



Air quality in Europe

22 June 2016, Krakow

Guido de Wilt
European Commission
DG ENV C.3
Air

Air pollution is still a problem across Europe

Europe's air quality is slowly improving, but fine particulate matter and ground-level ozone in particular continue to cause serious impacts on health.

Estimates point to well above 400.000 premature deaths in EU-28 each year due to particulate matter; more than 70.000 due to nitrogen dioxide.

3 out of 10 of the urban population citizens are exposed to particulate matter above EU standards; with 9 out of 10 exposed above WHO guidelines.



63%

Air pollution exceeds eutrophication limits in 63% of ecosystem area, and in 73% Natura2000 area.

Increasing awareness of air quality urgencies

BBC NEWS

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Science & Environment

Polluted air causes 5.5 million deaths a year new research says

By Jonathan Amos
BBC Science Correspondent, Washington DC

© 13 February 2016 | Science & Environment | 14



M Pollutions

PLANÈTE POLLUTIONS

Nouveau pic de pollution à Paris

Le Monde | 20.01.2016 à 08h26 • Mis à jour le 20.01.2016 à 10h29



Le stationnement résidentiel est gratuit, mercredi 20 janvier à Paris, en raison d'un nouvel épisode de pollution atmosphérique. Airparif, l'association de

Stüddeutsche Zeitung
SZ.de Zeitung Magazin

Politik Wirtschaft Panorama Sport München Bayern Kultur Wissen Digital Chancen Reise Auto Stil mehr...

5. Februar 2016, 18:48 Uhr Stickoxid-Emissionen

Die Luft bleibt dreckig - mindestens bis 2030

Geplante wie Stützpunkt werden besonders unter den hohen Abgasen, selbst mit Einführung der Vorratzone ist jedoch keine schnelle Besserung zu sehen. (Foto: dpa)

Feinstaub-Alarm
Derzeit Umweltzone Stuttgart
Busse/ Bahnen nutzen

Der Straßenverkehr ist hauptverantwortlich für die schlechte Luft in den Städten. Die Industrie sieht in modernen Euro-6-Dieseln die Lösung. Doch die sind nicht immer so sauber wie versprochen.

Analysen von Joachim Becker

Wyborcza.biz / Wyborcza.biz / Ekologia / Odsyłać: po ketchup

Wojna ze smogiem

Dominika Wantuch 01.02.2016 01:00



Agencja Gazeta

Najgorzej jakości węgiel i przestarzałe piece idą w odstawkę. Po Krakowie uchwali antysmogowych chcą władze Wrocławia i Legnicy, a marszałek Śląska przepisał antysmogowymi zamierza objąć ponad 160 gmin.

EL PAÍS

CONTAMINACIÓN

La capital vulnera por sexto año seguido los límites de contaminación

- El informe anual de Ecologistas en Acción concluye que en 2015 los niveles de contaminación han sufrido un incremento notable
- Las alertas por contaminación se vuelven cotidianas
- Intentamos pasar muy poco tiempo al aire libre

ESTHER SÁNCHEZ | Madrid | 12 ENE 2016 - 21:27 CET

Archivado en: Manuela Camena Contaminación atmosférica Madrid Comunidad de Madrid Contaminación Ayuntamientos Problemas ambientales Gobierno municipal



the guardian

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London takes just one week to breach annual air pollution limits

Parts of the capital have already breached EU hourly limits for nitrogen dioxide pollution which causes thousands of premature deaths each year



© Reuters High Street in London breached annual limits for nitrogen dioxide early on 8 January. Photograph: Peter Macdonald/Getty Images

Adam Vaughan
@adamvaughanuk
Friday 8 January 2016, 10:58 GMT

The Economist

World politics Business & finance Economics Science & technology Culture

air pollution

Choking on it

While Paris focuses on climate change, air pollution kills 400,000 Europeans a year

12c 5th 2015 | KRAKOW | From the print edition

Timekeeper Like 236 Tweet

N WIELICZKA, near Krakow, a handful of locals have gathered in a hotel conference

DeMorgen

BIJN A PRETENTIES? Het kan geen kwaad

DE ECONOMIE Is dit haalbaar?

