Implemented by

“Clean Action Plans“

Dr. Axel Friedrich

On the behalf of GIZ

Germany

“12th Urban Mobility India Conference 2019"

15th to 18th of November 2019, Lucknow, India

Smog Alert Berlin

Berlin 2014

berlin.de/en/tourism/2444987-2975548-berlin-tv-tower.en.html

EUROPEAN UNION AIR QUALITY STANDARDS

Pollutant	Obligation	Time period	Compliance deadline	Permitted annual exceedences
Nitrogen dioxide (NO_2)	Hourly limit value of 200 µg/m3	1 hour	01/01/2010	No more than 18 hours
	Annual mean limit value of 40 µg/m3	Calendar year	01/01/2010	none
Coarse particulate matter (PM_{10})	Daily limit value of 50 µg/m3	24 hours	01/01/2005	No more than 35 days
	Annual mean limit value of 40 µg/m3	Calendar year	01/01/2005	none
Fine particle ($PM_{2.5}$)	Annual mean limit value of 25 µg/m3	Calendar year	01/01/2015	none
Sulphur dioxide (SO_2)	Hourly limit value of 50 µg/m3	1 hour	01/01/2005	No more than 24 hours
	Daily limit value of 125 µg/m3	24 hours	01/01/2005	No more than 3 days

Legal Basis

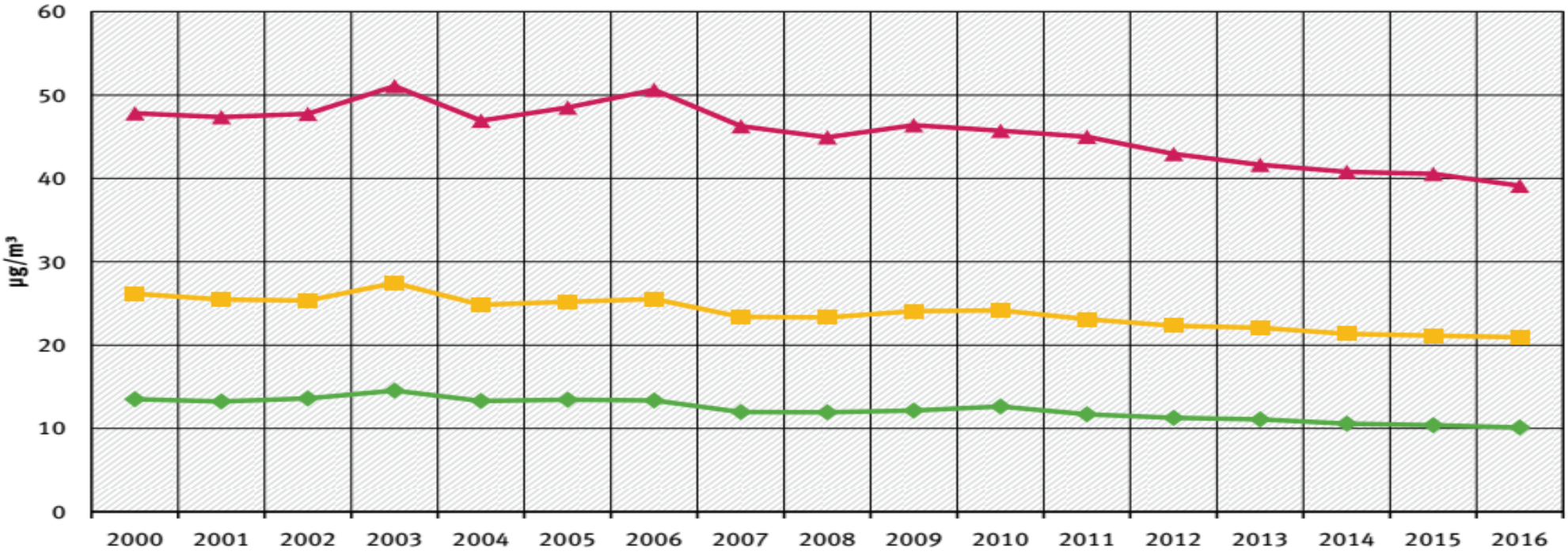
The basis for legal actions relating to clean air are the Council Directive 96/62/EC on ambient air quality assessment and management of 27 September 1996 and the Directive 2008/50/EC on ambient air quality and cleaner air for Europe, which came into force on 21 May 2008. The guidelines established limit values for the pollutant concentration in ambient air. The defined limit values had to be anchored in national law, e.g. in Germany by the 39th Federal Emission Control Act. If air quality limits are exceeded, cities and municipalities are obliged to draw up action plans and/or air quality plans. These plans must ensure that the

