

Acid News

Cleaner marine fuels could save many lives

Using cleaner marine fuel could prevent between 40,000 and 50,000 premature deaths each year.

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EU wants to show the way – but is aiming low

The Commission's climate package calls for a 20-per-cent reduction in emissions by 2020, a fact that may indicate they do not expect an ambitious international agreement.

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EU industrial pollution laws to be revised

The Commission has proposed legislation to further reduce emissions from industrial installations, including large combustion plants.

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IMO moves slowly on ship air pollution

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Baltic Sea states call for tough emission controls

Tighter emission standards are needed to cut emissions of air pollutants from ships in the Baltic Sea.

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Lignite – expensive and unsustainable

Germany continues to invest in brown coal mining, despite ambitious climate targets. Requirements for carbon capture and storage could eventually make the fuel unprofitable.

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NATIONAL EMISSION CEILINGS

Acting too slow

Thirteen EU member states are projected to miss ceilings for at least one pollutant if additional action is not taken.

Only 11 of the 25 countries that were members of the EU in 2005 expect to meet their respective national emission ceilings defined in the NEC directive 2010 with the measures they have agreed so far. The remaining thirteen – Austria, Belgium, Denmark, France, Germany, Ireland, Italy, Malta, Netherlands, Portugal, Slovenia, Spain and Sweden – are projected to miss ceilings for at least one of the four pollutants if additional actions to reduce emissions are not taken.

The eleven states that report they will meet the ceilings are Cyprus, Czech Republic, Estonia, Finland, Greece, Hungary, Latvia, Lithuania, Poland, Slovak Republic and the UK. In some cases they will only do so by small or non-existent margins, for example the UK's projected levels are identical to its emission ceilings.

These are the findings of a summary by the European Environment Agency (EEA), based on each country's official

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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 AcidNews, 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.

Editorial

To meet the maximum warming target of two degrees above the pre-industrial level with a reasonable degree of confidence, emissions in 2050 must be 50–85 per cent below the 1990 level, according to the Intergovernmental Panel on Climate Change (IPCC). To provide emissions space for developing countries, emissions from the industrialized countries would need to be cut by at least 80 per cent.

In order to achieve emission reductions on this scale, our use of fossil fuels such as coal, oil and gas must be dramatically reduced, especially in the industrialized nations – a fact that has led to fresh support for the nuclear power industry.

But is it really justifiable to use the climate argument to support the use of nuclear power?

Nuclear power entails risks of enormous proportions: unsolved waste disposal problems, dependency on uranium (uranium ore extraction and processing represent major problems themselves), the risk of nuclear arms proliferation, and large scale operations that are especially vulnerable to power cuts and terrorism. In addition there is the constant risk of accidents during operation.

These risks are serious enough to rule out nuclear power. But the biggest weakness of nuclear power in the role of climate saviour is perhaps not its risks, but the fact that expensive investment in nuclear power would divert money from other means of countering the greenhouse effect that are faster, more cost-effective and more sustainable in the long term.

It is also worth noting in this context that in global terms nuclear power is now a relatively marginal energy source. It accounts for around six per cent of global energy consumption and 15 per cent of power generation. In order for nuclear power to play anything more than a minor role in the war against cli-

mate change it would require massive expansion.

Last year the IPCC came to the conclusion that stabilizing atmospheric greenhouse gas levels at 450 ppm CO₂ equivalents is possible if global emissions reach a maximum in 2015 and then fall sharply.

Since it takes on average 10–12 years to build a new nuclear power plant it is clearly totally unrealistic that additional nuclear power could make any significant contribution to reducing greenhouse gas emissions before 2020.

If nuclear power really were the environmentally friendly alternative that some of its proponents claim it to be, the environmental movement would naturally have supported it, but this is not the case.

Instead it is the same factions that put the environment in second place that are in favour of more nuclear power. Their main interest lies in the opportunities provided by various forms of large-scale, centralized projects.

Renewable energy is virtually unlimited; it can be used more easily in remote or technologically undeveloped regions and it does not entail any risk to global security.

Achieving solutions that are sustainable in the long term also requires substantial improvements in the efficiency with which we use energy. It may also require a different, less consumption-oriented lifestyle.

Nuclear power is a dangerous, polluting, expensive and finite energy source. More nuclear power also unavoidably means less resources for genuine environmentally friendly means of supplying global energy needs.

Renewable energy combined with energy efficiency measures can provide a cost-effective solution to the problem now. Why wait years for a bad solution when we can choose a good one now?

Christer Ågren

Why not nuclear power?

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it to be, the environmental movement would naturally have supported it, but this is not the case.

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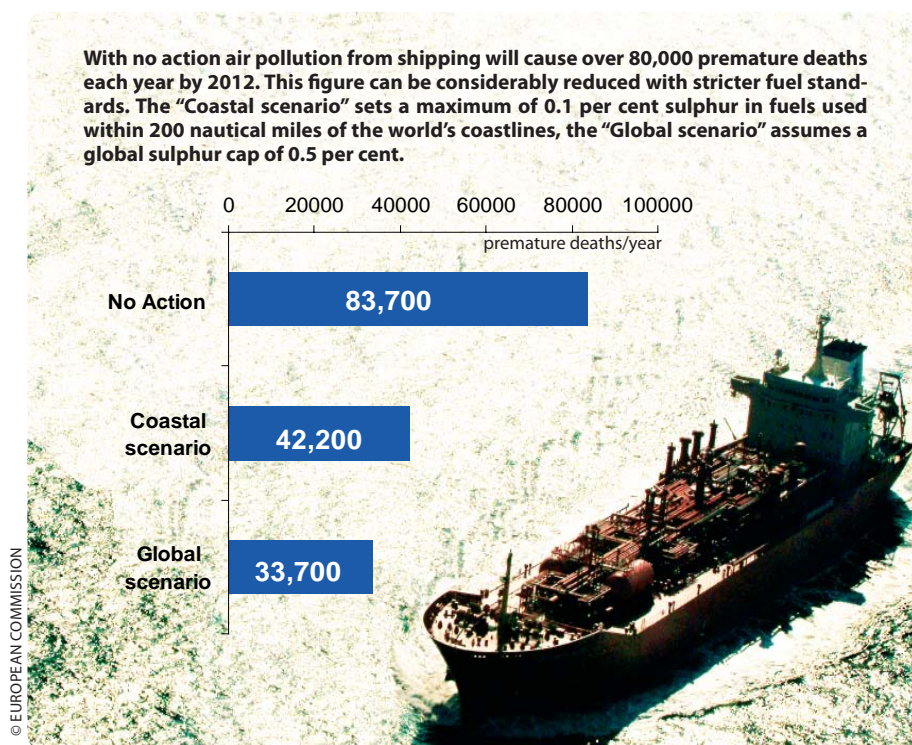
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Cleaner fuels could save tens of thousands of lives

Using cleaner marine fuel could prevent 40,000 to 50,000 premature deaths each year.



According to results from continuing scientific research¹, premature deaths caused by air pollution from international shipping will total over 80,000 by 2012.

Using the same methodology as in previous work (see AN 4/07, pp. 1–3), scientists have estimated mortality changes by 2012 associated with three of the six policy scenarios currently under review for the IMO's ship emission regulations (see pp. 12–13).

► The base-line scenario, no action, assumes continued worldwide use of marine heavy fuel oil with an average sulphur content of about 2.7 per cent. It is estimated that this would lead to 83,700 premature deaths from shipping-related emissions by 2012, up from around 60,000 in 2002.

► A "coastal scenario" assuming the use of marine distillate fuel with a sulphur

content of 0.1 per cent by ships sailing within 200 nautical miles of the world's coastlines could reduce premature mortality rates by about 50 per cent to 42,200, the study found.

The coastal scenario is in line with a proposal by the United States, as a way of reducing sulphur dioxide (SO₂) and particulate matter (PM) emissions from

ships under MARPOL Annex VI.

► A global scenario with all ships using marine distillate fuel with a 0.5 per cent sulphur cap could cut premature mortality rates by around 60 per cent to 33,700.

"The IMO cannot continue to ignore the mounting evidence that action to reduce air pollution from ships could avoid tens of thousands of premature deaths each year," said David Marshall, at the Clean Air Task Force (CATF). "The IMO must act promptly to clean up the shipping industry and its fuel."

Marshall also emphasized that the benefits of cleaner marine fuel and reduced emissions would far outweigh the costs. Using cost methodology employed by the US Environmental Protection Agency, CATF estimates that the 40–50,000 lives saved annually will produce benefits to society of about US\$ 225–275 billion per year. Cleanup costs are much lower.

Christer Ågren

¹ The study **Mitigating Health Impacts of Ship Pollution through Low Sulfur Fuel Options: Initial Comparison of Scenarios**. January 2008. By J. Corbett, J. Winebrake, E. Green, V. Eyring, and A. Lauer. Available at www.catf.us/projects/international_air_quality/shipping

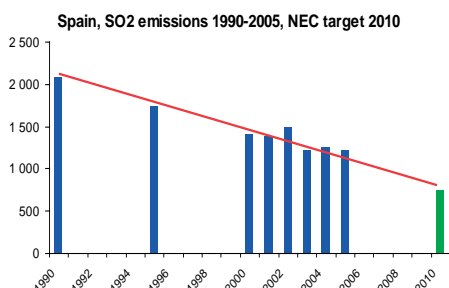
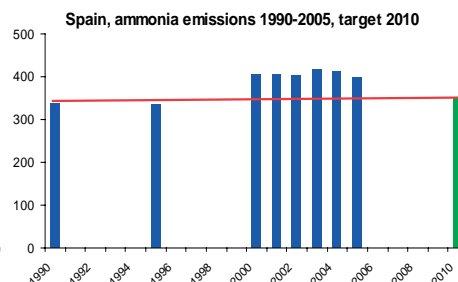
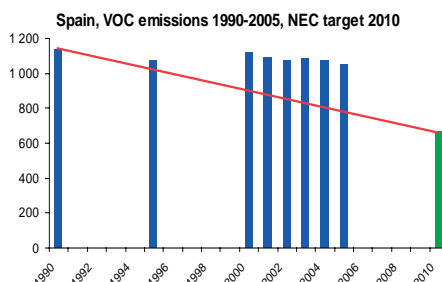
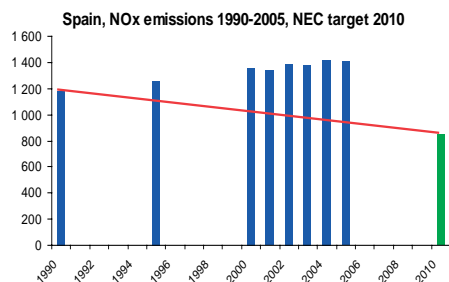
Cleanest ship?

The Cleanest Ship project intends to demonstrate how inland navigation can improve its environmental performance and thereby its competitive position. The project is being carried out on the motor tanker vessel *Victoria*, owned by BP and managed by Verenigde Tankrederij (VT). The vessel operates in the Port of Rotterdam and Antwerp areas.

