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AIR QUALITY PLANS IN AUSTRIA

DEVELOPMENT AND IMPLEMENTATION

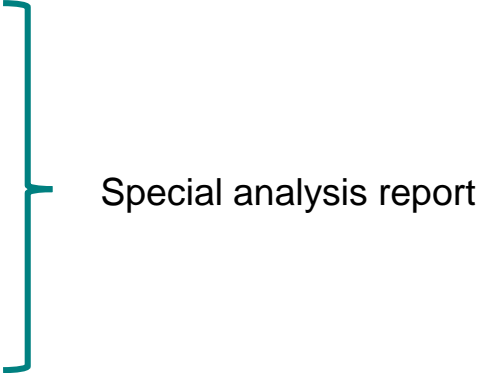
CONTENT

- Legal background
- Main air pollutants and their impact
- Main air quality problems in Austria
- Main sources of air quality problems
- General considerations
- Development of air quality plans in Austria
- Examples of measures
- Implementation of air quality plans in Austria

LEGAL BACKGROUND – ARTICLE 23 AAQD

- AQ plan has to be prepared in case of exceedance of limit or target value (+margin of tolerance) of Annexes XI and XIV
- Exceedance period as short as possible
- Integrated programmes in case of exceedance of several pollutant thresholds
- Consistency with Industrial Emissions Directive, National emission reduction commitments Directive (NEC), noise programmes
- Information listed in Annex XV A
- To be published two years after exceedance year
- Art. 25: cooperation in case of significant transboundary contribution
- Art. 26: public and organisations have to be informed

LEGAL REQUIREMENTS – ANNEX XV A

1. Localisation of excess pollution
 2. General information
 3. Responsible authorities
 4. Nature and assessment of pollution
 5. Origin of pollution
 6. Analysis of the situation
 7. Details of measures or projects implemented before 2008
 8. Details of adopted measures after 2008
 9. Details of planned measures
 10. List of publications, documents, etc.
- Special analysis report
- 

GENERAL CONSIDERATIONS & PRINCIPLES

- Air Quality Directive Art 23: “*the air quality plans shall set out appropriate measures, so that the exceedance period can be kept **as short as possible***”
- Measures should address those sources that contribute most to the pollutant
- Air quality plan should include an overall estimate of its impact and the timeframe for compliance
- Air quality plan should be aligned with other plans and strategies (e.g. for climate change, national emission ceilings, noise, traffic, ,...)
- “Appropriateness of measures”: protection of human health allows for far-reaching interventions

GUIDING PRINCIPLES

1.

- reduce emissions at the source

2.

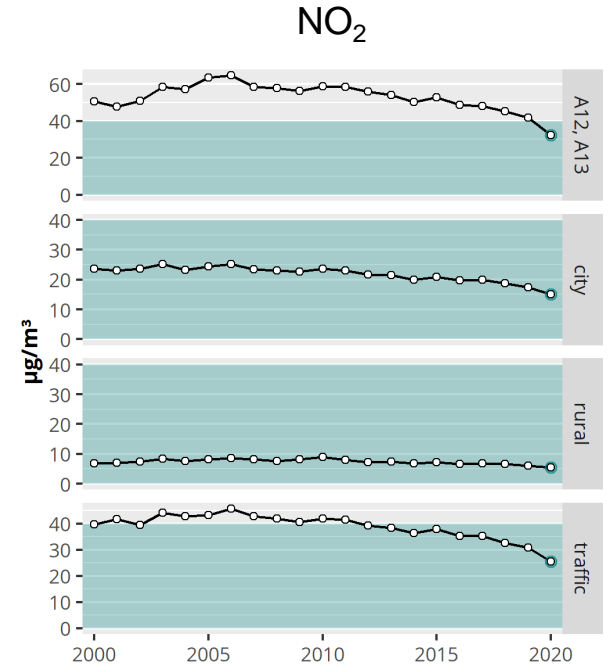
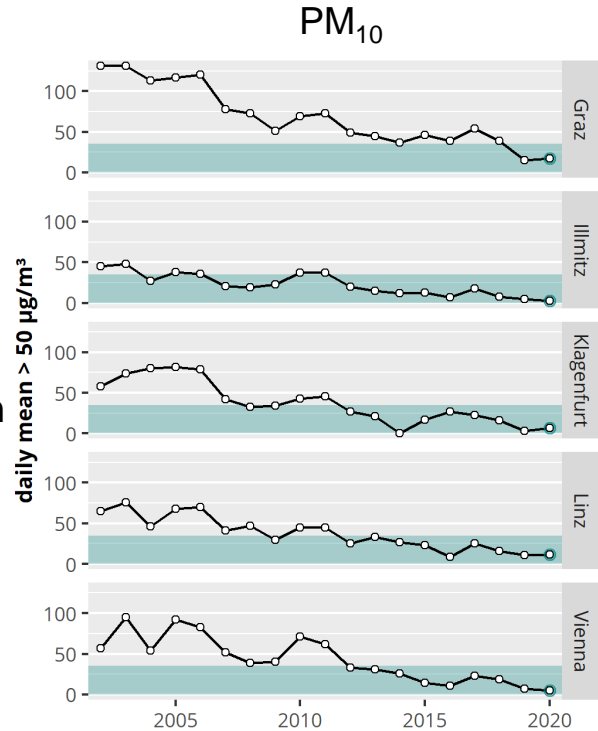
- reduce concentrations