Air Quality in Europe

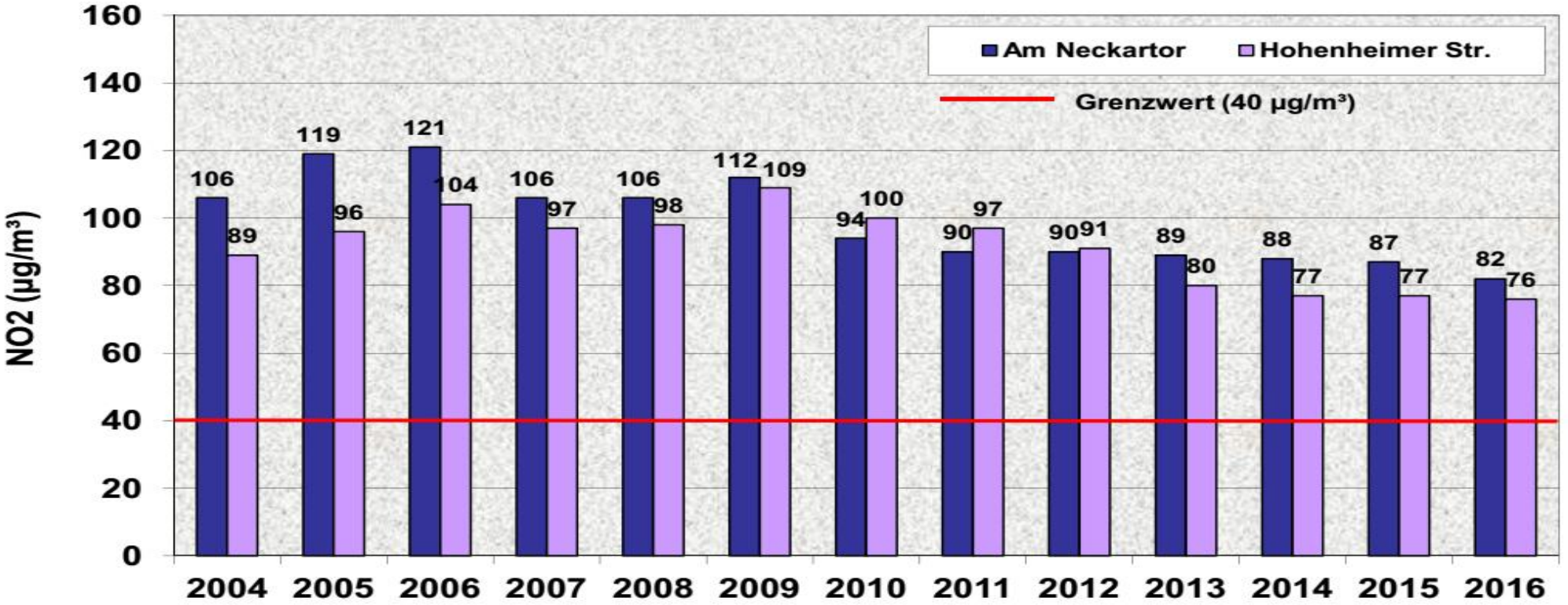
According to studies by the European Environment Agency (EEA), more than 420,000 people died prematurely from the consequences of particulate matter air pollution throughout Europe in 2015. The high NO_2 emission levels are responsible for approximately 79,000 premature deaths.