The ship is using existing technologies to

improve performance and reduce emissions. Application of nearly sulphur-free road diesel fuel, a speed control system, selective catalytic reduction and a particulate matter filter will reduce fuel consumption by 5–10 per cent and at the same time cut emissions of nitrogen oxide by 85–90 per cent (down to 1.5 g/kWh), particulate matter by 96–98 per cent, and sulphur dioxide by more than 99 per cent.

See: www.cleanestship.eu



Spain is one of the EU states with the highest emissions of air pollutants and is finding it difficult to meet three of the four emission ceilings in the NEC directive. Nitrogen oxides are the biggest problem, with the country promising a 28-per-cent cut in emissions over the period, but actually showing a 20-per-cent increase in 1990-2005. The target for sulphur dioxide (SO₂) is considered achievable, but the country can still lay claim to the unenviable title of major European polluter (sharing first place with Poland).

report of emissions to 2005. Bulgaria and Romania are not included in the report since they were not members of the EU when the data was reported. Luxemburg is also absent since it failed to submit any data.

Nitrogen oxides

In most cases it is the emission ceiling for nitrogen oxides that poses a problem for the countries. Twelve member states indicate that, without taking additional measures, they will not fall within their ceilings by 2010. They are Germany, Ireland, Spain, France, Austria, Sweden, Belgium, Denmark, Italy, the Netherlands, Slovenia, and Malta. Four of them – Belgium, France, Ireland and the Netherlands – show that even with additional measures, they are unlikely to meet their NO_x ceilings in 2010.

The projected NO_x emissions for the EU25 are eight per cent above the aggregated ceiling in 2010. Over the period 1990-2005 emissions rose in five countries: Greece, Spain, Portugal, Malta and Cyprus.

The largest single polluter was the UK, which alone accounted for 15 per cent of the total emissions – as much as the new EU10 countries combined.

Volatile Organic Compounds (VOCs)

Four member states – Spain, Hungary, Denmark and Portugal – report that they do not envisage meeting their VOC ceilings in 2010.

The projections for the EU25 as a whole are five per cent below the ag-

gregated ceiling target. Two countries increased their emissions during the period 1990-2005: Malta and Greece.

The biggest single polluter was France, which alone accounted for 16 per cent of the total emissions – more than the new EU10 countries combined.

Sulphur dioxide

Regarding sulphur dioxide, only two member states – Malta and the Netherlands – do not expect, with the current measures in place, to meet their ceilings in 2010.

The EU25 as a whole is projected to be 39 per cent below the aggregate ceiling. Between 1990 and 2005 all member states except Greece and Cyprus report a decrease in emissions. The biggest reductions were reported by Germany (90 per cent), Denmark (88), Italy (72), Latvia (96) and Hungary (84 per cent).

The major polluters were Spain and

Poland, which both contributed 19 per cent of total emissions.

Ammonia

Seventeen member states have already reduced ammonia emissions below their respective ceilings. Germany and Spain report that they will not reach the target for 2010 with the current measures in place. The projections for the EU25 are 7 per cent below the aggregated EU emission ceiling target. Inadequate reporting by several countries makes comparisons and forecasts for the EU as a whole unreliable.

Reporting failures

The EEA dishes out some criticism for the fact that nine of the 25 countries submitted their reports too late, and in one case – Luxembourg – not at all. One problem in this respect is that the directive does not stipulate the format

The NEC directive

The aim of the NEC directive is to limit emissions of acidifying and eutrophying pollutants and ozone precursors in order to improve the protection in the EU of the environment and human health against risks of adverse effects from acidification, soil eutrophication and ground-level ozone.

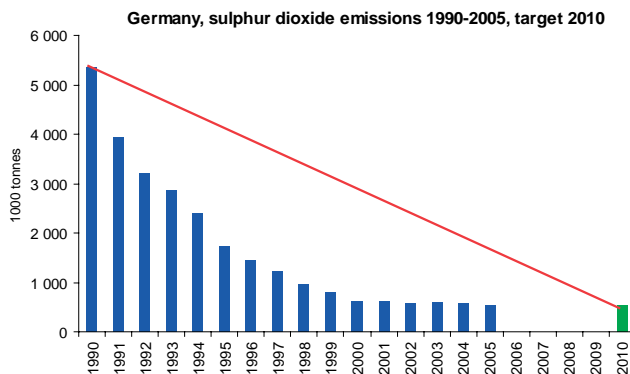
National emission ceilings for four pollutants are specified with the objective of achieving a range of interim environmental objectives by 2010 compared to a 1990 baseline.

The directive requires member states to report information concerning emissions of four pollutants: sulphur dioxide (SO₂), nitrogen oxides (NO_x), volatile organic compounds (VOCs), and ammonia (NH₃). The states are also expected to report expected trends until 2010, the year in which they are to meet their undertakings.

More information on the directive:

- ✕ European Commission: <http://ec.europa.eu/environment/air/ceilings.htm>
- ✕ Factsheet from the Secretariat (2004): www.acidrain.org (select Publications > Factsheets)

Germany has cut emissions of sulphur dioxide by 90 per cent between 1990 and 2005. By 2000 it was already close to its target for 2010. This is the result of a combination of strict power plant emission controls and infrastructure changes in the eastern half of the country in the 1990s.



in which national inventory data and projections should be submitted by the member states.

Revision in progress

Based on its Thematic Strategy on Air Pollution from September 2005, the European Commission has spent more than two years preparing a proposal for a revised NEC directive – the main intention being to set new (stricter) emission ceilings for 2020, and expand the number of air pollutants covered from four to five by adding fine particles, $PM_{2.5}$. (See AN 3/07, pp. 8–11.)

For various reasons the proposal has been postponed several times, and in May 2007 the Commission decided to postpone again, the main reason being that the EU's forthcoming new climate

and energy policies should be fully accounted for when developing the new national emission ceilings.

On 23 January, the Commission adopted its proposal for a new EU climate policy, including suggestions for burden sharing between member states on the 20-per-cent reduction target for greenhouse gas emissions and the target for a 20-per-cent share of renewable energy.

The final NEC scenario analysis is now ongoing, but the NEC proposal is not expected until May at the earliest.

Per Elvingson & Christer Ågren

The EEA report: NEC Directive status report 2006. EEA Technical Report No. 15/2007. <http://reports.eea.europa.eu>. See also NEC evaluation report for the European Commission: http://www.ec.europa.eu/environment/air/pdf/nec_report.pdf.

Spain approves plan for LCP emissions reduction

In December the Spanish government adopted a national plan to reduce emissions from large combustion plants (LCPs) – four years after the deadline to do so under the EU LCP directive.

Targets in the national plan will require the combustion sector to make significantly faster reductions in emissions of sulphur dioxide (SO_2), nitrogen oxides (NO_x) and dust by 2015 than it has achieved in the six years since the directive entered force.

According to Spain's emission registry, SO_2 emissions from LCPs stood at 708,000 tonnes in 2005 and will have to be reduced by 76 per cent by 2015. Emissions of NO_x were at 267,000 tonnes in 2005 and will have to be reduced by 30 per cent by 2015.

The government has also approved an updated national programme for reducing air pollution under the 2001 EU national emission ceilings directive.

Source: ENDS Europe DAILY, 10 December 2007.

Acid rain severely impacts coastal water

It has long been taken as accepted fact that the deposition of sulphur and nitrogen pollutants, which causes serious acidification problems in fresh water, does not have a corresponding effect in the sea because of the high content of buffering compounds in sea water. However, research over the last few years has shown that seas are also affected by acid rain, since carbon dioxide from the air dissolves in surface water to form carbonic acid.

New modelling calculations indicate that on a global scale, changes to seawater chemistry due to anthropogenic nitrogen and sulphur deposition represent a small percentage compared with the changes due to the uptake of carbon dioxide.

The impacts of nitrogen and sulphur can however be much more important in coastal waters, accounting for 10 to 50 per cent of the total changes caused by the oceanic uptake of anthropogenic carbon dioxide.

Sea water acidification is a serious threat to all marine animals and plants with calcareous skeletons, including corals, snails, clams and crabs.

Source: Doney S. C. et al. (2007) « Impact of anthropogenic atmospheric nitrogen and sulphur deposition on ocean acidification and the inorganic carbon system », PNAS 104(37): 14580-14585. <http://www.pnas.org/>

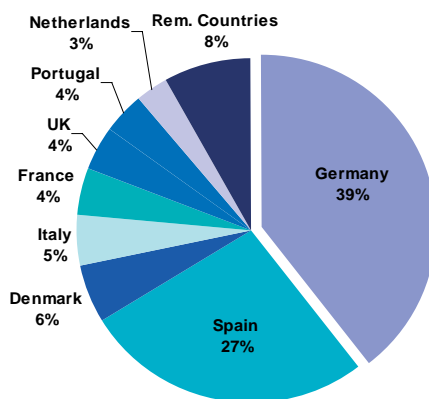
Wind power leads EU power installations

In 2007 wind capacity grew more in Europe than any other power-generating technology, an increase driven by Spain.

Statistics released by the European Wind Energy Association (EWEA) show that the installed wind power capacity increased by 18 per cent last year to reach 56,535 megawatts.

Total wind power capacity installed by the end of 2007 will eliminate about 90 million tonnes of carbon dioxide annually and produce 119 TWh in an average wind year, equal to 3.7 per cent of EU power demand. In 2000, less than 0.9 per cent of EU electricity demand was met by wind power.

Further information: www.ewe.org



Installed capacity in EU27, share per member state by end of 2007. Three countries – Cyprus, Malta and Slovenia – have no wind power installed.

EU wants to show the way – but is aiming low

The EU Commission's climate package calls for a 20-per-cent reduction in emissions by 2020, a fact that may indicate they do not expect an ambitious international agreement.

On 23 January the EU presented its climate package, which is intended to clarify how the targets adopted by the European Council in March 2007 should be achieved and how responsibility should be shared between the member states.

Last year's decision by the Council means that greenhouse gas emissions in the EU must be reduced by 20 per cent by the year 2020 compared with 1990 levels, or by 30 per cent if other industrial nations make similar undertakings, and that the renewable energy share should increase to at least a 20 per cent by 2020 (the current figure according to the Commission is 8.5 per cent). There is a further target that renewable fuels should supply 10 per cent of energy needs in the transport sector by 2020.

Reducing emissions by 20 per cent compared with 1990 means a reduction of 14 per cent compared with the 2005 level. The Commission wants this reduction to be achieved through the emissions trading system and measures in other sectors.

Trading sector allocation

One important part of the package involves changes to the EU emissions trading system (ETS). It is proposed to extend this to include more greenhouse gases (only CO₂ is currently included), and to involve all major industrial emitters.

The emission allowances put on the market will be reduced year-on-year to allow for emissions covered by the ETS to be reduced by 21 per cent from 2005 levels in 2020.

