Diesel recalls have stalled in the middle of an EU air quality crisis

At the current pace, it will take another two years to finish just software updates of manipulated cars. Consumers in Central and Eastern Europe are treated even worse.

May 2019

Summary

An analysis of new official EU data shows that progress on recalls of manipulated diesel cars is stalling in the European Union while the continent still faces an air quality crisis which has landed 14 EU Member States in court.[1] Even the cheapest and least effective form of diesel fixes – software updates – are making very slow progress in the EU and would take another two years to be completed at the current pace. They also cover only 10 out of 43 million grossly polluting diesels cars and vans on Europe's roads, leaving the vast majority of dirty diesels unaddressed.

Progress is not only slow but also very unequal across Member States and manufacturers, with consumers from Central and Eastern Europe (CEE), in particular, being left behind: there only 55% of Volkswagen Group's cars are updated compared to 83% in the West. Recall rates are particularly low for Opel Cascada and Zafira (12%) as well as for Audi's A6 (30%). DUH's latest report shows that, unlike in the US, much more effective hardware retrofits are currently not offered to European consumers.[2]

This failure to effectively tackle the Dieselgate legacy is due to a design flaw of the Single Market: whereas cars can be sold freely across the EU once they have been type-approved in only one Member State, there is currently no European system for car recalls. New, improved rules will only apply as of September 2020 and will only cover new cars approved after this date. In the meantime, Europe is left with a fleet of polluting diesel cars. Solutions are immediately available as the recent EU 'Roadmap towards clean vehicles' shows: Car makers must accelerate updates and use or develop hardware retrofits. Governments must order mandatory recalls across the whole EU, especially in cases where a national authority has already issued such a measure. Unfixed cars should not be allowed to be exported unless there is proof of an effective fix. And in parallel, the EU should expand its testing capacities.

1. Introduction: the unresolved legacy of Dieselgate

The Dieselgate scandal revealed that numerous carmakers have been manipulating diesel cars for years in order to pass official air pollution tests by disabling or turning down exhaust after-treatment systems in real-world driving on the road. This cheating resulted in additional pollution posing a serious threat to

[1] European Commission, Commission takes Italy to Court over air pollution and failure to properly treat urban waste water, Press release, March 2019

[2] Deutsche Umwelthilfe, Hardware-Nachrüstung BMW X3 xDrive 20d, NOx- und CO2-Messungen im realen Fahrbetrieb, December 2018

human health and the environment,[3] inflicted substantial financial damage to millions of consumers[4] and undermined trust in the car industry. Partly in response to these practices more than 250 European cities have started to ban certain polluting cars from their territory.[5] Many of these vehicles are now being exported to Central and Eastern Europe (CEE) without prior fixes.[6]

According to T&E's latest estimations,[7] there are currently around 43 million grossly polluting Euro 5 and Euro 6 cars and vans on Europe's roads (emitting more than three times the legal limit).[8] To date, only a quarter of these vehicles (10.4 million) has been officially classified as manipulated and subject to recall, leaving three quarters of grossly polluting cars and vans without any official measures to potentially clean them up.

A look at the most polluting Euro 5 and 6 diesel cars (emitting at least more than 6 times their respective limits[9]) shows that, for example, some of the models from the following manufacturers are currently not concerned by any recall, according to the data gathered by the European Commission:

- Ford (1.5- and 2.0-litre Euro 6 engines),
- Jaguar-Land Rover (2.2- and 3.0-litre Euro 5 engine, 2.0-litre Euro 6 engine),
- Hyundai-Kia (1.6-, 1.7-, 2.0- and 2.2-litre Euro 5 engines, 1.1- and 1.7-litre Euro 6 engines),
- PSA Group (1.6- and 2.0-litre Euro 6 engines),
- Volvo (1.6-litre Euro 5 engine).

Even where recalls have been initiated, efforts in the EU remain very limited in comparison to the approach chosen in the USA. Whereas US owners of manipulated cars got a compensation and could choose to either return their vehicle or get software and hardware fixes,[10] European consumers are not offered that choice. To date only very cheap software updates of manipulated engine management systems have been offered, and their effectiveness in reducing NOx emissions is limited according to independent testing. In some cases such changes may even increase on-road emissions.[11] There have so far not been any hardware retrofits of after-treatment systems mandated by recalls in the EU. A recently passed German law did however create the legal conditions to allow manufacturers of such equipment to apply for homologation.[12]

Considering all of the above, it is clear that efforts to clean up grossly polluting diesel cars in the EU have so far been very limited: only a quarter of grossly polluting vehicles is subject to a recall and fixes have been limited to mostly insufficient software updates. Yet, even these limited actions have not been carried out consistently in the EU, as our following analysis shows.