Poor air quality increases the risk of cardiovascular and respiratory diseases including cancer. These damages to human health are responsible for economic costs of between 330 and 940 billion Euros, which is the equivalent of 3 to 9 % of GDP in the EU 28 .

Development of the Yearly Average of NO2 of selected Measurement Stations in Germany



Concentration at Stations in Stuttgart



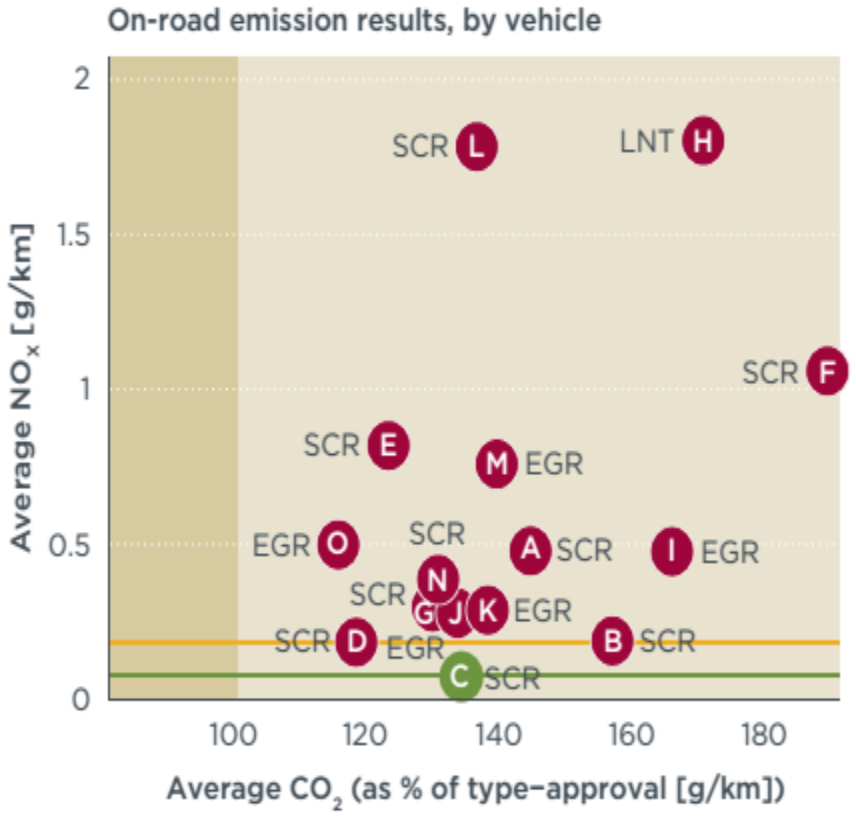
Quelle: LUBW, Grafik: AfU Stuttgart, Abt. 36-4

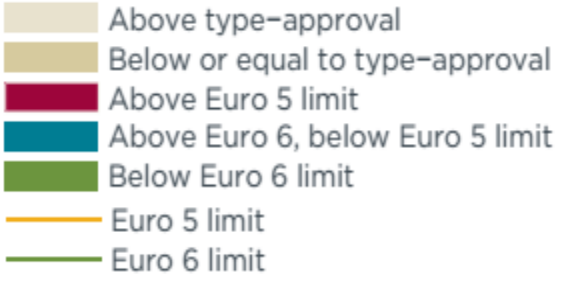
Limits for Diesel Passenger Car

Diesel emission limits [mg/km over NEDC cycle]					
Pollutant	**CO**	**NO_x**	**PM**	**THC+NO_x**	**PN [#/km over NEDC cycle]**
Euro 5a	500	180	5.0	230	-
Euro 5b/b+	500	180	4.5	230	6.0E11
Euro 6b/6c	500	80	4.5	170	6.0E11

