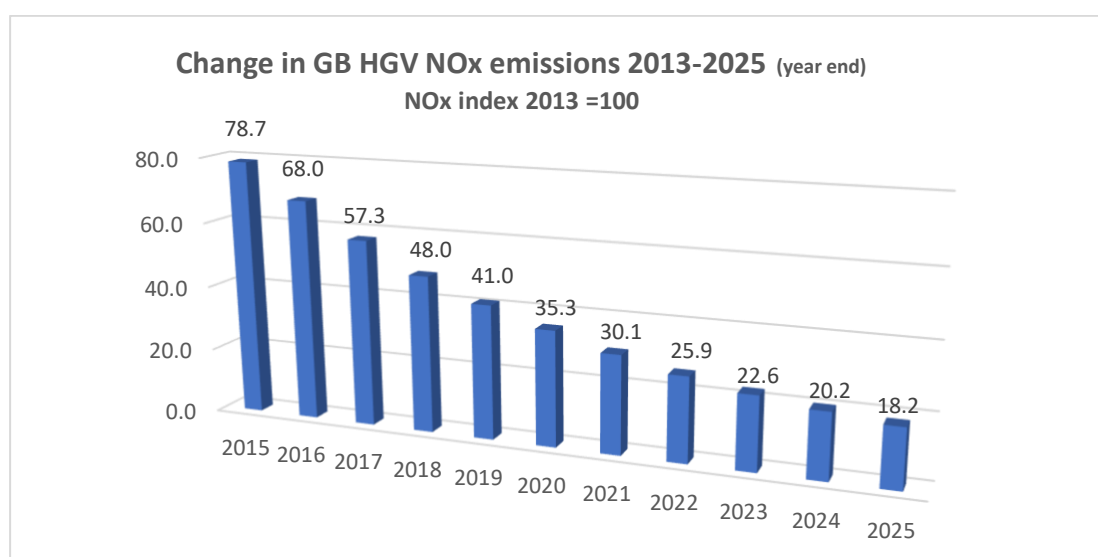


Figure 1: RHA estimates of NOx emissions from lorries in Great Britain.
NOx Index 2013 = 100.

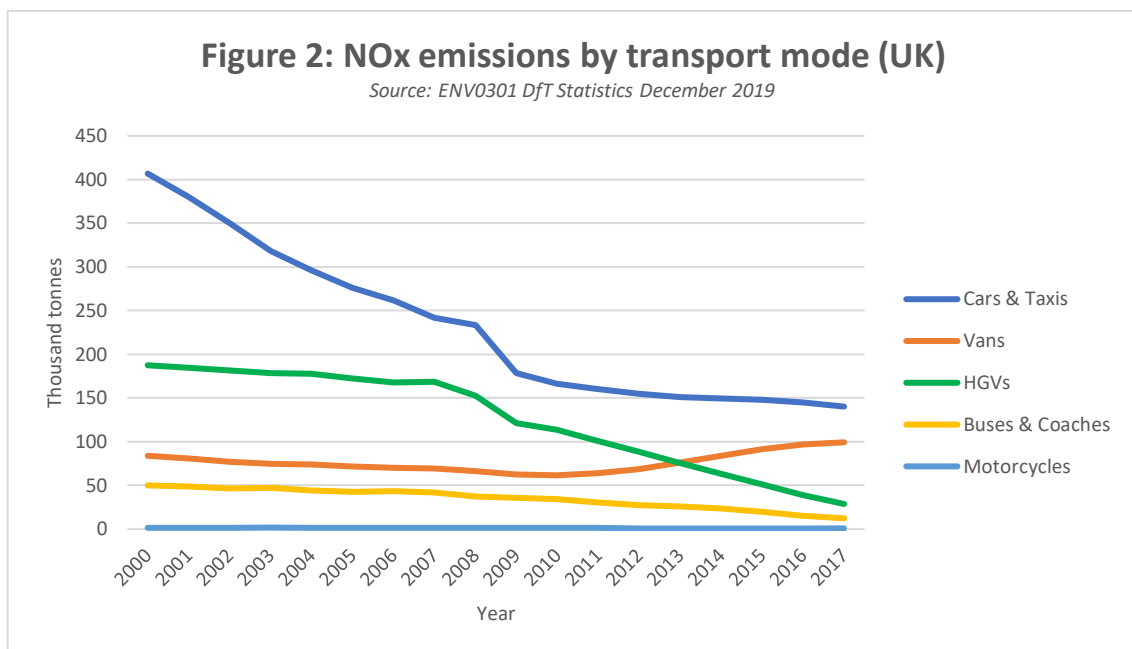
9. The assessment is based on lorry fleet numbers up to the end of 2019 published by the DfT on the 30 April 2020², with estimates of the fleet change by Euro class over time from 2020 to 2025 by the RHA. However, COVID-19 will change what happens in coming years. It will be another 12 months before the impact of the pandemic on fleet composition will be known. It is already appearing likely that lorry vehicle numbers will fall, and that emissions from lorries will fall faster than the estimates in this assessment.

