Deutsche Umwelthilfe

NO_x and CO_2 measurements of Euro 6 diesel cars in real driving conditions

Winter measurements
September 2016 – March 2017

This report shows the average values of the NO_x and CO_2 emissions of 16 tested vehicles recorded as part of the project of the "Emissions-Kontroll-Institut" ("Emission Control Institute", EKI).
As a rule, in each case, ten test journeys were conducted on a test track, which is divided into an urban driving, rural driving and a motorway part. The technology and test methodology used is described in the background paper entitled *PEMS Measurements*. In order to obtain real emission data, possible regeneration in the exhaust gas cleaning system has been incorporated in the calculation to determine the average NO_x and CO_2 values.

The emission measurements in real driving operation presented here were carried out during the period from the end of September 2016 to the end of March 2017. This was done in order to be able to show the exhaust gas behaviour of the vehicles at low outside temperatures and/or the use of temperature-controlled shutdown devices, as used by most manufacturers. If the NO_x excess values of the Euro 6 standard are 9.2 times higher than the limit values in the six months of the summer, they rose to exceed the limit values 17.2-fold during the winter measurements.

With regard to the 15 Euro 6 diesel cars measured, the NO_x emissions are, on average, 8 times higher than the limit value permits.

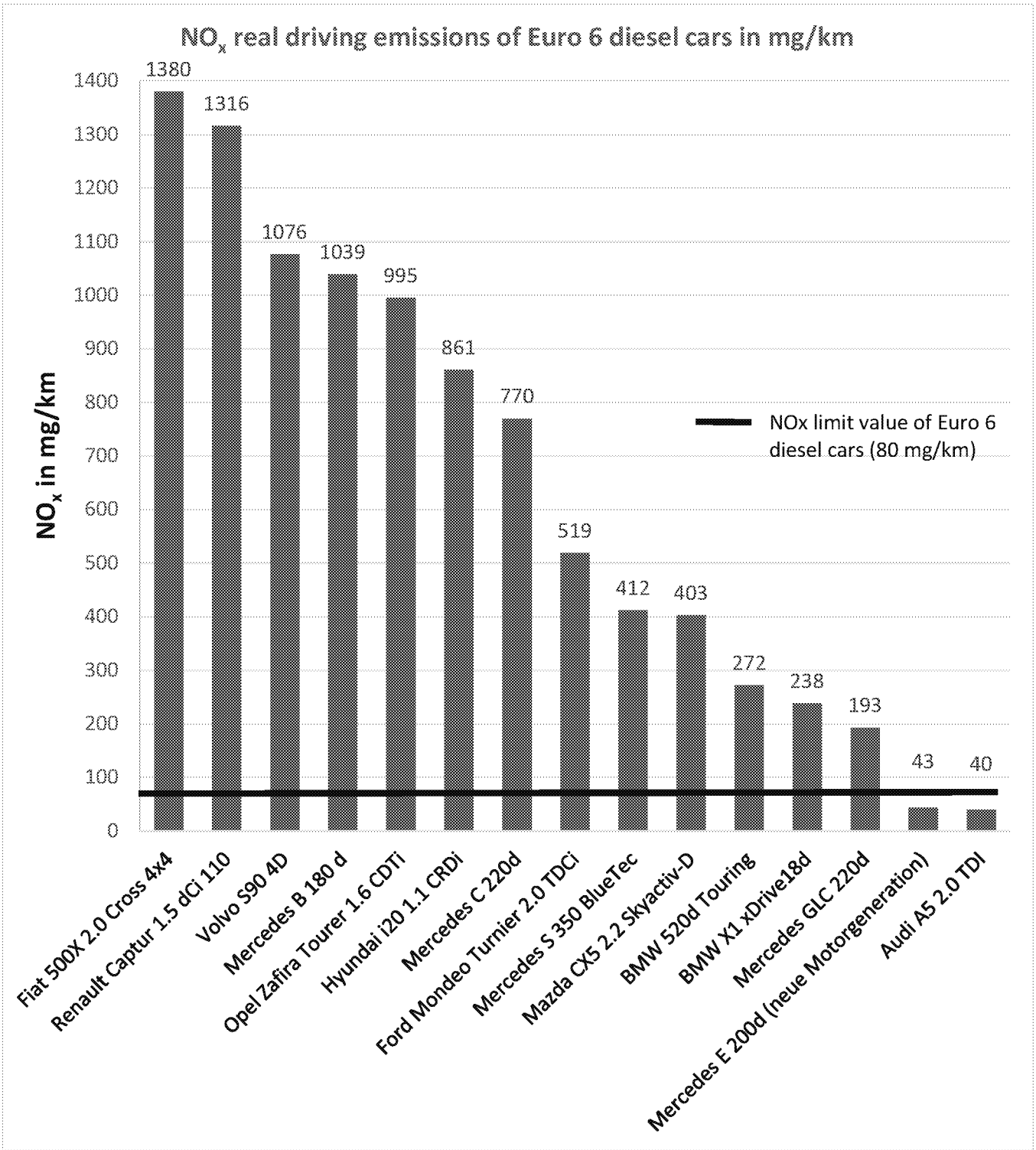
Exhaust emissions conducted on 16 diesel cars in the winter half year 2016/17