2. A Single Market for selling cars, but not for recalls

In order to evaluate the progress on diesel recalls, it is important to understand how EU rules for the so-called 'type approval' of new car models work; the process through which cars are approved for sale on the

[3] Anenberg et al., Impacts and mitigation of excess diesel-related NOx emissions in 11 major vehicle markets, Nature International Journal of Science, Volume 545, Pages 467–471, May 2017
[4] European Court of Auditors, The EU's response to the "dieselgate" scandal, February 2019
[5] Transport & Environment, City bans are spreading in Europe, October 2018
[6] Transport & Environment, Western Europe brushes its dirty diesel cars under the Polish carpet, October 2018
[7] Transport & Environment, Dieselgate, three years on: 43 million dirty diesels on our roads – and still growing, September 2018
[8] Euro 5 and 6 diesel cars and vans are considered as grossly polluting if NOx results are at least 2 times above the respective Euro standard limit for NEDC tests and at least 3 times above the respective Euro standard limit for Real Driving Emissions (RDE) tests and remote sensing measurements.
[9] Test results are from investigations by Member States (France, Germany, the Netherlands, Spain, the United Kingdom) and from a public research institute (TNO). This includes a various range of in-lab and on-road NEDC tests as well as on-road RDE tests.
[10] Reuters, U.S. regulators approve fix for 326,000 VW diesels, July 2017
[11] Deutsche Umwelthilfe, Wirksamkeit von Software-Updates und neue Wintermessungen im realen Fahrbetrieb, February 2019 & Joint Research Centre (JRC), JRC 2017 light-duty vehicles emissions testing, 2018
[12] German Federal Ministry of Transport, Technical rules of hardware retrofits for passenger cars, December 2018

single market. Under the current Framework Directive 2007/46/EC,[13] national 'type approval authorities' (or TAAs, such as CNRV in France, KBA in Germany, the Ministry for Infrastructure and Transport in Italy, RDW in the Netherlands, the Ministry of Economy and Business in Spain and VCA in the UK[14]) make all the key decisions. This includes how to to certify a new car or whether to recall faulty vehicles. A new vehicle can be sold freely across the European Single Market once it has been type-approved by one national TAA.

Type approval decisions are based upon tests overseen by TAAs and performed by a 'technical service' (TS) – some of which are part of the same TAA, while some are operated by the manufacturer. A manufacturer pays for the testing and is free to choose any TAA and approved TS in the EU. The testing authorities compete for business enabling the carmakers to "shop around" for the optimal offer.[15]

When it comes to recalls, only the issuing TAA can withdraw an approval or take action against a manufacturer for non-compliance. No other Member States nor the European Commission can initiate a recall. Other Member States can only temporarily prevent the sale of a model within their own territory if they identify a "serious" safety or environmental issue.[16] The European Commission and Parliament currently have no official oversight of the work of TAAs.

Improved rules for approval and market surveillance for type-approval under new regulation 2018/858 were adopted as a response to the lessons drawn from the Dieselgate scandal.[17] But they will only enter into force in September 2020 and almost exclusively concern new types approved after this date. The European Commission will then have the power to check vehicles on the road and issue EU-wide recalls. If used appropriately, this will bring significant improvements and may help prevent similar scandals in the future.

The new rules also foresee that there will be regular and independent audits for technical services, which can include the European Commission and national experts from other Member States. The EU Commission will have the power to suspend, restrict or withdraw the designation of technical services that are underperforming and too lax in applying the rules. When it comes to the work of TAA, all national authorities as well as the European Commission will be able to order corrective measures and order recalls at no cost to the consumers. The Commission will also be able to issue fines of up to €30,000 per manipulated car.[18]

3. Data shows great variance in recall rates across the EU

Despite these improvements in the future, only the current rules are available today to tackle the legacy of the Dieselgate scandal. This also means that there is still no centralised database that contains complete and up-to-date official data on all emissions-linked recalls of vehicles in the EU. There only is a database (called 'RAPEX'[19]) for urgent, mainly safety-related recalls where Member State authorities can share information.