¹ DfT figures shown in the annex at figure A3 show a higher reduction from lorries, in excess of 60% from 2013 to end of 2017.

² DfT table VEH0511 - <https://www.gov.uk/government/statistical-data-sets/veh05-licensed-heavy-goods-vehicles>

Clean Air Zone Plans

10. The DEFRA Clean Air Zone Framework (2017)³ requires local authorities to improve air quality in their areas. The RHA supports the UK government’s aims to improve local air quality but disagrees with the approaches promoted by DEFRA and the Department for Transport (DfT). The CAZ approach has been to create a model that emphasises high charges for pre-Euro VI diesel vehicles and which discriminates by vehicle type (e.g. HGVs vs cars) through the creation of inappropriate CAZ “classes”.
11. The RHA believes this approach is expensive, inflexible and not as effective as it should be.
12. The DEFRA/DfT approach has had a damaging impact. It has reduced the residual values of Euro V lorries and inflated the value of used Euro VI lorries. By failing to appreciate vehicle life cycles, the Government has made it more expensive to upgrade to cleaner lorries for many operators. Existing policy has unjustly caused a “stranded asset”⁴ effect for the Euro V fleet of HGVs for negligible gain in reducing NOx emissions given the significant fall in emissions from lorries compared to all other vehicle types (see figure 2).



³ DEFRA (2017). Clean Air Zone Framework. DEFRA, London, UK.

⁴ A “stranded asset” is an asset that suffers an unanticipated or premature devaluation due to a public policy measure. See: <http://www.lse.ac.uk/GranthamInstitute/fags/what-are-stranded-assets/>

13. This mistake is having a disproportionate effect on haulage. As much as £1.2 billion has been wiped off the value of the 126,000-strong Euro V HGV lorry fleet as a direct result of the Government's CAZ plans.
14. Due to Covid-19, DEFRA announced that CAZ implementation will be delayed "until after January 2021". The RHA is clear that this delay is not sufficient, and that DEFRA should instead undertake a review of CAZ policy. The review should take into account:
 - the reports of improved air quality during the Covid-19 crisis and the reasons for this;
 - that the financial state of many hauliers is precarious, and vehicle upgrades will be difficult during from the pandemic;⁵
 - that normal HGV replacement cycles ceased during the pandemic, timescales do not allow for hauliers to upgrade to CAZ Euro VI standard by 2021;
 - changing work and travel patterns, and the impact on air quality, which should be understood further.

RHA NOx emissions assessment - 2020

15. The RHA's estimates for NOx emissions from the lorry fleet between 2013 and 2025 in Great Britain is presented in Figure 1 above. For indexing, we considered 2013 as a base year as this is the year Transport for London (TfL) use as their baseline for the London Ultra Low Emission Zones.
16. We can see that following the introduction of Euro VI in 2014, NOx emissions fell by 59% from 2013 baseline to the end of 2019.
17. In summary, by 2025, NOx emissions from the lorry fleet is expected to be fallen by over 80% since 2013.

⁵ During Covid-19, 83% of hauliers reported volumes significantly reducing, with 22% reporting no work at all. See: <https://www.rha.uk.net/news/news-updates/a-summary-of-survey-responses-on-the-impact-of-covid-19-on-the-haulage-industry>

Further information

18. The annex below provides further information and details on the age profile of lorries by Euro Class, the source of NOx emissions, NOx standards for lorries and other useful information.

Concluding remarks

19. The 2020 estimates build on the estimates done by the RHA in previous years. The consistent outputs between 2018 and 2020 give us a high degree of confidence in the data produced.
20. Our estimates show that until Covid-19, pre-Euro VI vehicles were rapidly being replaced by Euro VI. We expect the trend to continue after Covid-19.
21. Our data also gives an indication of for how long modern Euro IV and Euro V lorries will be in active service. Generally, lorries last about 12 years in active service, we know that it is longer for specialised vehicles.
22. The data published by the National Atmospheric Emissions Inventory (NAEI) show that, in 2017, NOx emissions from lorries and buses are declining, and accounted for a small proportion (5%) of total NOx emissions. Other forms of transport including cars accounted for 45% of total NOx emissions.
23. The RHA predictions are clear. Given the changes in fleet profile consistent with the long-term replacement rates for lorries, by 2025 there will be at least an 80% decline in NOx emissions level from the GB lorry fleet compared to 2013 - without imposing any restrictive measures on HGV movements. This reduction excludes any change due to alternative fuels or electrification – both of which may add to that reduction.
24. If the focus of the clean air zones was limited to the older proportion of the fleet – to those lorries over 12 years old – much of the benefits would be obtained, but without the increasingly apparent serious commercial impacts on businesses, mostly SME businesses.