Euro 6 diesel passenger cars	average CO_2 g/km	average NO_x mg/km	Factor the limit value is exceeded by
Fiat 500X 2.0 Cross 4x4	160	1380	17.2
Renault Captur 1.5 dCi 110	118	1316	16.5
Volvo S90 4D	143	1076	13.4
Mercedes B 180 d	134	1039	13.0
Opel Zafira Tourer 1.6 CDTi	151	995	12.4
Hyundai i20 1.1 CRDi	110	861	10.8
Mercedes C 220d	131	770	9.6
Land Rover Discovery Sport HSE TD4 [1)]	172	1242	6.9
Ford Mondeo Turnier 2.0 TDCi	144	519	6.5
Mercedes S 350 BlueTec [2)]	186	412	5.2
Mazda CX5 2.2 Skyactiv-D	176	403	5
BMW 520d Touring	139	272	3.4
BMW X1 xDrive18d	151	238	3
Mercedes GLC 220d [2)]	150	193	2.4
Audi A5 2.0 TDI [2)]	117	40	0.5
Mercedes E 200d (new generation of engines, OM 654)	148	43	0.5

[1)] Exhaust gas standard Euro 5, NO_x limit value at 180 mg/km

[2)] CO_2 value with reservations

ED_002078G_00000145-00004



Berlin, 29 March 2017

Technical data and summary results of the Euro 6 diesel cars measured

Model/first registration (month, year)	**Fiat 500X 2.0 Cross 4x4 / 06.2016**
Cubic capacity	1,965 cm^3
Performance	103 kW
Fuel	Diesel
Exhaust gas standard	EURO 6
Exhaust gas aftertreatment system	NOx adsorber
Mileage in km	17.613
Ambient temperature in degrees Celsius	+6 to +10

Summary

Average CO_2 in g/km	160
Average NO_x in mg/km	1380
Factor above NOx limit for Euro 6 diesel (80 mg/km)	17.2

Model/first registration (month, year)	**Renault Captur 1.5 dCi 110 / 03.2016**
Cubic capacity	1,461 cm^3
Performance	81 kW
Fuel	Diesel
Exhaust gas standard	EURO 6
Exhaust gas aftertreatment system	NOx adsorber
Mileage in km	17.723
Ambient temperature in degrees Celsius	+11 to +16

Summary

Average CO_2 in g/km	118
Average NO_x in mg/km	1316
Factor above NOx limit for Euro 6 diesel (80 mg/km)	16.5

Model/first registration (month, year)	**Volvo S90 4D / 09.2016**
Cubic capacity	1.969 cm^3
Performance	140 kW
Fuel	Diesel
Exhaust gas standard	EURO 6
Exhaust gas aftertreatment system	NOx adsorber
Mileage in km	18.372
Ambient temperature in degrees Celsius	0

Summary

Average CO_2 in g/km	143
Average NO_x in mg/km	1076
Factor above NOx limit for Euro 6 diesel (80 mg/km)	13.4

Model/first registration (month, year)	**Mercedes B 180d / 08.2016**
Cubic capacity	1.461 cm^3
Performance	80 kW
Fuel	Diesel
Exhaust gas standard	EURO 6
Exhaust gas aftertreatment system	NOx adsorber
Mileage in km	5.046
Ambient temperature in degrees Celsius	+2 to +5

