

# Acid News

NO. 1, MARCH 2007

## IN THIS ISSUE

### **Binding targets to come** 3

The European Commission intends to propose legislation forcing car makers to cut average carbon dioxide emissions from new cars.

### **Will countries deliver?** 6

Only nine member states submitted their national programmes as mandated by the national emission ceilings directive before the deadline.

### **Unsustainable increase** 8

European transport policy must deal with increasing demand for transport, according to a new assessment by the European Environment Agency (EEA).

### **Stricter fuel standards** 10

The European Commission has proposed new standards for transport fuels that will reduce their contribution to climate change and air pollution.

### **Weak diesel car standards** 12

The deal has taken the worst elements of the positions of both sides, according to the European Federation for Transport and Environment (T&E).

### **The heat is on** 13

Evidence that human activities are causing the planet to warm up is "unequivocal", says IPCC, the Intergovernmental Panel on Climate Change.

### **Cleaner maritime fuels** 16

A global fuel switch for shipping is likely to be high on the agenda at the forthcoming IMO meeting.

### **Rapid growth at sea** 17

A new global emission inventory predicts increasing emissions despite cleaner ships, because of rapid growth in the volume of transport.

### **A global energy strategy** 19

If we use energy more efficiently, half of the world's energy needs could be supplied from renewables by 2050, and CO<sub>2</sub> emissions could be halved.



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EUROPEAN UNION

## EU leaders agree on climate target

But still further reductions are necessary to meet the objective of keeping global average temperature increases below 2°C.

The Spring Council meeting of EU heads of government in Brussels on 8–9 March resulted in unexpectedly clear targets for the Union's climate and energy policy:

□ A binding target that total emissions of greenhouse gases from the EU must be reduced by at least 20 per cent between 1990 and 2020. Under international agreement the EU un-

dertakes to increase that target to 30 per cent.

□ A binding target that 20 per cent of energy used in the EU must come from renewable sources by 2020, while 10 per cent of energy use for road transport must come from bio-fuels.

□ A non-binding agreement to im-

*Continued on page 4*

# Acid News

A newsletter from the Swedish NGO Secretariat on Acid Rain, the primary aim of which is to provide information on air pollution and its effects on health and the environment.

Anyone interested in these matters is invited to contact the secretariat. All requests for information or material will be dealt with to the best of our ability. Acid News is available free of charge.

In order to fulfill the purpose of Acid News, we need information from everywhere, so if you have read or heard about something that might be of general interest, please write or send a copy to:

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## THE SWEDISH NGO SECRETARIAT ON ACID RAIN

The Secretariat has a board consisting of one representative from each of the following organizations: Friends of the Earth Sweden, the Swedish Anglers' National Association, the Swedish Society for Nature Conservation, the Swedish Youth Association for Environmental Studies and Conservation, and the World Wide Fund for Nature Sweden.

The essential aim of the secretariat is to promote awareness of the problems associated with air pollution, and thus, in part as a result of public pressure, to bring about the needed reductions in the emissions of air pollutants. The aim is to have those emissions eventually brought down to levels – the so-called critical loads – that the environment can tolerate without suffering damage.

In furtherance of these aims, the secretariat

- Keeps up observation of political trends and scientific developments.
- Acts as an information centre, primarily for European environmentalist organizations, but also for the media, authorities, and researchers.
- Produces information material.
- Supports environmentalist bodies in other countries in their work towards common ends.
- Participates in the lobbying and campaigning activities of European environmentalist organizations concerning European policy relating to air quality and climate change, as well as in meetings of the Convention on Long-range Transboundary Air Pollution and the UN Framework Convention on Climate Change.

**T**HE AIM of the national emission ceilings (NEC) directive is to gradually improve, through the progressive reduction of air pollutant emissions, the protection both of human health and the environment throughout the EU.

Interim environmental quality targets that are to be attained by 2010 are established in the directive. These targets constitute the first step towards achievement of the long-term objectives of effectively protecting human health from the risks of air pollution, and bringing acidification and ground-level ozone below critical loads.

By 2010 member states must limit their annual national air pollutant emissions so that they do not exceed the ceilings laid down in the NEC directive. However, when the directive was negotiated, opposition from several member countries meant that the ceilings came to be set so high that not even the interim environmental targets for 2010 will be met.

The forthcoming review and revision of the directive (see article p. 6) provides an opportunity to mandate further reductions in emissions, with the aim both of attaining the interim environmental objectives by 2010, and of meeting the long-term ones by 2020.

But the level of ambition set out in the Commission's thematic strategy on air pollution – which is supposed to have a strong influence on the revision of the directive – is far too low. There are currently no intentions to strengthen the 2010 emission ceilings, and the thematic strategy did not properly investigate the action needed for attainment of either the interim environmental targets or the long-term objectives.

The fact that many member states fail to give proper attention to air quality policy at the national level certainly does not help. One recent example is that less than half the member states fulfilled their obligations to produce and submit national programmes under the NEC directive in time. Another example is the widespread non-compliance with the air quality standards for PM<sub>10</sub>.

Of utmost importance for the ongoing analysis of various scenarios

that will be used to determine the level of ambition for the 2020 emission ceilings, are the assumptions regarding levels of fossil fuel usage in 2020.

It is paradoxical and shameful that while member states have accepted that the EU must reduce its emissions of greenhouse gases by 20 or even 30 per cent by 2020, the same member states do not accept that this policy target is reflected in the NEC scenario analysis!

This is essential because the forecast energy use largely determines the levels of emissions of air pollutants such as sulphur dioxide, nitrogen oxides and fine particles. If the total energy used – and especially the share generated from fossil fuels – is overestimated, the estimated cost of cutting air pollutants will also be exaggerated. Inflated cost estimates are also likely to lower political acceptance of the more ambitious initiatives.

An overestimation of future fossil fuel use will moreover result in an underestimation of the potential to reduce emissions of air pollutants, thus further weakening the setting of environmental targets.

Consequently, if the EU takes action to reduce emissions of carbon dioxide, the costs of reducing emissions of recognized air pollutants will be significantly lower.

Those cost savings should be used to further improve the protection of human health and the environment from the damaging impacts of air pollution. This would mean aiming for a much higher level of environmental ambition, as compared to that proposed by the Commission in its thematic strategy.

The NEC analysis must be based on environmentally sound energy scenarios. This would not only result in more accurate cost estimates, but also in legislation that provides the double benefits of reducing local as well as European air pollution and related environmental problems, while at the same time reducing emissions of the primary greenhouse gas, carbon dioxide.

CHRISTER ÅGREN

# Binding targets to come

The European Commission intends to propose legislation forcing car makers to cut average carbon dioxide emissions from all new cars sold in the EU to 130 grams per kilometre by 2012.



It is not just hybrid vehicles and small cars that already meet the 130 g/km limit. A good number of medium-class cars also manage to do so, including most diesel versions of the Ford Focus.

A COMMUNICATION FROM the Commission was published in early February after three delays caused by significant differences between the environment and enterprise commissioners, Stavros Dimas and Günter Verheugen.

The outcome of this in-fighting is that Verheugen appears to have got the better deal, as the requirement to be imposed on European car makers by 2012 has been softened from 120 to 130 grams per kilometre.

However, Dimas has secured an important point: there will be a binding target for the average new car that manufacturers must meet. The Commission had already reported earlier this year that the car industry will be unable to meet its voluntary undertaking to reduce the level to 140 g/km 2008. The average carbon dioxide emission in 2005 was 162 g/km.

The environmental movement was disappointed at what is the latest weakening of a standard first published in 1996. The 120 g/km target

was first set for 2005, then moved to 2010, and postponed again to the current date of 2012. If the proposals are approved, the weakened 130 g/km limit for carmakers will cause an additional 100 million tonnes of carbon dioxide (CO<sub>2</sub>) to be emitted between 2012 and 2020. An emission level of 120 g/km equates to 4.5 litres of diesel or 5.0 of petrol per 100 kilometres.

Commissioner Verheugen was clearly influenced by a campaign of misinformation by the German car industry, in which some makers said the original draft proposals would put the German automotive industry out of business.

“What we have seen is mindless scaremongering from the German car industry,” said Jos Dings, director at the European Federation for Transport and Environment, T&E.

“They talk of millions of jobs at risk but the reality is they will make job cuts anyway as a result of overcapacity and other problems of their own making and blame it all on en-

vironmental legislation. It is simply wrong that the Commission is weakening an absolutely key element of Europe’s climate policy due to the misleading claims of one industry in one country.”

On top of measures on passenger cars, the communication proposes average CO<sub>2</sub> emission targets for new vans of 175g/km by 2012 and 160g/km by 2015, compared with a 2002 average of 201g/km. It also encourages research and development efforts with a view to reaching a new long-term reduction goal for passenger cars of 95g/km by 2020.

T&E says that the proposal fails to look far enough ahead, and recommends a target of 80 g/km by 2020, which would also give long-term certainty to the car industry.

The next stage is that both Council and Parliament will form opinions on the Commission’s Communication and advise the Commission on the form of the final legislative proposal that will be presented in due course (probably spring 2008).

In their first debate over the proposal in February, the environment ministers expressed overwhelming support for binding legislation. Several member states said producers should be responsible for meeting the 120g/km target. A number also want the EU to set itself a longer-term objective, in the region of 80–100g/km by 2020. The Council will agree on a resolution at their next meeting in June.

The European Parliament presented a resolution on 14 February calling for a binding obligation on carmakers to reduce carbon dioxide emissions from new cars to an average 120 grams per kilometre by 2012.

Adapted from **T&E Bulletin** No. 155, February 2007.

The Communication, COM(2007) 19 Final, can be downloaded at [http://ec.europa.eu/environment/co2/co2\\_home.htm](http://ec.europa.eu/environment/co2/co2_home.htm)

## EU leaders agree on climate target

*Continued from front page*

prove the efficiency of energy use by 20 per cent over the business-as-usual scenario by the year 2020.

Energy and climate issues were at the top of the summit agenda as a result of the proposal for a new climate and energy strategy that the Commission presented on 10 January. The decisions that were reached at the Spring Council complied in all essential respects with the Commission's proposal.

The biggest issue for debate before and during the meeting was whether the target for renewable energy should be made binding or not. The leaders finally backed it, providing it is shared "fairly and equitably" between countries, and takes into account different national "circumstances, starting points and potentials".

There was also some disagreement over the climate goal prior to and during the summit. Some countries regarded the ambition level as too high, while others argued for a reduction of 30 per cent regardless of what happened in the international negotiations. A proposal for burden sharing will also be drawn up that



takes into account the circumstances and potential of different countries.

A unilateral climate target of a 30 per-cent reduction was supported by the European Parliament in a resolution presented in February. On renewable energy, the Parliament called

for a 25-per-cent share of all EU energy by 2020 rather than 20 per cent. The resolution also demands the reinstatement of specific renewables targets for the electricity, heating and cooling sectors.

The umbrella body representing

## Targets for greenhouse gases

□ EU greenhouse gas emissions should be reduced by 20 per cent by 2020, compared to 1990. This means that the EU must adopt a significantly more ambitious strategy than at present. The current Kyoto Protocol target, which the EU is unlikely to meet without exceptional efforts, demands a cut in emissions by eight per cent between 1990 and 2012, a period of 22 years. A further 12-per-cent must then be achieved in eight years. A proposal for burden sharing between countries in order to achieve the 20-per-cent target will be drawn up by the Commission in close consultation with the Member States.

□ The European Council endorsed an EU objective of a 30-per-cent reduction in emissions by 2020 compared to 1990 as its contribution to a global and comprehensive agreement for the period beyond 2012, provided that other developed countries commit themselves to comparable emission reductions and that economically more advanced developing countries contribute "adequately according to their responsibilities and respective capabilities".

□ Beyond 2020, developed countries should be aiming at collective cuts in emissions of 60–80 per cent by 2050, compared to 1990 emissions.

□ The summit outcome will form the basis of the EU's position in international talks to follow up on the UN Kyoto Protocol, which expires in 2012.

## Targets for renewables

□ The share of renewable energies in overall EU energy supply should be 20 per cent by 2020. Renewables currently account for less than seven per cent of the EU energy mix, with a current non-binding goal of 12 per cent by 2010.

□ The new binding target will be broken down into differentiated national targets, taking account of countries' varied circumstances, starting points and potentials. The national targets will be set out in proposals for a comprehensive directive on the use of all renewable energy resources, expected from the Commission in the third quarter of 2007.

