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Why is RDE important for the Netherlands ?





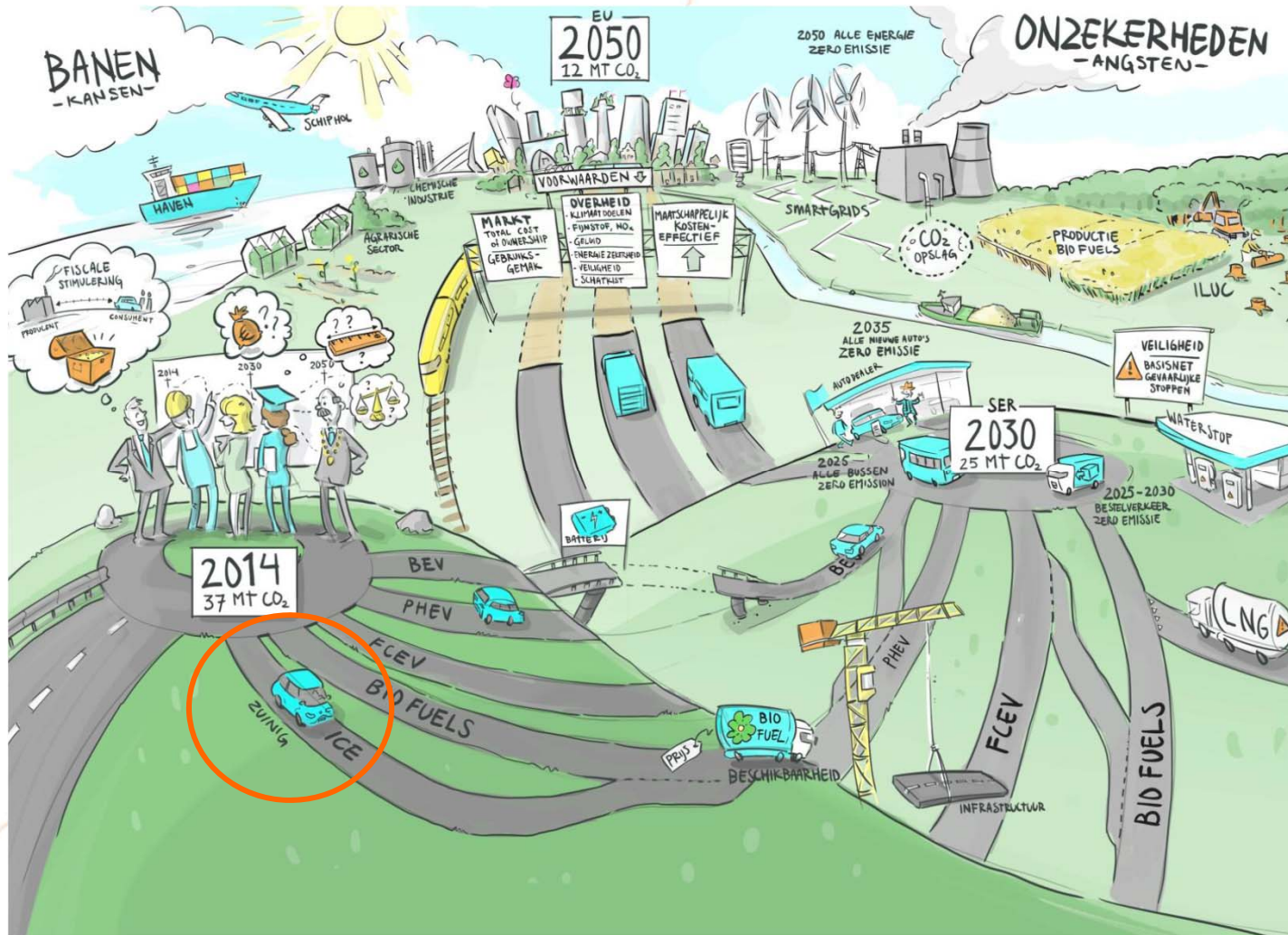
Transport is part of our modern world



RDW

AECC technical seminar on RDE
29 April 2015

Reduction of Transport CO₂ emissions - Alternative fuels



Reduction of Transport CO₂ emissions

Promoting low emission cars ?



