

Measures to improve air quality and reduce particles

TWELVE VIRTUOUS EXAMPLES

The health implications of particle pollution are a major concern across Europe. Owing to the limit values for particles (PM₁₀) many places have now started to take action against this form of pollution. This briefing focuses on twelve virtuous Europe-wide examples of what Member States and cities have done to reduce air pollution, demonstrating that there are a wide range of possible measures to improve public health.¹

INCENTIVES FOR THE INTRODUCTION AND RETROFITTING OF PARTICLE FILTERS ON DIESEL CARS (Austria)

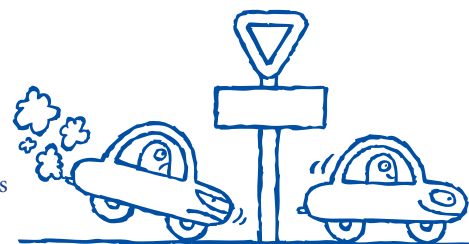
NoVA (Normverbrauchsabgabe) is a federal tax paid when new vehicles are initially registered. An environmental tax/rebate system was introduced for diesel cars in July 2005. Since then the tax differential has increased every six months. Under the scheme, new cars fitted with particle filters receive a €300 rebate. Those without a particle filter face an increase over the base NoVA rate. Initially this represented a maximum increase of €150. From July 2006 this doubled to €300. Originally, the scheme only covered cars rated 80kW (kilowatts) or higher, but in January 2006 it was expanded to include smaller cars as well.

Two-thirds of new diesel cars in Austria now have particle filters and those without them are hard to sell. One drawback of the scheme is that it only applies to the initial registration of new cars. If the approach were applied to the annual vehicle tax, greater environmental benefits would be achieved. Given the vehicle fleet's slow turnover, further incentives for upgrading existing cars are needed to achieve significant particle reduction over the short-to-medium term. In the absence of a federal plan, various Austrian regions and towns run local schemes offering incentives for retrofitting particle filters.

ENVIRONMENTAL ZONES (Gothenburg, Sweden)

Gothenburg introduced Sweden's first 'environmental zone' in 1996. Its aim is to reduce the emission of particles and nitrogen oxides from heavy goods vehicles. Noise benefits are also possible.

On its introduction, the Gothenburg scheme required all lorries and buses over 3.5 tonnes to meet the Euro 1 emission standard. Vehicles between nine and 15 years old could only operate in the zone if they were retrofitted with a certified emissions control device or a new engine. There were also special permits for vehicles that only rarely entered the zone, available for a one-off fee.



The scheme is enforced using a permit system for older vehicles. Drivers entering illegally are subject to a fine enforced by

the police. The compliance rate is over 90 percent. The zone is simple, costs little to administer and is designed flexibly to help operators make the necessary changes to their fleets.

In Gothenburg, most buses now comply with Euro IV and heavy-duty vehicle particle emissions have been reduced by 40 percent. The public have been won over and favour the zone's extension. A two-step enlargement is planned over the next five years.

Further Information: Environmental zones:

http://www.lund.se/upload/Tekniska%20f%C3%B6rvaltningen/Gatuoch%20trafikkontoret/miljozon_eng2002.pdf. Impact assessment reports: <http://www.slb.mf.stockholm.se/> (in Swedish)

CONGESTION CHARGING (Stockholm, Sweden)

In Stockholm, a congestion charge system underwent trials during the first half of 2006. It operated between 6:30 am and 6:30 pm. Vehicles were charged every time they passed one of the checkpoints in a cordon round the city. Charges ranged between SEK 10-20 (€1-2), depending on the time of day and accumulated to a maximum of SEK 60 per day. The scheme was enforced using cameras and number plate recognition technology. Owners who failed to pay following an initial reminder, were liable for extra charges. The trial was enabled by the National Congestion Tax Act, passed in 2004.

The trial was very successful. During charging hours traffic was reduced by 20-25 per cent, equating to an overall reduction of 14 per cent, largely as a result of people switching to public transport. Journey times at peak periods were reduced by 30 percent, PM10 emissions reduced by 12-13 per cent and Nitrogen oxides by 8-9 per cent. Significant carbon dioxide savings were also achieved. The trial generated SEK 36.5 million in new income.

¹ We gratefully acknowledge the contributions and comments from colleagues in EEB member organisations, who collected these examples.

Before the trial there had been heated debate among politicians, haulage firms, shop owners and the public. Ultimately, the trial proved very popular with inner city residents and earlier concerns over impacts on local businesses appear to be unfounded. Even haulage firms and bus operators view the trial positively, since reduced traffic has made their work quicker and more efficient.

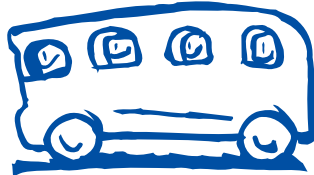
Future progress is uncertain.

A referendum will be held in September, though the final decision lies with Parliament.

The latter will also decide how money raised from the charge will be spent. There is pressure, especially in Stockholm city, for it to be spent on improving public transport.