3.

- reduce exposure

MAIN AQ PROBLEMS IN AUSTRIA

- NO₂
- PM₁₀
- Benzo(a)pyren
- But: large improvements in recent years



Source: Umweltbundesamt, Federal Provinces

MAIN SOURCES FOR AIR QUALITY PROBLEMS

Pollutants	Traffic (diesel vehicles)	Industry	Domestic heating (solid fuels, old devices)	Transboundary, natural sources, secondary particles
NO ₂	x			
PM	x	x ¹⁾	x	x
BaP		(x) ²⁾	x	

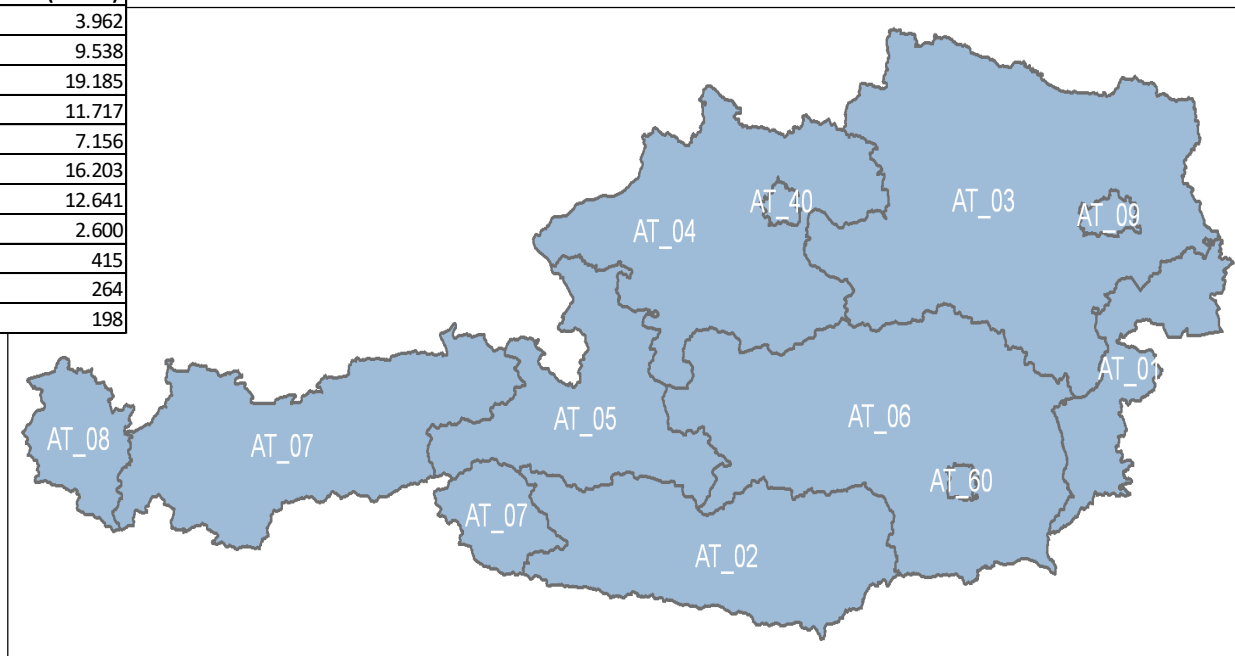
- ➔ NO₂ traffic only, on local, regional level
- ➔ BaP old solid fuel appliances only, on local, regional level
- ➔ PM: various sources, incl. precursors on local, regional, national, European scale