Public awareness

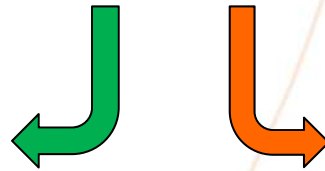
green house gas emissions and

pollutant emissions

CO₂
CH₄
N₂O

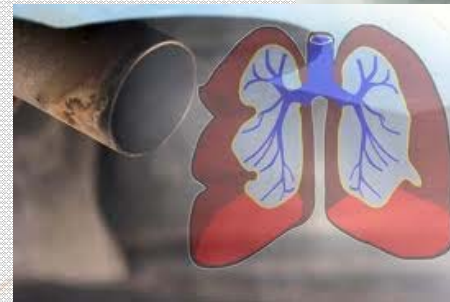


global



NO_x
PM / PN

CO
NMHC
NH₃

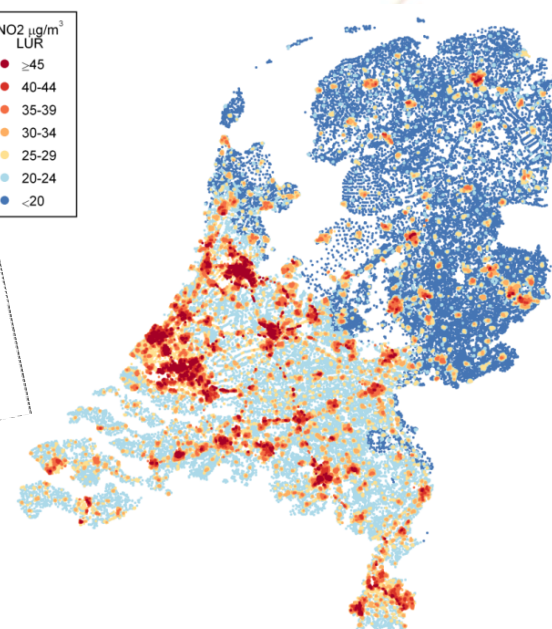
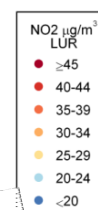
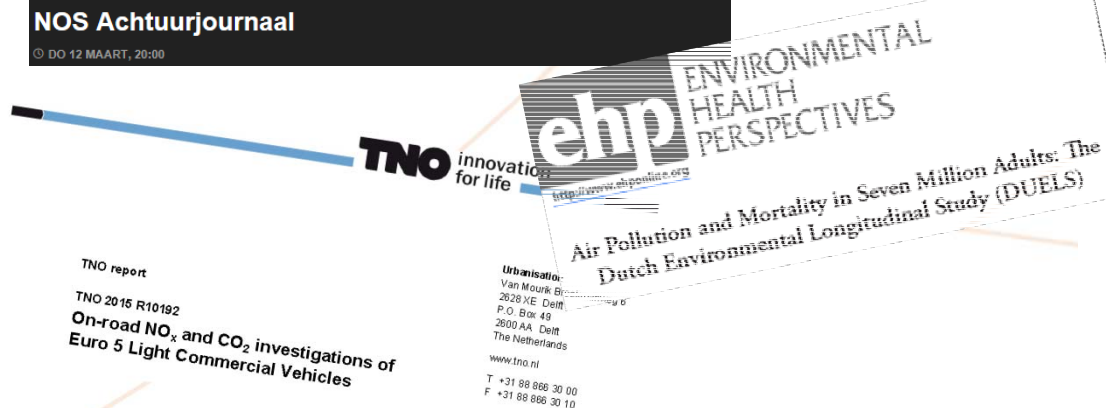


local



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Public awareness in the Netherlands





What are the European standards?

