



Transport and Air Pollution: setting the scene

Krzysztof Olendrzynski
LRTAP Convention Secretariat
with support from CIAM, MSC-W and CCC

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Outline

- **Why a special sectoral session at WGSR?**
CLRTAP: from negotiation to implementation mode (2013 - ...)
- **Why on transport?**
 1. Unexpectedly high NO_x emissions – failure to meet the reduction targets for 2010 in the Gothenburg Protocol and EU National Emission Ceiling Directive
 2. Share of road transport in national nitrogen oxides and particulate matter emissions
 3. Numerous exceedances of WHO Air Quality Guidelines in urban areas (PM₁₀, O₃)
 4. WHO rulings on air pollution, significant health implications
 5. Contribution of emissions from transport to PM_{2.5} concentrations



1. Distance of 2010 emissions - reported in 2012 [2014] – to the GP ceilings



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FOR EUROPE



NO_x

*2010 [2012]
emission [Gg]*

*GP ceilings
[Gg]*

*2010 Distance
to target*

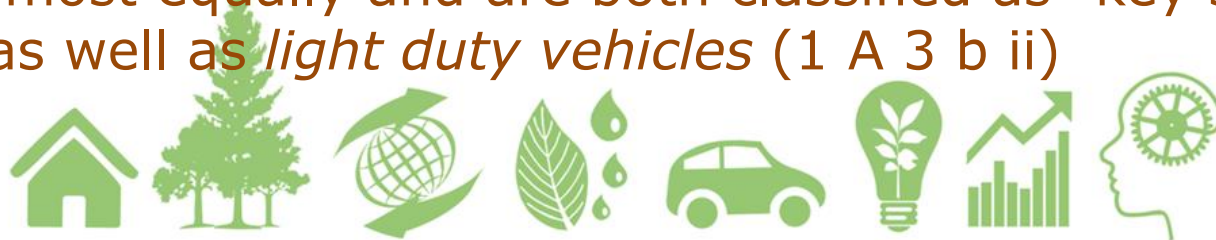
*Adjustment
procedure for
NO_x?*

Luxembourg	46 [17]	11	320%	
<i>Austria</i>	<i>189 [141]</i>	<i>107</i>	<i>76%</i>	
France	1080 [983]	860	26%	YES
Germany	1323 [1273]	1081	22%	YES
Belgium	221 [195]	181	22%	YES
Norway	184 [164]	156	18%	
<i>Ireland</i>	<i>75 [71]</i>	<i>65</i>	<i>15%</i>	
Sweden	161 [131]	148	9%	
EU- 15	7219 [6638]	6671	8%	
Spain	890 [841]	847	5%	YES
Netherlands	276 [248]	266	4%	
Denmark	129 [116]	127	1%	



2. Share of road transport in national NO_x emissions

- the 10 MS made up a 49% share of the EU-28 NO_x emissions in 2012
- NO_x emissions in the ECE region/EU decreased significantly over the last 22 years (1990-2012)
- the overall decrease in EU-28 is 49% in 2012 to 1990 level
- in 2012, for EU-28, *road transport* was the biggest emitting economic sector (39% share; *non-road transport* made up 7%) followed by *energy production and distribution* (20%) and *commercial, institutional and households* (14%)
- within the *road transport*, the contributions of *heavy duty vehicles* (source category: 1 A 3 b iii) and *passenger cars* (1 A 3 b i) contribute almost equally and are both classified as “key source categories” as well as *light duty vehicles* (1 A 3 b ii)





2. Share of road transport in national PM2.5 and PM10 emissions in 2012

- *road transport* sector is the 2nd largest emission sources for PM2.5 and 3rd largest for PM10 emissions
- the largest source for PM2.5 in the EU was *commercial, institutional and households* sector contributing 55% and 43%, for PM2.5 and PM10 respectively
- *road transport* sector contributed 15% and 13% to PM2.5 and PM10 emissions, respectively





3. Numerous exceedances of WHO Air Quality Guidelines in urban areas

Pollutant	EU reference value	Exposure estimate [%]	WHO reference level	Exposure estimate [%]
PM _{2.5}	Year (20µg/m ³)	20-31	Year (10µg/m ³)	91-96
ozone	8-hour (120µg/m ³)	14-18	8-hour (100µg/m ³)	97-98
NO ₂	Year (40µg/m ³)	5-13	Year (40µg/m ³)	5-13