Source: Vicente Franco, Francisco Posada Sánchez, John German, and Peter Mock, ICCT 2014

Overview of on-road NO_X and CO_2 Emission Results for all Vehicles under Test





15 test vehicles in total (6 manufacturers), with different NO_x control technologies:

- 10 selective catalytic reduction (SCR)
- 4 exhaust gas recirculation (EGR)
- 1 lean NO_x trap (LNT)

Average Euro 6 NO_x conformity factors (ratio of on-road emissions to legal limits):

- all cars: 7.1
- best performer (Vehicle C, SCR): 1.0
- bad performer (Vehicle H, LNT): 24.3
- worst performer (Vehicle L, SCR): 25.4

(5) Achieving EU air quality objectives requires a continuing effort to reduce vehicle emissions. For that reason, industry should be provided with clear information on future emission limit values. This is why this Regulation includes, in addition to Euro 5, the Euro 6 stage of emission limit values.

(6) In particular, a considerable reduction in nitrogen oxide emissions from diesel vehicles is necessary to improve air quality and comply with limit values for pollution. This requires reaching ambitious limit values at the Euro 6 stage without being obliged to forego the advantages of diesel engines in terms of fuel consumption and hydrocarbon and carbon monoxide emissions. Setting such a step for reducing nitrogen oxide emissions at an early stage will provide long-term, Europe-wide planning security for vehicle manufacturers.

Emissions from new diesel cars are still far higher than official limit

New diesel cars are still emitting many times the official limit for polluting nitrogen oxides when driven on the road, almost a year after the Volkswagen emissions scandal broke.

Renault, Mercedes-Benz, Mazda and Hyundai have all launched diesel models in 2016 with NOx emissions that are far higher than the official lab-based test when driven in real-world conditions, according to tests by Emissions Analytics (EA), a company whose data is used by the manufacturers of most cars sold in Europe.

Ironically, the only new model to meet the limit when on the road was a Volkswagen Tiguan.

30.08.2016

LEGAL ACTIONS ON CLEAN AIR

Legality of Diesel Driving Restrictions Confirmed

On 13 September 2016, the administrative Court of Düsseldorf ruled that driving bans on certain diesel vehicles were legally possible in order to comply with the limit values as quickly as possible.
The administrative Court of Stuttgart went one step further with its decision of 26 July 2017 and ordered the state of Baden-Wuerttemberg to consider a year-round ban on diesel-powered vehicles.
In a judgement in principle, the Federal administrative Court in Leipzig declared on 27 February 2018 that diesel traffic bans are possible already today, while respecting the principle of commensurability.


Umwelt
ZONE
frei
Diesel
verboten!

Environmental Zone Berlin

Emission Citeria

Area:

about 88 km²
(Berlin total area: 892 km²)

Inhabitants:

about 1 Million

(Berlin total: 3,4 Mio)

Stage 1: since 1.1.2008

- Diesel vehicles: at least Euro 2 or Euro 1 & retrofit
- Gasoline vehicles: at least Euro 1
- 7% of vehicle fleet affected