□ By 2020, all member states must achieve a 10 per cent minimum binding target for the share of biofuels in overall EU transport fuel consumption. The binding nature of the target is said to be subject to production being sustainable, second-generation biofuels being available, and successful amendments to the fuel quality directive.

## Target for energy efficiency

□ The EU leaders agreed on a non-binding commitment to reduce EU energy use by 20 per cent compared to projections for 2020 through improvements in energy efficiency. This will be achieved primarily through implementation of the EU action plan on energy efficiency, presented by the Commission last October (AN 4/06, p.18).

## UK to set 60 per cent carbon cut in law

The UK Government has published a draft Climate Change Bill, and accompanying strategy, to set out a framework for moving the UK to a low-carbon economy. Key points include:

- A series of clear targets for reducing carbon dioxide emissions – including making the UK's targets for a 60-per-cent reduction by 2050 and a 26 to 32-per-cent reduction by 2020 legally binding.
- A new system of legally binding five-year "carbon budgets", set at least 15 years ahead, to provide clarity on the UK's pathway towards its key targets and increase the certainty that businesses and individuals need to invest in low-carbon technologies.
- A new system of annual open and transparent reporting to Parliament.

Carbon would now be counted in the same way as money, according to finance minister Gordon Brown. "Just as we manage our financial budgets over the economic cycle with prudence and discipline, so we will have to manage our carbon budgets with the same prudence and discipline."

The draft bill will be subject to a full public consultation alongside pre-legislative scrutiny in Parliament.

Further information: [www.defra.gov.uk/news/latest/2007/climate-0313.htm](http://www.defra.gov.uk/news/latest/2007/climate-0313.htm).

## EU to lift minimum diesel duties

The European Commission wants to raise minimum duties on diesel. The current minimum is 302 euro per 1,000 litres for diesel, whereas it is 359 euro for petrol. This differential cannot be justified environmentally or economically, the Commission argues. It therefore wants to raise the minimum level for diesel to the same level as petrol by 2012. The minimum for both diesel and petrol will then increase further to 380 euro in 2014.

The proposal is based on the fact that existing tax differentials on diesel used by trucks create distortions of competition within the internal market. In addition, they lead to "fuel tourism" – studies have shown that millions of extra kilometres were driven by hauliers in order to benefit from lower taxation.

If the Commission's draft law is approved, a significant number of EU countries will have to increase diesel duties by 2014. Petrol duties will be less affected.

Further information: [http://ec.europa.eu/taxation\\_customs/index\\_en.htm](http://ec.europa.eu/taxation_customs/index_en.htm)

European environmentalist organizations on climate issues – Climate Action Network (CAN) Europe – described the results of the Spring Council as "positive steps forward, if not exactly the giant leap that the climate challenge demands."

CAN welcomes the unilateral target as the first concrete commitment by any party to emission reductions post 2012. However, since the science indicates that developed countries need to reduce their emissions by 30 per cent by 2020, compared to 1990 levels, this latter target is, in CAN's view, what the EU needed to put forward as its unilateral offering, if it is serious about fulfilling its own objective of keeping global average temperature increases below 2°C.

The agreement on a binding renewables target was also broadly welcomed. However, several environmentalist organizations were severely critical of the binding targets for biofuels in the transport sector.

They argue that the EU should instead adopt the recently proposed lifecycle greenhouse gas emission reduction targets for transport fuel, which would differentiate between biofuels according to their environmental performance and would only support the best performing ones (see article on p. 10).

"This approach requires fuel suppliers actually to improve their climate performance, rather than just blending in a product with uncertain environmental consequences," said Jos Dings, director of European Federation for Transport and Environment (T&E).

PER ELVINGSON

EU summit: [www.eu2007.de/en/Meetings\\_Calendar/Dates/March/0308-ER.html](http://www.eu2007.de/en/Meetings_Calendar/Dates/March/0308-ER.html)

European Commission: [http://ec.europa.eu/energy/energy\\_policy/index\\_en.htm](http://ec.europa.eu/energy/energy_policy/index_en.htm)

Climate Action Network Europe: [www.climnet.org/EUenergy/2012\\_newitems.htm](http://www.climnet.org/EUenergy/2012_newitems.htm)

## Europeans support EU action on energy and climate change

ACCORDING TO a Eurobarometer opinion survey, released just before the Spring Summit in March, the overwhelming majority of EU citizens are concerned about climate change. Europeans are well aware of the impact of energy supply and use on climate change and global warming, while an overwhelming majority feel that the best way to tackle energy-related issues would be at EU level.

"This survey clearly shows that EU citizens expect the EU to shape a common European response to face energy and climate change challenges", said European Energy Commissioner, Andris Piebalgs.

Half of EU citizens are very much concerned about the effects of climate change and global warming, while a further 37 per cent say that they are concerned to some degree about the issue. The level of concern increases significantly as we look further south: people in Spain, Cyprus, Malta and Greece are the most worried.

More than eight out of ten Europeans (82%) are well aware that the way they consume and produce en-

ergy in their country has a negative impact on climate.

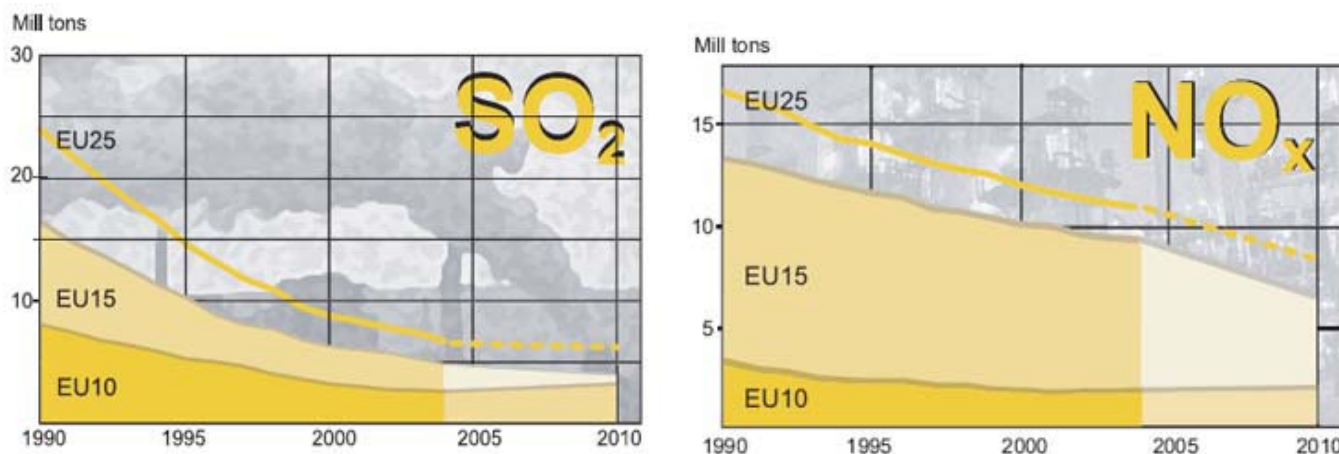
For a majority of EU citizens (62%) the best way to tackle energy-related issues is "through measures agreed at EU level" as opposed to "measures agreed at national level", an option preferred by 32 per cent. Several policy initiatives in the EU also enjoy the support of the majority of citizens. Eighty three per cent agree with the EU setting a minimum percentage for the energy used in each member state that should come from renewable sources.

The survey shows that EU citizens are fairly certain that energy prices will increase significantly over the next decade due to ongoing climate change. More than seven out of ten Europeans feel that they will need to change their energy consumption habits in the next decade (76%), and that they will need to install energy-saving heating, lighting, cooling and other such equipment (72%).

Further information: [http://ec.europa.eu/energy/energy\\_policy/index\\_en.htm](http://ec.europa.eu/energy/energy_policy/index_en.htm)

# Will countries fulfill their commitments?

Penalties could consist of a lump sum and a daily fine, and can be very expensive.



Emissions in EU15, EU10 and EU25 1990-2005, and NEC target levels for 2010. Million tonnes. See Acid News 3/06 for details.

MANY MEMBER STATES are failing to produce and report national programmes as mandated by the EU national emission ceilings (NEC) directive. In total, only nine out of 25 member states submitted their programmes before the deadline of 31 December 2006.

As late as two months after that deadline, six countries – Belgium, Greece, Ireland, Luxembourg, Portugal, and Spain – had still not submitted such plans to the European Commission. This became clear at a stakeholder consultation meeting<sup>1</sup> arranged by the Commission's environment directorate as part of the ongoing process for review and revision of the NEC directive.

The directive stipulates that member states must prepare updated national programmes for the progressive reduction of national emissions of the four pollutants and present them to the Commission before the end of 2006. The programmes must provide information on measures and action taken at national level to attain the emission ceilings. Member states are obliged to make this information available to the public.

Last October it was reported that more than half of the EU member countries foresee difficulties in meeting their legally binding emission ceilings 2010 (see AN 3/06). The lack of proper analysis and failure to investigate and report on possible additional emission abatement measures by many member states may help explain this disturbing situation.

Interestingly, at the meeting the Commission gave a presentation on the "legal perspective" when it comes

to compliance or non-compliance with the NEC directive, and it was explained that ultimately it is the EU Court of Justice that decides on penalties. Such penalties could consist of a lump sum (for the period of non-compliance to date) and a daily fine (for the period until compliance has been achieved), and the penalties can be very expensive.

Although the process of review and revision provides an opportunity to strengthen the existing 2010 emission ceilings so that they comply with

## The NEC directive

Directive 2001/81/EC on national emission ceilings for certain atmospheric pollutants sets national emission ceilings for four air pollutants, namely sulphur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), volatile organic compounds (VOCs), and ammonia (NH<sub>3</sub>).

By 2010 member states must limit their annual national emissions so that they do not exceed the emission ceilings laid down in the directive, and they must ensure that these emission ceilings are not exceeded in any year after 2010.

The NEC directive is the key legislation for the achievement of the EU's air pollution objectives as well as for attaining the air quality standards for a number of pollutants, including PM, NO<sub>2</sub>, SO<sub>2</sub>, and ozone.

The directive was originally scheduled for review and revision by 2004, but slower than expected progress in the EU's Clean Air For Europe (CAFE) programme has led to some delay.

the reductions needed to attain the interim environmental objectives set by the directive, it is more likely to result in progressive future strengthening of the ceilings, e.g. by establishing new NECs for 2020.

It is in any case clear that the attainment of the EU's long-term objectives for air quality will require significant further reductions in emissions of all four pollutants, as well as cuts in emissions of fine particles (PM<sub>2.5</sub>). Current developments also indicate that the NEC directive will most probably also be extended to include emission reduction re-

quirements for PM<sub>2.5</sub>.

The Commission announced that it plans to adopt its proposal for a revised NEC directive in July 2007. Before being adopted, the proposal will then be considered by the Parliament and the Council of Ministers, a policy process that usually takes one or two years.

CHRISTER ÅGREN

<sup>1</sup> **17th CAFE Steering Group meeting**, Brussels, 28 February 2007. The national programmes so far submitted to the Commission can be downloaded from: [http://ec.europa.eu/environment/air/nationalprogr\\_dir200181.html](http://ec.europa.eu/environment/air/nationalprogr_dir200181.html)

NORWAY

## NO<sub>x</sub> emissions tax introduced for ships

ON 1 JANUARY 2007 a tax of NOK 15 (approx. 1.8 euro) per kilogram was imposed on emissions of nitrogen oxides (NO<sub>x</sub>) in Norway. The tax applies to ships (including fishing boats), aeroplanes, diesel locomotives and industrial energy generation, emission sources that are jointly estimated to account for about 55 per cent of Norway's NO<sub>x</sub> emissions.

According to the binding emission ceiling laid down in the Gothenburg Protocol to the Convention on Long-Range Transboundary Air Pollution, Norway's NO<sub>x</sub> emissions must not exceed 156,000 tonnes from the year 2010 onwards. Since emissions totalled 197,000 tonnes in 2005, this will require a reduction of about 21 per cent. The new tax is expected to lead to reductions of around 25,000 tonnes by 2010, and will therefore be important in helping Norway to achieve its emission ceiling.

In the case of shipping and aviation, the tax is limited to those emissions that are considered to be national under the Gothenburg Protocol. For shipping, this means that the tax will apply to all vessels in domestic traffic, even if parts of the domestic traffic take place outside Norwegian territorial waters and regardless of the vessel's nationality. It also applies to all Norwegian vessels fishing within 250 nautical miles

of the Norwegian coast (near waters). Emissions from ships in direct foreign traffic and fishing and hunting in distant waters are exempted from the tax.