¹⁾ including construction sites

²⁾ coking plants, carbon cathodes plants

ZONES AND AGGLOMERATIONS IN AUSTRIA

code	zone_name	population	area (in km ²)
AT_01	Burgenland	279.000	3.962
AT_02	Kärnten	561.000	9.538
AT_03	Niederösterreich	1.550.000	19.185
AT_04	Oberösterreich without AG Linz	1.113.000	11.717
AT_05	Salzburg	529.000	7.156
AT_06	Steiermark without AG Graz	931.000	16.203
AT_07	Tirol	675.000	12.641
AT_08	Vorarlberg	352.000	2.600
AT_09	Wien	1.706.000	415
AT_40	AG Linz	269.000	264
AT_60	AG Graz	255.000	198



AQ PLANS IN AUSTRIA

DEVELOPING AQ PLANS

- All 9 federal provinces developed AQ plans
- Evaluation, update required every 3 years
- Preceding step: analysis of sources, causes
- Public consultation for draft plans necessary
- Involvement of stakeholders beforehand, partly of public as well
- But mainly within administration
- Final plans published at websites
- Partly accompanied by ordinances for specific measures

- [Burgenland](#) (PM₁₀)
- [Carinthia](#) (PM₁₀, NO₂, BaP)
- [Lower Austria](#) (PM₁₀)
- [Upper Austria](#) (PM₁₀, NO₂)
- [Salzburg](#) (NO₂)
- [Styria](#) (PM₁₀, partly NO₂)
- [Tyrol](#) (NO₂)
- [Vorarlberg](#) (PM₁₀, NO₂)
- [Vienna](#) (PM₁₀, NO₂)

MAIN MEASURES – GENERAL

TRAFFIC

- Ban of old trucks (Burgenland, Lower Austria, Styria, Tyrol, Vienna)
- Speed limits on motorways, partly dependent on pollutant levels (Upper Austria, Salzburg, Styria, Tyrol, Vorarlberg) and cities
- Improvements public transport (but not only for AQ)
- Improvements slow modes (pedestrians, bicycles) (but not only for AQ)
- Strict procurement rules for new vehicles for administration
- Improvements spatial planning (but not only for AQ)

DOMESTIC HEATING

- Subsidies for replacing old solid fuel appliances
- Subsidies for renewable energy appliances
- Subsidies for building insulation
- Extension of district heating
- Obligatory district heating for large buildings
- Inspections
- Renewal, district heating for public buildings
- Awareness raising, information campaigns

MAIN MEASURES – GENERAL

CONSTRUCTION SITES

- Guidance documents
- Strict rules (waste logistics, traffic logistics, environment inspector,...) for large sites
- Diesel particle filters for machinery

AGRICULTURE

- Manure storage requirements
- Manure appliance requirements

NATIONAL LEVEL

- Ban of open burning of agricultural waste
- Strict rules, inspection regime for industry, power plants
- Stickers for vehicles dependent on emission standards