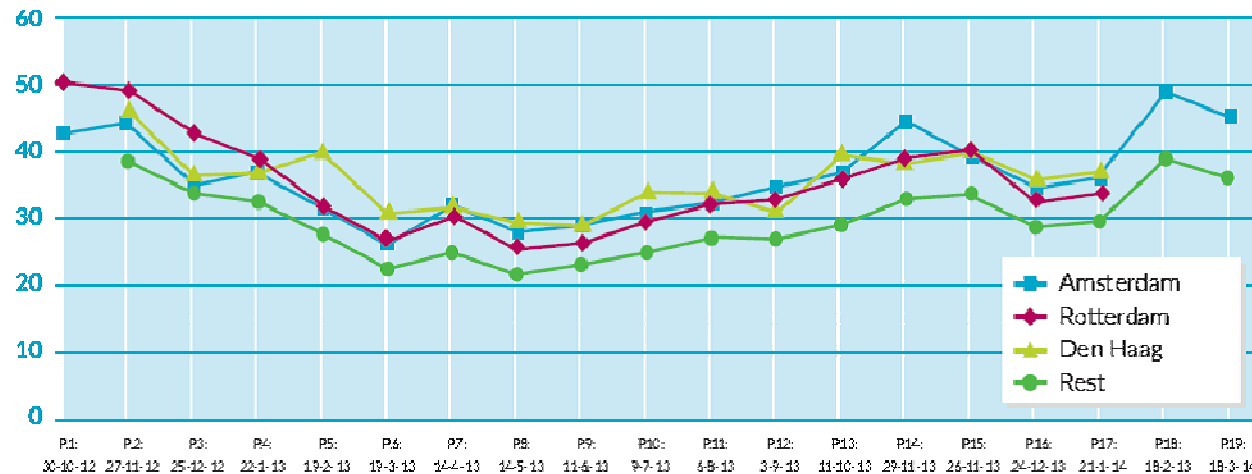
There are European standards for particulate matter (PM10), for NO₂ and for several other gases. Not for ultrafine particulates (the most unhealthy form of particulate matter).

Particulate matter (PM10) annual average standard:	40 µg/m ³ (50 µg/m ³ day)
Ultrafine particulates (PM2.5) annual average standard:	25 µg/m ³ (little measured)
Nitrogen dioxide (NO ₂) annual average standard:	40 µg/m ³



WHO even propose stricter standards specific for ultrafine particulates.

Air quality in the Netherlands



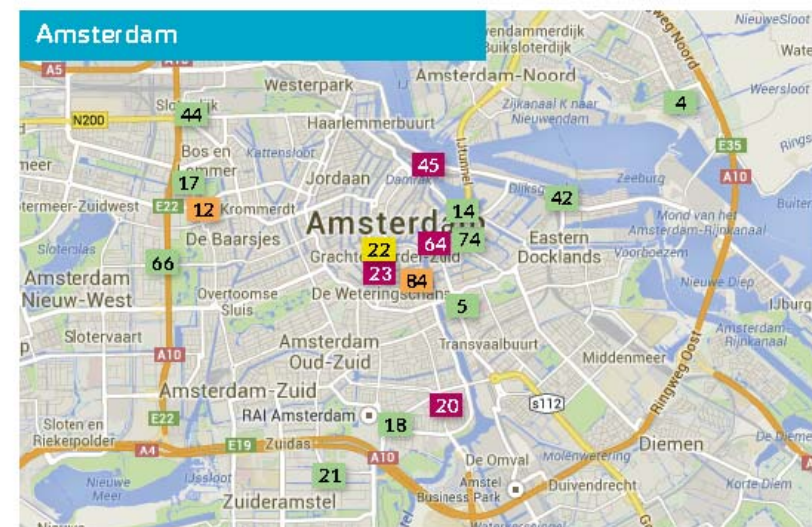
Source Milieudefensie

NO₂ concentrations (in µg/m³) per measuring period, average for the measuring points in 3 major cities and for the rest of the measuring points in Netherlands.