A growing share of emission rights will be auctioned instead of being allocated free of charge, as they are at present. See the factfile for more details.

Targets for other sectors

In sectors not covered by the ETS, such as buildings, transport, agriculture and waste, the EU will reduce emissions to 10 per cent below 2005 levels by 2020. For each member state the Commission is proposing a specific target. These targets, which are based on GDP per capita, range from -20 per cent for Denmark

and Ireland to an increase of 20 per cent for Bulgaria, see table below.

States would get extra flexibility by being able to use international carbon reduction credits (under Kyoto's CDM and JI mechanisms). They could do this up to a value of 3 per cent of their 2005 emissions. This equates to almost a third of the reduction effort, the Commission says.

EU greenhouse gas (GHG) emission reduction targets. The target for 2008-2012 covers emissions from all sectors, while the target for 2020 only applies to the non-trading sector.

	Target 2008-12 relative to 1990 (%)	Target by 2020 relative to 2005 (%)	Emission cap 2020 for non-ETS (MtCO ₂ e)
Austria	-13	-16	49.84
Belgium	-7.5	-15	70.95
Bulgaria	-8	+20	35.16
Cyprus	n/a	-5	4.63
Czech Rep.	-8	+9	68.74
Denmark	-21	-20	29.87
Estonia	-8	+11	8.89
Finland	0	-16	29.74
France	0	-14	354.45
Germany	-21	-14	438.92
Greece	25	-4	219.09
Hungary	-6	+10	58.02
Ireland	13	-20	37.92
Italy	-6.5	-13	305.32
Latvia	-8	+17	9.37
Lithuania	-8	+15	18.43
Luxembourg	-28	-20	8.52
Malta	n/a	+5	1.53
Netherlands	-6	-16	107.30
Poland	-6	+14	216.59
Portugal	27	+1	48.42
Romania	-8	+19	98.48
Slovakia	-8	+13	23.55
Slovenia	-8	+4	12.14
Spain	15	-10	64.05
Sweden	4	-17	37.27
UK	-12.5	-16	310.39

Renewable energy

To achieve the target of 20 per cent renewable energy by 2020, the Commission proposes binding targets for all EU countries. The proposed targets range from 10 per cent for Malta to 49 per cent for Sweden, see Chart. Every country will have to draw up national action plans that set out how they intend to meet their targets and how progress can be monitored effectively.

As long as the EU's overall target is met, member states will be allowed to make their contribution by supporting Europe's overall renewables effort, and not necessarily inside their own borders.

According to energy commissioner Andris Piebalgs, separate targets for renewables are likely to disappear after 2020, since the price of emissions credits after this date will make the process self-sustaining.

Greater share of renewable fuels

The proposal also addresses the minimum target of 10 per cent for use of renewable fuels in transport, to be reached by 2020. This is the same for all member states. The directive sets out sustainability criteria that will ensure that the incentives actually benefit the environment, but many environmentalist organizations have criticized them as being completely inadequate, as well as being very difficult to enforce.

Several environmentalist organizations believe that specific renewable fuels target should be eliminated altogether. See box on following page. Revi-

sion of the EU fuel quality directive is taking place in parallel, with the aim of reducing the percentage of fossil carbon in fuels, see article on p. 10.

Carbon capture and storage (CCS)

In a separate policy paper the Commission sets out a commitment to encourage the construction of up to 12 CCS demonstration plants by 2015. An impact assessment suggests commercial take up is likely to begin around 2020 and

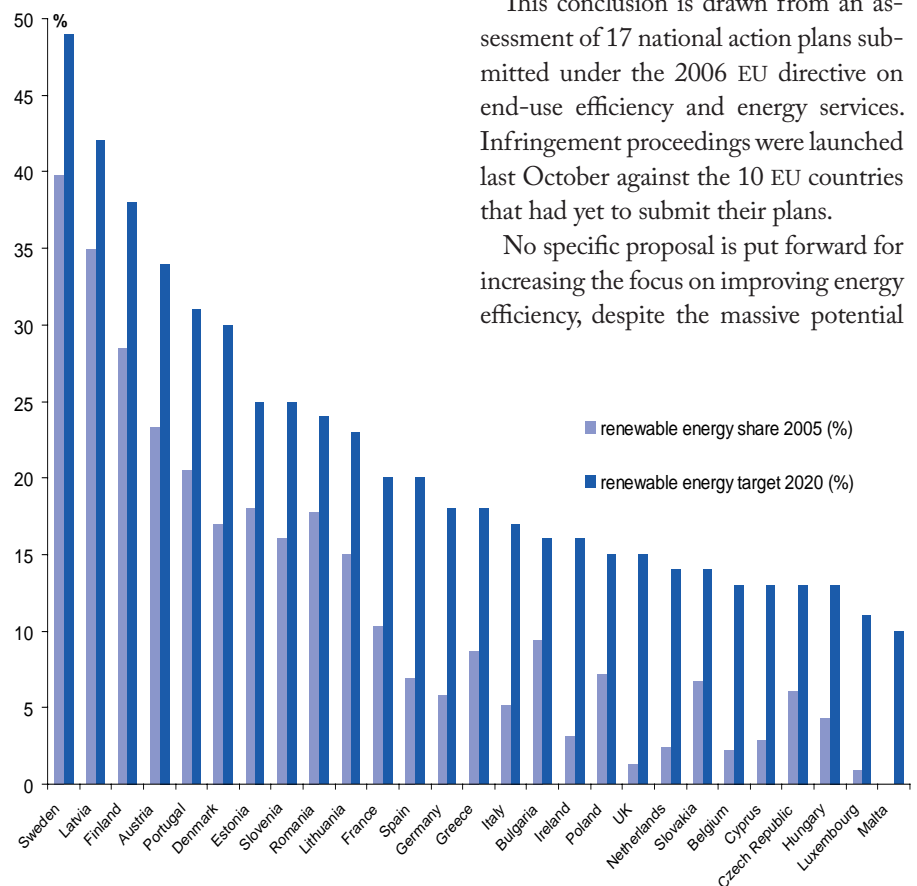
increase "substantially" after that. It estimates that 160 million tonnes of CO₂ could be captured by 2030.

Energy efficiency

The agreement by the EU leaders in March 2007 included a non-binding commitment to reduce the union's energy use by 20 per cent in 2020. The Commission reports however that most member states are not doing enough to increase energy efficiency.

This conclusion is drawn from an assessment of 17 national action plans submitted under the 2006 EU directive on end-use efficiency and energy services. Infringement proceedings were launched last October against the 10 EU countries that had yet to submit their plans.

No specific proposal is put forward for increasing the focus on improving energy efficiency, despite the massive potential



EU renewable energy share 2005 and proposed targets for 2020.

Changes in the emissions trading system (ETS)

Trade in emission rights is at the core of the Commission's proposal, which sets out the rules for a third phase, running from 2013 to 2020.

The emission allowances put on the market will be reduced year-on-year to allow for emissions covered by the ETS to be reduced by 21 per cent from 2005 levels in 2020. Allowances would be centrally allocated by the European commission instead of through national allocation plans (NAPs).

The overall EU carbon permit allocation would fall linearly from 2013 to 2020 by 1.74 per cent each year.

The power sector – responsible for the majority

of EU emissions – will face full auctioning from the start of the new regime in 2013. Other industrial sectors, as well as aviation, will make the transition to full auctioning gradually, although an exception may be made for sectors particularly vulnerable to competition from producers in countries without comparable carbon constraints.

By mid-2010 the Commission would decide which EU industry sectors might be "at significant risk" of carbon leakage – meaning that they could be forced by international competitive pressure to relocate. The Commission would then review whether allowances are to be made for industry in the EU, or whether permits should be required for imported products.

Revenues resulting from the ETS will accrue to member states and should be used to help the EU to adjust to an environment-friendly

economy. Earmarking of revenue in this way has already been criticized by EU finance ministers, however.

At present the EU emissions trading system covers some 10,000 industrial plants across the EU – including power plants, oil refineries, and steel mills – accounting for almost half the EU's CO₂ emissions.

Under the new system, over 40 per cent of total emissions will be covered by the ETS. To reduce the administrative burden, industrial plants emitting less than 10,000 tonnes of CO₂ will not have to participate in the ETS.

There are no proposals to include shipping and road transport in the scheme from 2013. From 2013, installations using carbon capture and storage (CCS) would not get allowances under the scheme, but nor would they have to buy any.

EU renewable target "sure to be missed"

The proportion of renewable energy that makes up EU final energy consumption rose from five to seven per cent between 2002 and 2006, reports the pro-renewables consortium Euroobserver in its annual report for 2006. Although this is a fairly rapid increase it is still inadequate to meet the Union's non-binding target of 12 per cent by 2010.

The target was set in the EU's 1997 white paper on renewable energy. If the rate of growth had been as high as it is now throughout the period, the target would have been within reach, says the report.

Last month the European Commission proposed draft legislation to increase the share of renewable energy in EU final energy consumption to 20 per cent by 2020.

Further reading: www.energies-renouvelables.org



Eco-benefits of biofuels under review

The British government is to review the economic and environmental impacts of biofuel production, following a large number of recent reports that suggest limited environmental benefit. A press release states that the results of the study will help inform the development of both the UK and EU policies in this area, and will underpin the consideration of EU biofuel targets after 2010.

Several large environmental organizations responded positively to the news and expressed their hope that other member states will engage in this review and that it will lead to a re-think of the EU's 10-per-cent biofuel target proposed under the Renewables Directive. The groups also reiterated their strong support for the overall 20-per-cent renewables target and pointed out that meeting this target would in fact be easier without a specific biofuels target.

Sources: Department for Transport press release and joint press release from BirdLife International, EEB, Friends of the Earth and Transport and Environment, both 21 February 2008.

and the fact that it is probably the most economical way to reduce emissions.

Costs and benefits

The Commission calculates that implementation of the entire package will cost 0.5 per cent of GDP or 60 billion euro per year, but that the benefits are greater:

- ▶ Reduction of energy imports worth 50 billion euro a year.
- ▶ Reduced need for air pollution control of 11 billion euro a year in 2020.
- ▶ Avert costs of harmful climate change estimated at up to 20 per cent of global GDP.
- ▶ Innovation in energy sector, efficiency improvements, global political leadership on fighting climate change.

Should sights be set higher?

So how does the Commission accommodate the fact that the EU leaders have expressed a willingness to reduce emissions by 30 per cent if other countries make a similar undertaking – while the current package merely entails a 20-per-cent reduction by 2020?

The intention is that the EU would adjust its targets proportionately to ensure an overall 30-per-cent reduction in ETS and non-ETS sectors. In this case the amount of international credits that could be used would rise to the equivalent of one half of the reduction effort. No figures are given to show how targets would be allocated, however.

It is precisely the fact that the package has been set at 20 rather than 30

per cent that has prompted the harshest criticism from environmentalist organisations. They believe it sends out a signal that the EU has little faith in an effective international agreement and undermines the Bali consensus that developed countries must cut emissions by 25–40 per cent by 2020 to avoid dangerous climate change.