Duncan Buchanan,
Policy Director – England and Wales
Email: d.buchanan@rha.uk.net

Chris Ashley
Head of Policy – Environment & Regulation
Email: c.ashley@rha.uk.net

11 August 2020

Annex - RHA Information on the GB lorry fleet and emissions

Table A1 below shows EU NOx emission standards for HGVs over time:

Table A1: NOx emissions - maximum permitted by Euro Standard

Euro standards	Year	NOx standard*
Euro VI	2014 on	0.4
Euro V	2009 to 2013	2.0
Euro VI	2006 to 2008	3.5
Euro III	2001 to 2005	5.0
Pre Euro III	1997 & older	7.5

(Rounded to full year)

Table A2 below shows the approximate Euro Standard for the GB lorry fleet in each selected year. Up to 2019, DfT data is used - RHA estimates are used thereafter.

Table A2: Percent of licensed heavy goods vehicles by Euro class (year end) in Great Britain between 2015 and 2025.

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Euro VI	17.6%	28.0%	36.3%	44.9%	53.6%	59.8%	65.7%	70.9%	75.5%	79.6%	82.9%
Euro V	35.6%	32.1%	29.2%	25.7%	21.6%	19.3%	16.6%	14.0%	11.5%	9.2%	7.4%
Euro IV	19.4%	16.8%	14.5%	12.2%	10.0%	8.0%	6.4%	5.1%	3.9%	3.1%	2.4%
Euro III	16.9%	14.2%	12.2%	10.4%	8.8%	7.4%	6.4%	5.5%	4.9%	4.4%	4.0%
Pre Euro III*	10.5%	8.9%	7.9%	6.8%	6.0%	5.4%	4.9%	4.6%	4.1%	3.7%	3.4%

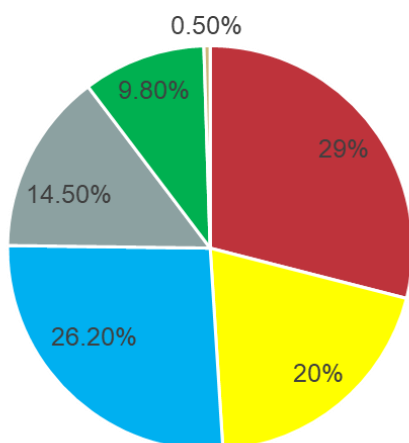
Data to 2019 extracted from DfT Statistics - VEH0511, published April 2020.

NOx emissions by source

Data published by the National Atmospheric Emissions Inventory (NAEI)⁶ show that NOx emissions from lorries and buses (i.e. heavy-duty vehicles⁷) is declining and accounted for a small proportion (5%) of the total NOx emissions in 2017 - see Figure 3b.

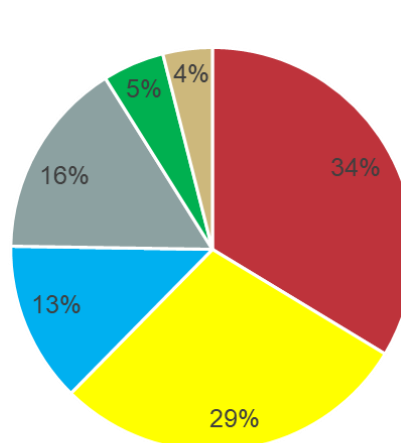
In contrast, between 2013 and 2017, the proportion of NOx emissions from other transport and passenger cars has increased from 20% to 29% and 14.5% to 16% respectively.

Figure 3a: NOx emissions by source (NAEI: 2013)



- Combustion in Industry
- Other transport
- Public Electricity & heat production
- Passenger Cars
- Lorries & buses
- Production processes: Agriculture/waste/other

Figure 3b: NOx emissions by source (NAEI: 2017)



- Combustion in Industry
- Other transport
- Public Electricity & heat production
- Passenger Cars
- Lorries & buses
- Production processes: Agriculture/waste/other

⁶ NAEI - http://naei.beis.gov.uk/overview/pollutants?pollutant_id=6

⁷ Heavy-duty vehicle – A bus or lorry designed for heavy work. https://en.wiktionary.org/wiki/heavy-duty_vehicle.