EXAMPLE: SPEED LIMIT

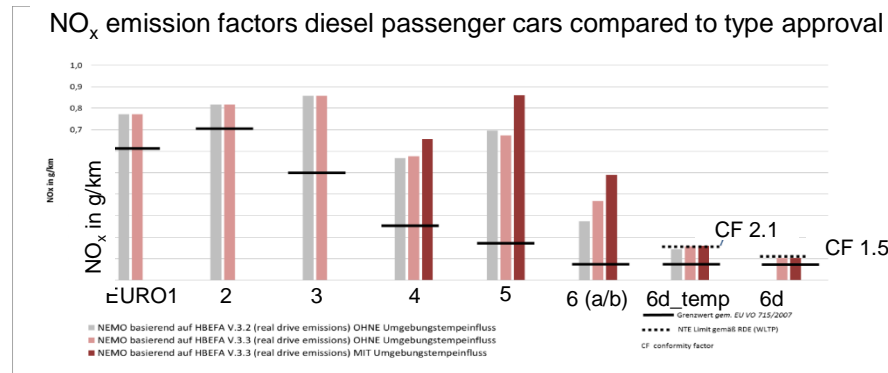
- Speed limits for passenger cars, light duty vehicles + **compliance checking**
- very effective if speed is reduced to ≈ 80 km/h
- in cities (50 km/h \rightarrow 30 km/h): emission reduction dependent on traffic flow
- BUT: less noise, less (severe) accidents, equalizing of speed and traffic flow
- Variable speed limits on motorways in Upper Austria, Salzburg, Styria
- Fixed limits in Tyrol, Vorarlberg, Vienna
- Highly debated measure



© M. Deweis

PROBLEM DIESEL NO_x EMISSIONS

- NO_x emissions of Euro 3, 4, 5 & 6 diesel passenger cars higher than expected
- Low emission zones, bans less effective if high share of diesel passenger cars
- ➔ more general approach needed to limit traffic & improve quality of life in cities
- ➔ address specifically diesel cars + LDV
- ➔ Ban import of old diesel vehicles
- ➔ Strict inspection of diesel vehicles



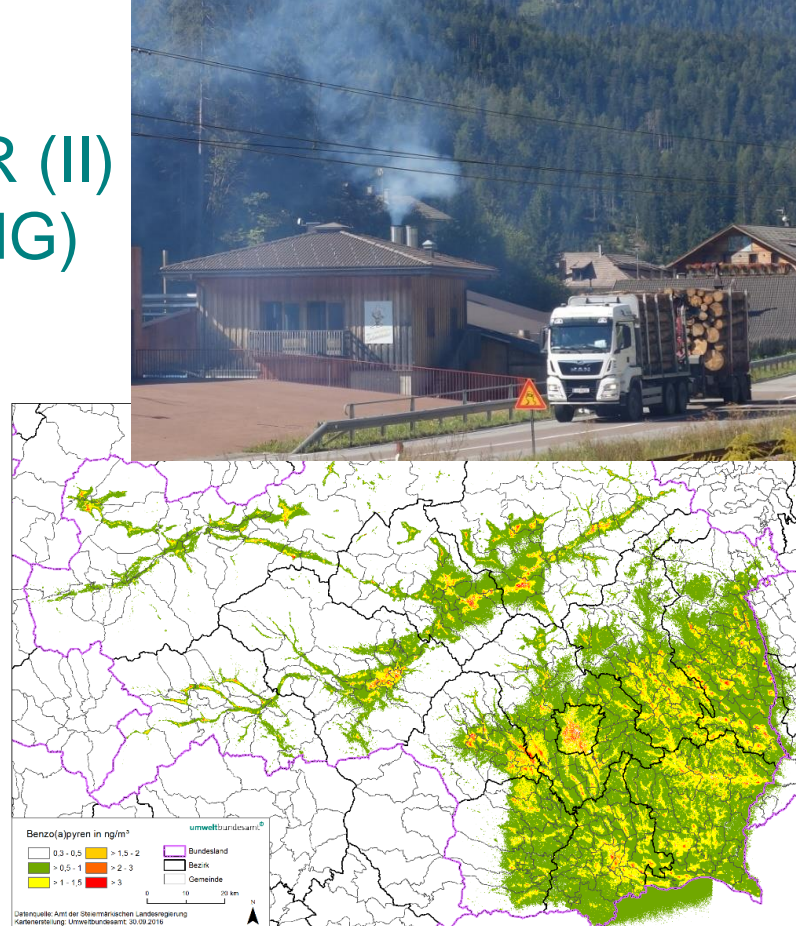
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EXAMPLES TRAFFIC MEASURE TYROL