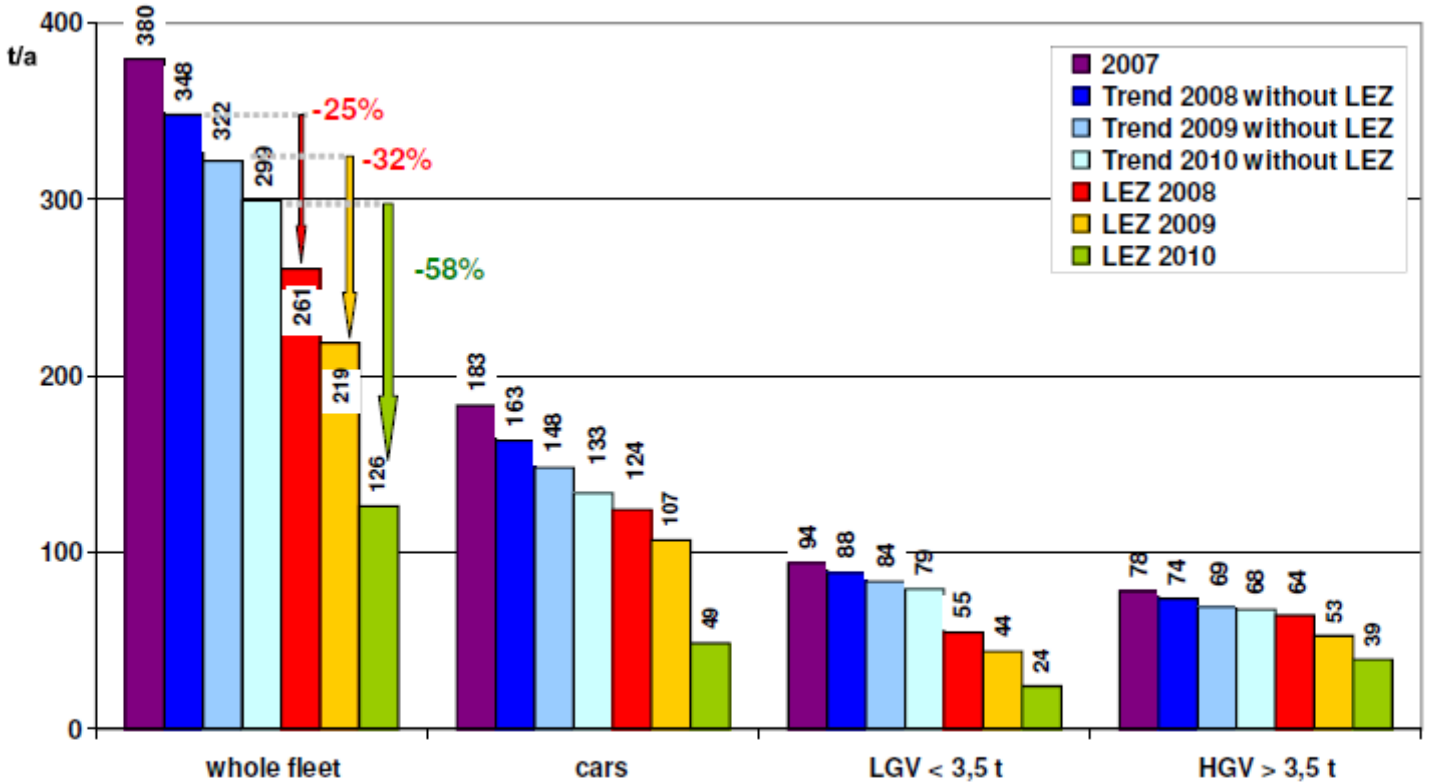
Stage 2: since 1.1.2010

- Diesel: Particle emission Euro 4:
- cars: Euro 3 + particle filter or better
- goods vehicles: also retrofit of Euro 1-3 towards Euro $4_{Particle}$
- 10% of the vehicle fleet affected

☝ more than 40 LEZ planned/in force in Germany, 30 LEZ in the EU, but with different emission criteria

