AERIS EUROPE
Air Quality Intelligence

The Key 'Beyond Euro 6/VI' NO_X Emission Limit Scenarios through the lens of the planned CLOVE CBA methodology

A taster of AERIS's planned CBA

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The Approach

- The Commission have mandated the CLOVE consortium to base their Cost-Benefit Assessment of the various 'Beyond Euro 6/VI' measures under consideration on the *'Handbook on the external costs of transport'* developed for them by a CE-Delft led consortium (which included Ricardo, INFRAS and TRT)
- The methodology for quantifying the health impacts is largely based on the NEEDS project (used in the CBA undertaken as part of the Clean Air for Europe Programme-CAPE) but with some further adjustments, notably for the assumed NO_2 mortality
- Aeris were substantially involved in reviewing the CBA for CAPE with a particular focus on the uncertainties around the 'Willingness To Pay' (WTP) survey on which the Value Of Statistical Life (VOLY) was based
- Other important areas needing further review are:
  - The assumed concentration response function for NO_2 direct health impacts and
  - The 'delta NO_2 concentration/tonne' of NO_X emissions reduction (for each MS of the EU)
- While all the above are important, in this 'first step', we take a look at the main project scenarios through the lens of the 'as published' Handbook methodology to understand the likelihood of this CBA methodology justifying 'Beyond Euro 6/VI' measures

Assumptions for Diesel Passenger Cars and the ≤7.5t Rigid Body HDVs

- The fleet composition and its evolution is as used for the main study, an ACEA Adjusted Sibyl fleet
- Three beyond Euro 6d/Euro VI D/E scenarios were analysed:
  - For Diesel Passenger Cars: 60mg/km; 35mg/km; 25mg/km (from January 1st 2025)
  - For ≤7.5t Rigid Body HDVs: 230 mg/kWh; 100mg/kWh; 30mg/kWh (from January 1st 2027)
- For each scenario, the NO_X emission reductions from the ACEA Base Case was computed in 2030 and 2035 together with the number of 'Euro 7/VII' vehicles in the parc at each of these time horizons
- Along with the external damage costs (€/tNO_X) from the Handbook, this allows the '*damage cost' per new vehicle per year* to be determined
- Using discounted cash flow theory (with an assumed average vehicle life of 10 years) then allows the *'damage costs' per new vehicle* to be determined for each increment of new technology
- This means that if the *'damage costs' per new vehicle* for a given additional technology step are lower than the *actual cost per new vehicle* for that technology step, then the monetised benefits for mitigating this damage do not justify or support the actual costs

Results for Beyond 'Euro 6d'/Euro VI (D/E) NO_X Reducing Measures

Diesel PCs	Non-Incremental 'Damage Cost' in €/New Vehicle			Incremental 'Damage Cost' in €/New Vehicle		
Scenario:	Base to 60mg/km	Base to 35	Base to 25	Base to 60	60 to 35	35 to 25
EU-28 (MS Range)	187 (660-106)	421 (795-131)	515 (972-160)	187 (660-106)	234 (442-73)	94 (177-29)

≤ 7.5t HDV Rigid	Non-Incremental 'Damage Cost' in €/New Vehicle			Incremental 'Damage Cost' in €/New Vehicle		
Scenario:	Base to 230mg/kWh	Base to 100	Base to 30	Base to 230	230 to 100	100 to 30
EU-28 (MS Range)	140 (394-16)	247 (696-28)	304 (858-34)	140 (394-16)	107 (301-12)	58 (162-7)

Key Points

- The analysis highlights the importance of using an incremental cost benefit analysis approach (not the cost versus benefits of the most extreme reduction from the Base Case)
- These incremental *'Damage Costs' per vehicle* are likely to fall far short of the actual incremental cost of the technology steps involved
- Although not yet available, the final CBA will look at the benefits from all pollutants and all health end points, it will be important to ensure these shown as individual elements i.e. for PM2.5, NO_X (direct NO_2) and Ozone impacts (included in NO_X external costs and VOC external costs)
- As already noted, the detailed methodology of the Commission's Handbook will also be reviewed in the light of other published approaches