Summary

Average CO_2 in g/km	134
Average NO_x in mg/km	1039
Factor above NOx limit for Euro 6 diesel (80 mg/km)	13

Model/first registration (month, year)	**Opel Zafira Tourer 1.6 CDTi / 03.2015**
Cubic capacity	1.598 cm^3
Performance	100 kW
Fuel	Diesel
Exhaust gas standard	EURO 6
Exhaust gas aftertreatment system	SCR-Kat
Mileage in km	6.336
Ambient temperature in degrees Celsius	+6 to +12

Summary

Average CO_2 in g/km	151
Average NO_x in mg/km	995
Factor above NOx limit for Euro 6 diesel (80 mg/km)	12.4

Model/first registration (month, year)	**Hyundai i20 1.1 CRDi / 11.2016**
Cubic capacity	1.120 cm^3
Performance	55 kW
Fuel	Diesel
Exhaust gas standard	EURO 6
Exhaust gas aftertreatment system	NOx adsorber
Mileage in km	10.735
Ambient temperature in degrees Celsius	+8 to +13

Summary

Average CO_2 in g/km	110
Average NO_x in mg/km	861
Factor above NOx limit for Euro 6 diesel (80 mg/km)	10.8

Model/first registration (month, year)	Mercedes C 220d / 09.2016
Cubic capacity	2.143 cm^3
Performance	125 kW
Fuel	Diesel
Exhaust gas standard	EURO 6
Exhaust gas aftertreatment system	SCR-Kat
Mileage in km	15.476
Ambient temperature in degrees Celsius	+1 to +3

Summary

Average CO_2 in g/km	131
Average NO_x in mg/km	770
Factor above NOx limit for Euro 6 diesel (80 mg/km)	9.6

Model/first registration (month, year)	Ford Mondeo Turnier 2.0 TDCi / 06.2016
Cubic capacity	1.997 cm^3
Performance	110 kW
Fuel	Diesel
Exhaust gas standard	EURO 6
Exhaust gas aftertreatment system	NOx adsorber
Mileage in km	18.141
Ambient temperature in degrees Celsius	+2 to +8

Summary

Average CO_2 in g/km	144
Average NO_x in mg/km	519
Factor above NOx limit for Euro 6 diesel (80 mg/km)	6.5

Model/first registration (month, year)	Mercedes S 350 BlueTec / 09.2013
Cubic capacity	2.987 cm^3
Performance	190 kW
Fuel	Diesel
Exhaust gas standard	EURO 6
Exhaust gas aftertreatment system	SCR-Kat
Mileage in km	80.488
Ambient temperature in degrees Celsius	-2 to +2

Summary

Average CO_2 in g/km	186*
Average NO_x in mg/km	412
Factor above NOx limit for Euro 6 diesel (80 mg/km)	5.2

* CO_2 value with reservations

Model/first registration (month, year)	Mazda CX 5 2.2 Skyactiv-D / 10.2016
Cubic capacity	2.191 cm^3
Performance	110 kW
Fuel	Diesel
Exhaust gas standard	EURO 6
Exhaust gas aftertreatment system	EGR
Mileage in km	18.720
Ambient temperature in degrees Celsius	0 to +2

Summary

Average CO_2 in g/km	176
Average NO_x in mg/km	403
Factor above NOx limit for Euro 6 diesel (80 mg/km)	5

Model/first registration (month, year)	**BMW 520d / 11.2015**
Cubic capacity	1.995 cm^3
Performance	140 kW
Fuel	Diesel
Exhaust gas standard	EURO 6
Exhaust gas aftertreatment system	NOx adsorber
Mileage in km	42.298
Ambient temperature in degrees Celsius	+8 to +11

Summary

Average CO_2 in g/km	139
Average NO_x in mg/km	272
Factor above NOx limit for Euro 6 diesel (80 mg/km)	3.4

Model/first registration (month, year)	**BMW X1 xDrive18d / 09.2016**
Cubic capacity	1.995 cm^3
Performance	110 kW
Fuel	Diesel
Exhaust gas standard	EURO 6
Exhaust gas aftertreatment system	NOx adsorber
Mileage in km	5.545
Ambient temperature in degrees Celsius	-2 to 0

