

Summary

Ambitious, comprehensive and consistent rules are needed to limit air pollution emissions from non-road mobile machinery (NRMM - diesel machines¹). These are required to address the growing urban air pollution that Europe faces. T&E believes that future EU legislation on diesel machines must be in line with emissions limits for equivalent road vehicles.

What are diesel machines and why do they matter?

European air pollution rules for diesel machines such as bulldozers, excavators and barges are much more lax than those for cars and lorries. As well as this, some engine types and older machines are excluded from air pollution law. This is a problem because, according to the World Health Organisation (WHO), diesel exhaust is carcinogenic.

Health and environmental damage

Regulations to reduce air pollution from diesel machines, such as construction equipment, have failed to prevent emissions of air pollution rising.² Nitrogen oxides (NOx) and particulate matter (PM) from the exhausts of diesel machines are dangerous for human health. PM penetrates deep into the lungs and blood where they cause a range of heart and respiratory diseases and cancer. They also damage the environment, with black carbon contributing to climate change.

Emissions limits for road vehicles have become stricter over time, but equivalent limits for diesel machines lag behind, with no emissions controls on many types of machines. There is significant potential to reduce emissions³ and an urgent need to do so. The European Commission proposal to reduce emissions from diesel machines is a welcome development, but early indications suggest a lack of urgency and ambition. The proposed regulation will fail to adequately improve levels of air pollution that are already above safe levels in many EU-cities. This briefing outlines how emissions from diesel machines should be reduced.

Inadequate scope and ambition of the proposed regulation

T&E welcomes the intention of the Commission to update the current NRMM directive and establish a new regulation. This will ensure a faster and more harmonised implementation of the rules across Europe. The intention to enlarge the scope of the regulation to cover currently excluded machines is also a positive step. However, the scope still omits several important classes of vehicles and none of the Commission scenarios set limits for the number of particles (PN) that engines over 560kW can emit. As well as this, the proposed NOx and PM emissions limits for these engines are significantly higher than European emission limits for heavy-duty vehicles - known as Euro VI. There is no technical argument that justifies bigger machines having lower standards. This will distort the market, leading to migration of sales to larger, more polluting engines. Failing to set sufficiently stringent emissions limits will not deliver the required benefits to health and the environment. There should be consistent emissions limits for all fuel types and no exemptions for specific technologies.

PN limits should be defined for all engines (including those over 560kW) and emissions limits set to be equivalent with Euro VI levels for vehicles.

¹ T&E refers to NRMM as diesel machines as the majority of these machines use diesel

² European Commission. Stakeholder Consultation on the revision of Directive 97/68/EC on emissions from non-road mobile machinery engines. 2013

³ JRC, (2008), Technical review of NRMM Directive

Inadequate and misleading emissions scenarios

All the Commission's emissions scenarios are unambitious. Business as usual provides a baseline for assessment, but would be disastrous for tackling the urban air pollution crisis. The Commission's second scenario, which is simple alignment with US legislation, would only be marginally better. Notably it would fail to set adequate limits for locomotives, railcars, inland water engines and engines over 560kW. It would also exclude PN limits.

The Commission's so-called "road ambition" scenario is misleadingly titled, as the proposed emissions limits fall short of equivalent EURO VI standards for road vehicles. Specifically, this scenario does not include PN limits for all machine types and is also less ambitious than Euro VI limits for NOx. Current state-of-the-art technology makes alignment with Euro VI possible and will create a larger market for these engines and the supporting pollution control equipment.

The Commission might also propose different emissions limits for effectively the same engine, depending upon whether it is used at a constant or variable speed, or in a static or mobile machine. This is entirely unnecessary and creates unnecessary loopholes.

Emissions limits should be aligned with Euro VI standards for road-vehicles, with no differences for fuels or engine applications

Greener transport must radically reduce air pollution emissions

Locomotives and inland water vessels (IWW) are considered more environmentally-friendly forms of transport than road ones, however they create considerable air pollution. Use of these transport modes is actively encouraged, such as by the NAIADES II Communication for IWW, but these engines are currently highly polluting. Stringent, harmonized limits should be adopted as benefits of a greener form of transport. In addition, methane (CH₄) emissions limits should be included for inland water vessels (IWW) and methane-slip adequately addressed.

Unnecessary flexibilities should be avoided

The current legislation for diesel machines includes a number of flexibilities that delay or weaken the effectiveness of the regulation. For example: a sell-off of stock provision and an end of series provision lead to stock piling of older, more polluting engines. This effectively delays the entry into force of new emissions requirements. Whilst a transitional period is needed for manufacturers to fulfil new emissions standards, the several years between the adoption of the legislation and its entry into force provides sufficient time for manufacturers to adapt.

Emissions from existing machines should also be addressed to avoid older machines continuing to pollute the environment. The United Nations Economic Commission for Europe (UNECE) is currently harmonising the standards that retrofit devices must meet. The regulation should be extended to ensure that replacement, retrofitted engines meet the limits and accelerate the rate of penetration of cleaner technologies.

The regulation should apply to all new machines and replacement (retrofit) engines from entry into force.

Limits must be met in use and not just during tests

The current air pollution blighting cities is in part the result of vehicles emitting far more pollution in use than during tests. Similar issues need to be avoided for diesel machines. In-service conformity checks can ensure that real world emissions of diesel machines are similar to type-approval emissions measured during tests. In addition, periodic technical inspections should ensure that vehicles in use are achieving the limits.

In-service conformity checks, together with periodic inspections for diesel machines would ensure limits are not just met in tests but machines were actually cleaner in use.

The inadequate past progress in reducing emissions from diesel machines is in part the result of inadequate data about the contribution of these engines. Better data is essential to improve the estimation of emissions and determine the contribution of this sector in different cities to urban air pollution. The regulation should include provisions to Member States to register diesel machines and the EU make available data from type approval and in-service conformity of machines.

Diesel machines and their relevant data should be registered in a transparent, accessible database

Conclusions

T&E calls for:

- Consistent emissions limits for all fuels, engine sizes and types of machines
- Alignment of emissions limits with equivalent road vehicles (Euro VI limits)
- Particulate number (PN) limits for all engines to address the harmful health effect of ultrafine particulates
- Emissions limits for all harmful emissions, including methane emitted from gas-powered inland water vessels
- Removal of flexibilities that weaken the legislation and delay its effective introduction
- In-service conformity for all machines in order to ensure compliance with emission limits in real-life conditions
- Diesel machine registration to ensure transparency of the market.

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