Further Information:

<http://www.stockholmsforsoket.se/templates/page.aspx?id=183>



PARKING POLICIES TO REDUCE CITY CAR USE (Amsterdam, the Netherlands)

In 1992, citizens of Amsterdam decided by referendum to tackle rising traffic in the inner city. Ten years later levels have been reduced by 19 per cent (while in the surrounding area they have increased by 28 per cent). This dramatic reduction has been achieved largely as a result of the city's parking policy.

Amsterdam applies a strict limit on the number of parking spaces available. You must wait a long time to obtain a permit and even then drivers must deal with the continual challenge of finding a place to park. Businesses are allowed only limited space and visitors to the city are charged over €4 per hour. Importantly, this policy is not just about pulling people out of their cars. Great efforts are also being made to encourage cycling. Cycle lanes are widespread and car access in some streets is limited. Consequently, 50 per cent of inner-city journeys are now made by bike.

Amsterdam's parking policies help avoid the more severe air quality problems experienced by The Hague and Rotterdam. Nevertheless, in 2005 air quality limit value exceedances aroused great concern among politicians, public and media. The authorities are developing and implementing new measures. It is anticipated that parking policies will continue to play a role.

Further Information: Top tien voor een betere luchtkwaliteit, CE Delft, 2005 (http://www.natuurenmilieunederland.nl/images/upload/rap_CE10voorklucht.pdf).

LOWERING HIGHWAY SPEED LIMITS TO 80 KPH (Overschie, Rotterdam, the Netherlands)

In 2002, an 80 km per hour speed limit was trialled on a busy highway in Overschie (near Rotterdam). Studies indicated emission reductions of up to 35 per cent for PM10 and 25 per cent for nitrogen dioxide. Additionally, noise-levels dropped by between 25 per cent and 50 per cent and congestion decreased significantly.

The emission benefits result directly from lower vehicle speeds, and also indirectly because at lower speeds traffic flows more smoothly. This smoothing reduces emissions by reducing the frequency and intensity of vehicle acceleration, when emissions are greatest. This effect is most pronounced with lorries and for emissions of PM10. It may even be the dominant effect. The measure can be introduced easily and rapidly, making this one of the most effective short-term measures for managing pollution hotspots. Effective enforcement is vital to achieve the maximum benefit.

In 2005, lower speed limits were introduced to another four Dutch locations. Unfortunately, they only applied to short stretches of road, meaning that the benefits of smooth traffic flows could not be fully realised. The measure would be far more effective if applied to larger areas.

This approach has also been widely applied in Switzerland. Almost half of the cantons apply environmentally-based speed limits on their highways.

Further Information: "research of the effects of the 80 KM measure on the A13 on the air quality in Overschie". TNO, 2003 (<http://www.dcmr.nl/binaries/publicatie/2005/LUC/R2003-258.pdf>, in Dutch)



SHORE-SIDE ELECTRICITY FOR CLEANER SHIPPING (Gothenburg, Sweden)

In-port emissions of air pollutants from shipping can be greatly reduced by using electricity supplied by cable from the shore, instead of generating electricity using onboard diesel engines. In 2000, the Port of Gothenburg in Sweden introduced its first modern high-voltage electricity connection. At that time it was the first in the world designed for larger cargo vessels and ferries. Previously, only smaller ferries had been connected using low-voltage systems.

The installation in the Port of Gothenburg is estimated to prevent annual emissions of some 80 tonnes of nitrogen oxides, 60 tonnes of sulphur dioxide, and two tonnes of particulate matter. The reduction of nitrogen oxides and sulphur dioxide also contributes to reducing particle concentrations as these substances cause particles to form in air. Beside the direct benefits to health and the environment from lowering air pollutant emissions, shore-side electricity also reduces noise and fosters a better working environment.

The promotion of shore-side electricity is one of the objectives outlined in the EU Thematic Strategy on Air Pollution. In May 2006 the European Commission issued a recommendation to the Member States to offer economic incentives to operators to use shore-side electricity. It concluded that in most cases the environmental benefits of switching to shore-side electricity considerably exceeded the costs.

Further Information: "Shore-connected electricity supply to vessels in the Port of Göteborg"

[http://www.portgot.se/prod/hamnen/ghab/dalis2.nsf/vyFilArkiv/shoreconnectedelectricity.pdf/\\$file/shoreconnectedelectricity.pdf](http://www.portgot.se/prod/hamnen/ghab/dalis2.nsf/vyFilArkiv/shoreconnectedelectricity.pdf/$file/shoreconnectedelectricity.pdf)

PROMOTE CYCLING (Münster, Germany)

Münster is well known in Germany as the 'bicycle city'. About half a million bicycles are in use on the streets and on the 275 kilometres of cycle paths. The city built its first cycle paths in 1948 and has continued to improve the cycling environment ever since. Systematic cycle route planning has helped and Münster has transformed its former medieval city wall around the old town into a green ring for the exclusive use of cyclists and pedestrians. Since 1998, a bicycle park with 3,500 spaces at the main railway station has also encouraged commuters to use public transport.



