



## Requirements and tests

### AL OBLIGATIONS

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mission limits set out in  
referred to in Article 5.

1. The manufacturer shall equip vehicles so that the components likely to affect emissions are designed, constructed and assembled so as to enable the vehicle, in normal use, to comply with this Regulation and its implementing measures.
2. The use of defeat devices that reduce the effectiveness of emission control systems shall be prohibited. The prohibition shall not apply where:
  - (a) the need for the device is justified in terms of protecting the engine against damage or accident and for safe operation of the vehicle;
  - (b) the device does not function beyond the requirements of engine starting;or
  - (c) the conditions are substantially included in the test procedures for verifying evaporative emissions and average tailpipe emissions.

## Diesel cars: Nitrogen oxide (NO<sub>x</sub>) emissions (in g/km)



**Euro 3**  
(2000)



**Euro 4**  
(2005)



**Euro 5**  
(2009)



**Euro 6**  
(2014)

■ On-road measured value (Carslaw, 2011)/(ICCT, 2014e)  
--- Euro emission limit

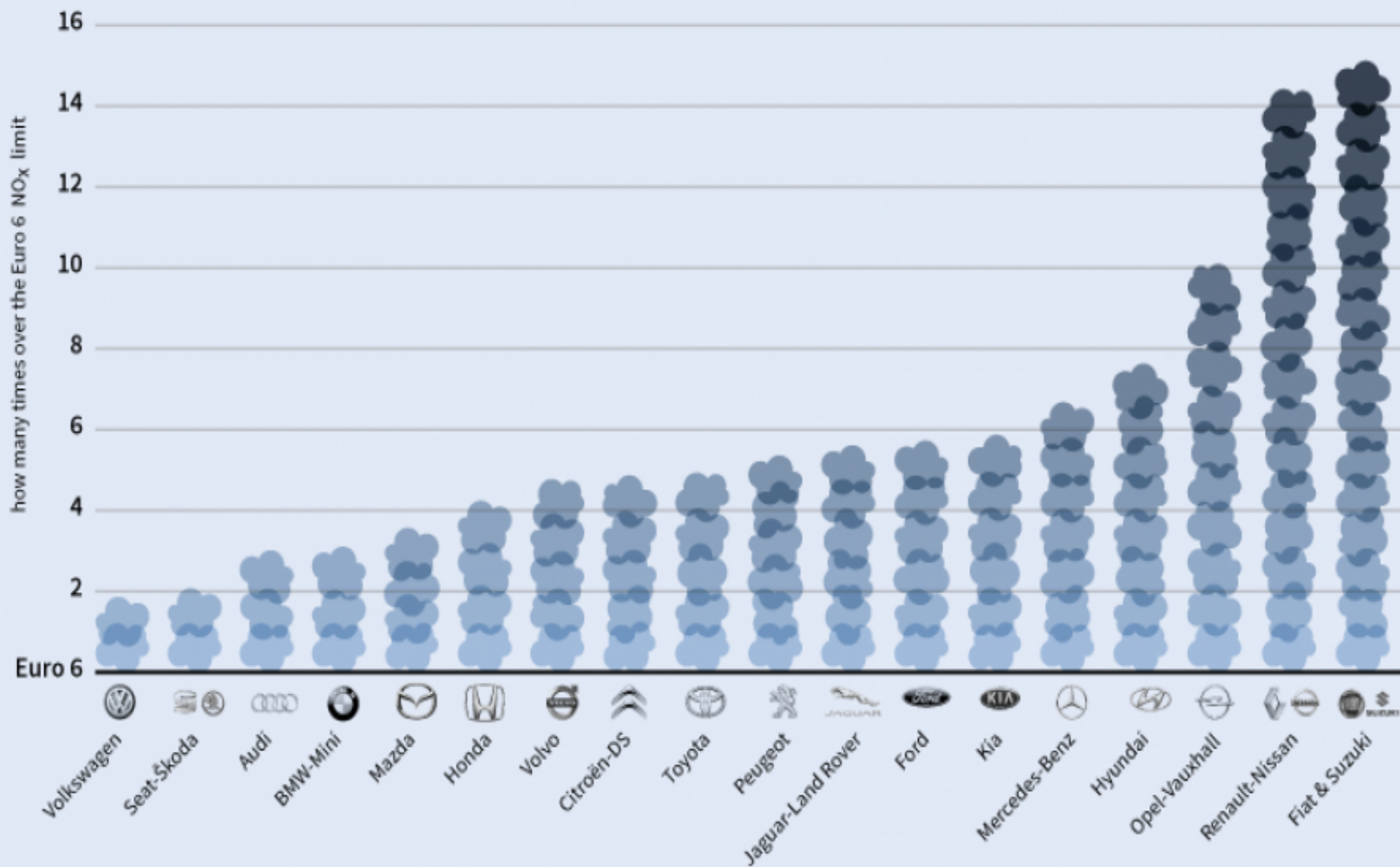
- **Real-driving emissions measurements started in 2005**