In reaction to the dieselgate scandal, the European Commission has started to compile data on a 'Recall Information Platform' that compiles data submitted by Member States. The first dataset was published in

[13] European Commission, DG GROW, Directives and regulations on motor vehicles, their trailers, systems and components, Directive 2007/46/EC (Framework Directive), January 2019
[14] European Commission, DG GROW, Technical harmonisation in the EU, Approval authorities, November 2016
[15] Transport & Environment, See, hear, speak no evil: Type Approval Authorities at the EMIS hearings, May 2017
[16] Official Journal of the European Union, Directive 2007/46/EC, Article 29
[17] Official Journal of the European Union, Regulation n°2018/858, May 2018
[18] European Commission, New EU type-approval rules for safer and cleaner cars: Frequently Asked Questions, May 2018
[19] European Commission, Safety Gate: the rapid alert system for dangerous non-food products, Search notifications

Low recall rates of dirty diesels are even worse in Central and Eastern EU

Member State	Vehicles fitted with Volkswagen's EA189 engine (Percentage of recalled vehicles)	Other Volkswagen engines and other carmakers (Percentage of recalled vehicles)
Germany	99%	70%
Finland	95%	
Austria	86%	
Portugal	86%	
Denmark	85%	50%
Luxembourg	83%	
Spain	81%	53%
Slovenia	78%	79%
Belgium	75%	
Malta	75%	
Netherlands	75%	81%
United Kingdom	75%	
France	74%	54%
Cyprus	72%	
Hungary	72%	
Ireland	70%	
Lithuania	69%	
Italy	68%	63%
Czech Republic	67%	
Greece	66%	
Sweden	64%	
Estonia	61%	
Latvia	61%	
Bulgaria	52%	
Slovakia	51%	
Croatia	46%	
Poland	45%	
Romania	37%	

Source: Transport & Environment from European Commission data (May 2019 update)
Note: For vehicles not fitted with Volkswagen's EA189 engine, only the recalls with EU-wide numbers are taken into account. For these recalls, detailed level of information for each recall vary considerably per Member State.

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Table 1 - Fragmented data on recall rates, as reported to the European Commission by Member States (for Volkswagen's vehicles with the EA189 engine and others engines and manufacturers)

January 2018. The last publications date back to January 2019 and March 2019. On 20 May 2019, a new version was put online by the European Commission.[20]

These efforts are laudable but cannot completely remediate the serious shortcomings of data provided under the current system, which namely are:

- There is **no central database** that national authorities are obliged to provide all data to. Cooperation **depends on the good will of Member States**.
- Data for **recalls of Volkswagen's EA189 engine** (which was at the heart of the Dieselgate scandal) is **nearly complete**, while there are **only 4 Member States** that provide the EU-wide total number of affected vehicles for a few of the recalls for **other manufacturers**.
- Sometimes, national authorities only provide data on recalls for their territory but **not EU-wide numbers** on vehicles they have type-approved.
- Most of the time there is only **next to no information on the recalls** and barely any details on the reasons for the recall, the exact models and Euro class concerned, the issues to be fixed and proposed remedies. For example, there are no explanations available why the very same model is subject to a mandatory recall in some Member States while other authorities only apply voluntary recalls (see examples and details below).

Table 1 summarises the data that has so far been provided to and published by the European Commission. The main conclusions are:

- The share of recalled vehicles with Volkswagen's EA189 engine that have

[20] European Commission, DG GROW, Progress overview on recall actions related to NOx emissions, State of play of the recall actions related to NOx emissions - Revision 11, May 2019

received a software update **varies greatly across Member States**, ranging from 37% in Romania to 99% in Germany.

- **For other Volkswagen engines and other carmakers, only seven Member States have provided comparable data.** Recall rates range from 50% in Denmark to 81% in the Netherlands. However, these national figures mentioned in Table 1 are not directly comparable to each other as the data from these Member States does not include all of the same recalls.

4. Very slow progress over past 9 months, CEE countries still left behind

In order to assess progress in diesel recalls, T&E has carried out an analysis to compare different versions of the dataset compiled by the European Commission published between September 2018 and May 2019. The European trends that can be identified are the following and include only recalls for which EU-wide total numbers of affected vehicles and recall rates are available:

- For the whole of the EU, **only 76% of recalled cars have received software updates so far**.
- Between September 2018 and May 2019, the number of recalled cars with a software update has **only increased by 13%**.
- This means that **at this pace it will take almost two more years to finish all software updates**.