Berlin Environmental Zone – Impact Analysis Particle Emissions-Black Carbon

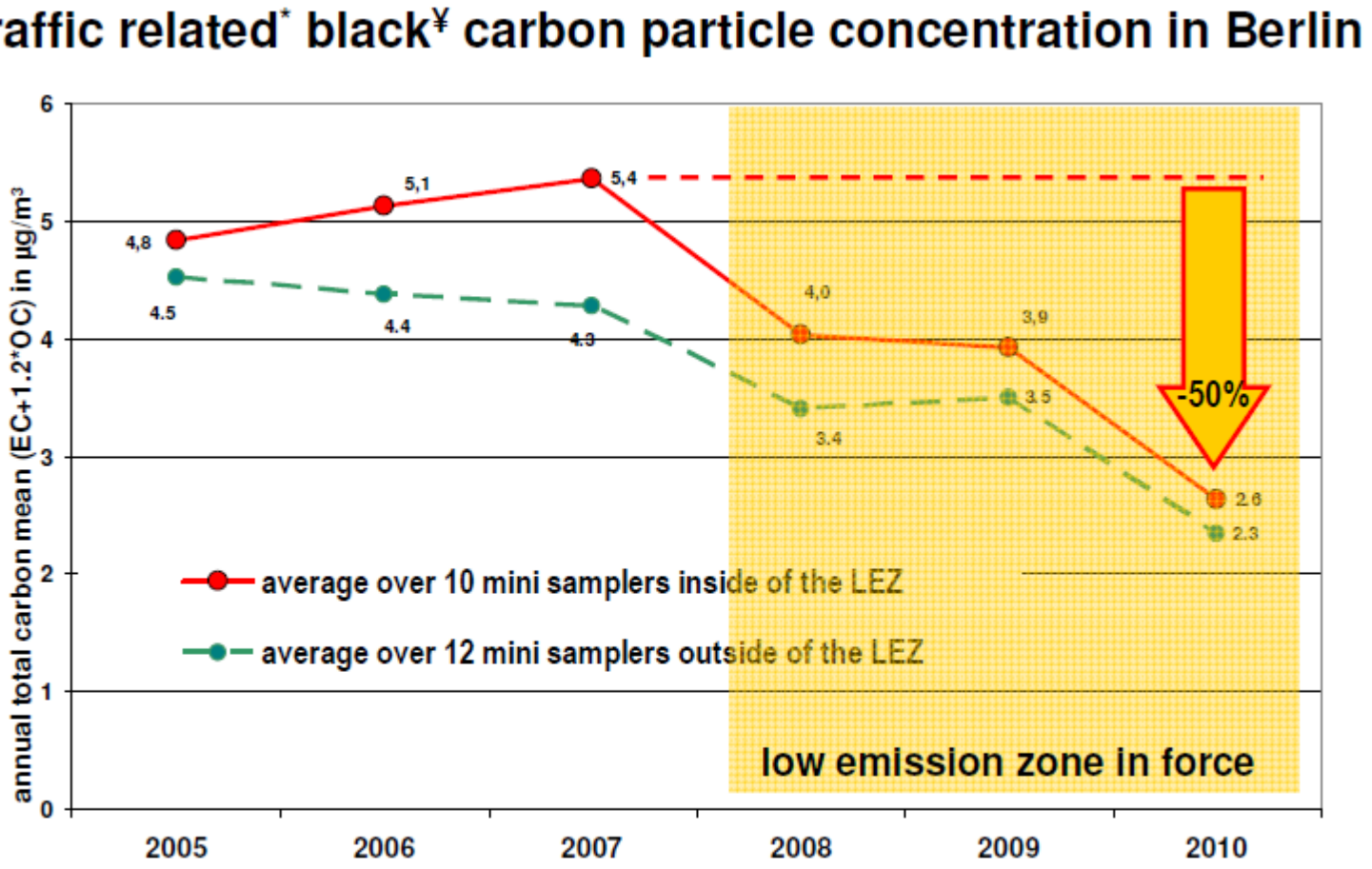
based on fleet composition at Frankfurter Allee (new emission factor data base HBEFa 3.1)



emissions extrapolated to the entire main road network based on the fleet composition at Frankfurter Allee (with DPF-retrofit, only warm emissions, no cold start impact)

(preliminary results, vers. 22/3/2011)