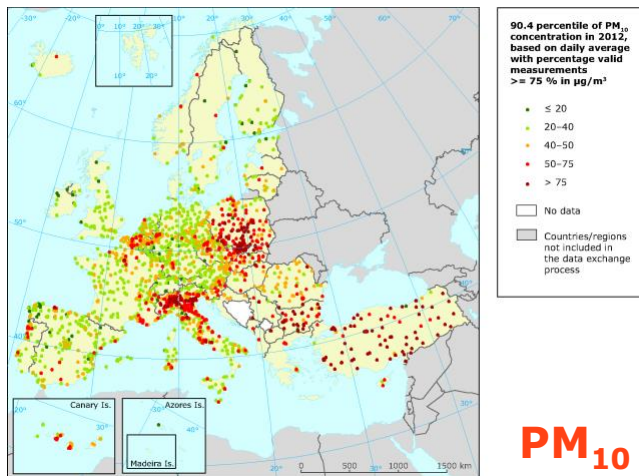
Vlaming kickt af van DIESEL

Verkoop van wagens vergroot als gevolg van beleidsingrepen

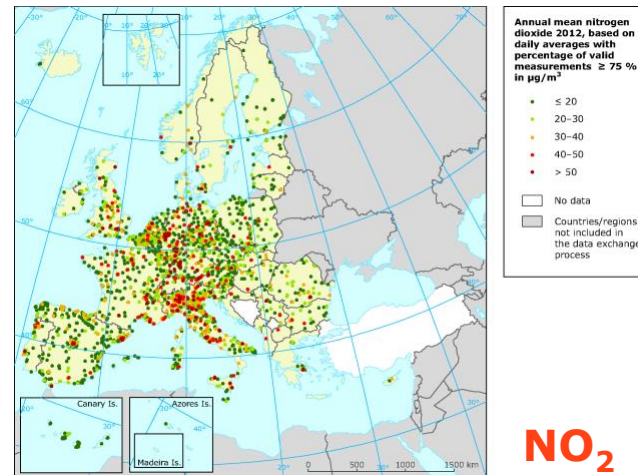
DE VLAAMSE Regering stelt een nieuw beleid voor dat de verkoop van dieselwagens zal dalen. Dit komt door de hoge kosten van de nieuwe normen voor de uitstoot van stoffen die schadelijk zijn voor de gezondheid. De Vlaamse Regering heeft ook een plan om de verkoop van elektrische wagens te stimuleren.

MATTHEUS BENTHIN
RODOLPHE LUTHELM

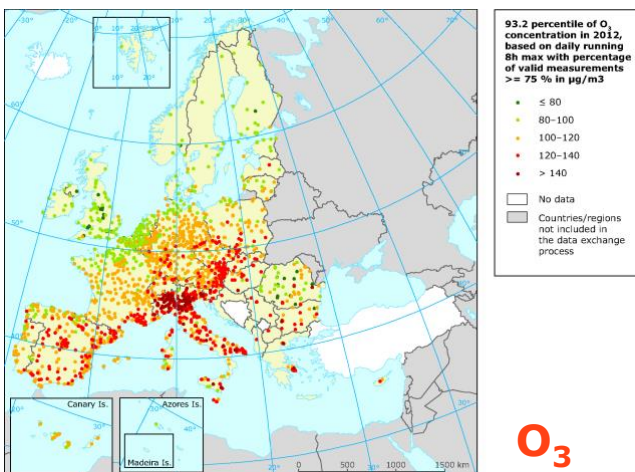
Where is air pollution a problem?