Lucht in grote steden is nog zeer ongezond

De luchtkwaliteit is in sommige woonwijken in de grote steden nog altijd zeer ongezond. Als steden geen strengere milieuzones voor vervuilende dieselmotoren instellen, zal Nederland in 2015 opnieuw niet aan de Europese stikstofnormen voldoen.
Volkskrant, 5 september 2013

- zeer ongezond, boven de wettelijke grenswaarde (40,5 µg/m³)
- ongezond, potentieel beleidsmatig knelpunt (tussen de 38 en 40,5 µg/m³)
- ongezond (tussen de 30 en 38 µg/m³)
- redelijk (tussen de 20 en 30 µg/m³)
- gezond (onder de 20 µg/m³)



In Amsterdam, are some main roads to and through the Center that show high measured values.

What can we do on National level?

- **No houses close to busy roads**
- **No schools close to busy roads**
- **Low emission zones**
 - **Based on vehicle type and age**
 - **Based on vehicle fuel or technology**
 - **Based on Euro emission classes**



We expect that the emission Euro classes reflect the emissions on the street → but is this the case??

Euro emission classes and Real Driving Emissions (RDE)

Diesel NO_x reduction

Source RIVM/TNO

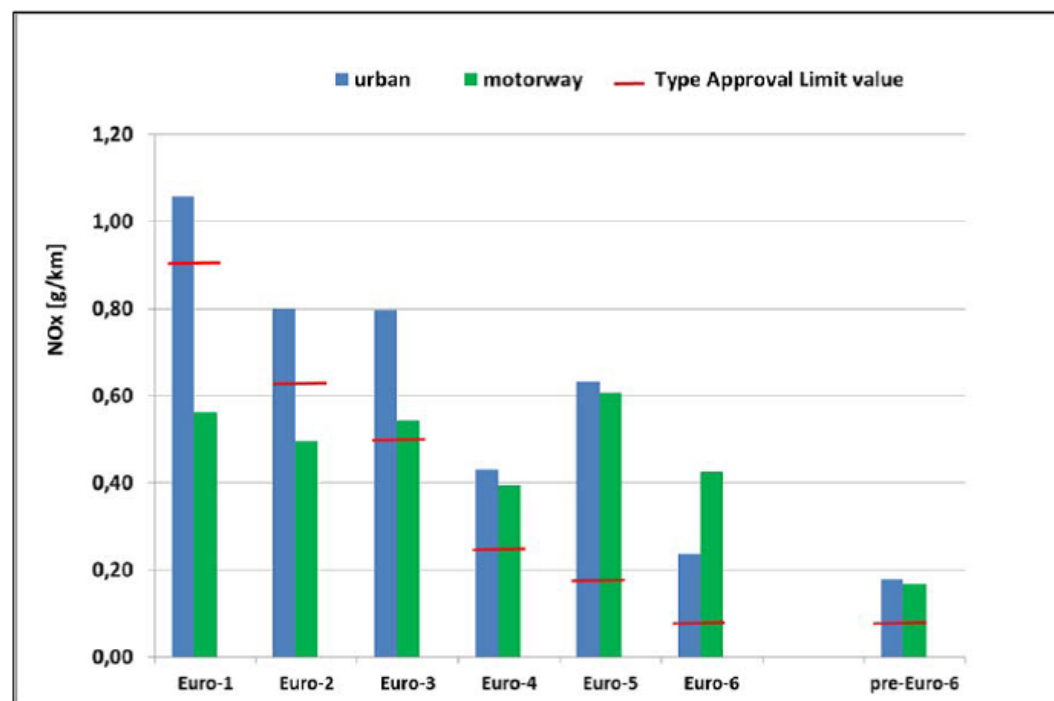


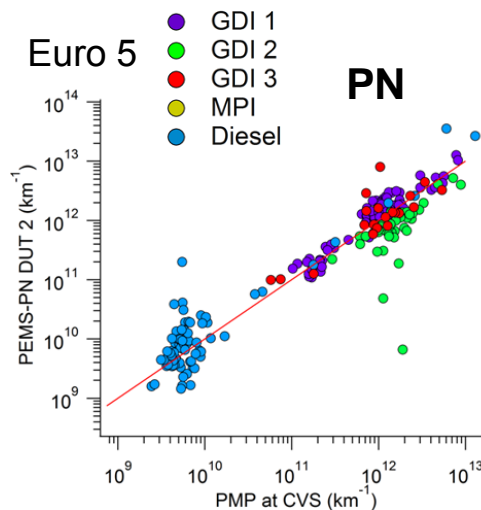
Figure 1 NO_x emission limits and the real-world emission factors of diesel passenger cars for urban driving and motorway conditions. The emission factors relate to the average type of cars and average driving conditions in the Netherlands.



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Euro emission classes and Real Driving Emissions (RDE)

Petrol NOx and PN reduction



Source JRC

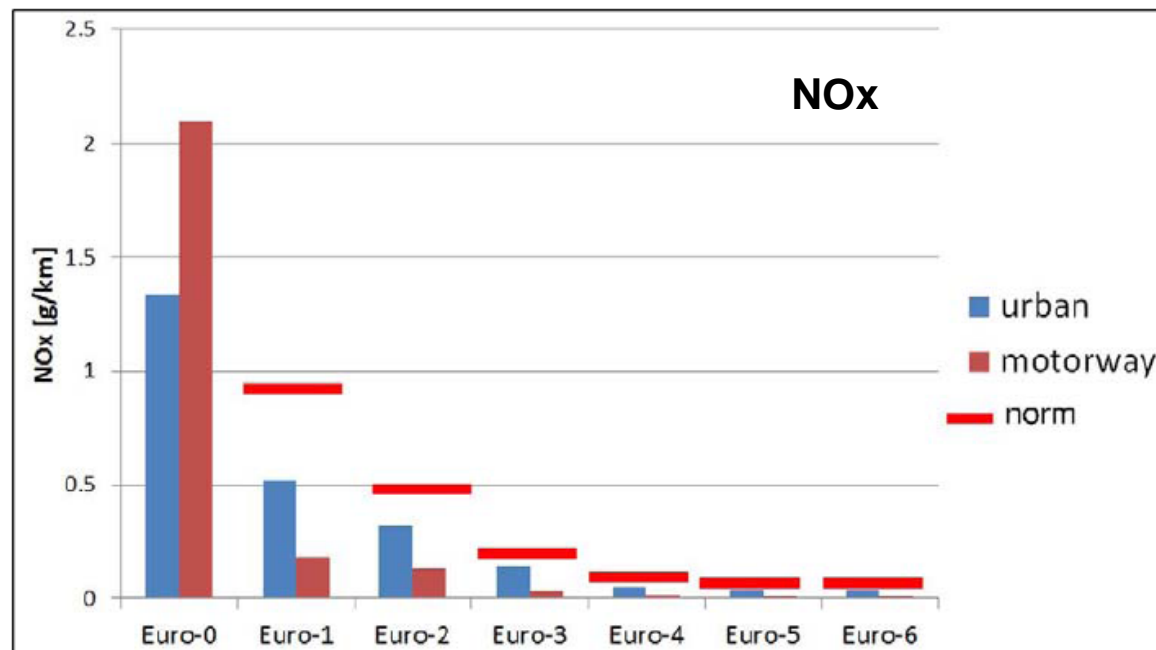


Figure 2 The real-world NO_x emission factors of petrol cars from Euro-0 to Euro-6 for urban driving and motorway conditions. The emission factors relate to the average type of cars and average driving conditions in the Netherlands.

Source RIVM/TNO

RDE procedure

The existing NEDC does not and the new WLTP **test cycles** will not deliver real driving emissions of all criteria pollutants.



The RDE should ensure compliance with the Euro 6 limit values under **real driving** conditions and prevent the use of “defeat-devices”.