Berlin Environmental Zone Impact



* local BC increment at traffic sites, adjusted to traffic volumes trend relative to 2007 before LEZ came into force

¥ elemental carbon (EC) particles plus other deposited organic compounds (OC)

Senatsverwaltung für Gesundheit, Umwelt und Verbraucherschutz, Referat III D, M. Lutz

axel.friedrich.berlin@gmail.com

Small is beautiful

PEMS Installation

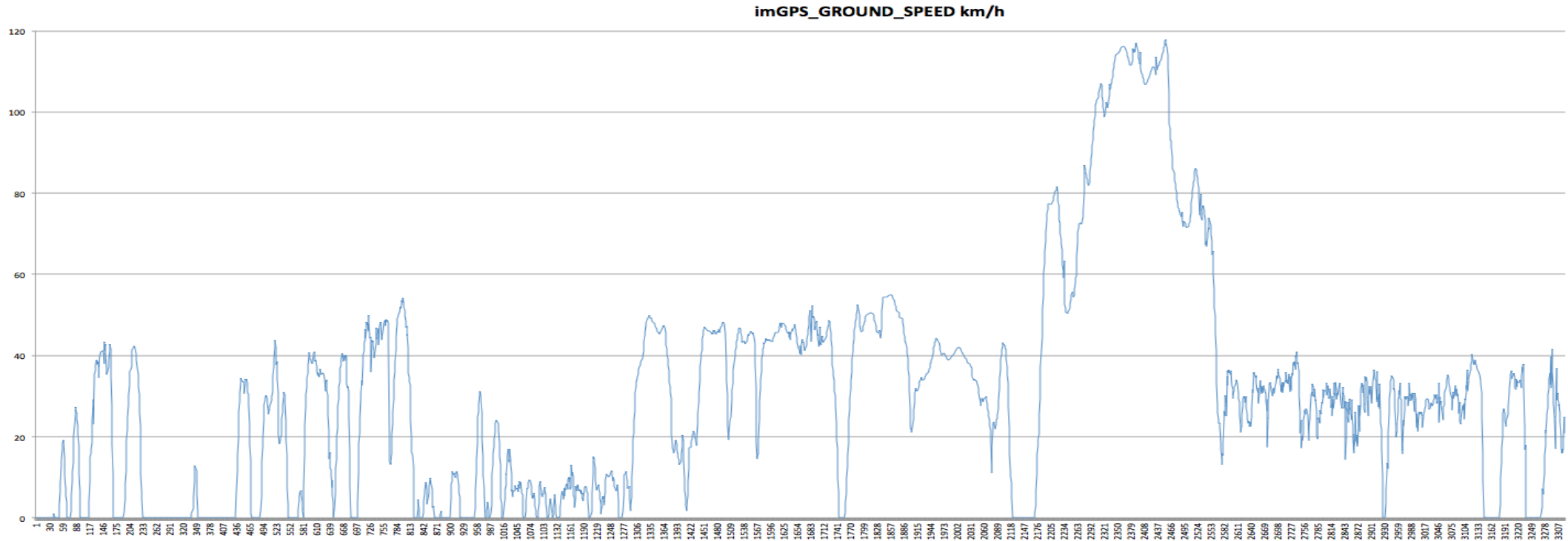
EKI