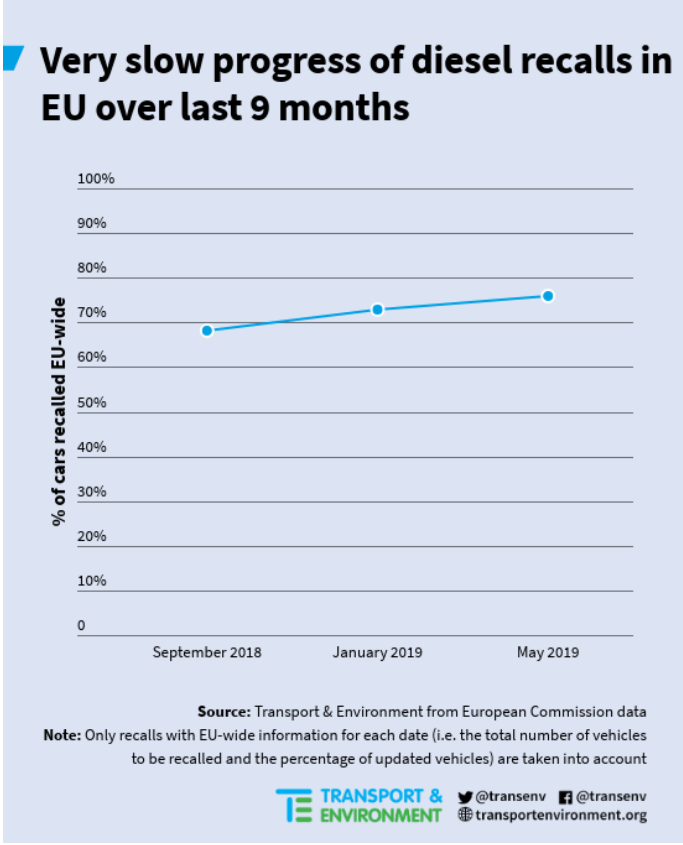


Figure 1 - Progress of recalls in the EU where EU-wide figures are provided

When it comes to regional patterns, it is particularly interesting to compare progress in Western Member States (EU-15) to the ones in Central and Eastern Europe (CEE), as Figure 2 shows for Volkswagen's EA189 engine recall:[21]

[21] This comparison can only be done for Volkswagen's EA189 engine as EU-13 Member States have barely provided data for other engines and manufacturers.