Mobile sources (such as ships, aircrafts and locomotives) must have engines with an output of at least 750 kW in order to incur the tax, while the corresponding limit for stationary installations is 10 MW.

Besides introducing the NO<sub>x</sub> tax the Norwegian government has also earmarked funds to provide investment grants for a variety of emission control measures, including selective catalytic reduction (SCR) for ships. The intention is to give grants for up to 30–40 per cent of the additional cost of such measures on large ships and stationary installations, while fishing vessels can recover up to 100 per cent of the extra cost.

Emissions from sources that are encompassed by an environmental agreement with the State on the implementation of NO<sub>x</sub>-reducing measures in accordance with a predetermined environmental target are exempted from the tax.

CHRISTER ÅGREN

Further information (in Norwegian only): [www.regjeringen.no/nb/dep/fin/aktuelt/nyheter/2006/Nox-avgift.html?id=439959](http://www.regjeringen.no/nb/dep/fin/aktuelt/nyheter/2006/Nox-avgift.html?id=439959)

## Global sulphur emissions declining

A new study has found that global anthropogenic sulphur emissions increased until the late 1980s. Existing estimates showed a moderate decline from 1990 to 1995 and relative stability through the decade. The new data presented in the paper indicates a 22 per cent decline in emissions in the 1990s to a level not seen since the mid-1960s. In particular, from 1987 to 2000, global emissions declined by 24 per cent and since 1989 they have fallen at an average rate of 2.4 per cent per annum. The decline is evident in North America, Western and Eastern Europe, and in the last few years, in East Asia as well.

The study highlights the importance and effectiveness of international efforts to reduce sulphur emissions.

*Source: Science for Environment Policy*, January 2007. *The study:* David I. Stern (2006) Reversal of the trend in global anthropogenic sulphur emissions. *Global Environmental Change* 16(2): 207-220. Free download (pdf, 290 kB): [www.rpi.edu/~stern/GEC2006.pdf](http://www.rpi.edu/~stern/GEC2006.pdf)

## Authorities to offset flight carbon

The Norwegian government announced in December a plan to offset greenhouse gas emissions caused by all official flights abroad. All Norwegian state employees will be covered by the initiative, which is expected to cost 300,000 euro per year to run. A similar initiative was taken by Germany in March. There the cost will be three to four million euros a year.

## Unsustainable investments

The NGOs CEE Bankwatch and Friends of the Earth have published research showing that EU funding for transport in the new member states is threatening to undermine EU goals to tackle climate change and curb transport growth. The two NGOs analyzed the draft operational programmes for the use of Structural and Cohesion funds and found plans to invest massively in roads and motorways at the expense of public transport. They identify Romania, Slovenia, Slovakia and Lithuania as the worst cases, as these four plan to spend little or no EU money on public transport.

*Source: T&E Bulletin* No 154, December 2006.

# Spiralling demand key issue

Between 270 and 290 billion euro a year is spent in Europe in transport subsidies.

EUROPEAN TRANSPORT POLICY must deal with spiralling demand for transport, according to a recent assessment by the European Environment Agency (EEA).

The EEA report shows that European freight transport grew by 43 per cent between 1990 and 2004. It increased significantly faster than the economy in 2004, showing no signs of decoupling between the two. Passenger transport volumes grew by 20 per cent in the same period. Air transport alone surged by 96 per cent, aided by cheaper flights.

In the EU10 countries (member states that joined in 2004) there will be strong pressure for expansion in transport volumes over the next decade, according to the EEA. This will be due to rising incomes, increasing car ownership and better infrastructure. In the five EU10 states for which data is available, the number of kilometres travelled per capita is currently more than 40 per cent lower than in the EU15.

The EEA deplores the shift of emphasis in last year's review of the EU transport white paper from managing demand to addressing transport's environmental impact. Traffic demand must still be addressed in order to meet a long list of environmental targets:

"We cannot deal with the increasing greenhouse gas emissions, noise pollution and landscape fragmentation caused by transport without dealing with the increasing traffic across the spectrum: on our roads and railways, in the air and by sea. Technical advances, such as cleaner, more fuel-efficient engines are very important but we cannot innovate our way out of the emissions problem from transport," said Professor Jacqueline McGlade, Executive Director of the EEA.

Transport is responsible for 21 per cent of total greenhouse gas emissions in the EU15 (excluding inter-



national aviation and maritime transport). Road transport contributes 93 per cent of the total of all transport emissions. However, emissions from international aviation are growing fastest with an increase of 86 per cent between 1990 and 2004.

Emissions of greenhouse gases (excluding marine and aviation) from transport grew the most in Luxembourg and Ireland between 1990 and 2004, with respective increases of 156 and 140 per cent. The average increase in the 32 EEA member countries was 25 per cent. Transport trends are undermining the EU's overall progress towards meeting its Kyoto emissions target, The EEA says.

While emissions from most other sectors – energy supply, industry, ag-

riculture and waste management – dropped between 1990 and 2004, emissions from transport increased substantially, driven by the increase in demand. Improvements in the energy efficiency of different means of transport and the introduction of renewable fuels are not sufficient to offset the growth in transport volumes.

The EEA also points out that the production of biofuels must be carried out in a sustainable way to avoid loss of biodiversity.

The report highlights the significant role that transport subsidies play in terms of directing transport choices. Between 270 and 290 billion euro is spent annually in Europe in transport subsidies. Almost half of



these subsidies go to road transport, one of the least environmentally friendly modes. The EEA will release a detailed study of transport subsidies in March 2007.

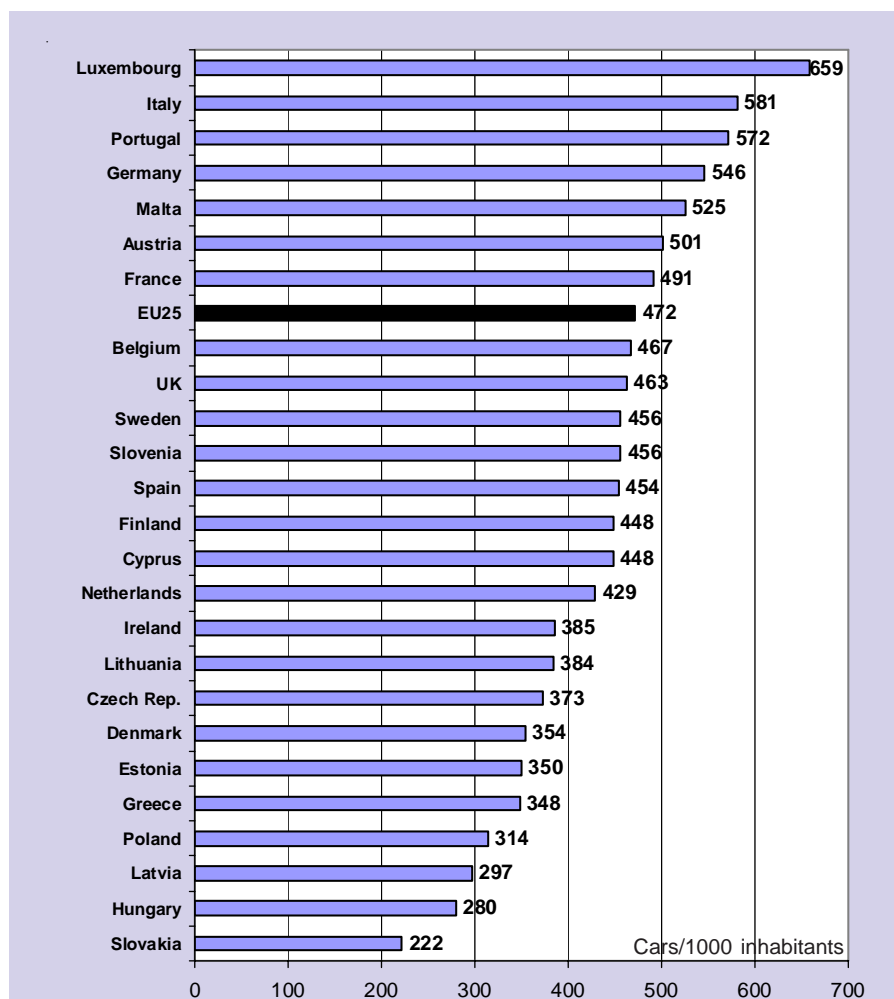
The external costs of transport even exceed the size of transport subsidies. Internalizing external costs should remain a main focus of transport pricing policy and reducing transport subsidies is one of the options available, states the EEA.

PER ELVINGSON

**Source: Transport and Environment: on the way to a new common transport policy,** Annual publication from the EEA's Transport and Environment Reporting Mechanism (TERM), which monitors the progress and effectiveness of attempts to integrate transport and environment strategies.

Available at [http://reports.eea.europa.eu/eea\\_report\\_2007\\_1/en](http://reports.eea.europa.eu/eea_report_2007_1/en)

The report aims to cover all EEA member countries. These are the EU member states, Turkey, Norway, Iceland, Liechtenstein and Switzerland.



### Big differences in car-ownership between countries

Between 1990 and 2004, the total number of cars in the EU25 increased by 38 per cent. The largest increases were recorded in Lithuania (+167%), Latvia (+142%), Portugal (+135%), Poland (+128%) and Greece (+121%). On the other hand, Sweden (+14%), Denmark (+20%) and Finland (+21%) registered the smallest increases.

There were 472 cars per 1,000 inhabitants on average in the EU25 in 2004, compared to 759 cars per 1,000 inhabitants in the USA in 2003. The member state with the highest ratio was Luxembourg, with 659 cars per 1,000 inhabitants. Italy (581), Portugal (572), Germany (546), Malta (525) and Austria (501) also recorded more than one car per two inhabitants. At the other end of the scale were Slovakia (222), Hungary (280) and Latvia (297).

Source: **Passenger transport in the European Union.** Eurostat, 2006.

## NEWS IN BRIEF

### Urban sprawl an ignored challenge

A report by the European Environment Agency (EEA) shows that many environmental problems in Europe are caused by rapidly expanding urban areas. The global economy, cross-border transport networks, large-scale societal, economic and demographic changes and differences in national planning laws are some of the major drivers of change to the urban environment. EU policy to co-ordinate and control planning is required, the report says.

Sprawling cities demand more energy supply, require more transport infrastructure and consume larger amounts of land. This damages the natural environment and increases greenhouse gas emissions. The report contains case studies from seven cities across Europe illustrating both good and bad approaches to urban planning over the past 50 years.

Further reading: **Urban sprawl – Europe's ignored environmental challenge.** EEA Report 10/2006. Available in pdf format at [http://reports.eea.europa.eu/eea\\_report\\_2006\\_10/en](http://reports.eea.europa.eu/eea_report_2006_10/en)

### Majority in favour of German speed limit

According to a survey published by the Leipziger Volkszeitung, 58 per cent of those Germans asked said yes to a speed limit on the autobahn in order to reduce carbon dioxide emissions. The Federal Environment Minister, Sigmar Gabriel (SPD), is also in favour of speed restrictions on the autobahn, but said in a newspaper interview that his primary reason is that it would reduce the number of accidents.

Source: Dagens Nyheter, 5 March 2007.

### Consultation on urban transport

The European Commission will publish a Green Paper on Urban Transport in the second half of 2007. An internet consultation will support the preparation of the Green Paper, and is intended to collect views from interested parties on how best the EU may contribute to improving transport and mobility in urban areas.

Stakeholders have until 30 April to comment on major issues and best solutions (web link below).

[http://ec.europa.eu/transport/clean/green\\_paper\\_urban\\_transport/public\\_consultation\\_en.htm](http://ec.europa.eu/transport/clean/green_paper_urban_transport/public_consultation_en.htm)

# Stricter standards to combat climate change and reduce air pollution

Fuel suppliers must reduce greenhouse gas emissions per unit of energy by 1 per cent a year.

THE European Commission has proposed new standards for transport fuels that will reduce their contribution to climate change and air pollution. In contrast to previous policy this directive does not focus primarily on encouraging the use of bio-fuels to reduce climate impact.

## Reduced emissions of greenhouse gases

The revised directive will introduce an obligation for fuel suppliers to reduce the greenhouse gas emissions that their fuels cause over their life cycle, i.e. when they are refined, transported and used. They will be able to meet this objective by cutting emissions from processing the fuels or by promoting the use of lower-carbon fuels such as biofuels.