RDE should cover all criteria pollutants, with the **reduction of NOx** emissions of diesel vehicles as its first priority and secondly **PN for GDI** vehicles



New emission calibration
Engine measures
After treatment measures
(SCR, GPF)

RDE procedure

A draft Commission Regulation is ready for adoption which will introduces a test procedure for assessing the emissions of light duty vehicles under normal conditions of use.

The Netherlands is actively involved in the development of the technical procedures and is pleased with the technical procedures now in the draft proposal after long discussion in the RDE-LDV working group.

The criteria of normal conditions of use and the burden on the manufacturer to demonstrate during TA that their vehicles fulfil in real world the euro 6 emission limits is now in balance.

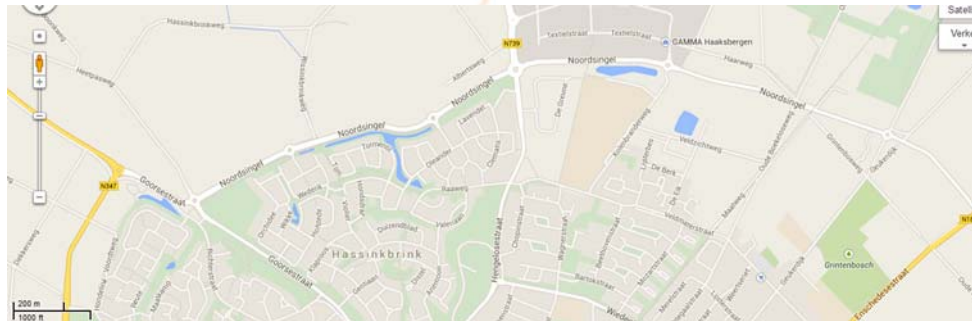
RDE procedure

The Netherlands support:

1. the start of the RDE procedure as soon as possible with a **monitoring phase** and later an application of not-to-exceed emission limits as from three years after the mandatory Euro 6 dates (in line with the cars 2020 Final Report).
2. the introduction of the **NTE Limit for RDE in 2 mandatory steps**. Which mean 2 steps on the all vehicle date. The type approval dates should stay 1 year before the all vehicle date what is common in the WVTa legislation and to prevent market distortion.
3. a robust definition of quantitative **correction factors for extended ambient conditions** and if necessary **additional dynamical boundary conditions** for preventing "biased" PEMS trips.

RDE procedure

4. If additional dynamical boundary conditions for identifying "biased" PEMS trips are considered to be necessary
 - the need for an evaluation tool could/should be reconsidered (no accumulation of measures)
 - with dynamical boundary conditions the NTE can be close to 1.
 - the dynamical boundaries should not restrict real driving behavior.



Example:

A road around a normal Dutch town, mainly a 80 km/h road, with roundabouts every couple of hundred meters, making the driver accelerate and decelerate continuously between roughly 40 km/h and 80 km/h, yielding a high $v \cdot a_{pos}$. Which should not be seen as aggressive driving (Google Maps)

Next important steps

- **Legal introduction dates**

- Type approval date is not introducing vehicles with RDE on the road.
- All vehicle type date is the real introduction date that counts. New registrations of vehicles will comply with RDE (first legal phase)



- First legal phase:

- 3 year after introduction euro 6 (1 September 2017/1 September 2018)

- Second legal phase:

- 5 year after introduction euro 6 (1 September 2019/1 September 2020)

- **First phase legal conformity factor (NTE)**

- A challenge level but feasible.
- Should really improve real world emissions (not a status quo)