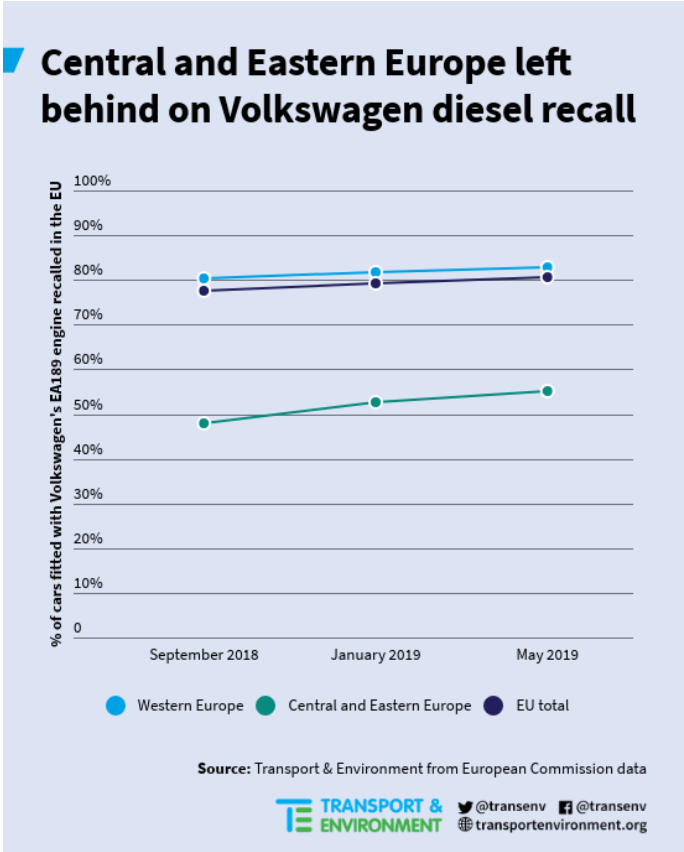
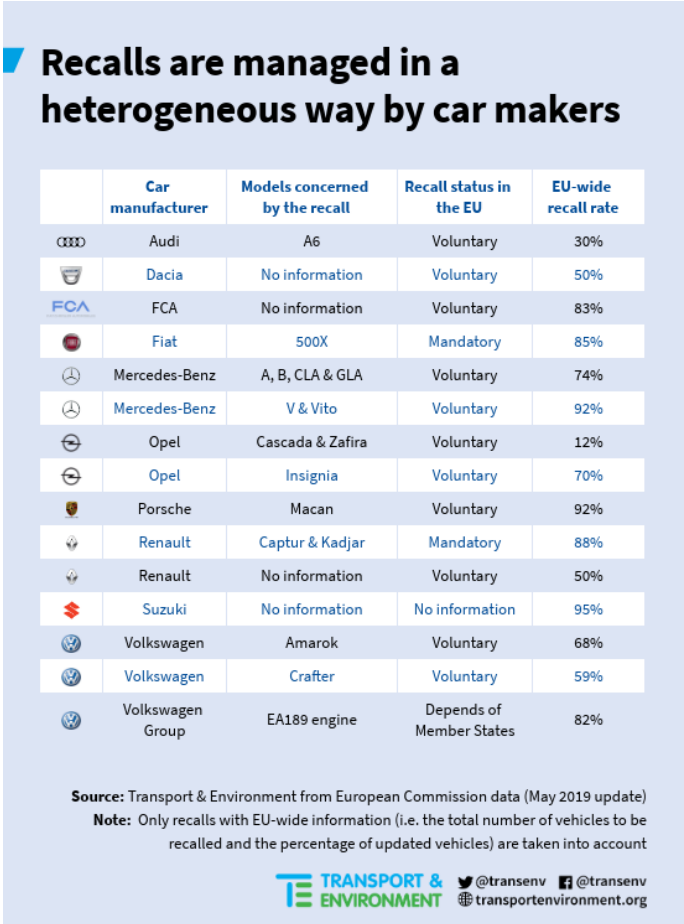


Figure 2 - Progress on Volkswagen's vehicles with EA189 engine - Total for the EU, the CEE and West



Car manufacturer	Models concerned by the recall	Recall status in the EU	EU-wide recall rate
Audi	A6	Voluntary	30%
Dacia	No information	Voluntary	50%
FCA	No information	Voluntary	83%
Fiat	500X	Mandatory	85%
Mercedes-Benz	A, B, CLA & GLA	Voluntary	74%
Mercedes-Benz	V & Vito	Voluntary	92%
Opel	Cascada & Zafira	Voluntary	12%
Opel	Insignia	Voluntary	70%
Porsche	Macan	Voluntary	92%
Renault	Captur & Kadjar	Mandatory	88%
Renault	No information	Voluntary	50%
Suzuki	No information	No information	95%
Volkswagen	Amarok	Voluntary	68%
Volkswagen	Crafter	Voluntary	59%
Volkswagen Group	EA189 engine	Depends of Member States	82%

Table 2 - Recall rates by manufacturer where EU data is provided

- The share of recalled vehicles that have received an update is **much lower in CEE countries**, reaching only 55% (compared to 83% in the EU-15).
- **However, recent progress has been faster**, reaching 15% in the EU-13 since September 2018 (versus 5% in EU-15).

Comparing different car manufacturers is not easy given the very limited availability of data. Table 2 shows that OEMs handle recalls in a very heterogeneous way, with the following notable insights for recalls for which an EU-wide total number of affected vehicles and recall rate were provided:

- **Renault and Dacia have recently made good progress** (+430% and +257% respectively since September 2018). One however has to note that the recall is still at an early stage and can be expected to struggle to keep a similar growth pace at higher recall levels - as also observed with Volkswagen's recalls - especially given the important number of affected vehicles in the EU (about 1.3 million Renault & Dacia cars).
- **Mercedes-Benz has reached a recall rate of 92% for its V and Vito models**, and **Suzuki's** data shows a level of **95%**, although no details have been provided regarding the affected models. The number of recalled vehicles is lower in both cases, with about 50,000 Mercedes vans and cars concerned and 42,000 cars in the case of Suzuki.
- **Recalls of Opel Cascada and Zafira are particularly low**, reaching only 12%. This is striking as software updates were first ordered by the German TAA as early as 2015, with a fifth illegal software programme capable of altering vehicle emissions found in 2018.
- **Progress on the recall of Audi A6 car also remains low (30%)**, although only a small number of 5,000 vehicles is concerned according to available data.