As a first step the directive will require fuel companies to monitor and report overall life cycle emissions of their fuels by January 2009. From 2011, they will have to reduce emissions of greenhouse gases per unit of energy by one per cent a year from 2010 levels. This will result in a 10-per-cent cut by 2020.

To enable a higher volume of bio-fuels to be used in petrol, a separate petrol blend will be established with a higher permitted content of oxygen-containing additives (so-called oxygenates), including up to 10 per cent ethanol.

To compensate for an increase in emissions of volatile organic compounds (VOCs) that will result from greater use of ethanol, the Commission will put forward a proposal for the mandatory introduction of vapour recovery equipment at filling stations later this year. (VOCs contribute to the formation of ground-level ozone.)

## Measures to improve air quality

The proposed revised directive requires that by 1 January 2009 all

Main changes to technical specifications proposed. ppm = parts per million.

Parameter	Old value	New value
Maximum permitted oxygen content in petrol	2.7% by mass	3.7% by mass in "high-biofuel petrol"
Maximum ethanol content	5% by volume	10% by volume in "high-biofuel petrol"
Other oxygenates	Varied between 3 and 15%	All increased by a comparable amount in "high-biofuel petrol" except methanol.
Sulphur content of road transport diesel	Currently 50ppm. Provisionally 10ppm from 1/1/2009	10ppm from 31/12/2008.
Sulphur content of non-road machinery gasoil	1000ppm from 2008	10ppm from 31/12/2009.
Sulphur content of inland waterway gasoil	1000ppm from 2008	300ppm from 31/12/2009 10ppm from 31/12/2011
Polyaromatic hydrocarbon content of diesel	11% by mass	8% by mass

diesel fuel marketed will have to have an ultra-low sulphur content (no more than 10 parts per million). This was already agreed in an amendment made in 2003, although only provisionally. The lower sulphur content will primarily cut emissions of fine particles, the air pollutant that presents the biggest danger to human health. The sulphur reduction will facilitate the introduction of new pollution control equipment such as particle filters on diesel vehicles.

From the same date, the maximum permitted content of polyaromatic

hydrocarbons (PAHs), another group of dangerous substances present in diesel, will be reduced by one-third. This may lower emissions not only of PAHs, some of which may cause cancer, but also of particulate matter.

The permitted sulphur content of gasoil for use by non-road machinery and inland waterway barges will also be substantially cut, see table. This too will reduce emissions of particles and allow the introduction of more advanced engines and emission control equipment.

The costs of the different elements

## Background

The 1998 fuel quality directive (98/70/EC, as amended by Directive 2003/17/EC) sets common EU specifications for petrol, diesel and gasoil used in road vehicles, inland waterway barges and non-road mobile machinery such as locomotives, earth moving machinery and tractors.

Biofuels are already being promoted in the EU through two existing directives: one that mandates minimum biofuel blended content in conventional petroleum fuels, and another that sets up tax breaks. The major energy policy review launched by the Commission on 10 January proposed increasing biofuels penetration to 10 per cent by 2020.



*“Until now Europe’s approach to alternatives like biofuels has been to promote them regardless of whether or not they are good or bad for the environment.”*

have been assessed and, overall, the changes proposed are justified on a cost-benefit analysis.

#### **“A very good approach”**

Reacting to the proposed new fuel standards Jos Dings, director of the European Federation for Transport and Environment (T&E) said: “Until now EU’s approach to alternatives like biofuels has been to promote them regardless of whether or not they are good or bad for the environment. If it’s designed right this commitment to reduce carbon emissions will ensure that only the cleanest biofuels are promoted and the production

process of fossil fuels is cleaned up. That is a very good approach and we welcome it.”

It should be noted that the Commission has also put forward a proposal to increase the share of biofuels used in the EU to 10 per cent by 2020 by means of binding targets. This proposal was endorsed by the European Council at their meeting in March (see article starting on front page).

PER ELVINGSON

*Further information:* European Commission, DG Environment, <http://ec.europa.eu/environment/air/transport.htm#2>

## **Cleaner fossil fuels in California too**

THE EU PROPOSAL for a new fuel standards directive was announced just three weeks after a similar plan was put forward in California.

On 9 January, Governor Arnold Schwarzenegger announced he will issue an Executive Order establishing a Low Carbon Fuel Standard (LCFS) for transportation fuels sold in California.

The LCFS requires fuel providers to ensure that the mix of fuel they sell to the Californian market meets, on average, a declining standard for emissions of greenhouse gases measured in CO<sub>2</sub>-equivalent grams per unit of fuel energy sold. By 2020, the LCFS will produce a 10-per-cent reduction in the carbon content of all passenger vehicle fuels sold in California.

The LCFS will use market-based mechanisms that allow providers to

choose how they reduce emissions while responding to consumer demand. For example, providers may purchase and blend more low-carbon ethanol into petrol products, purchase credits from electric utilities that supply low-carbon electrons to electric passenger vehicles, diversify into low-carbon hydrogen as a product and more, including new strategies yet to be developed.

California’s Air Resources Board will put the new fuel regulations into effect no later than December 2008. The Air Resources Board is working with the state’s Environmental Protection Agency and the California Energy Commission to finalize the details of the new regulations.

*Further information:* [www.gov.ca.gov/sots/alt\\_fuels.html](http://www.gov.ca.gov/sots/alt_fuels.html)

## **Aviation to join trading scheme**

JUST BEFORE Christmas the European Commission tabled plans to bring international aviation into the EU emission trading scheme, as expected from 2011. The proposed directive will cover emissions from flights within the EU from 2011 and all flights to and from EU airports from 2012. Both EU and foreign aircraft operators would be covered.

There is no longer a suggestion that airlines could have to surrender twice as many allowances per tonne of carbon dioxide emitted if laws to curb nitrogen oxides (NO<sub>x</sub>) emissions are not implemented by 2010. Instead, the Commission says it will put forward a proposal on NO<sub>x</sub> in 2008.

The proposal is expected to have limited environmental effect, however.

T&E, the European Federation for Transport and Environment, calculates that the effect will be to reduce aviation emissions by just three per cent, which is equivalent to less than one year’s growth in the sector’s emissions. To be effective, the scheme must be accompanied by additional measures applied to all other sectors, such as a tax on fuel and VAT on tickets.

Jos Dings, director of T&E, said:

“After ten years of talk, we welcome the world’s first multilateral plan to cut aviation emissions. But the European Parliament and ministers must quickly agree to an end result that actually encourages airlines to cut their emissions rather than giving them a free ride.”

Emissions from aviation currently account for about three percent of total EU greenhouse gas emissions, but they are increasing fast – by 87 percent since 1990 – as air travel becomes cheaper without its environmental costs being addressed.

*Further information:* T&E website, [www.transportenvironment.org/Article337.html](http://www.transportenvironment.org/Article337.html)

# New emission standards for diesel cars too weak

REPRESENTATIVES of the European Parliament and Council of Ministers have reached a so-called first reading agreement over the next two generations of limits on passenger car pollution.

The deal, agreed last December, has taken the worst elements of the positions of both sides, according to the European Federation for Transport and Environment (T&E). Ministers had demanded weaker standards for emissions of nitrogen oxides (NO<sub>x</sub>) while the Parliament wanted a longer time frame for introduction. In the discussions, the Council basically accepted Parliament's proposed timetable in return for the Council's preferred NO<sub>x</sub> standards.

The law will set new Euro 5 standards for fine particles, hydrocarbons and nitrogen oxides (NO<sub>x</sub>) from 2009 for new models (2010 for all vehicles), and tougher Euro 6 standards for NO<sub>x</sub> only from 2014 for new models (2015 for all vehicles).

The two sides agreed on a Euro 5 NO<sub>x</sub> limit of 60 milligrams per kilometre for petrol cars and 180 mg/km for diesel cars.

Parliament dropped demands for a "technology neutral" Euro 6 NO<sub>x</sub> limit of 70 mg/km for all passenger

cars in favour of Council's preferred values of 60 and 80 mg/km respectively for petrol and diesel vehicles.

The level for particulates (PM) is set at 5 mg/km, for both diesel and petrol cars (both Euro 5 and 6). The new standard will cut permitted PM emissions from new diesel cars by 80 per cent. This is very likely to force fleet-wide application of diesel particle filters (DPFs).

The two sides compromised on a timetable for requiring that sport utility vehicles (SUVs) over 2.5 tonnes comply with car emission standards rather than those for light commercial vehicles. They agreed on 2012 – ministers had wanted an earlier switch and MEPs a later one.

**The new Euro standards for nitrogen oxides (NO<sub>x</sub>) and particulates (PM) from passenger cars. Emissions in mg/km.**

	Euro 4	Euro 5	Euro 6
NO <sub>x</sub> - diesel cars	250	180	80
NO <sub>x</sub> - petrol cars	80	60	60
PM - all cars	25 (diesel cars only)	5	5

There are also standards for hydrocarbons, but these are not included in the table.

The Euro 6 standards for NO<sub>x</sub> that are to apply as from 2014 are substantially more lenient than the US standards currently being phased in. This is even more surprising in light of the serious problems that many European cities are having in meeting the limit values for nitrogen dioxide, as well as the public statements from several major European manufacturers that their diesel models will have no difficulty complying with the US limits.

Jos Dings, director of T&E, commented: "The European Parliament has thrown away the opportunity to fix many of Europe's severe urban air quality problems using technologies that are already available. Instead, Europeans will have to wait until 2015 to buy a diesel car as clean as those already on sale in America."

Member states will be able to offer financial incentives for the purchase of vehicles meeting the Euro 5 and 6 standards before the standards actually come in to force. Earlier introduction is therefore possible, but at the expense of tax payers rather than the automotive industry.

Sources: *Car Lines* 2006-6 and *Ends Europe Daily*, 7 December 2006.

## Euro standards for cars in brief

The first set of modern European emission standards, Euro 1, was agreed in 1991 and entered into force in 1993, and led to widespread introduction of three-way catalytic converters in petrol cars. Cars currently sold within the EU comply with Euro 4 standards.

In terms of environmental and technological impact, the Euro 5 and 6 standards are most significant for diesel cars. These now have to 'catch up', as the air pollution impact of new petrol cars is currently lower than that of new diesel cars. Euro 6 will partly close that gap, but not completely.

As regards NO<sub>x</sub>, the current Euro 4 standard for diesel cars is 250 mg/km. Euro 5 would tighten this to 180, and Euro 6 to 80 mg/km by 2014. The Euro 6 standards could force application of NO<sub>x</sub> emission control technology, such as lean NO<sub>x</sub> traps (LNT) or Selective Catalytic Reduction (SCR).

The American state of California, along with ten other states (representing over 30 per cent of US car sales) has a *current* NO<sub>x</sub> standard of approximately 40 mg/km. This implies that Euro 6-compliant cars (on the EU market from 2014) would not qualify to be sold across the United States today.

According to the official Impact Assessment of the European Commission, the combined cost of the Euro 5 and 6 standards for diesel cars would be 590 euro per car. Past impact assessments have as a rule overestimated compliance costs. For example, three-way catalytic converters were estimated in the late 1980s to cost around 700 euro, while their current cost is about 10 times lower.

The Euro standards do *not* address emissions of carbon dioxide.

Further reading: <http://www.transportenvironment.org/Article306.html>



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The Treint glacier in Switzerland, one of many vanishing glaciers all over the world.

IPCC FOURTH ASSESSMENT REPORT

# Evidence for human-caused global warming unequivocal

EVIDENCE that human activities are causing the planet to warm up is now “unequivocal”, the United Nations Intergovernmental Panel on Climate Change (IPCC) says in its first full assessment of the science behind climate change since 2001.

The most significant new finding in the fourth assessment report is that researchers are now much more certain that human activity is responsible for warming. The reliability of the assessment has increased as a result of extensive research that has clarified former areas of doubt.

In 2001, the panel said it was “likely” that human activities lay behind the trends observed in various parts of the planet. “Likely” in IPCC terminology means between 66

and 90 per cent probability. Now, the panel concludes, it is at least 90 per cent certain (“very likely”) that human emissions of greenhouse gases, rather than natural variations, are warming the planet’s surface.

The IPCC has this to say about developments to date:

□ The mean global temperature has risen by 0.74°C over the last 100 years (1906–2005). Over the last fifty years the rate of increase has risen to around 0.13°C per decade. Average Arctic temperatures increased at almost twice the global average rate in the past 100 years.