- **Second phase legal conformity factor (NTE)**

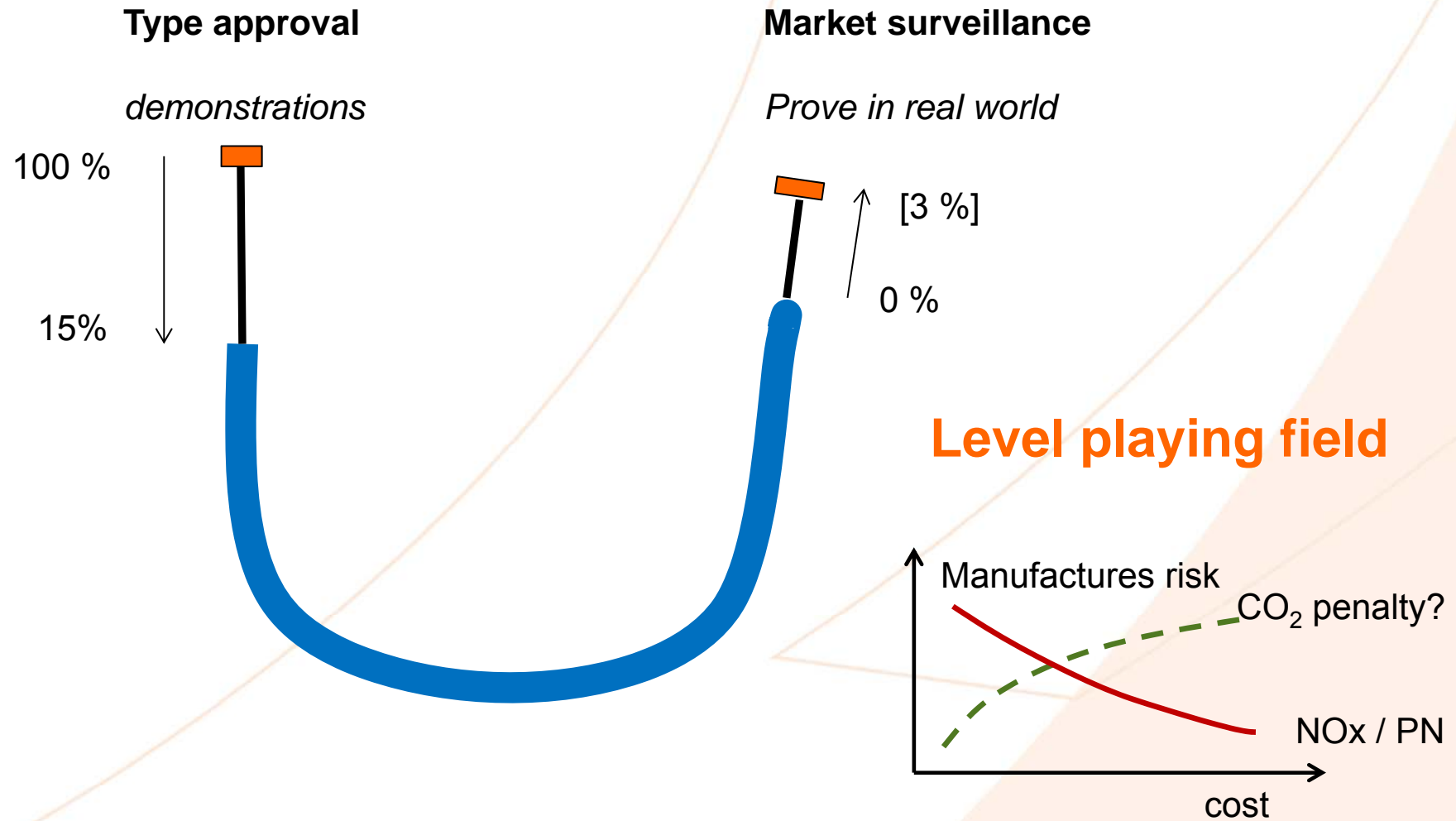
- Should serve our needs. RDE vehicles should comply with euro 6 under real world conditions. (factor 1 or close to 1)