- Air quality, esp. NO₂ (and noise) impacted by traffic at Inntal motorway (A12)
- Measures implemented by [ordinances](#):
 - Night time ban for heavy goods vehicles (HGV)
 - Sectoral travel ban of specific goods for HGV
 - Ban of old HGV (incl. EURO V since 1.1.2021)
 - Speed limit for passenger cars
- Further measures HGV:
 - Large increase of railway capacity (Brenner base tunnel, lower Inn valley track, rolling highway)
 - Maximum charge for HGV according to Dir. 1999/62/EC
 - Extensive controls
 - Restrictions to limit evasion to minor roads

EXAMPLE STYRIAN CLEAN AIR (II) PROJECT (DOMESTIC HEATING)

- Goal: public awareness raising how user behaviour can influence emissions from biomass domestic heating
- Mobile domestic heating demonstration laboratory
- Website: <https://www.ea-stmk.at/cleanair2>



Source: [Umweltbundesamt](https://www.umweltbundesamt.at), Nagl

EXAMPLE STYRIAN CLEAN AIR (II) PROJECT

- Mobile heating infrastructure (trailer) with different heating systems, installed sensors
- to illustrate significant emission reduction by “correct heating”
- to illustrate influence of conditions (position of air slide, amount of fuel, heating technique, loading process, etc.)



© BEST – Bioenergy and Sustainable Technologies GmbH

EXAMPLE STYRIAN CLEAN AIR (II) PROJECT

- Smartphone app specially developed for the documentation of heating data
- Participants / households, additionally receive on-line sensors
- written feedback with information on better heating

citizen science
(temperature monitoring + app)



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EXAMPLES RESIDENTIAL HEATING

1. improvement of building envelope
 2. low/no emission heating/cooling: large district h/c networks, gas networks, solar h/c, heat pumps, low temperature h/c
- intelligent h/c systems, including storage
 - ban of chimneys in allotments (Vienna)
 - Combined heat-power plants (gas):
 - Strict permit conditions, esp. NO_x
 - Continuous monitoring of emissions
 - Detailed provisions for monitoring

h/c: heating / cooling



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EXAMPLE OPEN BURNING

- Open waste burning prohibited since 2002 (not state of art, adverse impact on soil, animals,...)
- One of most successful single measure!
- Few general exceptions:
 - Campfire
 - Barbecue
 - Selective burning of waste material in inaccessible alpine locations to prevent encroachment
- Possible exceptions (by ordinance):
 - Bonfires
 - Smoking in orchards, vineyards as a measure of frost protection
 - incineration of pest and disease-infested materials

Waste burned if no strict rules for bonfires



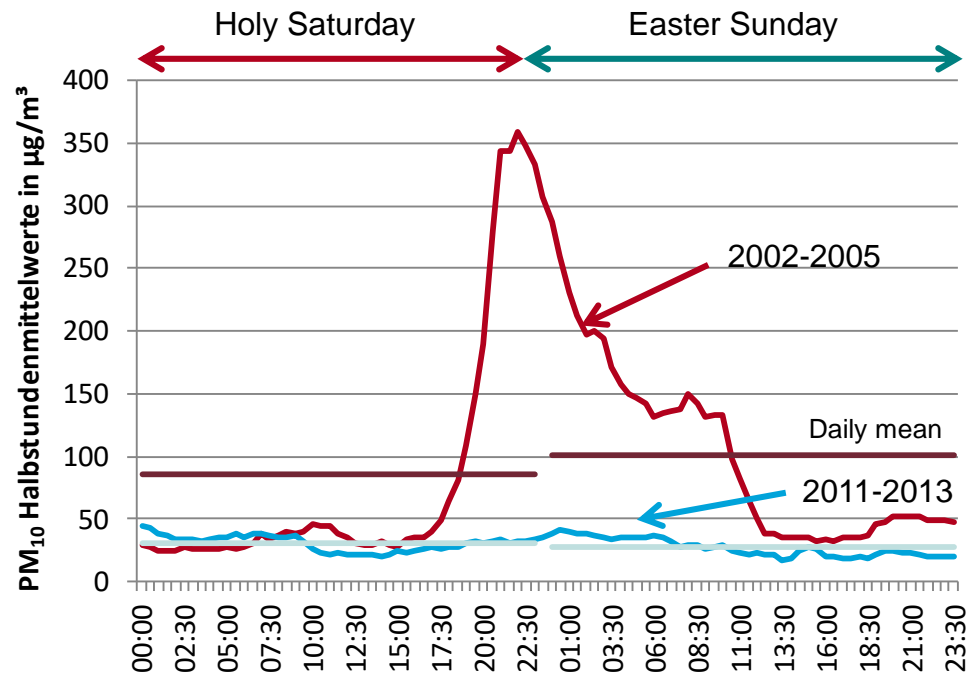
Single fire can lead to widespread air pollution