□ The biggest single impact on the climate that results from human activities comes from emissions of carbon dioxide. This is produced by

burning fossil fuels, particularly coal and oil, but also through changes in land use. The level of carbon dioxide in the atmosphere has risen by over 35 per cent since the mid-nineteenth century (from around 280 ppm in 1850 to 379 ppm in 2005).

□ Levels of other greenhouse gases (methane and nitrous oxide) have also risen at the same time as a result of human activities, especially agriculture.

□ The combined radiative forcing of the increases in carbon dioxide, methane and nitrous oxide is +2.30 W/m<sup>2</sup>, and its rate of increase during the industrial era is *very likely* to have been unprecedented in more than 10,000 years. Other gases that contribute to global warming include



Unnecessary sign in the future?

ozone (+0.35) and halocarbons (+0.34).

□ However, there are also human-produced emissions into the atmosphere that lower the surface temperature of the Earth and so counteract some of the warming, such as sulphur particles, which are produced by burning coal and oil. These are estimated to produce an overall cooling effect equivalent to  $-1.2 \text{ W/m}^2$ . Although more reliable background data now exists, there is still some uncertainty about the precise climate effects of these particles.

□ The combined effect of the rise in greenhouse gas and particle levels and change in surface albedo between 1750 and 2005 is an additional net heat input of  $1.6 \text{ W/m}^2$  (+0.6 to +2.4) at the surface.

□ Between 1961 and 2003 the oceans of the world have risen by almost eight centimetres. This rise is partly due to seawater expanding as a result of the warming of the oceans (down to a depth of 3,000 metres) and partly due to the melting of glaciers.

□ Over the period 1993–2003 the rate at which the seas are rising has increased to around twice the rate for the previous forty years. This increase is due mainly to increasing expansion of seawater as a result of warming.

□ Long-term trends from 1900 to 2005 have been observed in the amounts of precipitation over many large regions. Significantly increased precipitation has been observed in eastern parts of North and South America, northern Europe and northern and central Asia. Drying has been observed in the Sahel, the Mediterranean, south-

ern Africa and parts of southern Asia.

□ Some extreme weather events have

become more frequent, while others have become less frequent. Examples include a fall in the number of cold winter nights and days with frost over land areas, while at the same time there have been increases in the number of hot summer days and warm summer nights. Both these trends are probably due to the enhanced greenhouse effect.

□ One conclusion that could have clear political repercussions is that it is now considered *likely* (between 66 and 90 per cent probability) that very severe Atlantic hurricanes have become more frequent. This is a politically sensitive issue in the United States, since hurricanes are a natural phenomenon that generally hit the US hardest of all. The Bush administration has denied the link between emissions and climate change for a long time, although its tone has begun to change recently.

The response of the climate system to changes in radiative forcing – the climate sensitivity – can now be forecast with greater certainty. If the levels of greenhouse gases in the atmosphere stabilize at twice pre-industrial levels it is considered *likely* that the average temperature at the Earth's surface will rise by 2.0–4.5°C, with 3°C as the best estimate. It is considered *very unlikely* that the rise will be less than 1.5°C, while a rise of more than 4.5°C cannot be ruled out.

Note that these figures refer to a future equilibrium state. The inertia of the climate system means that the full effects will not be seen for several hundred years.

Most forecasts of future emissions, and all the scenarios the IPCC uses in its report, assume that levels of

greenhouse gases in the atmosphere will increase sharply compared to the present. None of the IPCC's scenarios make any assumptions regarding international agreements to limit emissions.

In the lowest emission scenario, B1, it is assumed that technical and social development permits the reduced use of fossil fuels. In this case the carbon dioxide level is expected to continue rising, but to stabilize at a level that is roughly twice the pre-industrial level.

The highest emission scenario, A1FI, assumes continued use of fossil fuels and hence a continued rapid rise in the carbon dioxide level. By 2100 the carbon dioxide concentration is forecast to be around three times higher than the pre-industrial level.

Climate simulations were carried out for the period 1990–2095. In the case of the lower emission scenario (B1) these show a rise in the mean global temperature of 1.8°C from the present level, with an uncertainty range of 1.1 to 2.9°C. The higher emission scenario (A1FI) gives a temperature rise of 4.0°C with an uncertainty range of 2.4 to 6.4°C.

One new factor introduced in some models is feedback between the natural carbon cycle and physical climate changes. Rising temperatures may lead to reduced land and ocean uptake of carbon dioxide. This is one of the main reasons why several scenarios give a higher limit for the uncertainty range in comparison with the 2001 IPCC report.

The IPCC also described what could happen if concentrations of greenhouse gases in the atmosphere are stabilized at year 2000 levels. The temperature rise by 2100 would then be around 0.6°C (0.3–0.9°C) above the current level, i.e. 1.3°C above the pre-industrial level.

The sea level will also continue to rise. The lowest emission scenario (B1) predicts a rise of between 0.18 and 0.38 metres, while the highest scenario indicates between 0.26 and 0.59 metres by 2100, compared to present levels. These calculations do not take into account the risk of accelerated glacial melting in Greenland and the Antarctic that could result from continued warming. Such processes could give an additional increase in sea level of 0.1–0.2 metres.

Warming will not be distributed

## “Reduce perverse incentives”

A cross-party committee in the Australian parliament has put forward a number of recommendations for national transport policy in light of the threat of rising oil prices.

“By far the quickest and most cost-effective means of responding to the long-term issues of peak oil and climate change is to make gains on the demand side. The Committee made several important, although hardly revolutionary recommendations: increase fuel efficiency of vehicles, investigate congestion charging, support use of rail for long-distance freight and review fringe benefits taxation to reduce perverse incentives for car use.”

*Further reading:* [www.aph.gov.au/senate/committee/rrat\\_ctte/oil\\_supply/index.htm](http://www.aph.gov.au/senate/committee/rrat_ctte/oil_supply/index.htm)

## Business leaders want action

Climate change is “an urgent problem that requires global action,” according to a joint statement issued by the leaders of more than 90 major international corporations and organizations, including Citigroup, General Electric, Rolls Royce, Volvo and the World Council of Churches. Representatives of the global insurance industry also endorsed the statement, citing climate change as a growing risk to business and society.

The statement calls on governments to set new targets for reducing greenhouse gas emissions and enact bold policies to increase energy efficiency. The signatories recommend the setting of a global price on emissions of carbon dioxide, and cooperation on a new international agreement to replace the Kyoto Protocol.

*Source:* Environment News Service, 22 February.

## Dirty vehicles banned

The city of Milan has, for a trial period, banned 170,000 older cars and scooters that do not pass strict environmental standards from the city centre, after doctors warned that fumes were contributing to the deaths of hundreds of Milanese citizens every year. The ban is expected to last until mid-April, but Mayor Moratti also wants to introduce a “pollution charge” for drivers who enter the central area of the city and improve public transport. Milan regularly features as one of the most polluted cities in Europe.

*Source:* T&E Bulletin No 155, February 2007.

uniformly around the world. Over the Arctic and land masses in the northern hemisphere, warming will be significantly greater. In fact over the Arctic it will be roughly twice as high as the global mean. Over the seas of the southern hemisphere and in the north Atlantic, warming will be less than the global mean. The latter is linked to weakening of the Gulf Stream, which will mean that less heat is transferred to the sea areas around Iceland and southern Greenland. It is however highly unlikely that warming will lead to a sudden collapse of the Gulf Stream.

It is *very likely* that precipitation will increase at high latitudes, such as Europe and America, and *likely* that it will decrease over most subtropical land regions. The pattern of these changes is similar to what has been observed during the 20th century.

It is *very likely* that hot extremes, heat waves, and heavy precipitation events will continue to become more frequent. Sea ice is projected to shrink in both the Arctic and Antarctic under all scenarios. In some projections, Arctic late-summer sea ice disappears almost entirely by the latter part of the 21st century.

It is likely that the frequency of severe tropical cyclones will increase as the climate gets warmer. There is a tendency for the westerly wind belt to shift northwards, with the consequence that low pressure corridors and precipitation patterns are also shifted north.

Continued warming and rising of the sea level is likely after 2100 even if the concentrations of greenhouse gases in the atmosphere are stabi-

lized. Among other things, this means that the melting of the Greenland ice sheet will continue. Global warming of between 1.9 and 4.6°C compared with the pre-industrial level – which is not at all improbable – could lead to the entire Greenland ice sheet melting within a few thousand years. This would cause the sea level to rise seven metres and submerge many cities around the world.

The Antarctic ice sheet would be likely to grow in a warmer climate since much of the ice sheet is still colder than zero degrees. It is however possible that large masses of ice will break loose as the climate warms. This will lead to sudden ice losses and rises in sea level.

Future emissions of carbon dioxide over the next century will remain in the atmosphere for more than a thousand years and contribute to the continued warming and rising of the sea level.

Increasing atmospheric carbon dioxide concentrations also lead to increasing acidification of the ocean. Projections give reductions in average global surface ocean pH of between 0.14 and 0.35 units over the 21st century, adding to the present decrease of 0.1 units since pre-industrial times.

PER ELVINGSON

*Sources:* Summary for Policymakers for IPCC Working Group I, and a summary provided by Prof. Erland Källén, Stockholm University.

*Further reading:* The Summary for Policymakers for IPCC Working Group I can be downloaded at [www.ipcc.ch](http://www.ipcc.ch). The full underlying report – “Climate Change 2007: The Physical Science Basis” – will be published by Cambridge University Press.

## IPCC in brief

IPCC, the Intergovernmental Panel on Climate Change, was set up in 1988 by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) to provide a comprehensive review of the scientific, technical and socio-economic literature related to climate change. It published its previous comprehensive, three-volume reports in 1990, 1995 and 2001.

The first part of the fourth assessment report, published in Paris on 2 February, assesses the current scientific knowledge of the natural and human drivers of climate change, observed changes in climate, the ability of science to attribute changes to different causes, and projections for future climate change. It was produced by some 600 authors from 40 countries. Over 620 expert reviewers and a large number of government reviewers also participated.

The Working Group II report on climate impacts and adaptation will be launched in Brussels on 6 April. The Working Group III report on mitigation will be launched in Bangkok on 4 May. A Synthesis Report will be adopted in Valencia, Spain on 16 November.

# Cleaner fuels high on the agenda

Substantial benefits to switch from heavy bunker to lighter distillate fuel oil.

THE PROPOSAL by the shipping industry group Intertanko for all ships to switch from conventional heavy fuel oil to lighter distillate fuel oil by 2010, which was presented at an international meeting in Oslo last November (see AN 4/06), remains high on the agenda.

This and other proposals to reduce emissions of air pollutants from ships will be debated by the so-called BLG subcommittee to the Marine Environment Protection Committee (MEPC) of the International Maritime Organization (IMO), to be held in London 16–20 April.

Much of the focus of the debate is likely to be on the idea of a global fuel switch for shipping. Several countries, including the US, Sweden and Norway, as well as environmentalist groups, have expressed general support for the proposal. Not surprisingly, the oil industry has so far been opposed, claiming that the required scale of construction of conversion units in the refining industry is not possible to complete even within a 10-year timescale.

According to the oil industry, the total investment costs in the EU alone would be in excess of US\$ 38 billion, a figure that would be several times higher if extrapolated globally.

Moreover, the industry concludes that the additional internal energy demand for conversion and other refinery processes would result in increased emissions of carbon dioxide. Part of this increase would be recouped when burning distillate fuel, but the net increase from refineries in the EU is estimated at some 21 million tons per year.

Clearly, the proposal by Intertanko would also produce substantial environmental benefits. Not only would the use of low-sulphur distillate fuel reduce emissions of sulphur dioxide (SO<sub>2</sub>) and fine particles (PM) significantly, it would also allow the more effective use of advanced emission control devices, such as selective catalytic reduction (SCR) to reduce emis-

sions of nitrogen oxides (NO<sub>x</sub>).

Other benefits pointed out e.g. by Sweden include:

- Simplifying compliance monitoring and control.
- Decreasing costs for cleaning up accidental and deliberate oil spills.
- Eliminating need for various fuel treatment installations on board.
- Reducing the amount of fuel-generated waste.
- Eliminating possible risk of fuel incompatibilities that may occur for vessels switching fuels when entering SECAs, thus improving safety.