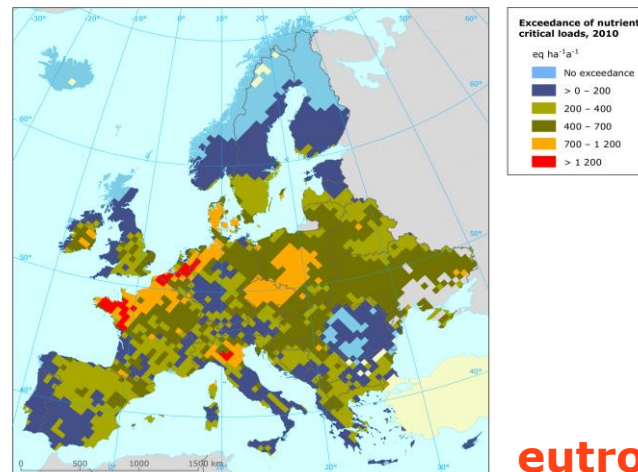
PM_{10}



NO_2



O_3

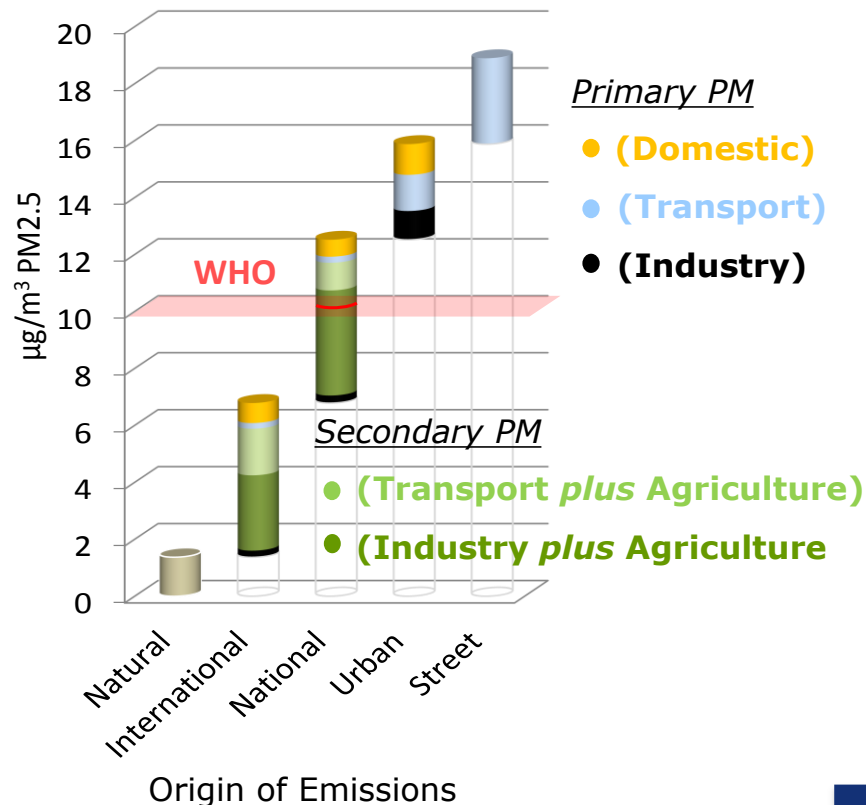


eutrophication

Who and what causes air pollution?

Particulate Matter (PM_{2.5})

e.g. Germany, 2009 -



Sulphur dioxide (SO₂)

- Energy sector, Transport, ...

Nitrogen oxides (NO_x)

- Transport, Energy, Industry, ...

Ammonia (NH₃)

- Agriculture (Livestock & Fertilizers), ...

Volatile Organic Compounds (VOC)

- Solvents, Paints, Transport, ...