Some countries have raised objections to the national targets they have been allocated, and industry has complained that emission rights will be auctioned in future instead of being given out free of charge, as they are now. The 10-per-cent target for renewable fuels has also been hotly debated.

Decision by next spring

The goal is that the complete climate package should be adopted by spring 2009 at the latest, before the June 2009 elections to the European Parliament.

Meeting this deadline will probably require Council and Parliament to reach agreement at the first reading. The incentive to reach a quick agreement is grounded on a desire that the EU should take the lead in negotiations on an international agreement to fight global warming, due to be finalized in Copenhagen in December 2009.

Per Elvingson

The Commission's proposals can be found at http://ec.europa.eu/environment/climat/climate_action.htm

See also Climate Action Network- Europe: www.climnet.org/EUenergy/Energy_Europe.html

Renewable fuels in the transport sector

The 10-per-cent target for use of renewable fuels in transport has received criticism. There are big differences between renewable fuels, and environmentalist organizations feel that the Commission has not defined sufficiently robust sustainability criteria for their production.

A group of 17 Brussels-based NGOs wrote to the energy commissioner, Andris Piebalgs, saying the legislation could lead to the destruction of important ecosystems, food price rises, water shortages, forced evictions, poor working conditions, and the displacement of other land-based activities into environmentally sensitive areas.

Most environmentalist organizations opposed volume targets for biofuels, saying the

target should concentrate on the desired result, in this case less CO₂. They have therefore called for CO₂ reduction targets for transport fuel in general rather than legislation that says a specific type of fuel should be used.

This argument has been reinforced by two further studies, which say that biofuels can be a poor option in terms of sustainability and economics. According to a survey by the World Bank and the World Conservation Union, biofuels produced from food crops were judged to have the least potential for reducing emissions of greenhouse gases.

A team at Berkeley University says most biofuels appear to have higher greenhouse-gas emissions than fossil fuels when the impact of land use is factored in, up to six times as much in some cases.

Source: T&E Bulletin, February 2008.

Proposed binding rules weaken current target

Draft EU legislation to limit the maximum level of carbon dioxide emitted from new cars was published in December. It was criticized for weakening the existing target.

The aim of the proposed new legislation from the European Commission is to limit the average emissions of carbon dioxide (CO₂) from new cars sold within the EU to 120 g/km by 2012. But car-makers will only be responsible for an average of 130 g/km, with the last 10 g/km to be made up by other measures for which legislation will be proposed by the Commission later this year.

The proposal was announced by Stavros Dimas, environment commissioner, on his own, after the enterprise commissioner, Günter Verheugen, declined to turn up. It aims to enforce the target for carmakers by imposing a scale of fines, starting in 2012 at 20 euro per gram of CO₂ per car over the target, rising to 95 euro/g in 2015.

Environmental groups criticized the level of fines, and the fact that the Commission has ignored the calls of NGOs by including a weight-based scale, which means heavier vehicles will be allowed to pollute more.

Dimas said: "Manufacturers of larger cars will be asked to do more than the makers of smaller vehicles, to avoid the perverse incentive to make heavier vehicles." But T&E, the European Federation for Transport and Environment, disagreed, calling the weight scale "a pat on the back for SUV makers and a setback for Europe's low-carbon future".

The car industry association ACEA was strongly critical of the agreement, saying the required technology could force up the price of new cars by as much as 3,650 euro. Yet a report by the international debt-rating company Moody's said the car makers were exaggerating

the costs, and that the legislation would bring price increases of between 300 and 1,000 euro.

The Commission's own impact assessment says the legislation will add 1,300 euro to the price of the average car, but deliver fuel savings of around 2,700 euro over its lifetime.

The biggest pressure to water down the legislation has come from Germany, whose government and commissioner (Verheugen) have been fighting for the German car industry, which produces larger cars on average.

Verheugen's absence from the launch was seen as a form of protest, and even a month later he was still distancing himself from the draft legislation. "All industries should be made as environment-friendly as technologically possi-

ble," he told the members of the European Parliament, "but I don't think we should do it in a way that our international competitiveness is undermined."

The draft legislation now goes to the Council of Ministers and the European Parliament as part of the co-decision legislative procedure.

It may get a rough ride through Parliament. In a non-binding resolution adopted on 15 January the Parliament said manufacturers should reduce the average level of CO₂ emitted by cars to 125 grams per km by 2015, rather than to 120 grams by 2012 as proposed by the Commission.

This contrasts with comments from Thierry Morin, the head of the French automotive company Valeo, who says the 130 g/km target is achievable now with off-the-shelf technology. Morin told Le Tribune newspaper: "Why isn't there a law stating that the target of 120 grams of CO₂ emissions per kilometre applies today, rather than in five years?"

Source: **T&E Bulletin**, February 2008. Further reading: European Commission, http://ec.europa.eu/environment/co2/co2_home.htm.

Background:

The EU target to reduce average new car emissions to 120 g/km was first proposed by Germany, following informal negotiations with member states, at a meeting of European environment ministers in October 1994. That target translates into fuel consumption figures of 4.5 litres/100 km for diesel cars and 5.0 litres/100 km for petrol cars and represents a 35-per-cent reduction over 1995 levels.

After further endorsements the 120 g/km target was formally announced in a European Commission communication in 1995. The target has now been postponed three times. Average emissions from new cars in 2006 were about 160 g/km.

France changes taxation of cars

In January this year it became much more expensive to buy a gas-guzzling car in France, while the most fuel-efficient cars simultaneously became cheaper. Sales tax has been tied to carbon dioxide emissions and changed as follows:

less than 101 g	-1000 euro
101 – 120 g	-700 euro
121 – 130 g	-200 euro
131 – 160 g	unchanged
161 – 165 g	+200 euro
166g – 200 g	+750 euro
201 – 250 g	+1600 euro
more than 251g	+2600 euro

The system is revenue neutral.

Source: **Times Online**, 6 January 2008.

Tipping elements in the climate system

Global warming this century could trigger a runaway thaw of Greenland's ice sheet and other abrupt shifts such as a dieback of the Amazon rainforest, according to research presented in the journal *Proceedings of the National Academy of Sciences*.

The authors urge governments to be more aware of "tipping points" in nature, tiny shifts that can bring big and almost always damaging changes such as the melting of Arctic summer sea ice or a failure of the Indian monsoon.

Other sudden changes linked to climate change, stoked by human use of fossil fuels, included a dieback of northern pine forests, or a stronger warming of the Pacific under El Nino weather events that can disrupt weather worldwide, they wrote.

"Society may be lulled into a false sense of security by smooth projections of global change. Our synthesis of present knowledge suggests that a variety of tipping elements could reach their critical point within this century under anthropogenic climate change," the authors write in their conclusions.

Source: **Planet Ark** (Reuters) 13 February 2008. Full article: www.pnas.org/cgi/content/full/105/6/1786

Counting the cost of climate change

The future economic costs of climate change – known as the costs of inaction – will be significant in Europe, according to a European Environment Agency (EEA) report.

The report looks at the economic costs of climate change (impacts) at a European level. Based on a review of existing information, it also analyzes the economic costs of climate change at sector level in Europe, considering natural ecosystems, coastal zones, agriculture, energy, tourism, human health, water availability and the built environment.

Whilst detailed information is still limited, the report reveals that projected changes in climate are expected to have wide ranging impacts and economic effects. The overall net economic effects are still largely uncertain, however there is a strong distribution pattern, with more adverse effects in the Mediterranean and south-eastern Europe.

The study also concludes that adaptation has an extremely important role in reducing these economic costs.

Further reading: **Climate change: the cost of inaction and the cost of adaptation**. EEA Technical report 13/2007. Available at <http://reports.eea.europa.eu/>



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Less carbon from road fuels

It is reported that the European Parliament and Member States are working towards a first reading agreement on the revision of the EU fuel quality directive, with the aim of reaching a decision by summer.

The work is prompted by a proposal presented by the Commission in January 2007, which recommends giving fuel suppliers responsibility for reducing the carbon footprint of their road fuels by 10 per cent by 2020. Specifically, they must cut the life-cycle greenhouse gas emissions of their fuels by one per cent per year from 2011 onwards. The market will then decide for itself if the fossil fuel chain or renewable fuels offer more cost-effective emission reductions.

Both the Parliament and Member States have expressed their support in principle for the proposal, but there is some disagreement over the sustainability criteria that will apply to renewable fuels, and how this will relate to the proposed directive to increase the use of renewable fuels (see article on pp. 6–8).

It appears most likely that both directives will have the same sustainability criteria. The form these will take is currently being worked out. Effectively, there is a tug of war between two directorates within the Commission, with the energy directorate being responsible for the directive to increase the share of renewable fuels, and the environment directorate responsible for the fuel quality directive.

The two directives have different goals: one to increase the use of biofuels, and the other to reduce emissions of fossil carbon dioxide throughout the fuel life cycle. It is not yet clear how the volume target will work with the target to "decarbonize" fuels, but if decarbonization is to be achieved solely through an increased share of biofuels, it will require a higher proportion than 10 per cent by 2020.

Per Elvingson

Note. The Commission's proposal also includes new, but not particularly controversial, requirements on fuels to improve air quality, see AN 1/07.

EU industrial pollution laws to be revised

Estimates by the Commission show that stricter emission standards for large combustion plants would increase abatement costs, but that the benefits increase several times more.

Just before Christmas last year, the European Commission proposed draft legislation to further reduce emissions from thousands of industrial installations regulated under the EU's 1996 integrated pollution prevention and control (IPPC) directive and six related laws.

According to the Commission, the aim is to strengthen the provisions already in force and reduce industrial emissions, which will bring significant health and environmental benefits. The proposal should also create a more level playing field across the EU, thus reducing competition distortions between companies. By simplifying current legislation it is also hoped to cut the administrative burden for industry and public authorities.

Figures on the level of implementation of the IPPC directive suggest that only about 50 per cent of the 52,000 installations covered had received a permit. This shows that member states have not made sufficient efforts to comply with the directive in time – the deadline expired on 30 October 2007.

The idea is now to merge the current IPPC directive and six sectoral directives¹ into a single new industrial emissions directive. This should strengthen the application of Best Available Techniques (BAT) across the EU, particularly by restricting divergence from BATs to specific cases and placing greater emphasis on justifying the conditions laid down in the permits.

Minimum emission limit values in certain industrial sectors should be tightened – particularly for large combustion plants (LCPs) where progress

to reduce pollution is insufficient. The scope would also be extended to include medium-sized combustion plants, i.e. between 20 and 50 megawatts thermal input.

Lesley James, acid rain campaigner for Friends of the Earth England, Wales and Northern Ireland, commented: "Under the current scenario in which IPPC is not being properly implemented, the objectives of the Thematic Strategy on Air Pollution are not being met. The Commission has now recognized that reversing this trend requires strict, legally binding emission limit values, especially for large combustion plants."