Switching to distillate fuels would no doubt result in a higher fuel price, which in itself would act as an incentive to improve the energy efficiency of the shipping transport system. Resulting reductions in fuel consumption would also mean lower emissions of carbon dioxide and other air pollutants, a factor not accounted for in the calculations by the oil industry.

The discussion on future SO<sub>2</sub>-related measures is likely to be split into two basic options. One would be to keep the current regulation structure, but lower the sulphur limit in sulphur emission control areas (SECAs) from the current 1.5 per cent to say 0.5 per cent, or, in the longer term, even lower levels. A variant of this option would be to reduce the global sulphur cap as well.

An alternative option would be to follow the proposal by Intertanko and require a global fuel switch from residual to distillate fuel with a maximum sulphur content of 1.0 or 0.5 per cent. A significant variant of this could be to still allow the use of residual fuel and/or apply alternative methods (such as flue gas scrubbing) that meet equally strict SO<sub>2</sub> emission limit values.

The discussion on future NO<sub>x</sub> standards is still a bit vague, but there appears to be wide support for a two-stage approach to *new* engine standards, with so-called Tier II standards to be effective around 2010, and Tier III standards around 2015.

The Tier II standards may be limited to in-engine modifications, producing reductions of only 10–25 per cent.

Regarding Tier III, some countries want to prescribe emission reductions of 70–80 per cent or more, which with currently available technologies would mean applying either humid air motor (HAM) or flue gas treatment, such as selective catalytic reduction (SCR). If the future requirements for new ship engines are limited to reductions of 40–50 per cent, such levels could most likely be met solely by in-engine measures.

A possible alternative – or additional variant – is to apply very strict NO<sub>x</sub> standards only in geographically defined areas, either along the lines of designated emission control areas, or a coastal zone pre-defined at a fixed distance from shore.

Proposals tabled so far regarding global standards to promote NO<sub>x</sub> reductions from *existing* ships have been very moderate, pointing to a reduction potential of about 20 per cent (through in-engine measures) – possibly with exemptions for certain types of engines.

Discussions on PM reductions have not yet progressed very far, although there appears to be general agreement that one main option for reducing PM emissions is to reduce sulphur limits in the fuel. However, the US recently proposed PM emission standards of 0.2–0.5 grams per kilowatt-hour (g/kWh) to apply to ships operating within defined coastal areas, for example 200 nautical miles from land, and to be combined with an SO<sub>2</sub> emission standard of 0.4 g/kWh – a limit that is equivalent to a sulphur content of 0.1 per cent.

The aim of the BLG meeting in April is to agree on recommendations that are as specific as possible, and submit these to the full MEPC, which will meet in July 2007. MEPC will then consider the new draft standards for approval.

CHRISTER ÅGREN



## New rules to cut ship and train emissions

ON 2 MARCH the US Environmental Protection Agency proposed a new rule to significantly reduce air pollution from locomotive and marine diesel engines.

When fully implemented, emissions of particulate matter and nitrogen oxides from these engines would be cut by 90 and 80 per cent, respectively. This would result in annual health benefits of US\$12 billion in 2030 and reduce premature deaths across the US. These benefits would continue to grow as older locomotive and marine engines are replaced. Overall benefits are estimated to outweigh costs by more than 20 to 1.

Emissions will be cut from all types of diesel locomotives, including line-haul, switch, and passenger rail, as well as from a wide range of marine sources, including ferries, tugboats, yachts and marine auxiliary engines. This includes small generator sets to large generators on ocean-going ships. The rules for ships apply to US-flagged or US-registered vessels, but not long-haul commercial liners.

The proposals to cut emissions from diesel-powered ships and trains come on top of federal laws that took effect in 2006, requiring diesel-engine trucks and cars to use fuel with ultra-low sulphur content. New trucks are also required to be equipped with diesel particulate filters, which combined with the cleaner fuels, should cut particulate emissions by 90 per cent or more. US ships and trains will start using the ultra-low sulphur diesel fuel by 2012.

The rules would call for old locomotives to start using new emission control technology between 2008 and 2010, and newly manufactured train and ship engines to apply the standards starting in 2009. By 2014, marine diesel engines would be required to use new, highly efficient catalytic converters, with locomotive diesel engines following in 2015.

*Further information, locomotives:* [www.epa.gov/otaq/locomotv.htm](http://www.epa.gov/otaq/locomotv.htm). *Clean Diesel Marine:* [www.epa.gov/otaq/marine.htm](http://www.epa.gov/otaq/marine.htm)

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SHIPPING

## Growing emissions

Emission reductions that would result from most of the proposals currently discussed would be completely offset by emission increases resulting from projected growth in shipping traffic.

AIR POLLUTION from ocean-going ships represents some 15–30 per cent of global emissions of nitrogen oxides (NO<sub>x</sub>) and 5–7 per cent of global sulphur dioxide (SO<sub>2</sub>) emissions, and is projected to grow at a rate of about 4 per cent a year up to 2040, according to a new study<sup>1</sup> on global ship emissions.

Another study<sup>2</sup> on shipping emissions inventories and growth projections for North America shows that energy used by ships bringing global

trade to and from that region will double before 2020 – some scenarios even predict doubling before 2015.

### Global emissions

The global emissions inventory presents updated global inventories of emissions from international cargo shipping, and projects future shipping emissions. For the base year 2002, global emissions from cargo ships were estimated at 16.4 million

*Continued overleaf*

Continued from previous page

tons of NO<sub>x</sub>; 9.4 million tons of SO<sub>2</sub>; 1.2 million tons of PM<sub>10</sub>; 574,000 tons of hydrocarbons (expressed as methane); 1.1 million tons of carbon monoxide (CO); and 176 million tons of carbon dioxide (expressed as carbon).

This suggests that NO<sub>x</sub> and SO<sub>2</sub> pollution from ocean-going ships represent some 15–30 per cent of global NO<sub>x</sub> emissions and 5–7 per cent of global SO<sub>2</sub> emissions, while fuel usage ranges between 2–4 per cent of annual global fossil fuel consumption.

According to the study, a common belief is that technological change improves energy efficiency – i.e. reduces energy intensity – over time. In fact, the opposite trend is observed in ocean freight over the past 20–30 years, where fleet installed power has grown rapidly. This means that ocean shipping may have become more energy intensive, not more energy conserving.

The assumed explanation is that globalization produced longer shipping routes, and containerization serves just-in-time schedules. Both of these drivers provided economic justification for larger and faster ships, which require greater power to perform their service.

After considering various approaches for estimating future growth in shipping emissions, the study based its forecasts on projected growth rates of installed power, adjusted downward for potential efficiency improvements. The outcome was a projected world average growth rate in shipping of 4.1 per cent per year up to 2040 – a finding that is essentially similar to other studies relating growth in seaborne trade.

Future shipping emissions were projected for a number of scenarios, including:

- A business-as-usual (BAU) scenario with a growth from the baseline inventory by 4.1 per cent per year, and adjusting for existing IMO Annex VI regulations that require reduced NO<sub>x</sub> emissions for post-2000 ships and reduced sulphur emissions in the two SECAs designated to date.
- Scenarios that assumed a 2010 global marine fuel sulphur reduction from the current average of 2.7 per cent down to 1.5, 1.0 and 0.5 per cent, respectively.
- A BAU scenario and a 2010 1.5-per-cent global marine fuel sulphur scenario that each assumed a 3-per-cent annual growth rate.

The forecast SO<sub>2</sub> emissions from these scenarios are summarized in Table 1.

### North American emissions

The North American emissions inventory established both a baseline 2002 emissions inventory for the North American domain and coastal regions therein (domain areas of Canada, Mexico and the USA within 200 nautical miles of the coast), and a forecast of future ship emissions under a business as usual scenario and under hypothetical sulphur emission control area (SECA) scenarios.

Within the North American domain, total SO<sub>2</sub> and NO<sub>x</sub> emissions in 2002 were about 1.6 and 2.7 million tons, respectively. These inventories do not include emissions produced at port or while operating in inland waterways.

The projected growth in shipping emissions within this region was 5.9 per cent per year, which is higher than the forecast global growth rate. This forecast was found to be consistent with other independent forecast approaches – the report states that:

*“using 2002 as a base year, these models agree under BAU scenarios that energy used by ships bringing global trade to and from North America will double by or before 2020; some scenarios predict doubling before 2015.”*

When forecasting emissions while assuming hypothetical SECAs with respectively 1.5 and 0.5 per cent marine fuel sulphur caps in place, it was found that emission reductions and associated health effects and/or other impacts will return to 2002 levels within one or two decades.

In fact the projected emissions would outpace reductions from the 1.5-per-cent sulphur cap as early as 2012. Using lower growth rates, SO<sub>2</sub> emissions within a North American SECA would return to 2002 levels by 2019.

A lower sulphur cap of 0.5 per cent would produce longer-lasting emission reductions, up to the early 2030s under a 5.9 per cent annual growth rate, or to about 2050 under a 3.7 per cent annual growth rate.

The results of these new inventories provide additional evidence that shipping emissions are significant and growing rapidly. In fact, emission reductions that would result from most of the initial proposals currently discussed in the International Maritime Organisation (IMO) would be completely offset by aggregate emission increases resulting from projected growth in shipping traffic over the next decade or two.

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<sup>1</sup> **Allocation and Forecasting of Global Ship Emissions.** by James J. Corbett, Cheng-feng Wang, James J. Winebrake and Erin Green. Commissioned by the Clean Air Task Force. Available at [www.acidrain.org/pages/policy/sub6\\_4.asp](http://www.acidrain.org/pages/policy/sub6_4.asp).

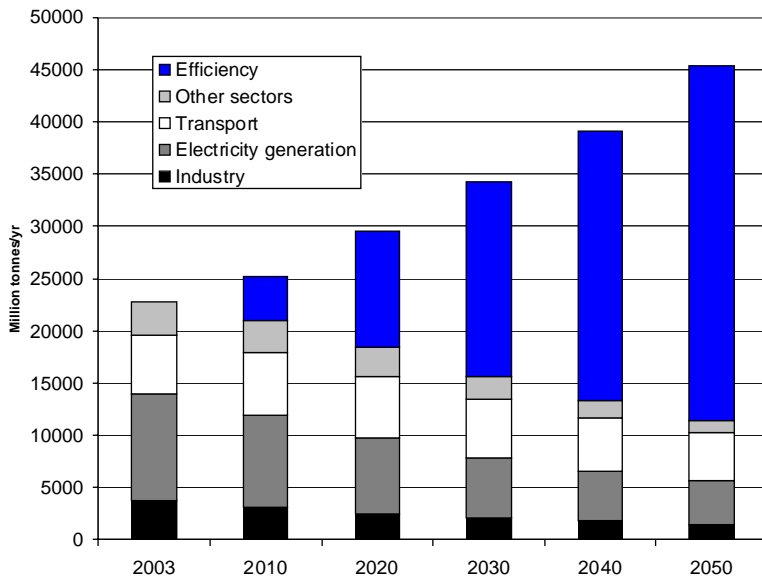
<sup>2</sup> **Estimation, Validation and Forecasts of Regional Commercial Marine Vessel Inventories.** Study prepared for the California Air Resources Board, the California Environmental Protection Agency, and the Commission for Environmental Cooperation in North America. By James J. Corbett, C. Wang, and J. Firestone. Tasks 1 and 2 of the North American emissions inventory are available at: <http://www.arb.ca.gov/research/seca/jctask12.pdf>. Tasks 3 and 4 are available at: <http://www.arb.ca.gov/research/seca/jctask34.pdf>

**Table 1: Projected SO<sub>2</sub> emissions from shipping under different BAU and global sulphur-control scenarios (million tons SO<sub>2</sub>).**

	2002	2010	2015	2020	2025	2030
BAU: 4.1% growth (new study)	9.4	13.0	15.9	19.5	23.8	29.1
1.5% sulphur fuel and 4.1% growth	9.4	7.2	8.8	10.8	12.2	16.2
1.0% sulphur fuel and 4.1% growth	9.4	4.8	5.9	7.2	8.8	10.8
0.5% sulphur fuel and 4.1% growth	9.4	2.4	2.9	3.6	4.4	5.4
BAU: IMO GHG study growth (3%)	9.4	12.0	13.9	16.1	18.6	21.6
1.5% sulphur fuel and 3% growth	9.4	6.6	7.7	8.9	10.4	12.0

# A global energy strategy for tackling climate change

Global carbon dioxide emissions could be halved by 2050, according to study.



**Development of global carbon dioxide emissions by sector under the Energy [R]evolution scenario.** Efficiency = reduction compared to the reference scenario.