- **Report that showed big discrepancy between real measurements and laboratory testing was published in 2011 (anonymous data though)**

- **Working group to develop method for official real-driving emissions started in 2011**

- **Approval of new testing in 2015 (after Volkswagen scandal broke out)**

# Above and beyond the legal NO<sub>x</sub> limits



# EU process for type approval



If a car manufacturer wants to sell a car in the EU, it needs a certificate called **type approval**



Certificates are granted by **type approval authorities**



They often outsource the actual testing to private labs called **technical services**



Type approval authorities have to accept test results from **other authorities in EU**



Cars are tested for a range of features, like **emissions**. Carmakers can collect test results elsewhere before applying for a whole vehicle certificate



Sometimes tests are done **by the manufacturer at its own facilities** while overseen by technical services



Once a company has acquired type approval from one EU country, it can sell its cars **everywhere in the EU**



Type approval authorities, or a technical service on their behalf, have to make sure produced cars conform to the approved type: **conformity of production**



National authorities, sometimes the same that grant type approvals, have to do **market surveillance**

**DIESELGATE**  
LOOKING UNDER  
THE HOOD

# Who approved the Dirty 30?



UK



GERMANY



FRANCE



NETHERLANDS



LUXEMBOURG



SPAIN



ITALY



## Power in Europe

### Current vehicle standards

Emission limits



Test procedures



Checks on vehicles



**Parliament**



**Commission**



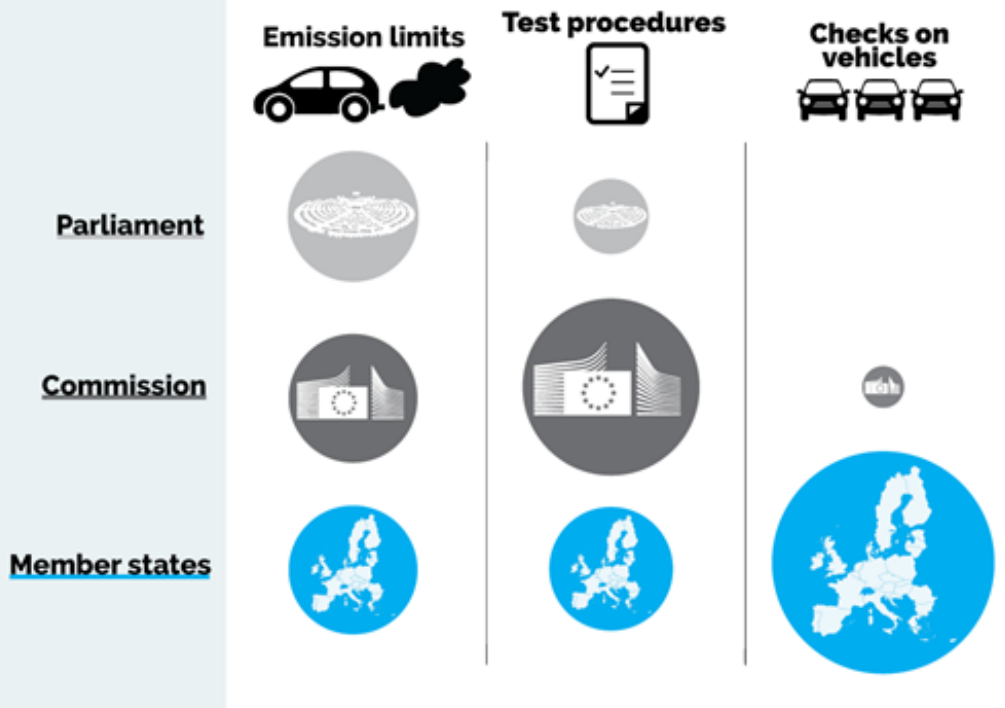
**Member states**





## Power in Europe

### Current vehicle standards



### Proposed future standards