In its communication, the Commission estimates that a higher uptake of BAT by large combustion plants "would play a significant part in helping to close (by 30–70 per cent) the existing gap" between the baseline projections for emissions of sulphur dioxide (SO₂) and nitrogen oxide (NO_x) emissions in 2020 and the objectives set out in the Thematic Strategy on Air Pollution.

Estimates by the Commission show that the additional emission reductions achieved at LCPs alone are likely to offer annual health benefits ranging from 9 to 30 billion euro, including cutting the number of premature deaths from air pollution by 13,000 per year. These health benefits could be compared to annual costs of about 2.1 billion euro, which means that benefits outweigh costs by as much as 14 times.

The Commission's impact analysis also shows that by opting instead for the stricter interpretation of BAT-based emission limit values for LCPs, annual

health benefits would rise to between 20 and 65 billion euro, while yearly costs would increase to 6.5 billion euro. The resulting net benefits – without including ecosystem benefits – would consequently amount to 13–58 billion euro per year.

The European Environmental Bureau (EEB) is pleased that the current text does not include a proposal for emissions trading for SO₂ and NO_x, but warns that the issue is not completely forgotten.

Catherine Ganzleben noted: "The Commission has indicated its intention to work on EU rules for an emissions trading scheme for sulphur dioxide and nitrogen oxides. EEB opposes any scheme that would lead to trading of local pollutants that damage human health and the environment."

It is to be hoped that the Council and Parliament respect the recasting technique and limit any amendments to addressing provisions that are open to substantive change by the Commission. Attempts to widen the scope of the review could, according to the EEB, lead to an erosion of the proposed directive's key mechanisms for environmental protection and derail the recasting process.

Christer Ågren

¹ The six sectoral directives are the 2001 large combustion plants (LCP) directive, the 2000 waste incineration and co-incineration directive, the 1999 solvents directive and three minor laws relating to titanium dioxide emissions.

Further information: European Commission, www.europa.eu.int/comm/environment/ippc

IMO moves slowly on ship air pollution

Regulation of polluting emissions from international shipping lags far behind land-based sources, despite widely available cleaner fuels and exhaust after-treatment technologies.

In 2006 the International Maritime Organization (IMO) agreed to revise its regulation¹ on air pollution control, with the aim of adopting new standards by the end of 2007. Work is already delayed, and a meeting of the IMO's Bulk Liquids and Gases (BLG) sub-committee in London in February agreed to streamline the options being discussed rather than make definitive recommendations.

The outcome of the sub-committee's discussions will be put to the IMO's Marine Environment Protection Committee (MEPC) in the first week of April, and rubber-stamped in October.

Sulphur dioxide

Six different proposals to reduce sulphur dioxide (SO₂) emissions were narrowed down to three options:

► Option 1 would markedly tighten the current global cap on sulphur content in fuel, from 45,000 to 10,000 parts per million (ppm) by 2012, and then further reduce it to 5,000 ppm by 2015.

► Option 2 would maintain the current global cap, but the fuel sulphur limit would be significantly tightened – at 1,000 ppm by 2012 – in designated sulphur emission control areas (SECAs).

► Option 3 would lower the global cap slightly to 30,000 ppm by 2012, as well as lowering the SECA sulphur limit in two steps, from 15,000 to 10,000 ppm by 2010, and then to 5,000 ppm by 2015. In addition, micro-emission control areas may be established (up to a distance of no more than 24 nautical miles from the shoreline) at a level of 1,000 ppm sulphur in fuel.

By comparison, the current global average sulphur content of marine fuels

is 27,000 ppm (2.7 per cent), and the current SECA limit is 15,000 ppm. The maximum allowed sulphur content for diesel fuel used by road vehicles in the EU and North America is, or soon will be, 10–15 ppm.

Note that the BLG sub-committee did not explicitly back either a global switch to low-sulphur marine fuels or the use of ship exhaust cleaning of SO₂ emissions (using scrubbers) to meet the new sulphur limits.

Bryan Wood-Thomas, the chairman of the BLG, said that the three options presented by the group were not intended to constrain debate, and that nothing should preclude the development of hybrid proposals during future discussions.

Nitrogen oxides

A three-tier system to cut emissions of nitrogen oxides (NO_x) from new engines was recommended by the sub-committee.

In Tier 2, emissions would be cut by 16–22 per cent by 2011 relative to the Tier 1 levels from year 2000. Tier 3 would imply an 80-per-cent reduction by 2016, but this tighter limit would only apply in specially designated areas.

There was no agreement on proposed NO_x standards for existing (pre-2000) engines, but special attention was given to larger engines produced between 1990 and 1999.

No to emissions trading

After having discussed the issue of market-based instruments, the BLG noted that a large number of fundamental legal questions still remained to be solved, and therefore decided not to recom-

mend emission trading as a means to reduce ship air pollution.

Controversial study

Leading up to the BLG meeting there has been some controversy over a report² prepared for the sub-committee by a panel of so-called independent experts.

The report, which was published on 21 December, does not make explicit recommendations, but its findings on the impact of the various options to reduce SO₂ and PM have been submitted to both the BLG and the MEPC for consideration.

In its summary of health and environment effects, the report concludes that “almost all of the available information points in the direction of a lower level of adverse environmental and human health effects when distillate fuels are used rather than residual fuel oils”.

As regards consequential impacts on carbon dioxide emissions, it states that: “The alternative to removing SO₂ from exhaust emissions is to remove it from the fuel prior to usage. Studies which assess the relative CO₂ emissions associated with these two options suggest little difference overall, taking into account emissions associated with neutralization, scrubber operation, combustion and refinery emissions, as applicable.”

The expert panel made an assessment of the total volume of fuels being consumed by shipping at present, and a prediction of fuel use and emission trends up to 2020.

With no change in international regulations, it is predicted that today's total of 369 million tonnes of marine fuel consumption would rise to 486 million

Port electrification in California

Two port-related emissions reduction programmes proposed in December by the California Air Resources Board (ARB), will dramatically reduce port-related emissions of diesel particulate matter and nitrogen oxides throughout the state by 2014.

The first regulation will require certain type of ships (container, passenger and refrigerated cargo ships) to shut down their diesel auxiliary engines in ports in favour of using shore-based electrical power. Requirements get more stringent with time – as from 2014, 50 per cent of ship visits will be required to use cold ironing, increasing to 70 per cent in 2017 and 80 per cent in 2020. Alternative compliance methods to achieve equivalent emission reductions will be allowed.

Emissions of diesel particles and smog-forming NO_x from the ships are expected to come down by nearly 50 per cent relative to levels otherwise expected to be emitted in 2014, and 80 per cent by 2020. Next year, ARB expects to introduce a similar rule that will reduce emissions from bulk ships, tankers and vehicle carriers.

The second regulation is aimed at cleaning up emissions from the ageing fleet of dirty diesel trucks that hauls goods to and from ports and rail yards throughout the state.

A 2005 exposure study at the ports of Los Angeles and Long Beach showed that more than two million people live in areas around the ports with predicted cancer risks of greater than 10 in a million due to emissions from docked ocean-going vessels. The new regulations will help the Los Angeles region meet federally mandated air quality standards by 2014. In addition they will help reduce emissions of carbon dioxide.

Further information: www.arb.ca.gov/newsrel/nr120507.htm



The technology already exists. Shipping line Wallenius Wilhelmsen Logistics follows an ambitious environmental policy that has already led to a one-third reduction in sulphur dioxide emissions between 2001 and 2006, thanks to the use of low-sulphur fuels.

tonnes by 2020, of which 382 would be heavy fuel oil and 104 would be distillates.

That would put current CO₂ emissions from ships at 1,120 million tonnes, rising to 1,475 million tonnes in 2020. Current total SO₂ emissions from ships are estimated at 16.2 million tonnes, rising to 22.7 million tonnes in 2020.

Christer Ågren

Control Areas" (SECAs) to be established with more stringent control on sulphur emissions. In these areas, the sulphur content of fuel used onboard ships must not exceed 1.5 per cent. Alternatively, ships must fit an exhaust gas cleaning system or use other methods to limit SO_x emissions. The Baltic Sea was the first SECA to come into effect in May 2006, followed by the North Sea in November 2007. Annex VI also sets limits on the emissions of NO_x from new ship engines, but these standards are so weak that in practice they do not have any appreciable effect.

² Report on the outcome of the Informal Cross Government/Industry Scientific Group of Experts established to evaluate the effects of the different fuel options proposed under the revision of MARPOL Annex VI (20 December 2007). IMO Document BLG 12/6/1.

¹ Annex VI of the IMO's MARPOL Convention was adopted in 1997 and entered into force in 2005. It includes a global cap of 4.5 per cent on the sulphur content of fuel oil, and contains provisions allowing for special "SO_x Emission Con-

Baltic Sea states call for tough emission controls

Tighter emission standards are needed to cut emissions of air pollutants from the fast increasing marine traffic in the Baltic Sea.

Emissions of nitrogen oxides from shipping in the Baltic Sea are comparable to the combined land-based NO_x emissions from Denmark and Sweden, and ship emissions of sulphur dioxide in the same sea area are higher than the combined land-based emissions of SO₂ in Finland, Sweden, Norway and Denmark.

Ship traffic in the area is heavy and is growing by around five per cent per year, making the Baltic Sea one of the busiest seas in the world with 15 per cent of the world's cargo.

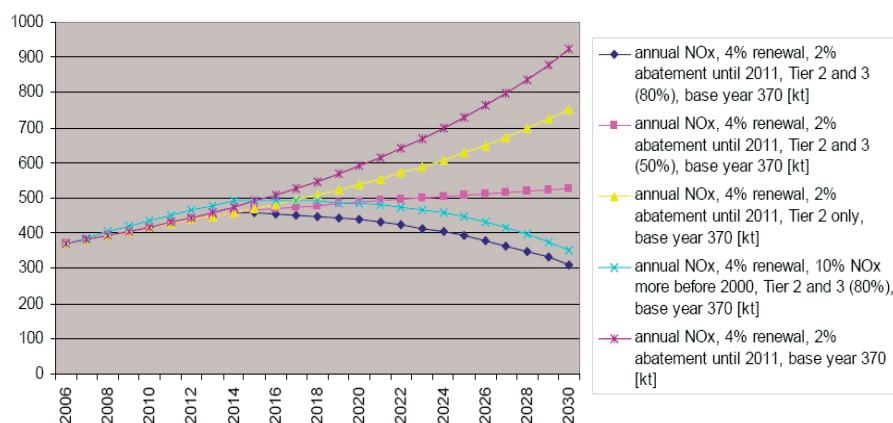
"The call for stricter international requirements is part of the Helcom Baltic Sea Action Plan to drastically reduce pollution to the sea and restore its good ecological status by 2021," said Anne Christine Brusendorff, Helcom executive secretary.