IF WE USE ENERGY more efficiently, half of the world's energy needs could be supplied from renewable sources by 2050, and carbon dioxide emissions could be halved, according to a report<sup>1</sup> produced by the European Renewable Energy Council (EREC) and Greenpeace International.

The report is said to be "a practical blueprint" for how to cut global CO<sub>2</sub> emissions by almost 50 per cent within the next 43 years, whilst providing a secure and affordable energy supply and maintaining steady worldwide economic development.

The plan takes into account rapid economic growth areas such as China, India and Africa. It concludes that renewable energies will represent the backbone of the world's economy, not only in OECD countries, but also in developing countries such as China, India and Brazil. Renewable energy will, according to the study, deliver nearly 70 per cent of global electricity needs and 65 per cent of global heating needs by 2050. At present, renewable energy only makes up 15 per cent of the global energy mix.

The report says energy demand in 2050 could be halved compared with the International Energy Agency's (IEA) business-as-usual forecast. Carbon dioxide emissions could also be halved. Both could be achieved while at the same time phasing out nuclear power.

However, the report also highlights the short time window for making the key decisions in energy infrastructure. Within the next few years governments, investment institutions and utility companies have to act. Within the next decade, many of the existing power plants in the OECD countries will come to the end of their technical lifetime and will need to be replaced, whilst developing countries such as China, India and Brazil are rapidly building up new energy infrastructure to service their growing economies.

Arthouros Zervos, president of the European Renewable Energy Council (EREC) said: "The global market for renewable energy can grow at a double digit rate till 2050, and achieve the size of today's fossil fuel

industry. We therefore call on decision makers around the world to make this vision a reality. The political choices of the coming years will determine the world's environmental and economic situation for many decades to come. Renewable energy can and will have to play a leading role in the world's energy future. There is no technical but a political barrier to make this shift."

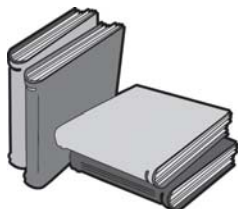
EREC and Greenpeace think the electricity sector will lead the way, followed by heating and finally transport. They assume that oil will cost US\$100 per barrel by 2050, which will speed up the changeover. In its scenario the IEA assumes a price of just US\$55 a barrel by 2030. The report also assumes that governments will impose a global price on emissions of CO<sub>2</sub>, the main greenhouse gas released primarily by burning fossil fuels. The study estimated a carbon price of US\$50 per tonne by 2050.

The groups urge a phase-out of subsidies for fossil fuels and nuclear power, binding targets for renewables, priority grid access for renewables providers, and energy efficiency standards for all energy-using products, vehicles and buildings.

The report was produced in conjunction with specialists from the Institute of Technical Thermodynamics at the German Aerospace Centre (DLR) and more than 30 scientists and engineers from universities, institutes and the renewable energy industry around the world. It gives a detailed analysis of how to restructure the global energy system based only on a detailed regional assessment for the potential of proven renewable energy sources, energy efficiency and the utilization of efficient, decentralized cogeneration.

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<sup>1</sup> **Energy [R]evolution: A sustainable World Energy Outlook.** Study and background material available at [www.energyblueprint.info](http://www.energyblueprint.info).



## Recent publications

### Cutting Transport CO<sub>2</sub> Emissions

Analyzes the policies that deliver the biggest cuts in transport CO<sub>2</sub> emissions and finds that efficiency is what counts most. Industry has to deliver more efficient products but government has to help. Most urgent is to provide tax incentives big enough to get large numbers of car buyers to choose low-emission models.

In the very long term, alternative fuels for transport are the only way to make big cuts in emissions but the report urges caution in the way support is provided, particularly to biofuels. Most ethanol and biodiesel currently produced in OECD countries saves very little in greenhouse gas emissions. Scaling up production could have serious impact on the environment and on international grain prices, hurting poor countries. Subsidies ought to be proportional to the well-to-wheels CO<sub>2</sub> emissions savings really achieved by each kind of biofuel – giving support only to the cleanest of these new fuels.

The report examines over 400 policies for cutting CO<sub>2</sub> emissions from planes, trains, automobiles, trucks and ships, adopted by governments among the world's 50 most developed countries.

228 pp. 49 euro. ISBN 92-821-0382-X. Published by ECMT, European Conference of Ministers of Transport. Can be ordered from OECD, [www.oecd.org](http://www.oecd.org).

### Bird Species and Climate Change

A status report compiled for WWF reviews more than 200 scientific articles. It finds a clear and escalating pattern of climate change impacts on bird species around the world, suggesting a trend towards a major bird extinction from global warming.

Published by WWF in November 2006. Available in pdf format free of charge at [www.panda.org](http://www.panda.org) (choose Climate change > Publications).

### Win-Win Emission Reduction Strategies

By Todd Litman, Victoria Transport Policy Institute. Smart transportation strategies can achieve emission reduction targets and provide other important economic, social and environmental benefits, according to this report.

13 pp. Can be downloaded at <http://www.vtpi.org>.

Frimmersdorf, Germany



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# Coal-fired plants worst point sources

COAL-FIRED POWER PLANTS dominate the twenty worst emitters, not only of carbon dioxide but also of sulphur dioxide and nitrogen oxides, in the 25 “old” EU member countries.

Seven plants are among the 25 worst on all three lists. They are Belchatow, Rybnik and Kozienc in Poland, Cottam and Longannet in the UK, Puentes in Spain and Taranto in Italy. Note that all data refer to 2004.

### Carbon dioxide

German plants are among the worst in respect of carbon dioxide – nine of the 25 biggest point sources are in Germany. However, the list is topped by Belchatow in Poland, which burns brown coal and emits a massive 31 million tonnes of carbon dioxide each year. There are also several large point sources in the UK. Of the 25 largest emitters, 23 were power plants.

### Sulphur dioxide

Topping the list for sulphur dioxide is the coal-fired Puentes power plant in the northwest of Spain. The plant is also high on the list for carbon dioxide and nitrogen oxides.

Second highest as regards sulphur dioxide is the Megalopolis A (I, II, III)

complex on the Peloponnesian peninsula in Greece. Close by is Megalopolis B (IV), also on the worst 25 list. All are fired with lignite from local deposits.

Third on the sulphur list is yet another Spanish power plant – at Teruel in the northeast of the country – and there are three more Spanish plants among the 25 greatest emitters of sulphur dioxide.

Seven of those on the list are British plants. It is worth noting on the other hand that, owing to strict national regulations, there is not a single German plant there – despite the fact that Germany has several of the largest coal-fired power plants in the EU25. Twenty-four of the twenty-five largest emitters of sulphur dioxide in the EU25 are power plants.

### Nitrogen oxides

British plants account for nine of the 25 worst emitters of nitrogen oxides. There are two German plants lower down on the list. One of them is Jänschwalde, which is also the third largest emitter of carbon dioxide in the EU25. Of the 25 largest sources of nitrogen oxides, 24 were power plants.

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Further information: [www.eper.ec.europa.eu/eper](http://www.eper.ec.europa.eu/eper)

## 25 largest point sources of airborne CO<sub>2</sub> in the EU25.

Name	Country	Emissions (million tonnes)	Type of facility
Belchatów	Poland	31.4	PS
Niederaussem	Germany	27.6	PS
Jänschwalde	Germany	24.9	PS
Frimmersdorf	Germany	21.9	PS
Drax	UK	20.5	PS
Neurath	Germany	20.1	PS
Weisweiler	Germany	20.0	PS
Boxberg	Germany	15.9	PS
Federico II (Brindisi)	Italy	15.8	PS
Agiou Dimitriou	Greece	13.5	PS
Scholven	Germany	12.9	PS
Lippendorf	Germany	12.2	PS
Turów	Poland	12.0	PS
Sollac Atlantique Dunkerque	France	11.9	metal
Kardias	Greece	11.0	PS
Schwarze Pumpe	Germany	10.9	PS
Puentes	Spain	10.7	PS
Rybnik	Poland	9.6	PS
Taranto	Italy	9.6	metal
Kozienice	Poland	9.5	PS
West Burton	UK	9.2	PS
Ratcliffe on Soar	UK	9.2	PS
Cottam	UK	9.0	PS
Longannet	UK	8.8	PS
Eesti	Estonia	8.7	PS

## 25 largest point sources of airborne SO<sub>2</sub> in the EU25.

Name	Country	Emissions (000 tonnes)	Type of facility
Puentes	Spain	312	PS
Megalopolis I.II.III	Greece	209	PS
Teruel	Spain	163	PS
Belchatów	Poland	140	PS
Patnów	Poland	88	PS
Compostilla	Spain	72	PS
Cottam	UK	67	PS
Meirama	Spain	63	PS
Kozienice	Poland	57	PS
Sines	Portugal	57	PS
La Robla	Spain	52	PS
Rybnik	Poland	48	PS
Eesti	Estonia	47	PS
Oroszlányi	Hungary	45	PS
Eggborough	UK	44	PS
Nováky	Slovakia	42	PS
Ferrybridge	UK	41	PS
Longannet	UK	41	PS
Taranto	Italy	41	metal
Kingsnorth	UK	37	PS
Amyntaioy	Greece	36	PS
West Burton	UK	36	PS
Megalopolis IV	Greece	34	PS
Aberthaw	UK	34	PS
Turów	Poland	33	PS

## EPER in brief

The figures in the tables come from EPER, the European Pollutant Emission Register, which was launched by the EU Commission and the European Environment Agency in 2004. At that time it covered the EU15 and provided emission data for 2001. Recently it was updated with 2004 figures and expanded to cover the whole EU25.

Today, EPER covers about 11,500 industrial facilities in the EU25 countries, as well as Norway. Data for 2001 is also available for EU15 facilities.

EPER is easy to use. From the first page, [www.eper.ec.europa.eu/eper/](http://www.eper.ec.europa.eu/eper/), just select your country (or EU25) in the left hand column. It is also possible to see detailed data on individual facilities. You can also search by name or by clicking on a map.

For the third reporting year in 2007, EPER will be replaced by the European Pollutant Release and Transfer Register (European PRTR). The European PRTR will be more comprehensive than EPER since it will cover more than 91 substances emitted from industrial installations in 65 different sectors of activity (compared to 50 substances and 56 sectors under EPER). The European PRTR will also be published annually, a much shorter time period than the triennial reports under EPER. Data on emissions from diffuse sources such as road traffic, agriculture, domestic heating, shipping, etc. will also be included.

## 25 largest point sources of airborne NO<sub>x</sub> in the EU25.

Name	Country	Emissions (000 tonnes)	Type of facility
Drax	UK	58	PS
Belchatów	Poland	40	PS
Compostilla	Spain	36	PS
Teruel	Spain	31	PS
Taranto	Italy	28	metal
Aberthaw	UK	24	PS
La Robla	Spain	24	PS
Sines	Portugal	23	PS
Ratcliffe on Soar	UK	23	PS
West Burton	UK	23	PS
Cottam	UK	22	PS
Agiou Dimitriou	Greece	22	PS
De Velilla	Spain	21	PS
Kingsnorth	UK	20	PS
Moneypoint	Ireland	20	PS
Kardias	Greece	20	PS
Ferrybridge	UK	20	PS
Longannet	UK	19	PS
Puentes	Spain	19	PS
Kozienice	Poland	19	PS
Eggborough	UK	19	PS
Rybnik	Poland	19	PS
Aboño	Spain	17	PS
Jänschwalde	Germany	17	PS
Niederaussem	Germany	16	PS

# Fifteen ratifications on the way

Dutch support to Balkan countries will result in reduced emissions and improved cooperation.

THE NETHERLANDS will provide economic incentives of 600,000 euro in order to stimulate five Balkan countries – Albania, Bosnia and Herzegovina, Macedonia, Montenegro, and Serbia – to ratify and implement the three most recent protocols<sup>1</sup> to the Convention on Long-range Transboundary Air Pollution (LRTAP).

Nearly all the 56 member countries of the UN Economic Commission for Europe (UNECE), which includes all the European countries, the United States, Canada and the the European Community, are party to the Convention.

Of the total 51 parties, those that have ratified the three most recent protocols are mostly countries with developed economies. Countries with “economies in transition” are lagging behind, for various reasons. Sometimes their existing legislative framework is not suited for incorporating the measures prescribed by the protocols. Another sticking point is insufficient capacity – both technical and also within the civil service and government authorities.