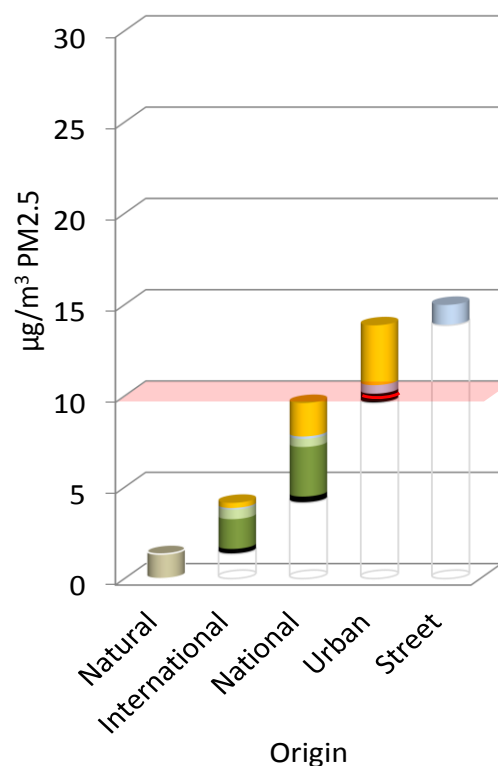
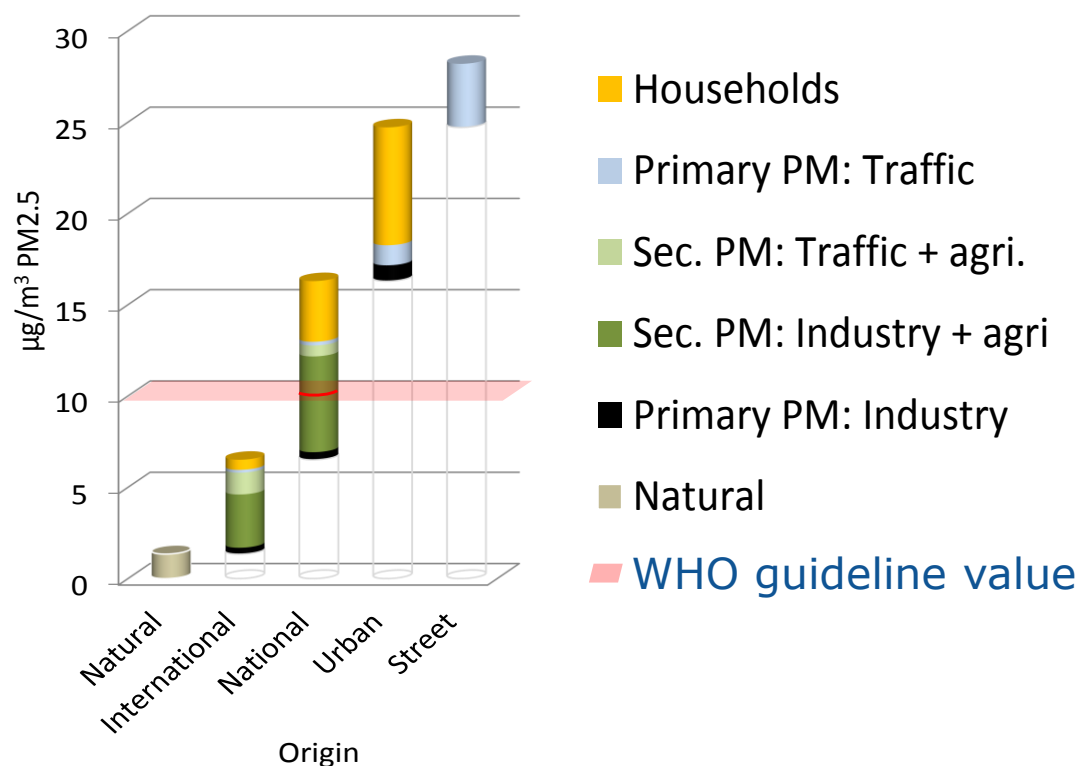
Methane (CH₄)

- Agriculture, Waste, Energy, ...

PM_{2.5} in Poland: average of 142 urban AIRBASE stations modelled in GAINS

2009

2030 Commission proposal



Source: IIASA GAINS (Kiesewetter et al., 2014)

Clean Air Policies in Europe – An Overview

The **international** context

- **UN ECE Convention on Long-Range Transboundary Air Pollution (CLRTAP)** and its Protocols (e.g. Gothenburg Protocol for 2010 and 2020)

The main **European Union** air policy instruments

- **Ambient Air Quality Directives (AAQD)**: Maximum concentrations to be attained across the EU (SO₂, NO₂, PM₁₀, benzene, lead, CO, O₃, arsenic, cadmium, nickel, PM_{2.5} and BaP)
- **National Emission Ceilings Directive (NECD)**: National emission inventories and caps to limit transboundary pollution (SO_x, NO_x, NMVOC, and NH₃)
- **Source-specific performance standards**: Euro and fuel standards, Industrial Emissions Directive, energy efficiency standards, etc.

The main **Member States** air policy instruments

- Air Quality Plans & Programmes (AAQD)
- National Emission Inventories, Projections, and Measures (NECD)
- ...