Nitrogen oxides

Tighter international regulations are needed to prevent a predicted sharp increase in NO_x emissions from ships in the Baltic Sea, according to a joint document¹ submitted by the Helcom countries to the upcoming 57th session of the International Maritime Organisation's (IMO) Marine Environment Protection Committee, which is due to approve new air pollutant emission standards in early April.

Helcom's submission is based on a study by research group ShipNODEff, which calculates that the pollutant's rise can be curbed only by limiting the NO_x emissions of ship engines installed from 2015 by at least 80 per cent compared to current levels.

Several scenarios up to the year 2030 were investigated. With a projected annual 5.2-per-cent growth in maritime



Emissions of nitrogen oxides [kt] from shipping in the Baltic Sea, assuming an annual traffic increase of 5.2 per cent. Figure from the Helcom NO_x submission.

traffic, the business-as-usual scenario would result in emissions nearly trebling, from the current (2006) level of 370,000 tonnes, to nearly 1,000,000 tonnes (see figure above).

Introducing one of the set of measures discussed by IMO – a 19-per-cent Tier 2 reduction in emissions from new ship engines as from 2011, and a 50-per-cent Tier 3 reduction after 2015 – would not reverse the current trend of increasing emissions.

Only the most challenging requirement – an 80-per cent Tier 3 reduction in emissions from new engines installed on ships from 1 January 2015 – would result in a gradual lowering of NO_x emissions after 2020. But even under this scenario, emissions in 2030 would still remain very high, about 300,000 tonnes per year.

Deposition of atmospheric nitrogen is one of the main contributors to the high nutrient concentrations that stimulate massive algae blooms in the Baltic Sea. The study identifies shipping as the largest contributor to atmospheric NO_x

deposition into the Baltic Sea, with a share of 16 per cent – while in some areas and seasons up to 50 per cent originates from shipping.

Sulphur dioxide

Helcom member states will also back proposals for steep reductions in sulphur emissions from ships. The Baltic Sea coastal countries have jointly submitted a document to the IMO, calling for more ambitious aims regionally as well as globally to further reduce SO₂ emissions from ships.

The Baltic Sea was the first established Sulphur Emissions Control Area (SECA), introducing a cap of 1.5 per cent sulphur for shipping fuel starting on 19 May 2006, followed by the North Sea a year and half later.

As a result, total annual emissions of SO₂ from shipping in the Baltic Sea were estimated at around 148,000–167,000 tonnes for 2006.

But not all ships in the Baltic Sea follow the SECA restrictions. In 2006, nearly 2,000 ships were inspected in the

Baltic Sea ports for compliance with the fuel oil requirements, and in 28 cases non-compliance with the requirements was found.

Sulphur emissions from shipping cause considerable harm to human health (primarily due to fine particles) and to the environment (acidification of freshwater as well as terrestrial ecosystems). One of the options favoured by most Helcom countries is a switch to cleaner fuels (distillate fuels) and a stricter fuel sulphur cap.

Christer Ågren

¹ The NO_x submission of the Helcom countries to the IMO Marine Environment Protection Committee, is available from www.helcom.fi/press_office/news_helcom/en_GB/HELCOM_submission_to_IMO/

The Baltic Marine Environment Protection Commission, or Helcom, is the governing body of the Convention on the Protection of the Marine Environment of the Baltic Sea Area, also known as the Helsinki Convention. See: www.helcom.fi



New dawn for sail power?

After several years of preparation and testing the Hamburg-based company SkySails is now carrying out full-scale trials of its concept. In January the cargo ship MS "Beluga SkySails" travelled from Europe to South America under a 160 sq. m sail.

The Shipping company and the manufacturer calculate that by using the towing kite system, a ship's average annual fuel costs can be reduced by 10 to 35 per cent, depending on the prevailing wind conditions. Under optimal wind conditions, SkySails estimates that fuel consumption can temporarily be cut by up to 50 per cent. The first results are to be expected in the next few months.

Further information: www.skysails.info

Emission requirements move toward global harmonization

The EU Commission wants stricter requirements to be imposed on emissions from heavy vehicles, but proposes that they are not implemented until 2013/14.

Having sent four different proposals for stakeholder consultation last summer (see AN 3/07), the EU Commission put forward a proposal for regulation¹ just before Christmas.

The new Euro VI requirements are proposed to come into force in 2013 (but would not include all vehicles until October 2014) and entail a reduction of 80 per cent in nitrogen oxides (NO_x) and 66 per cent in particulate matter (PM) emissions compared to the Euro V limits, which take effect in 2008. The emission requirements for hydrocarbons (HC) are also stiffened.

The vehicles covered are buses, lorries and other heavy road vehicles. Although the proposal does not take a stance on specific technical solutions it is clear that particulate filters must be fitted to all diesel vehicles in order to meet the PM requirement. Exhaust gas recirculation and after-treatment devices would be necessary to meet the NO_x standard.

The Commission's impact assessment acknowledges that meeting the standards will result in an increase in prices of new vehicles. But overall the new limits will deliver "a high amount of environmental benefit at a reasonable cost".

In light of the considerable stiffening of emission requirements this will entail, there have been surprisingly few protests. One significant reason is that the

proposed requirement levels are close to those that will come into effect in the US in 2010. The proposal is consequently seen as a step on the road to global harmonization, of which the industry is in favour.

In addition to more stringent limit values, the proposal introduces provisions on off-cycle emissions, on-board diagnostics, durability of pollution control devices, carbon dioxide emissions and fuel consumption measurement.

The proposal also foresees the introduction of a particle number limit value, as a complement to the current mass-based standards. This is to prevent the use of emission control technology that removes the larger (heavier) particles but lets through the smallest and most harmful.

The new legislation would be in the form of a regulation. Regulations are directly binding in all member states and require no transposition into national law. The Commission says this will reduce administrative burdens and delays.

The proposal will now be discussed by the European Parliament and the Council of Ministers.

Per Elvingson

¹ COM(2007) 851 final.

Further information: The proposal and its impact assessment are available at http://ec.europa.eu/enterprise/automotive/pagesbackground/pollutant_emission/#eurovi

Proposed Euro VI Emission Limits.

Test cycle	HC (mg/kWh)	NO _x (g/kWh)	NH ₃ (ppm)	PM (mg/kWh)	CO (g/kWh)
ESC	130	0.4	10	10	1.5
ETC	160 ^A	0.4	10	10	4.0

^A For LPG engines there are separate limits for methane and non-methane hydrocarbons (500 and 160 mg/kWh respectively).

A model regulatory programme for HDV

Tremendous opportunities exist to improve public health around the world by reducing emissions from heavy-duty vehicles.

In an effort to accelerate progress toward this objective, the International Council on Clean Transportation (ICCT) has developed a model regulatory programme for harmonizing and reducing exhaust and evaporative emissions from heavy-duty vehicles.

According to the ICCT, the model “distils best practices in heavy-duty emission controls from the EU, US, and Japan into a single regulatory programme suitable for adoption by interested countries.”

The model is presented in a report that summarizes the rules in different countries and describes the available emission control technology and its costs.

Further information: **A Model Regulatory Program for Heavy-Duty Emissions**. Available in pdf format (550kB) at www.theicct.org/documents/final_model_rule.pdf



Environmental zones in 70 European cities

On the first of January the cities of Berlin, Cologne and Hanover introduced environmental zones. Access into these zones is restricted to vehicles meeting certain exhaust gas standards.

Introduction of these zones is related to the exceedance of limit values for particles (PM_{10}) and nitrogen dioxide in many major streets of these cities. The main source of these substances is traffic, which contributes about 40 per cent of PM_{10} and 80 per cent of the nitrogen dioxide pollution in Berlin, for instance.

Actual regulations and the degree of further tightening differ between the three cities. During 2008 about 20 other German cities will follow suit and introduce environmental zones.

Well over 70 cities and towns in eight countries around Europe have already introduced, or are preparing to introduce “Low Emission Zones”, or “Environment Zones” to help meet the health-based air quality standards.

Further information: www.lowemissionzones.eu.

Air quality law revision agreed

Limit values for fine particles will enter into force by 2015. Member states will be given more time to meet already existing standards in certain areas.

On 11 December the European Parliament adopted a compromise agreement on the new air quality directive, based on a deal brokered by a group of parliamentarians and the Portuguese EU presidency. The text has been forwarded to the Council for final approval.

Environment Commissioner Stavros Dimas said: “Air pollution causes major problems for the environment and the health of European citizens. Therefore I am pleased that the agreement reached on air quality addresses this problem and provides ambitious, but realistic and timely standards for fine particle pollution in the EU.”

But environmentalist groups, such as the European Environmental Bureau, were critical: “Politicians have allowed the weakening of existing laws in order to get new standards for fine particles,” said Doreen Fedrigo. “This might seem attractive at first, but in fact, it will not demand the required additional action that would improve air quality.”

EEB is particularly disappointed with the limit value related to fine dust particles ($PM_{2.5}$), which are especially harmful to people's health. The new limit value is set as high as 25 micrograms per cubic meter ($\mu g/m^3$) and will not need to be achieved until 2015.

In contrast, the air quality guidelines agreed by the World Health Organization (WHO) in 2005 recommend an annual average $PM_{2.5}$ standard of $10 \mu g/m^3$.

Moreover, according to EEB, the new limit value will not lead to any meaningful pollution reduction as such a level is likely to be met anyway without any extra effort from member states.

However, a provisional $PM_{2.5}$ limit of $20 \mu g/m^3$ by 2020 was also agreed, sub-

ject to a “favourable assessment” by the European Commission in 2013. The assessment will cover experience gathered with the weaker limit, technical feasibility and the health and environment benefits of moving to the tougher target.

There is also a separate obligation for member states to limit population exposure to fine particles. The average background concentration in urban areas should not exceed $20 \mu g/m^3$ by 2015. The text also establishes related exposure reduction targets to be met by 2020.

The new directive will not change the existing air quality standards as such, but would give member states more time to meet some of these standards in areas where they have difficulty complying.