Fleet Age Profile

Understanding how the lorry fleet changes over time is vital for policymakers so that they can assess the impact of any proposed Clean Air Zones on businesses.

It is not just operators who will be impacted by these policy measures - businesses that service the haulage industry such as garages, parts suppliers and Roadworthiness Testing businesses stand to be impacted in the early application of policy on all non-Euro VI lorries.

The charts below show how the composition of the GB lorry fleet evolves over time.

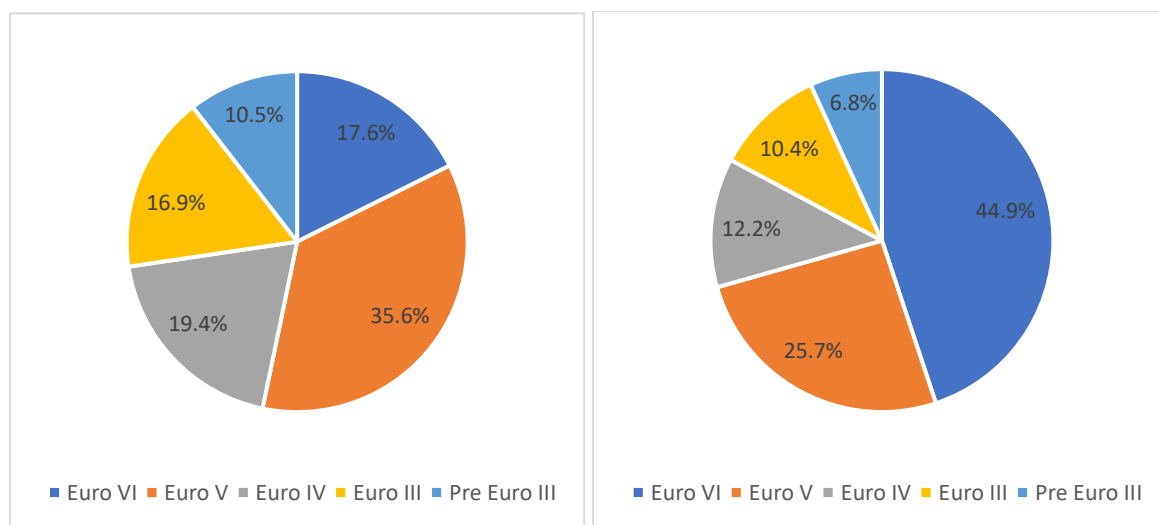


Figure A4a: GB HGV fleet by Euro class end 2015. **Figure A4b:** GB HGV fleet by Euro class end 2018.

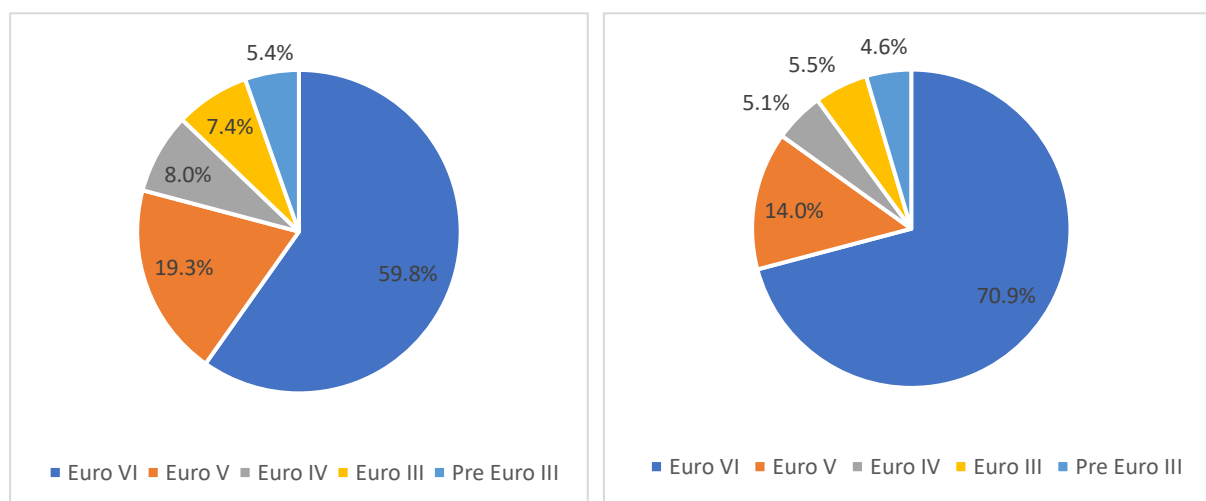


Figure A4c: GB HGV fleet by Euro class end 2020. **Figure A4d:** GB HGV fleet by Euro class end 2022.