Source: Government of Styria, Umweltinstitut Vorarlberg

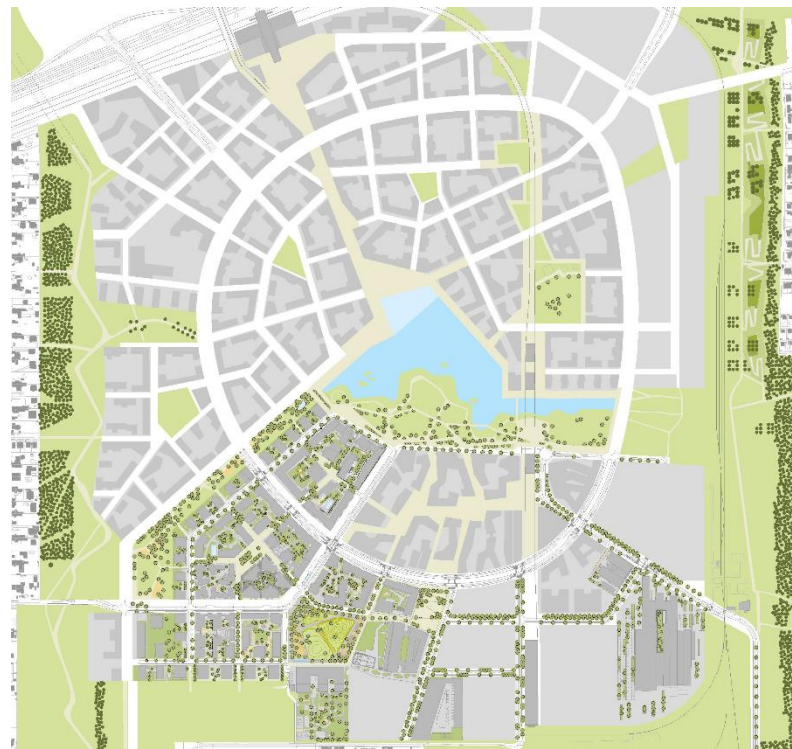
EXAMPLE OPEN BURNING – AQ IMPROVEMENTS

- PM₁₀ levels around Eastern in Graz
- Bonfires are forbidden since 2006
- 2-3 PM₁₀ exceedance days less