Clean Air Programme 2013 - Strategic Ambitions

Year	Health impact (premature deaths) reduction vs 2005	Ambient air quality standards and compliance
2020	33%	Full compliance with existing ambient air quality legislation (including NO ₂ , PM ₁₀ and PM 2.5)
2030	52%	Most Member States would reach PM 2.5 levels below or close to the WHO guidelines of 10 µg/m ³

Ambient Air Quality Directives

The Ambient Air Quality Directives requires Member States to have **Air Quality Plans** to keep exceedance periods as short as possible.

Regarding **NO₂**: 19 Member States have reported excess levels in 2014, and infringement proceedings have already been opened against 9 Member States.

Regarding **PM₁₀**: 16 Member States are facing infringement actions at various stages. First cases have been brought to Court.

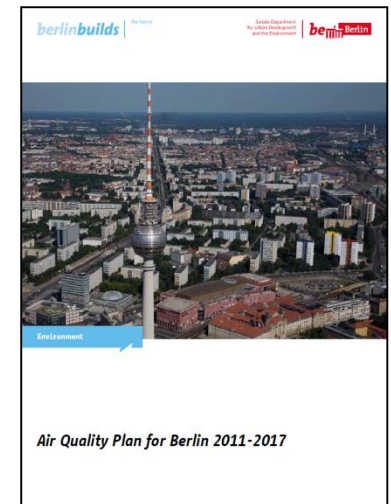
Regarding **PM_{2.5}**: Annual limit value applies as of 1 January 2015.

Directive '**kept under review**', with a view to revision once the NECD is agreed.

Air Quality Plans and Air Quality Measures

Air quality plans are to be developed where there are exceedances, and shall include the following:

- General information and details on measuring stations
- Nature and assessment of pollution (incl. trends)
- Techniques used for air quality assessments
- Origin of pollution (incl. source apportionment)
- Details of measures and estimate of improvement of air quality planned, and the expected time required



Improving Air Quality

Emission sources: heating, transport, agriculture, industry, power generation

Options: reduction of emissions (preferred) and dispersion

Some important issues:

- subsidiarity
- relation with Air Quality Plans under Directive 2008/50/EC
- correct data on emission sources and concentrations (monitoring, modelling)
- horizontal and vertical coherence in policy development and implementation
- building on existing info, best practices and legislation
(e.g. EEA/ENV Air Implementation Pilot, LIFE projects, Ecodesign)
- dissemination
- quantification of effects (cost-benefit)
- stakeholders (cities, NGOs, citizens, ...)

Improving Air Quality and the LIFE IP for Air

Some important characteristics:

- regional, national and international cooperation and dissemination
- excellent mobilisation of additional funding (e.g. from Structural Funds)
- good link with the development and implementation of Air Quality Plans
- building on existing info and best practices
- addressing energy and transport

Points of attention:

- energy efficiency (e.g. reducing heat demand in single houses reduces both PM and NO₂)
- role of agriculture
- regional and local competences for addressing air pollution (e.g. LEZ, urban planning, conditional building permits, fuel control/ban,)
- tools and willingness to address local and regional hotspots for the best cost-benefit ratio
- synergies with other policies, e.g. urban planning

EU support for improving Air Quality

Financial

Generally co-funding:

- ESIF ("Structural Funds")
- LIFE (traditional projects and Integrated Projects)
- Horizon 2020 (e.g. transport, energy, health, climate action, agriculture)

Loans/financial instruments:

- EIB and EFSI ("Juncker Fund")

Information and dissemination

- EEA

<http://www.eea.europa.eu/publications/air-quality-in-europe-2015>

- LIFE and air quality brochure

<http://ec.europa.eu/environment/life/publications/lifepublications/lifefocus/documents/airquality.pdf>

- Database of Air Quality measures (JRC/ENV)
- Clean Air Forum (2017)

Cleaner Air For All Infographic

ENVIRONMENT

Cleaner air for all

Every year, more than 400 000 people in the EU die prematurely due to the consequences of air pollution: this is more than 10 times the toll of road traffic accidents. Another 6.5 million people fall sick as air pollution causes diseases such as strokes, asthma and bronchitis. Air pollution also harms our natural environment, impacting both vegetation and wildlife: almost two-thirds of Europe's ecosystems are threatened by the effects of air pollution. It is time to act to prevent further damage. Find out below how the European Commission proposes to address air pollution in Europe.

introduction
air pollutants
effects
sources
origins
action
benefits
toolbox



origins of air pollution

Where do air pollutants come from?