4. WHO rulings on air pollution, significant health implications

- June 2012: diesel exhaust carcinogenic to humans (Group 1); strengthening of its 1988 ruling on probable cancer cause
- October 2013: particulate matter, in particular and air pollution, in general, carcinogenic to humans (Group 1)

also recent (March 2014) results of the WHO Burden of disease study: **air pollution is now the world's largest single environmental health risk**



Origin of PM2.5, 2009

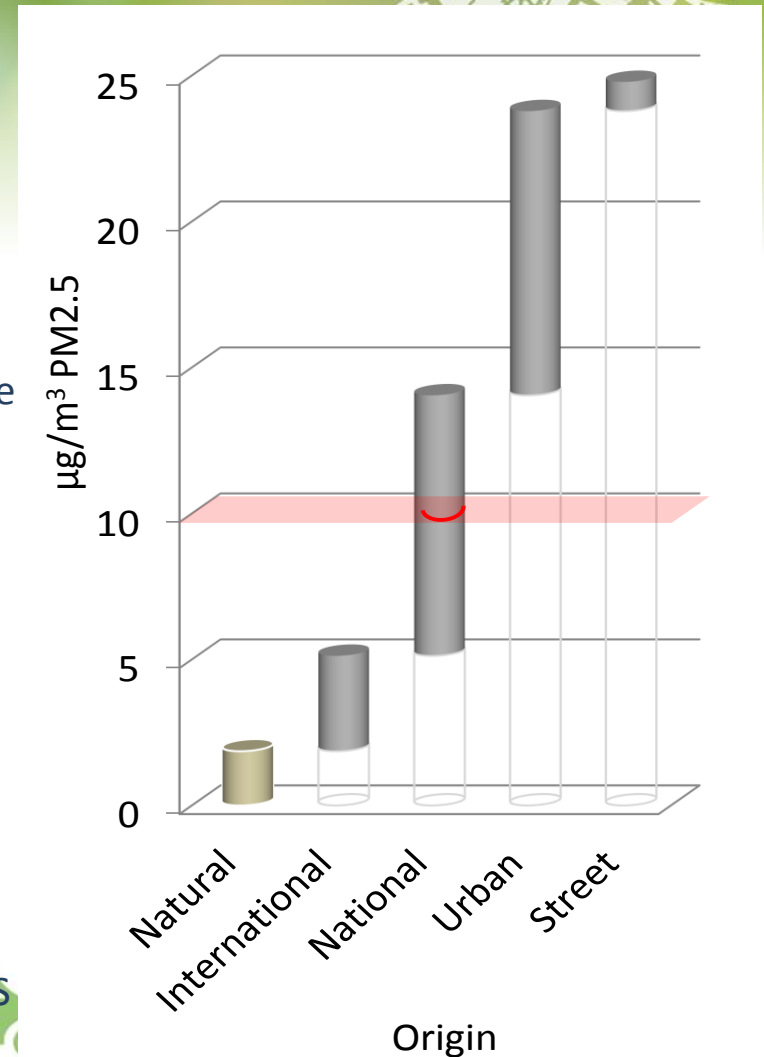
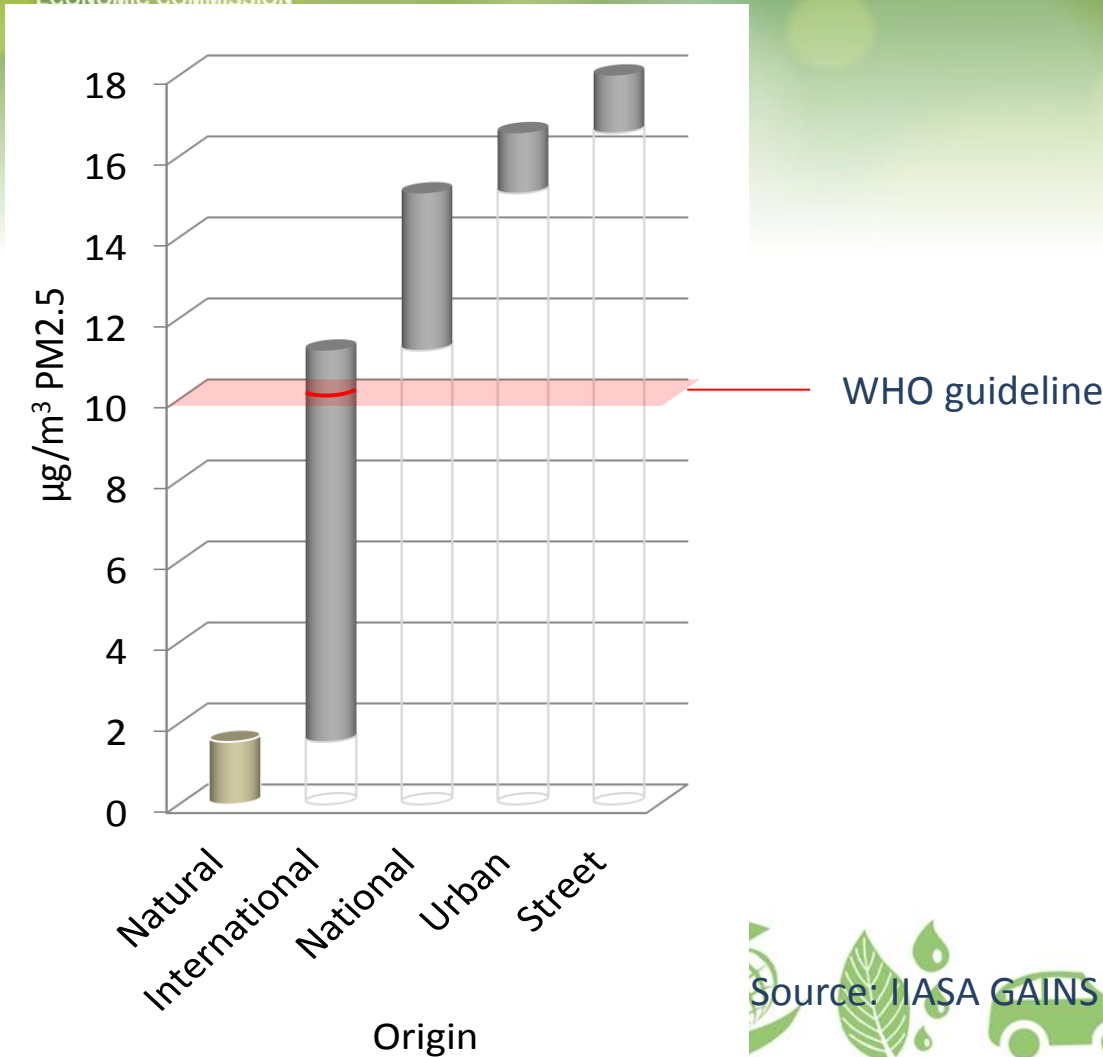