EXAMPLE INTEGRATED APPROACH – VIENNA ASPERN

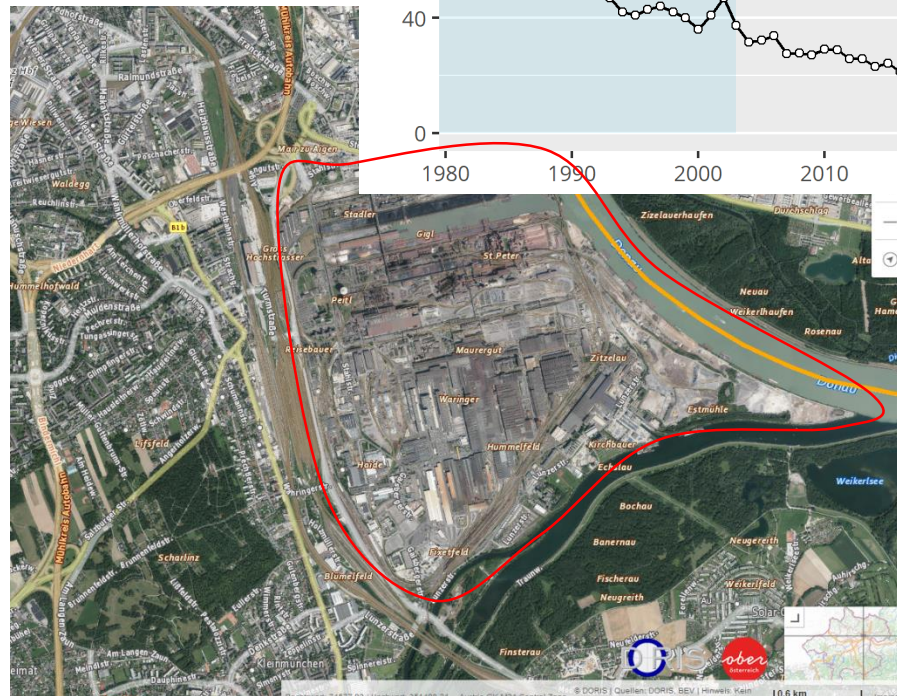
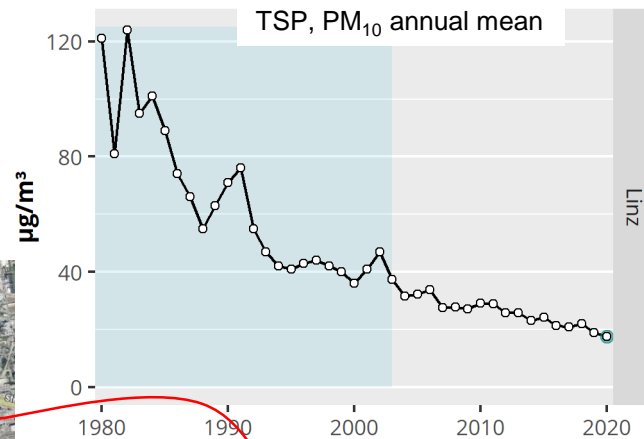
- Austria's largest construction site
- future home for 50.000 people
- high ecological standards, energy efficiency of all buildings (sustainability concept, total quality buildings, district heating)
- priority for public transport from the beginning
- construction logistics
 - use of excavation material at site
 - use of recycled materials at site
 - limitation of site traffic, dedicated routes, rail transport



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EXAMPLE INDUSTRY

- Large steel factory in city of Linz (≈ 200.000 inh.)
- High dust (TSP) concentrations in 70ies and 80ies
- Improvements:
 - Internal power plant
 - Coking plant
 - Sintering plant
 - Furnaces
 - Steel plant



EXAMPLE MEASURES – VOESTALPINE LINZ

POWER PLANT

- Oil replaced by gas
- DeNO_x (SCR)

COKING PLANT

- New coke ovens
- Renewal of H₂SO₄ plant

SINTERING PLANT

- Wet filtering (AIRFINE), re-use of dust
- Fabric filters

FURNACE

- Dedusting of casting hall
- Collection of fugitive emissions

STEEL PLANT

- Optimisation of dust abatement facilities
- Enlarging secondary dust abatement facilities

EXAMPLE MEASURES – VOESTALPINE LINZ

- Cap and reduction of overall PM₁₀ emissions as prerequisite for enlarging plant
- Laid down in short [ordinance](#)
- Reduction of PM₁₀ and TSP emissions have to be undertaken for the sintering plant, furnaces, steel plant until end of 2006
- From 2007 onwards emissions have to 1,610 tons (TSP), 1,300 tons (PM₁₀) less compared to 2001
- Overall, emissions have to be reduced by 60 %
- Details laid down in Environmental Impact Assessment for enlarging plant

Verordnung des Landeshauptmanns von Oberösterreich, mit der emissionsmindernde Maßnahmen für die Stadtgebiete Linz und Steyregg erlassen werden