Pick your situation to see how much fine particulate matter (PM_{2.5}) on average could be in the air you breathe where you live. This provides you with a simulation of what you may experience. Note that these are just general figures and do not give the actual situation.

Choose a country and your situation

Germany 18.9 µg/m³ PM_{2.5} The EU limit value for PM_{2.5} - 25 µg/m³ PM_{2.5} WHO guideline suggest: 10 µg/m³ PM_{2.5}

city street
quiet street
rural area

Natural Sources (1.4 µg/m³ PM_{2.5})
International (5.4 µg/m³ PM_{2.5})
National (5.7 µg/m³ PM_{2.5})
Urban (2.4 µg/m³ PM_{2.5})
Street (2 µg/m³ PM_{2.5})

• Natural Sources
• Industry
• Traffic
• Households
• Secondary PM (Agn + Ind + Traff)

Back

air pollutants

What are the main air pollutants?

Primary air pollutants
are directly emitted into the atmosphere e.g. from vehicle exhausts or chimneys.

Click on the images to find out more about each air pollutant.

air pollutants

PM Particulate matter (primary)
SO₂ Sulphur dioxide
NO_x Nitrogen (dioxide)
NH₃ Ammonia
VOC Volatile organic compounds
CH₄ Methane

Secondary air pollutants
are formed in the atmosphere through oxidation and reactions between primary air pollutants.

PM Particulate matter (secondary)
O₃ Ozone

Important
Other air pollutants can also cause severe damage to human health and the environment. These include heavy metals (such as mercury, arsenic, lead, cadmium and nickel) and polycyclic aromatic hydrocarbons (such as benzo(a)pyrene). The existing legislation has already helped to significantly reduce the emissions of these pollutants, resulting in a greatly reduced health risk.

Source: Air pollution, European Environment Agency

action to reduce air pollution

What are the means to reduce air emissions over the next 15 years?

In 2013, the EU proposed a Clean Air Policy Package to further reduce emissions of air pollutants until 2030. Slide the buttons to see how these reductions might be achieved.

Slide the buttons to see how these reductions might be achieved.

• through anticipated change in social and economic patterns
• through setting air pollution legislation
• through additional measures to control air pollution

Current EU and national anti-pollution laws and policies have done (and still do) much to reduce air pollution. Changes in our energy systems, such as the decline in the use of solid fuels like wood and coal, also help. The current trends, however, are not sufficient to safeguard human health and the environment. We have to take further action.

action

PM -63%
SO₂ -80%
NO_x -69%
NH₃ -25%
VOC -56%

Why is methane not part of this infographic?
Source: Air quality in Europe - 2014 report, European Environment Agency

sources of air pollution

What are the main sources of primary air pollutants?

Click on each air pollutant to see its main source or sources; or click on the sources to see the air pollution it causes.

air pollutants

PM SO₂ NO_x NH₃ VOC CH₄

Sources

electricity and heat production
commercial household heating
industrial and construction activities
petroleum refining and storage
road transport
non-road mobile machinery
agriculture
other

Source: European Union emissions inventory

benefits of taking action

How would the proposed Clean Air Policy Package improve health, the economy and the environment?

The total cost to implement the Clean Air Policy Package is estimated at about €2.2 billion a year by the time we reach 2030. However, about €3.3 billion a year could be saved in direct costs otherwise caused by air pollution, plus a further €40 to €140 billion in indirect costs (for example, related to improvements in people's health). This means that the expected benefits to society are more than 20 times the cost of implementing the legislation.

Slide the button to see what could happen in 2030.

Now 2030 2030: If the new Clean Air Policy Package becomes EU rules

Health

Life expectancy shortened by:
4.1 months
Life expectancy extended by 3.3 months

224 000 Premature deaths = 1000 Lives

Economic costs of air pollution
crop yield loss
workdays lost due to sickness
direct healthcare
damage to buildings

Environment



More Information

<http://ec.europa.eu/environment/air/>

Feedback

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wilhelmus.de-wilt@ec.europa.eu

Thank you!

European Commission

DG ENV C.3

Air