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Netherlands, average of the
urban AIRBASE stations

5. Contribution of emissions from transport to PM2.5 concentrations

Lyon, Centre Ville



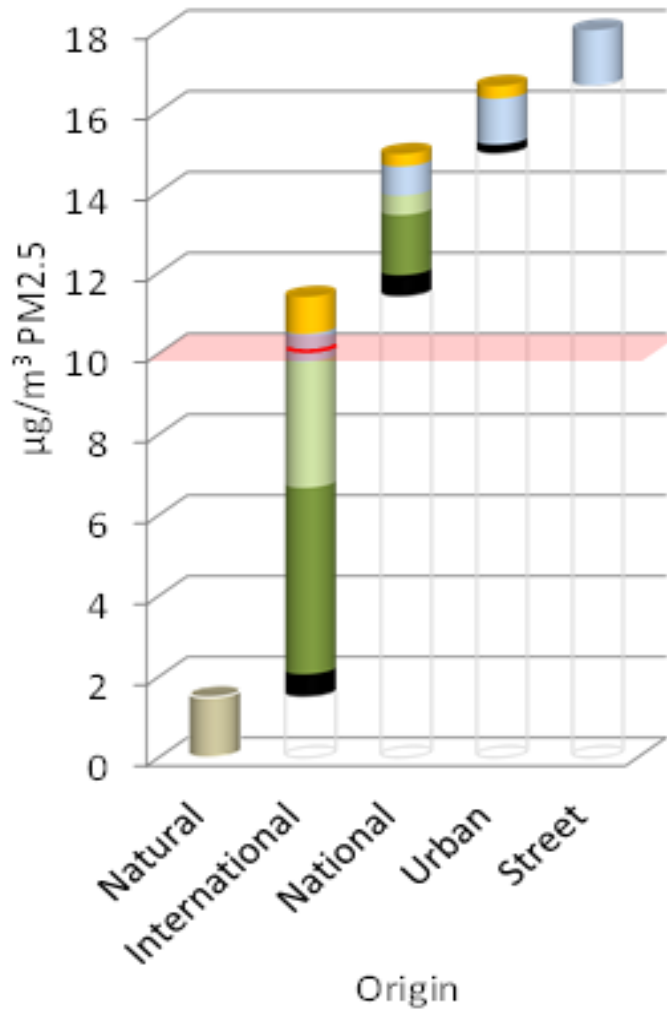


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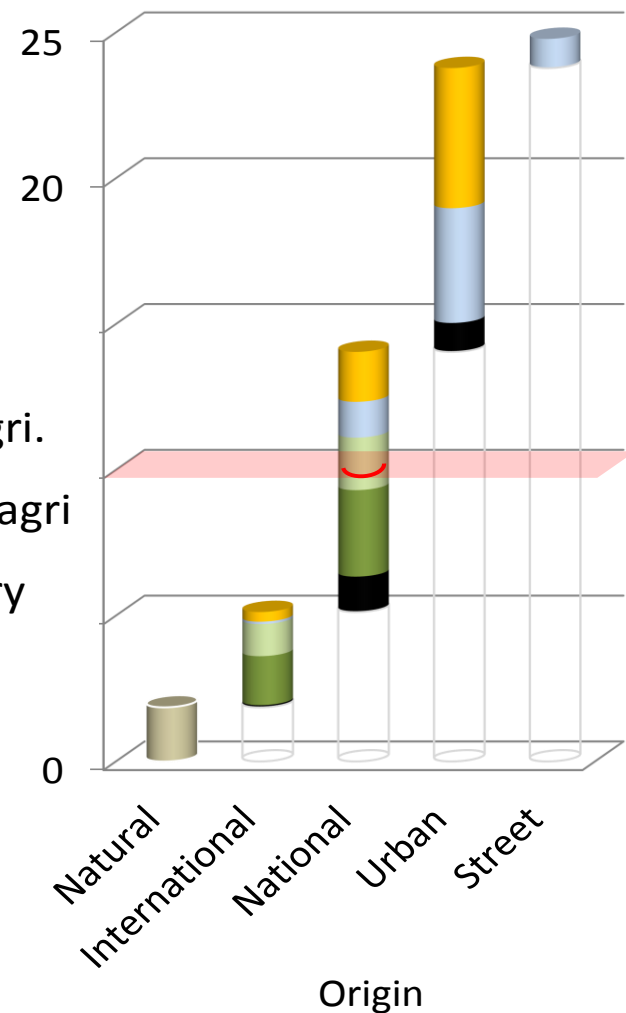
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- Households
- Primary PM: Traffic
- Sec. PM: Traffic + agri.
- Sec. PM: Industry + agri
- Primary PM: Industry
- Natural

Source: IIASA GAINS





5. Contribution of emissions from transport to PM2.5 concentrations

<i>PM_{2.5}</i>	<i>Athens</i>	<i>Helsinki</i>	<i>London</i>	<i>Rotterdam</i>	<i>Oslo</i>
<i>Model</i>	MARS	CAR-FMI	OSCAR	Urbis	EPISODE
<i>Traffic exhaust (%)</i>	15	8	5	3	18
<i>Traffic non-exhaust (%)</i>		4	3		10
<i>Shipping (%)</i>	20			3	2
<i>Non-transport city (%)</i>	5		19		16
<i>Regional BG (%)</i>	60	83	73	94	54





Thank you for your attention!

Krzysztof Olendrzynski

krzysztof.olendrzynski@unece.org