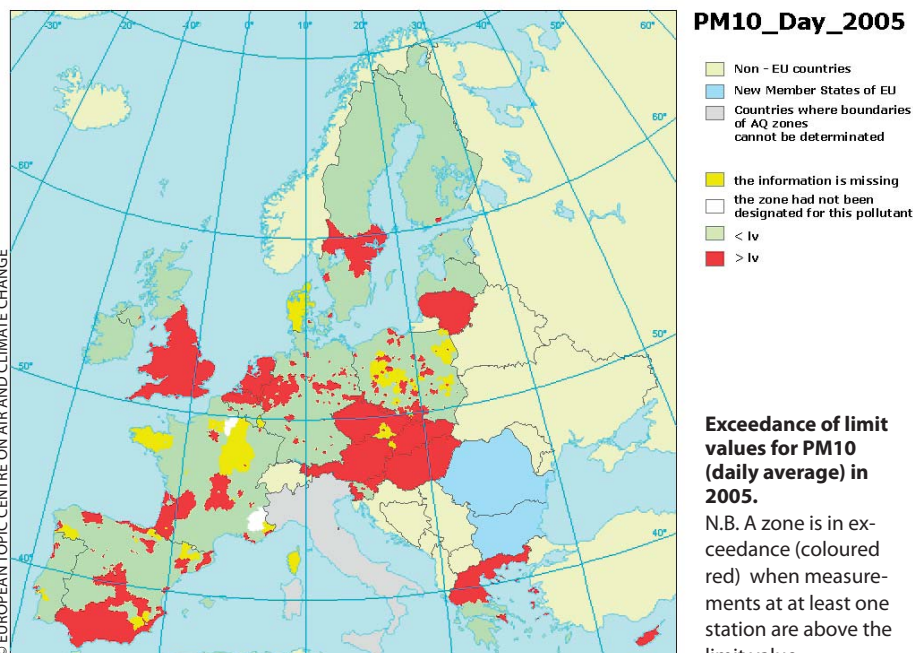
Under the agreed text the deadlines for complying with the already existing standards can be postponed by up to three years after the directive's entry into force, which means that meeting the existing limit values for PM_{10} may now be postponed from the original deadline of 2005 until 2011.

Such postponements should be granted only if member states have fully implemented relevant EU legislation, and taken all appropriate abatement measures. The directive provides a list of measures that need to be considered.

Upon final approval by the Council the new directive will be published in the EU's Official Journal alongside a Commission declaration on progress in developing and adopting further measures as outlined by the Thematic Strategy on Air Pollution. A review of the directive is required by 2013.

Christer Ågren

For more information, see: <http://ec.europa.eu/environment/air/directive.htm>



Air quality in Europe may be deteriorating

Air quality in Europe has declined in recent years, according to a report from the European Topic Centre on Air and Climate Change (ETC/ACC), which also cautions that the short time period involved makes it difficult to draw reliable conclusions.

Changes in EU legislation mean that concentrations and exceedances are now reported in a new way, and there are still

shortcomings in the data countries supply to ETC/ACC.

It is however noted that concentrations of the most significant pollutants in health terms – particulate matter (PM₁₀) and ground-level ozone – exceeded legal limits in a “considerably” higher proportion of measured zones in 2005 than in 2001.

The percentage of EU25 zones exceeding a daily limit value for PM₁₀ was 44 per cent in 2005. The health limit for ozone was broken in over a third of all zones and the limit to protect vegetation in nearly a quarter. The situation has also deteriorated for nitrogen dioxide (NO₂), and the annual legal limit was exceeded in 26 per cent of zones.

The problems are unevenly distributed across the continent, with the exception of ozone, for which almost every country in central and southern Europe reports levels that exceed limit values.

In the case of NO₂ and PM₁₀, local traffic is the main cause in at least 70 per cent and 50 per cent of reported exceedances respectively. The single most important reason for ozone exceedances is also local traffic, which accounts for at least 20 per cent of the cases. For sulphur dioxide, industry and power generation are the dominant cause.

Overall, it is reported that in 89 per cent of the zones, the levels reported in 2005 were below all limit values plus margins of tolerance for the First and Second Daughter Directive. Stated conversely, in 11 per cent of all zones, a plan or programme had to be developed for at least one pollutant under the same directives.

Per Elvingsson

Further information: The report, The air quality “Questionnaire” analysis of the Member States reporting on 2005, can be downloaded from the European Topic Centre on Air and Climate Change, <http://air-climate.eionet.europa.eu/>

Saab warned over “greenwash” advert

Swedish car manufacturer Saab has been warned it faces legal action from Friends of the Earth in Belgium for implying in an advertising campaign that its new “biopower” car has no environmental impact. FoE Europe says the advertisement is “greenwash”. Official fuel consumption figures show Saab cars are among the worst performers on the Belgian market, it says. The Belgian advertising authority has already condemned the Saab campaign.

Further information: FoE press release, 10 January 2008, www.foeeurope.org.

Lifetime costs for public procurement

The EU Commission’s proposal for legislation on the rules for public authorities to buy road vehicles came out in December. As expected they will require all authorities to consider the lifetime cost of emissions and fuel consumption. The principle of bodies such as public transport authorities paying more for vehicles that are environmentally better has been accepted for some time, but the new legislation proposes a harmonized methodology for calculating the lifecycle costs of fuels and harmful emissions.

Source: T&E Bulletin, February 2008.

Poor air affects the brain

Kids who live in neighbourhoods with heavy traffic pollution have lower IQs and score worse on other tests of intelligence and memory than children who breathe cleaner air, a new study shows. The effect of pollution on intelligence was similar to that seen in children whose mothers smoked 10 cigarettes a day while pregnant, or in kids who have been exposed to lead. The study used black carbon as a marker for traffic-related particles.

Source: Planet Ark (Reuters), 18 February 2008. The study was published in the American Journal of Epidemiology 2008 167(3): 280-286.



Lignite – expensive and unsustainable

Germany continues to invest in brown coal mining, despite ambitious climate targets. Requirements for carbon capture and storage could eventually make the fuel unprofitable.

Lignite, or brown coal, is Germany's main domestic fuel resource. Nearly 40 billion tons of economically accessible reserves slumber beneath the Rhineland near the Netherlands and in a large eastern semicircle extending from the Polish border, past the cities of Dresden and Leipzig, and up to the Baltic Sea near Hamburg. Almost a half-million tons of lignite are mined each day to generate a quarter of Germany's electricity, about 150 billion kilowatt-hours annually. While the lignite industry claims that this production level could be maintained well into the 22nd century, that prediction presupposes a continued indifference to environmental degradation and social disruption.

From a classic economic viewpoint, lignite is Europe's least costly commercial fuel. Being of recent geological origin, the shallow deposits can be easily extracted by surface mining.

As a consequence, however, the lignite delivered to power stations is saturated with groundwater from the mining pits, greatly reducing generating efficiency. Firing this wet, carbonaceous fuel emits three times as much carbon dioxide (CO₂) per

kWh as modern gas-fired power plants.

Lignite electricity generation is responsible for about one fifth of all German CO₂ emissions, making the attainment of climate protection goals difficult. Under the Kyoto Protocol, Germany is required to diminish greenhouse gas emissions by 21 per cent between 1990 and 2012. The greatest percentage was already achieved in the early 1990's, as lignite usage in eastern Germany declined from 300 to 80 million tons annually due to deindustrialization and fuel switching. Nearly two thirds of all CO₂ reductions occurred in Saxony alone, where lignite-based production had been concentrated. In the absence of any such further gains, EU emissions trading will now be essential for meeting Kyoto targets.

While most of the CO₂ emissions rights (called allocations) required for trading have been distributed to power companies without charge, utility customers are consistently billed for their fictional purchase. The environmental organization WWF estimates that Germany's five largest power producers RWE, E.ON, Vatten-

fall, EnBW, and Steag will have realized unearned income of 31 to 64 billion euro in this way by 2012. These windfall profits have boosted power bills considerably, unleashing a wave of consumer dissent. Over 1.2 million households have already switched their electricity supplier in reaction to rising prices. Public protest has widened, forcing several new coal plant projects to be abandoned.

The parliament of Mecklenburg-Vorpommern unanimously resolved in 2007 to oppose any lignite mining in that northeastern state, which already generates a third of its electricity using local wind, solar, and biomass resources. A coalition of NGOs and political parties has now collected enough signatures in neighboring Brandenburg to require the state parliament debate a moratorium on new mines. Continued lignite usage would involve wide-scale landscape devastation and the evacuation of dozens of communities. Vattenfall has already destroyed the historic village of Horno and the Flora-Fauna Habitat at Lacoma to extract additional quantities of lignite for its chronically inefficient

Jänschwalde power station. In producing one kilowatt-hour of electricity, this plant emits over a kilogram of CO₂ – the same as an average European automobile traveling seven kilometers on the open highway.

In the Rhineland, the new Garzweiler II mine with a projected capacity of 1.3 billion tons of lignite will necessitate the resettlement of 7,600 people by the middle of the century. Demographic erosion is more serious in eastern Germany, where a loss of up to three quarters of the population is expected in some mining regions by mid-century.

The village of Heuersdorf near Leipzig is currently being destroyed by the MIBRAG mining corporation after unsuccessfully appealing for a reduction of lignite usage to fulfill climate protection obligations. As was forewarned by the town, however, CO₂ emissions trading now threatens to make lignite generation a prohibitively costly venture. MIBRAG has been unable to secure adequate investment capital for a 660-megawatt power plant needed for its own operations.

Part of the lignite required for this project would be located under culturally hallowed ground. The German philosopher Friedrich Nietzsche lies buried at his birthplace in the town of Röcken only a few kilometers from the intended plant site. The lignite seams extend north past the medieval city of Lützen, where the Swedish king Gustavus Adolphus was killed in a victorious battle of the 30 Years' War in 1632. Lützen itself

might be spared devastation due to the cost of resettling thousands of city inhabitants, but its drinking water supplies would likely vanish as groundwater was pumped out of the surrounding mines.

The mining industry argues that continued lignite generation will lead to more advanced power plants that in turn can be emulated by China and India to avert a climate catastrophe. In actuality, however, there is no more expensive way of reducing CO₂ emissions than by continuing to use lignite.

Various techniques for carbon capture and storage (CCS) have been developed for removing climate-warming emissions from fossil fuel power generation. Vattenfall is completing a CCS demonstration plant at Schwarze Pumpe southeast of Berlin to verify the viability of its Oxyfuel process. The diminutive 30-megawatt capacity is only a fraction of normal plant size, however, obscuring the enormous expenditures required for full-scale lignite carbon elimination. To implement the entire CCS process chain, the carbon dioxide released by combustion would have to be captured, compressed into a supercritical liquid, transported to distant geological sequestration locations, and injected underground under high pressure for permanent storage. Two CCS operations would require a third power plant to replace the energy lost to these processes, raising total lignite consumption to a quarter billion tons annually, a third more than current levels. Surface mining would destroy even more landscape

and villages than previously expected.

The resulting hydrological imbalances would be particularly precarious in Lusatia, where all of the Vattenfall mines are located. This region already suffers from a water deficit of seven billion cubic meters with no prospect of replenishment. In the future, up to four litres of water could be required for each kilowatt-hour of electricity generated by a CCS plant from lignite.