Thirty-five per cent of all trips in Münster are made by bicycle, which is three to four times more than in other cities of comparable size (A further 13 per cent of trips are made on foot, while 11 per cent are made by public transport and 41 per cent by car).

Air quality improvements are just one benefit Münster enjoys as a result of its pioneering work on cycling. The measures also help limit green house gas emissions, reduce congestion and improve inhabitants' health and quality of life. The city has been recognised nationally and internationally for its achievements.

Further Information: Air and City in Brussels and Europe: can our cities fight against air pollution?

http://www.eeb.org/activities/air/conference_presentations/Air_and_city_report.pdf

CLEANER BUSES

(Berlin, Germany and Padua, Italy)

Berlin, Germany

As far back as 1999 Berlin's public transport provider Berliner Verkehrsbetriebe (BVG) has prioritised the reduction of particle emissions from its transport fleet. Currently 1,000 out of 1,300 buses are equipped with particle traps. Plans are in place to clean up the remaining vehicles.

Padua, Italy

In Padua, a fleet clean-up programme will ensure that by the end of 2006, 30 per cent of the public transport fleet will be powered by methane gas. Supplementing these services, a new electric light metro system will be ready for operation in 2007. Power will be supplied by photovoltaic devices at the terminus: a clean and green transport alternative.

INTELLIGENT FREIGHT DISTRIBUTION:

KEEPING LORRIES OUT OF THE CITY (Bristol, UK)

Bristol City Council, in partnership with supply chain experts, has been operating a consolidation centre since May 2004. Its aim is to help reduce pollution and congestion in central Bristol by streamlining deliveries and cutting vehicle numbers entering the city.

Over the last two years delivery vehicle movements have been reduced on average by 75 per cent for the 48 participating retailers, which equals a reduction of over 92,000 lorry kilometres. This in turn has reduced carbon dioxide, nitrogen oxide and particle emissions. Retailers have also benefited from a more reliable delivery service. Waste and packaging material is collected on the return leg with nearly six tonnes of cardboard and plastic being recycled so far.



Tendering is underway to extend the scheme's operation. Initially launched with the support of EU funds, retailers are encouraged to make voluntary contributions. The aim is move to a more sustainable business model with contributions from all beneficiaries.

Further Information:

http://www.greaterbristoltransportplan.org/ltp_pdf/maindoc/ltp-main-section-5.pdf, p. 32 Bristol Freight consolidation scheme.

CONTROLLING PARTICLES FROM WOOD-BURNING STOVES (Denmark)

In Denmark, wood-burning stoves are the country's largest single source of fine particles, contributing 36 per cent of total emissions. In rural areas, the emission of particles is not of such great importance for human health. But the situation in towns and even villages is quite different. Studies indicate that measurements of particle pollution in a typical village (Gundsoemagle, north of Roskilde) can equal some of Copenhagen's most polluted streets.

Currently, information campaigns advise users to burn clean, dry wood and to avoid painted/treated wood and waste products.

In autumn 2005, the Danish Environmental Protection Agency proposed a set of binding regulations. These are progressing, although they have been delayed. In the meantime, the Danish Government has proposed introducing a scrapping scheme in 2007. Under the proposals households would receive DKR 300-400, if they either replace an old stove with a cleaner model, or decide simply to stop using stoves altogether.

Further Information: The Danish National Environmental Research Institute: Air pollution with particles in Denmark, report no. 1021, 2005. In Danish, with English summary. www.dmu.dk (also a related report on diesel particles, including a section on wood burning will be published on www.ecocouncil.dk, October 2006).

PARTICLE FILTER REQUIREMENT FOR CONSTRUCTION MACHINERY (Zürich and Winterthur, Switzerland)

Concern over air quality and the need to meet particle limit values in Switzerland produced measures to reduce construction site emissions. A national law (Baurichtlinie Luft), was adopted in 2002, which requires off-road machinery with a capacity of more than 18 kW to be equipped with particle filters if used on large construction sites. The responsibility for implementing this law lies with the Swiss cantons. For example, the Canton of Zürich has since 2004 required particle filters to be fitted to all machinery used in construction projects in the region. In the town of Winterthur the requirements go even further: traps must be fitted not only on construction sites financed by the region, but everywhere in town.

INDUSTRIAL PERMITTING TO REDUCE PARTICLES (Oostrozebeke, Flanders, Belgium)

Oostrozebeke is a small town in the west of Belgium. Monitoring investigations indicated that there were exceedances of PM10 limit values. Several local wood processing plants were found to be in breach of permitted emission limits. The companies were obliged to take corrective measures. These included phasing out old installations, fitting more efficient filters and the alternative sourcing of wood and wood products.

These measures markedly reduced levels of PM and the yearly average limit value now looks likely to be achieved. Progress has also been made towards compliance with the daily limit value, though further reductions are required to assure this. Future action will focus on the more diffuse emissions (such as those from material handling).

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