StF: LGBL.Nr. 115/2003
Änderung idF: LGBL.Nr. 111/2005

Auf Grund der §§ 10 bis 12 und 16 Immissionsschutzgesetz-Luft (IG-L), BGBl. I Nr. 115/1997, zuletzt geändert durch das Bundesgesetz BGBl. I Nr. 34/2003, wird verordnet:

§ 1

Sanierungsgebiet

Als Sanierungsgebiet im Sinn des § 2 Abs. 8 IG-L wird das Stadtgebiet der Landeshauptstadt Linz mit Ausnahme der Katastralgemeinden Ebelsberg, Mönchgraben, Pichling, Posch und Wambach sowie das Stadtgebiet von Steyregg festgelegt.

§ 2

Maßnahmen und Fristen

- (1) Die voestalpine Stahl GmbH, Voest-Alpine-Straße 3, 4031 Linz, sowie allfällige Rechtsnachfolger haben bis 31.12.2006 emissionsmindernde Maßnahmen für die Luftschadstoffe Schwebestaub und PM₁₀ durchzuführen. Dabei sind staubemissionsmindernde Maßnahmen im Bereich der Sinteranlage, des Hochofens A, der Hochofen 4, 5 und 6 sowie im Bereich des Stahlwerkes zu setzen.
- (2) Ab 1. November 2007 müssen die gesamten Anlagen der voestalpine Stahl GmbH sowie allfälliger Rechtsnachfolger um mindestens 1.610 Tonnen/Jahr Schwebestaub, davon mindestens 1.300 Tonnen/Jahr PM₁₀, ausgehend von den Staubemissionsdaten des Geschäftsjahres 2001, weniger emittieren. Insgesamt müssen die emissionsmindernden Maßnahmen eine Reduktion von mindestens 60%, ausgehend von den Staubemissionsdaten des Geschäftsjahres 2001 (Gesamtemissionen von 2.339 Tonnen/Jahr Schwebestaub und 1.881 Tonnen/Jahr PM₁₀), bewirken. (Ann: LGBL.Nr. 111/2005)
- (3) Die voestalpine Stahl GmbH sowie allfällige Rechtsnachfolger haben bis zum 31. Dezember 2005 dem Landeshauptmann die Staubemissionsdaten der Geschäftsjahre 2001 (1. April 2000 bis 31. März 2001), 2002 (1. April 2001 bis 31. März 2002) und 2003 (1. April 2002 bis 31. März 2003) bekannt zu geben. (Ann: LGBL.Nr. 111/2005)

§ 3

Umsetzung

Die Maßnahmen sind von der Behörde mit Bescheid anzuordnen bzw. zu genehmigen. Die Zuständigkeit richtet sich nach § 17 IG-L.

§ 4

In-Kraft-Treten

Diese Verordnung tritt mit Ablauf des Tages ihrer Kundmachung im Landesgesetzblatt für Oberösterreich in Kraft.

Kundgemacht (LGBL. 111/2005) am 31. Oktober 2005

SUPPORTING FACTORS IN THE PLANNING PROCESS

- Communication and participation of stakeholders (authorities, trade organisations, NGOs, public) during planning and implementation
- Strong political commitment
- “Leading by example”
- Awareness raising and information of the public about air quality issues
- Reliable data for activities, emissions, impact and effectiveness of measures
- But don't wait for perfect data, any improvement will improve public health!

LEARNING FROM COVID-19 PANDEMIC

- + Replacing of flight travel by videoconferences
- + Temporary bike lanes
- + Discussion about redistribution of public space to allow for keeping safe distance
- + Less NO₂ → less O₃? (recent [JRC study](#))
- + Home office much more widespread
- Decline in public transport passengers

part of many AQ plans



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CONCLUSIONS & SUMMARY

- Air quality plans have been developed and implemented in all 9 Federal Provinces
- Large AQ improvements achieved, but only partly due to AQ plans, mainly due to general developments, measures to improve public transport, energy, quality of life,...
- Opposition by strong lobbying groups, public, newspaper sometimes not predictable → public participation from beginning helpful (see [French climate convention](#))
- Integrated approaches, strong political support, public involvement, leading by examples are key elements of these successful approaches

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