Summary

Average CO_2 in g/km	151
Average NO_x in mg/km	238
Factor above NOx limit for Euro 6 diesel (80 mg/km)	3

Model/first registration (month, year)	Mercedes GLC 220d / 06.2016
Cubic capacity	2.143 cm^3
Performance	125 kW
Fuel	Diesel
Exhaust gas standard	EURO 6
Exhaust gas aftertreatment system	SCR-Kat
Mileage in km	24.581
Ambient temperature in degrees Celsius	+3 to +7

Summary

Average CO_2 in g/km	150*
Average NO_x in mg/km	193
Factor above NOx limit for Euro 6 diesel (80 mg/km)	2.4

* CO_2 value with reservations

Model/first registration (month, year)	Mercedes E 200d / 09.2016
Cubic capacity	1.950 cm^3
Performance	110 kW
Fuel	Diesel
Exhaust gas standard	EURO 6
Exhaust gas aftertreatment system	SCR-Kat
Mileage in km	21.088
Ambient temperature in degrees Celsius	-5 to -3

Summary

Average CO_2 in g/km	148
Average NO_x in mg/km	43
Factor above NOx limit for Euro 6 diesel (80 mg/km)	0.5

Model/first registration (month, year)	Audi A5 2.0 TDI / 05.2016
Cubic capacity	1.968 cm^3
Performance	110 kW
Fuel	Diesel
Exhaust gas standard	EURO 6
Exhaust gas aftertreatment system	SCR-Kat
Mileage in km	5.282
Ambient temperature in degrees Celsius	+7 to +9

Summary

Average CO_2 in g/km	117*
Average NO_x in mg/km	40
Factor above NOx limit for Euro 6 diesel (80 mg/km)	0.5

* CO_2 value with reservations

Technical data and summary results of the Euro 5 diesel car measured

Modell / Erstzulassung (Monat, Jahr)	Land Rover Discovery Sport HSE TD4 / 06.2015
Cubic capacity	2.179 cm^3
Performance	110 kW
Fuel	Diesel
Exhaust gas standard	EURO 5
Exhaust gas aftertreatment system	-
Mileage in km	20.949
Ambient temperature in degrees Celsius	-3 to +1

Summary

Average CO_2 in g/km	172
Average NO_x in mg/km	1242
Factor above NOx limit for Euro 6 diesel (80 mg/km)	6.9

Deutsche Umwelthilfe

Deutsche Umwelthilfe e.V.

Bundesgeschäftsstelle Berlin
Hackescher Markt 4
10178 Berlin
Tel.: 030 2400867-0

Projekt Emissions-Kontroll-Institut
Deutsche Umwelthilfe e.V.
Simon Annen
Projektmanager Verkehr & Luftreinhaltung
Hackescher Markt 4
10178 Berlin

Projektleiter

Dr. Axel Friedrich
Telefon: +49 152 29483857
E-Mail:
axel.friedrich.berlin@gmail.com

Ansprechpartnerin

Dorothee Saar
Leiterin Verkehr & Luftreinhaltung
Hackescher Markt 4
10178 Berlin
Telefon: +49 30 2400867-72
E-Mail: saar@duh.de

Date and location: September 2016 to March 2017, Berlin Zehlendorf

Titelfoto: DUH

www.duh.de **info@duh.de** **umwelthilfe** **umwelthilfe**

Wir halten Sie auf dem Laufenden: **www.duh.de/newsletter-abo.html**

Die Deutsche Umwelthilfe e.V. (DUH) ist als gemeinnützige Umwelt- und Verbraucherschutzorganisation anerkannt. Sie ist mit dem DZI-Spendensiegel ausgezeichnet. Testamentarische Zuwendungen sind von der Erbschafts- und Schenkungssteuer befreit.

Wir machen uns seit über 40 Jahren stark für den Klimaschutz und kämpfen für den Erhalt von Natur und Artenvielfalt. Bitte unterstützen Sie unsere Arbeit mit Ihrer Spende – damit Natur und Mensch eine Zukunft haben.
Herzlichen Dank! **www.duh.de/spenden.html**

Unser Spendenkonto: Bank für Sozialwirtschaft Köln | IBAN: DE45 3702 0500 0008 1900 02 | BIC: BFSWDE33XXX