In order to help overcome these problems, two years ago the Convention’s Executive Body presented an action plan for the so-called EECCA countries (Eastern Europe, the Caucasus and Central Asia), to assist their participation in the Convention activities and in implementing and ratifying Convention protocols.

In addition, the UNECE has developed the CAPACT project (Capacity Building for Air Quality Management and the Application of Clean Coal Combustion Technology in Central Asia), financed by the UN Development Account. It is partly due to CAPACT that the EECCA action plan focuses on the Caucasus and beyond. This is also why the Netherlands decided to develop an incentive scheme for Balkan countries that are not EU member states or candidate countries.

Initiated by the Dutch Ministry of Housing, Spatial Planning and En-



Albania, Bosnia and Herzegovina, Macedonia, Montenegro and Serbia are all invited to participate in the Plan of Action for West Balkans.

vironment (VROM), a project plan was developed as part of the Regional Environment Programme Western Balkans, which is run by the Dutch embassies in that region. The programme has a total budget of 24 million euro, 600,000 of which has been reserved for the ratification of the LRTAP Convention protocols in five countries, under the guidance of the Convention’s secretariat.

After the decision in principle on the project last summer, the Convention’s secretariat worked out a more detailed plan aimed at implementation and ratification of the three protocols in all five participating countries within three years. The main features of the project are as follows:

- The secretariat will invite Albania, Bosnia and Herzegovina, Macedonia, Montenegro and Serbia to participate in the Plan of Action for West Balkans, and to submit national action plans for ratifying the three protocols.
- The budget of 600,000 euro will be divided equally among the participating countries and the secretariat (i.e. each will receive 100,000 euro).
- The secretariat and VROM will assess the national action plans. On approval, a country will receive 30 per cent of its allocated budget. An-

other 30 per cent will be granted after the first ratification, 20 per cent after the second, and a further 20 per cent after the third and final ratification.

□ The secretariat will use its share to support the participating countries by organizing workshops, hiring outside experts and arranging translations.

This project stands to benefit many. Naturally, the improvement in air quality will benefit the regional population and environment, but the project will also generate jobs, directly and indirectly. Ratification of the protocols will bring the countries more in line with EU environmental standards, and hence closer to EU membership. Finally, the project will improve relations in the region, thus contributing to sustained peace.

JOHAN SLIGGERS

Coordinator Acidification and Continental Air Pollution at the Ministry of Housing, Spatial Planning and the Environment. Mail contact: johan.sliggers@minvrom.nl

<sup>1</sup> The three protocols are the Heavy Metal Protocol (1998), the Persistent Organic Pollutant Protocol (1998), and the so-called “Multi-effect Multi-pollutant” Protocol (also called the Gothenburg Protocol) (1999).

# Vehicle fumes stunt lung growth

EXPERTS ALREADY KNOW toxic traffic fumes can trigger lung conditions such as asthma. But new research suggests pollution can stop the lung from growing to its full potential, even in children who are otherwise healthy.

Researchers at the University of Southern California have examined the lung function of 3,677 children annually from the age of 10 until they reached 18.

Those who had lived within 500 metres of a motorway had much poorer lung function at the age of 18 than those who had lived 1,500 meters away or more, even when factors such as smoking in the home were taken into account.

Scientists do not know exactly how air pollution hampers lung develop-

ment, but they believe lung inflammation in response to daily irritation by air pollutants may play a role.

As background air quality did not alter the picture, children living in the countryside but close to a main road would also be at risk, the researchers add.

Children living close to big roads in cities with high levels of background air pollution were likely to be at a greater risk of lung problems, however, because of the double effect on their lungs, they suggest.

**Source:** BBC News, 26 January 2007. **The study:** Effect of exposure to traffic on lung development from 10 to 18 years of age: a cohort study. *The Lancet* DOI:10.1016/S0140-6736(07)60037-3

# More harmful to heart than suspected

A STUDY published in the New England Journal of Medicine shows that a woman's risk of dying from cardiovascular disease is linked to the particulate levels in the air where she lives and that the damage is greater than anyone had suspected.

The researchers used information

## Southern Europe worst hit by ozone

The exposure to ground-level ozone in Europe was at its second worst level in a decade in 2006, according to a report by the European Environment Agency (EEA) in March. As in past years, Mediterranean countries such as Italy, France and Spain experienced highest levels of ozone pollution.

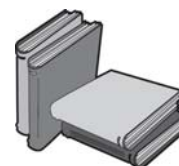
**Further reading:** **Air pollution by ozone in Europe in summer 2006.** EEA Report 5/2007. Available in pdf format at [http://reports.eea.europa.eu/technical\\_report\\_2007\\_5/en](http://reports.eea.europa.eu/technical_report_2007_5/en).

from more than 65,000 participants aged 50 to 79, living in 36 cities across the United States. None of them had heart disease at the beginning of the study.

The study found women living in areas with high concentrations of particles were more prone to strokes, heart attacks and other forms of heart disease than those living where the air is cleaner.

The average particulate levels (PM<sub>2.5</sub>) in the 36 cities covered by the study ranged from about 4 to almost 20 micrograms per cubic metre of air. Each 10-microgram rise carried a 76-per-cent increase in the chances of dying from any cardiovascular cause.

**Source:** The Guardian, 1 February 2007. **The study:** Long-Term Exposure to Air Pollution and Incidence of Cardiovascular Events in Women. *New England Journal of Medicine*, February 1, 2007. Volume 356:447-458. Available free of charge at <http://content.nejm.org>.



## Further publications

### Citizens' Guide to European Complaint Mechanisms

This guide aims to help individuals and NGOs to successfully use existing institutional mechanisms at the European and international level to protect the environment and ensure adequate/effective use of public funds. It aims to summarize citizens' experiences so far with appeals to international institutions such as the EU Ombudsman and the Aarhus Convention committee.

Available at [www.bankwatch.org](http://www.bankwatch.org).

### How can the EU help support the most promising technical measures to reduce NOx and PM from existing heavy duty vehicles and captive fleets?

Assessment of the impact on costs and emissions of technical measures on existing heavy-duty vehicles and captive fleets. Also provides recommendations on how to harmonize existing and upcoming city low-emission zones.

Prepared for the European Commission, DG Environment, November 2006 by Sadler Consultants. Final Report, ENV.C.1/SER/2006/0013r. Available at [www.airqualitypolicy.co.uk](http://www.airqualitypolicy.co.uk).

### Arctic Pollution 2006

The third State of the Arctic Environment Report by the Arctic Monitoring and Assessment Programme, updating the 1997 assessment on Acidification and Arctic Haze. Full report and summary both available in pdf format free of charge at [www.amap.no](http://www.amap.no). Printed copies can also be ordered (Summary report ISBN 82-7971-045-0, 28 pp., US\$20 plus handling).

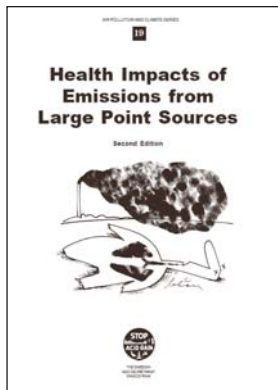
### Calendar highlights injustices

A new climate calendar has a novel way of illustrating differences between countries' contributions to global warming, and shows that climate change is not just an environmental issue – it is also about global justice.

The calendar shows that by 8 January the average person in Britain had produced as much carbon dioxide as the average person in the world's poorest countries will produce in the entire year. By around 10 June the average person in the UK had produced emissions equivalent to the annual average for the world's population.

Further information: [www.wdm.org.uk/campaigns/climate/calendar](http://www.wdm.org.uk/campaigns/climate/calendar)

# Recent publications from the Secretariat

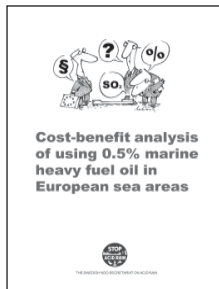


## Health Impacts of Emissions from Large Point Sources

This study combines the health impact assessment methodology used by EU's CAFE programme with an emissions database for European large point sources, to assess health damage linked to emissions of nitrogen oxides and sulphur dioxide on a plant by plant basis. It finds that the emissions from large point sources in Europe could be responsible for more than one million life years lost in Europe every year. Some of the worst polluting plants may each be responsible for the annual loss of between 10,000 and 20,000 life years. By Mike Holland, EMRC. Second Edition, March 2006.

## Status and Impacts of the German Lignite Industry

This report includes a historical treatment of German lignite use and discusses many of the hidden costs involved: excessive greenhouse gas emissions, depletion of groundwater resources, and destruction of hundreds of villages. Special consideration is paid to eastern Germany, where lignite accounts for up to 85 per cent of electrical power consumption in some regions. By Jeffrey H. Michel, April 2005.

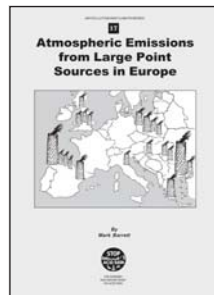


## Cost-benefit analysis of using 0.5% marine heavy fuel oil in European sea areas

A lowering of the sulphur content of marine heavy fuel oil to 0.5 per cent would reduce SO<sub>2</sub> emissions from international shipping around Europe by more than three quarters by 2010. The benefits of such a measure clearly outweigh the costs, according to this study. By Christer Ågren, January 2005.

## Atmospheric emissions from large point sources in Europe

This report identifies and lists the 200 largest emitters of sulphur dioxide and the 200 "best" fossil-fuelled power stations, in terms of SO<sub>2</sub> and NO<sub>x</sub> emissions per useful output. By Mark Barrett, SENCO. Published 2004.



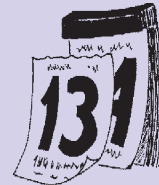
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## Coming events

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**LRTAP Convention Working Group on Strategies and Review.** Geneva, Switzerland, 18–20 April. *Information:* [www.unecce.org/env/lrtap/](http://www.unecce.org/env/lrtap/)

**IMO BLG 11 – Revision of MARPOL Annex VI.** London, UK, 16–20 April 2007. *Information:* [www.imo.org](http://www.imo.org)

**DustConf 2007: How to improve air quality.** Maastricht, the Netherlands, 23–24 April. *Information:* [www.dustconf.com](http://www.dustconf.com)

**3rd International Congress for South Eastern Europe on Energy Efficiency and Renewable Energy Sources.** Sofia, Bulgaria, 24–26 April. *Info:* <http://viaexpo.com/congress-ee-vei/eng/congress.php>

**Sustainable Regions and Municipalities 2007.** Växjö, Sweden, 6–10 May 2007.

**ECOMM 2007 – 11th European Conference on Mobility Management.** Lund, Sweden, 9–11 May 2007. *Information:* [www.ecomm2007.se](http://www.ecomm2007.se)

**Second European Conference on Electric road Transport.** Brussels, Belgium, 30 May–1 June. *Info:* [www.avere.org/eet.htm](http://www.avere.org/eet.htm)

**Velo-city 2007 – from vision to reality.** Munich, Germany, 12–15 June 2007. *Information:* [www.velo-city2007.com](http://www.velo-city2007.com)

**European Council.** Brussels, 21–22 June.

**EU Council of Environment Ministers.** 28 June. *Information:* [www.consilium.europa.eu/cms3\\_fo/](http://www.consilium.europa.eu/cms3_fo/)

**9th Conference on Energy for a Clean Environment.** Povoá do Varzim, Portugal, 2–5 July. *Info:* <http://rgesd.ist.utl.pt/cleanair>

**IMO MEPC 56 – Revision of MARPOL Annex VI.** London, UK, 9–13 July 2007. *Information:* [www.imo.org](http://www.imo.org)

**EU-G8 Energy Efficiency Conference.** Berlin, Germany, 15 July 2007.

**Bioenergy 2007. International Conference and Exhibition.** Jyväskylä, Finland, 3–6 September 2007. *Information:* <http://seminaarit.ohoi.fi/default.asp?seminarID=6>

**22nd European Photovoltaic Solar Energy Conference and Exhibition.** Milan, Italy, 3–7 September 2007. *Information:* [www.photovoltaic-conference.com](http://www.photovoltaic-conference.com)

**14th IUAPPA World Congress. Clean air partnerships.** Brisbane, Australia, 9–13 September. *Info:* [www.iuappa2007.com](http://www.iuappa2007.com)

**European Mobility Week.** 16–22 September. *Info:* [www.mobilityweek-europe.org](http://www.mobilityweek-europe.org)