- **Learn from monitoring phase**

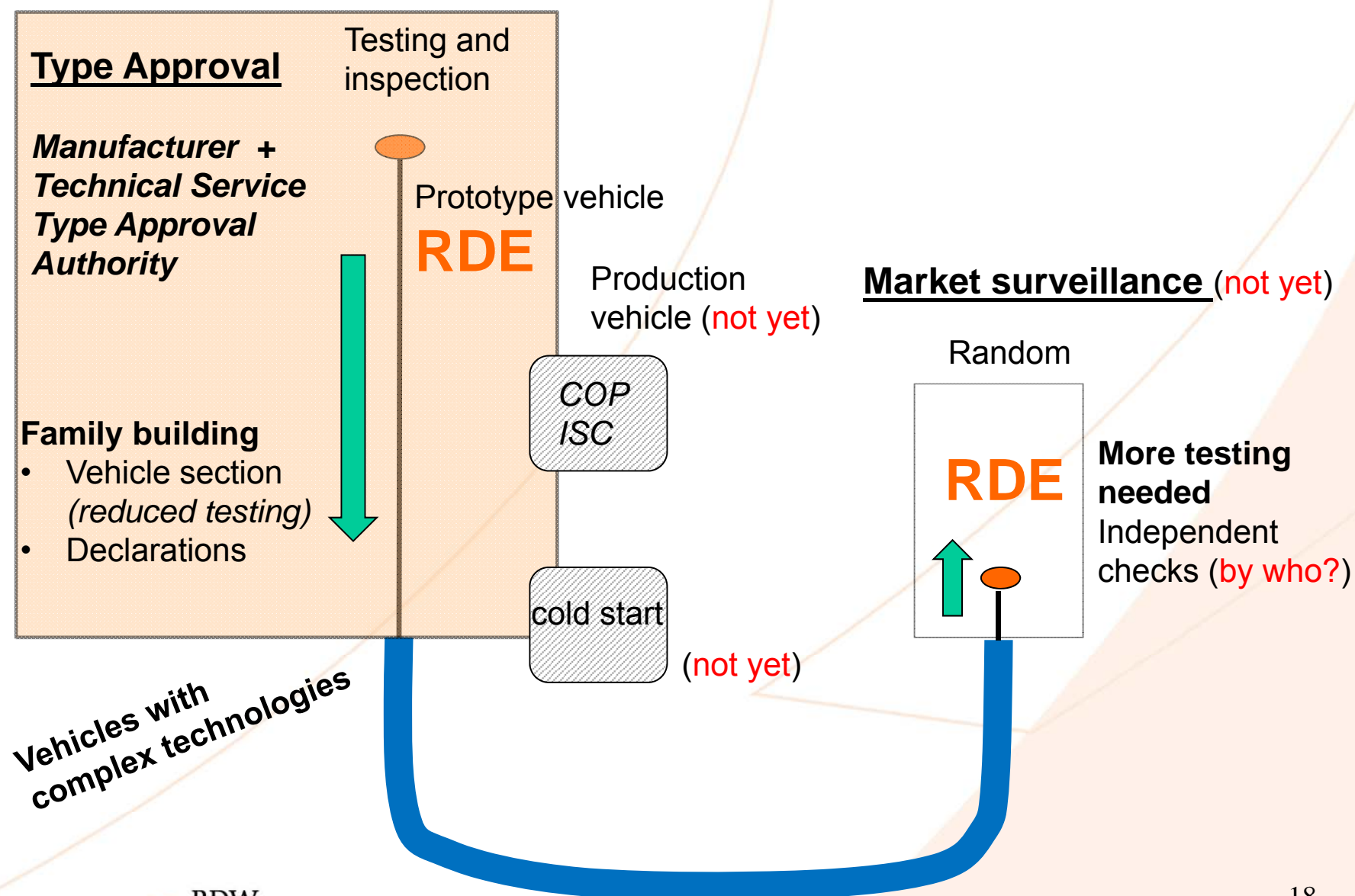
- Will the evaluation tool do what we expect (detect the NOx emissions in real city driving)?
- Check whole RDE procedure. Improvements needed?



Next important steps



Next important steps



Vehicles with complex technologies

RDE should give us real Euro 6 vehicles