5. Car owners get very unequal treatment for the same car

For consumers, this means that not only is it often impossible to get reliable data on which car models are subject to recalls in which countries and for what reasons. Consumers also get treated very differently depending on where they live. The examples of two models - Volkswagen's Golf, the highest selling vehicle in the EU, as well as Opel's Zafira family car - illustrate this.

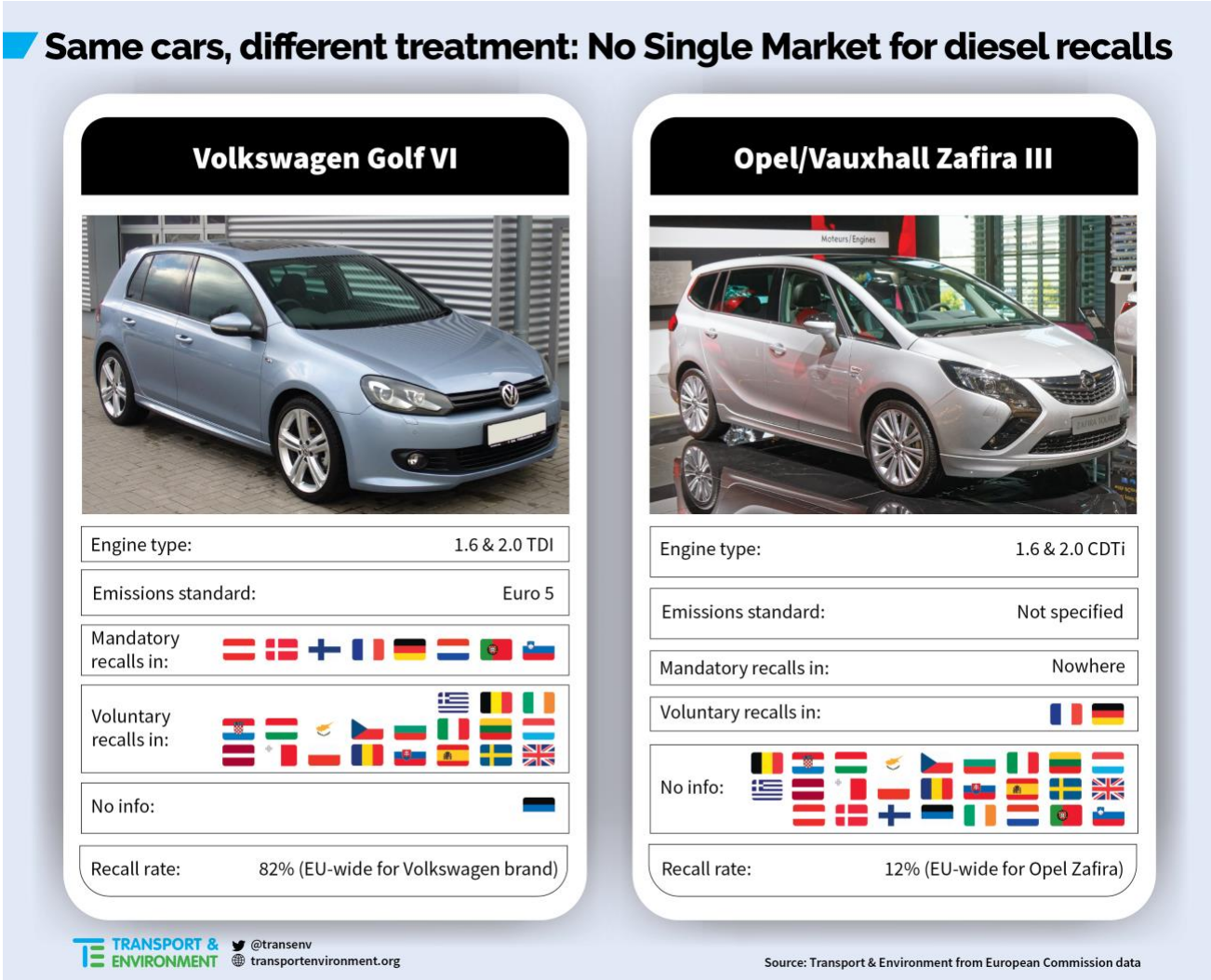


Figure 3 - Examples of unequal treatment of the same car across the EU

The Single Market hence fails car owners whose access to software updates for their cars depends on their place of residence. This not only undermines consumer trust in the industry and the EU Single Market, but also goes against the rights of every European citizen to breathe clean air and receive equal treatment.

6. Solutions are available, EU 'diesel roadmap' shows

Given that improved EU rules for type approval will only be available as of September 2020, companies, governments and the European Commission have to work with the currently available instruments to tackle the dangerous legacy of Dieselgate. And there are solutions available, as shown by the first ever EU 'roadmap towards clean vehicles' which the European Commission published in March 2019.[22] Based on the demands of the roadmap and T&E's own analysis,[23] the following measures are indispensable in order to clean up diesel cars in Europe and finally leave behind the Dieselgate scandal:

[22] European Commission, Roadmap towards clean vehicles, March 2019
[23] Transport & Environment, Analysis of the European Commission's 'Roadmap towards clean vehicles', March 2019

Carmakers:

- **Accelerate the delivery of both voluntary and mandatory recalls**. The EU roadmap rightly demands that a recall rate of at least 90% should be reached within two years after the start of a mandatory recall. From the current data, only Daimler, Porsche and Suzuki are on track with a small number of affected vehicles - all the other carmakers concerned by recalls must accelerate efforts without delay.
- **Use or develop hardware solutions** for all vehicles for which software updates are insufficient to reduce emissions on the road to close to the legal limits at the time of approval. Available solutions include the engine retrofit developed by a European consortium and awarded with the EU 'Horizon Prize'.[24]
- **Provide transparent, complete and detailed information** to regulators and consumers on all recalls and reliable information on emissions improvements.

National governments:

- **Implement recalls issued by other Member States so that they are carried out in a consistent way across the EU**, "in particular in cases where an approval authority already issued a mandatory recall" as the EU roadmap puts it. This **can be done immediately** by national authorities, no new legislation is needed but only coordination with the competent Type-Approval Authority.
- **Require carmakers to reach a recall rate of at least 90% within two years** after the start of a mandatory recall (see above), and monitor progress. Again, existing legal powers are sufficient to deliver these recalls.
- **Request a proof of the required recalls** at periodic technical inspection (PTI), the re-registration or de-registration of a vehicle (2nd hand vehicles and exports of such vehicles) or the renewal of insurance or registration. The EU roadmap shows this is possible; Member States may have to adopt national laws in order to implement these measures.

The European Commission:

- **Harmonise rules on retrofitting**, as mentioned in the EU roadmap,
- Create an **independent, well-resourced EU testing authority:** US experience shows that a budget of around $20 million allows regular and robust in service conformity tests to be undertaken. Such an authority could alternatively be funded for the equivalent of less than a €5 surcharge per new car sold in the EU as T&E has shown,[25]
- Use its new testing power to **check vehicles' performance on the road**, including following software recalls;
- **Reform without delay provisions for periodical technical inspection and roadworthiness testing**, e.g. to enable better tools to detect future manipulations (e.g. via remote sensing), as proposed in the EU roadmap.

Conclusions

Even three and a half years after the initial revelation of massive cheating on emissions after-treatment systems of diesel cars, the legacy of Dieselgate has not been properly addressed. Even the cheapest and least effective form of diesel fixes - software updates - makes very slow progress in the EU and is far from being completed in many Member States. The very same car gets very unequal treatment across the EU, which means the Single Market only works for selling cars but not for recalls. This explains why the scandal still keeps dragging on and undermines not only improvements in air quality but also consumer trust. Solutions are available and it is time they are implemented, especially by carmakers and national governments.

[24] European Commission, Horizon prize for the cleanest engine retrofit, April 2018
[25] Transport & Environment, MEPs should support an EU Vehicle Surveillance Agency to ensure clean and safe cars in the real world, April 2017

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