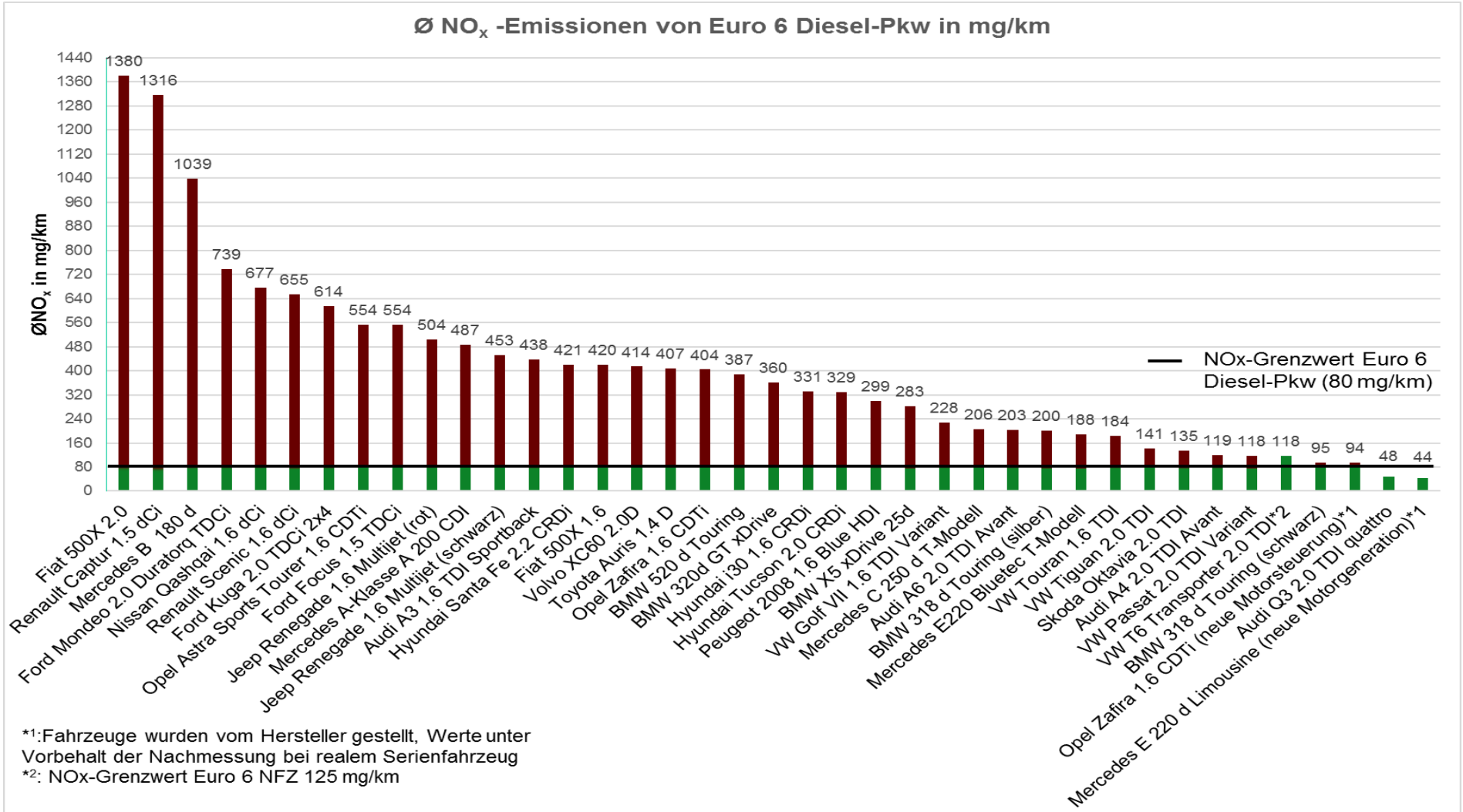
Deutsche Umwelthilfe

PEMS Track


Strandbad Wannsee
BEZIRK
STEGLITZ-ZEHLENDORF
ZEHLENDORF
Westlicher Düppeler Forst
WANNSEE
BERLIN
BRANDENBURG
Kleinmachnow
Teltow
Stahnsdorf
Parforceheide
STERN
POTSDAM SÜDOST
RUHLSDORF
L40
L76
L761
L794
1

Speed Track





*1:Fahrzeuge wurden vom Hersteller gestellt, Werte unter Vorbehalt der Nachmessung bei realem Serienfahrzeug

*2: NOx-Grenzwert Euro 6 NFZ 125 mg/km