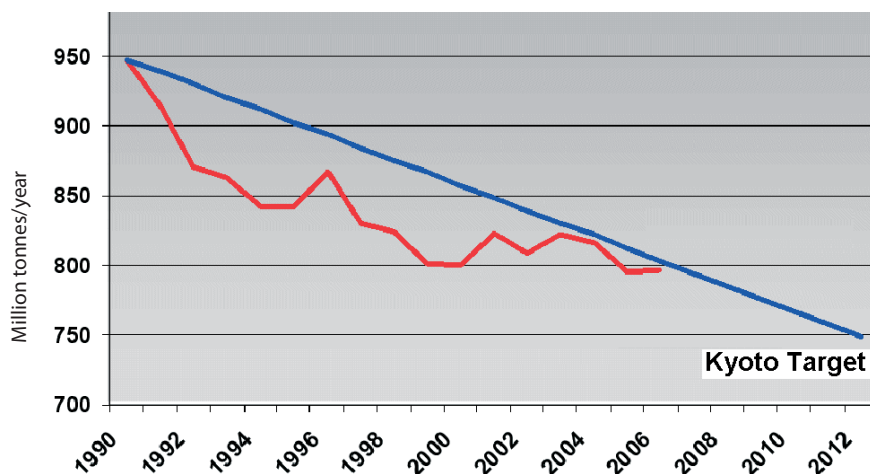
To ensure investment security, the price of CO₂ allocations must remain permanently higher than the added costs of CCS implementation. Even if this technology can be developed to perfection, however, the complicated licensing requirements of a nationwide pipeline network for transporting CO₂ might delay realization interminably.

Vattenfall has considered sidestepping this problem by shipping lignite by rail to the North Sea and building CCS power plants at the shoreline. This proposal exemplifies the embryonic irrationality inherent to all carbon capture schemes. CCS would essentially divert a third of fossil fuel power resources from human usage to underground storage. The option of lignite rail delivery could disrupt regular train services, while every second freight car would effectively be transporting groundwater from the mines.

On the positive side, however, the high investment risks of CCS would likely accelerate the deployment of renewable energy technologies and resource conservation strategies. Many options have yet to be implemented, ranging from wide-scale biomass and solar energy generation to the use of intelligent power meters interconnected with "smart" household appliances. Such alternatives promise far greater economy than the financial extravagance of carbon-free fossil fuel power. By instead canceling all future lignite projects, intact landscapes and demographic stability would remain as assets for a permanently sustainable economy.

Jeffrey H. Michel

Further reading: Status and Impacts of the German Lignite Industry. Updated February 2008. By J. H. Michel, published by the Swedish NGO Secretariat on Acid Rain. Available in pdf format at www.acidrain.org.



Under the Kyoto Protocol, Germany is required to reduce greenhouse gas emissions by 21 per cent between 1990 and 2012. The greatest cut was achieved in the early 1990's, as lignite usage in eastern Germany declined from 300 to 80 million tons annually due to deindustrialization and fuel switching.

Some countries still defaulting

Greece and Spain have still not reduced their emissions as required.

A few countries are still failing to comply with the emission reduction demands of protocols to the Convention on Long-Range Transboundary Air Pollution, and several countries are failing to comply with the obligation to report. This is apparent from last year's review conducted by its Implementation Committee,¹ which was discussed at the convention's Executive Body (EB) meeting in December 2007.

Despite the sharp reprimands that were issued in 2006 by the convention's EB (which includes representatives from all the member countries), three countries – Greece, Spain and Denmark – have still not reduced their emissions as required by the protocols.²

In 2007, the committee examined the following four countries for non-compliance with emission targets.

Spain. Emissions of nitrogen oxides (NO_x) were reported to have been above the base-year level every year from 1994 to 2005. Spain also failed to comply with the VOC protocol – it is still a long way from achieving the required 30-per-cent reduction. Spain has stated that it did not expect to achieve compliance with the NO_x protocol before 2017 and with the VOC protocol before 2020.

The committee noted that, based on the most recent emission data, Spain was now even further away from compliance than estimated before. The EB expressed increasing disappointment at the continuing failure of Spain to fulfil its obligations to take effective measures to attain compliance.

Greece. National NO_x emissions are still higher than they were in 1987, the base year for the 1988 NO_x protocol. In 2005

they rose to 317,000 tonnes, compared to 285,000 tonnes in 1987. The committee stated that it doubted Greece's expectation to achieve compliance by 2010, and concluded that the country's responses to earlier EB decisions remained insufficient. The committee also noted repeated instances of lack of cooperation.

The EB expressed increasing disappointment at the continuing failure of Greece to take effective measures to reduce its emissions, and also expressed concern that Greece does not seem to give sufficient attention to the matter of continuing non-compliance.

Denmark. Increased use of biomass for domestic heating has meant that emissions in Denmark of polycyclic aromatic hydrocarbons (PAH) continue to increase, which is not compliant with the emission reduction obligation in the Persistent Organic Pollutant (POP) protocol.

The EB expresses disappointment that Denmark has merely indicated that it

will achieve compliance “in a not too distant future”, and urges Denmark to speed up the implementation of planned measures and/or take additional measures as soon as possible to shorten the period of expected non-compliance.

Norway. In 2005, after six years of non-compliance, Norway achieved compliance with its VOC emission reduction obligation for the whole country, but still failed to comply with regard to its tropospheric ozone management area (TOMA). However, a downward trend in emissions has been observed, and preliminary data for 2006 indicate that Norway appeared to comply with its TOMA obligation to reduce VOC emissions by at least 30 per cent from the 1989 level.

During the following discussions in the EB several countries expressed their concern about some of the alarmingly long periods of non-compliance – 12 years in the case of Greece and more than 20

CLRTAP news

The Executive Body (EB) of the Convention on Long-Range Transboundary Air Pollution met in Geneva on 10–13 December 2007.

Regarding the 1999 Gothenburg Protocol (which among other things sets national emission ceilings for SO₂, NO_x, VOCs, and NH₃), it was agreed to mandate the Working Group on Strategies and Review to commence negotiations on further obligations to reduce emissions, with the aim of presenting the outcome of this work to the twenty-seventh session of the Executive Body in December 2009.

While the EB decided to mandate the Con-

vention's Working Group on Strategies and Review to negotiate draft amendments to the 1998 protocol on persistent organic pollutants (POPs) protocol, including for example the inclusion of seven new substances, there was no consensus to mandate a similar revision of the heavy metals protocol.

The EB established a new sub-group – a Task Force on Reactive Nitrogen under the leadership of the United Kingdom and the Netherlands.

Its long-term goal is to develop “technical and scientific information, and options which can be used for strategy development to encourage coordination of air pollution policies on nitrogen”.

years in the case of Spain, according to their domestic plans and projections. It was agreed that the committee should look into what possible stronger measures could be taken.

As to the obligation to report on emission data, the committee noted that despite a general improvement there are still several parties that have not reported final and complete emission data.

Parties to the convention are also required to report strategies and policies for abating air pollution generally, and several parties were still found to be failing to comply with their reporting obligations for 2006. The report¹ contains country-by-country tables giving an overview of the current status of reporting.

This inadequate reporting is a serious matter, as the information that is being asked for is essential not only for tracking compliance with agreed commitments, but also to provide information for the forthcoming reviews and possible revisions of the protocols under the Convention.

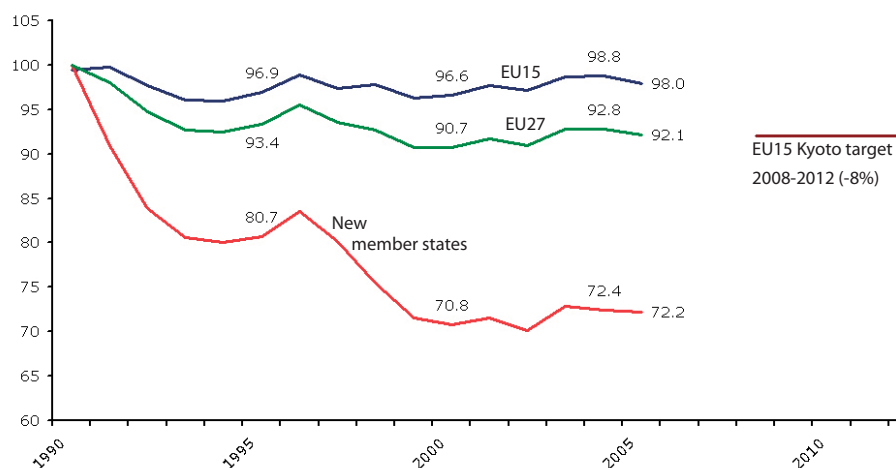
Christer Ågren

¹ The tenth report of the CLRTAP Implementation Committee (EB.AIR/2007/3). Can be downloaded from www.unece.org/env/eb/welcome.25.html

² Under the 1988 NOx Protocol, countries agreed to restrict their NOx emissions to 1987 levels after 1994. The obligation under the 1991 VOC Protocol is for most countries to reduce their VOC emissions by 30 per cent by 1999, as compared to a base year, which in most cases is 1988.

EU GHG emissions decreasing – but too slow?

EU-15: index 100 = base-year level
New Member States and EU-27: index 100 = 1990



A new assessment report from the European Environment Agency shows that the total greenhouse gas emissions in the EU27 decreased by 0.7 per cent between 2004 and 2005 and by 7.9 per cent between 1990 and 2005.

Emissions decreased strongly in the new member states during the 1990s but since 2000, the trends have been almost identical in the EU15 and in the new member states. Between 1990 and 2005, greenhouse gas emissions decreased in all sectors except in the transport sector,

where they increased significantly.

In the EU15, total emissions of greenhouse gases decreased by 2.0 per cent between the Kyoto base year and 2005. This means the EU15 has achieved one fourth of the total reduction needed to achieve the 8-per-cent reduction from base-year level required by 2008-2012 under the Kyoto Protocol. However, the target can also be reached through actions outside the EU.

Further reading: www.eea.europa.eu

Recent publications

Een Swingende Conventie – Acid, Heavy Metal en POP

Ed. Johan Sliggers, 2007. Book in Dutch about the Convention on Long-Range Transboundary Air Pollution. Published by the Vereniging van Milieuprofessionals. For information: Johan.Sliggers@minvrom.nl

Critical Loads of Nitrogen and Dynamic Modelling

201 pp. Eds. J. Slootweg, M. Posch, & J-P Hettelingh. CCE Progress Report 2007. Up-to-date maps and data on critical loads and their exceedance in Europe, as well as the current state of knowledge in modelling and mapping. Available from the Coordination Center for Effects, www.mnp.nl/cce

Handbook on estimation of external cost in the transport sector

336 pp. By CE Delft. The European Commission's DG for Energy and Transport has published this handbook. Available from http://ec.europa.eu/transport/costs/handbook/index_en.htm

U.S. Container Ports and Air Pollution: a Perfect Storm

90 pp. By James Cannon, Energy Futures, Inc. Study assessing air pollution control efforts at America's top 10 container ports. Available from www.energy-futures.com

A History of the Science and Politics of Climate Change – The Role of the Intergovernmental Panel on Climate Change

292 pp. By Bert Bolin, 2007. A unique history of the IPCC with a focus on the interaction of science and socio-economic issues, written by its first chairman. Published by Cambridge University Press. See: www.cambridge.org/uk/catalogue/

Cost-effective abatement options for improving air quality in the Netherlands

By the Netherlands Environmental Assessment Agency (MNP). Concludes that road use pricing is the most cost-effective option, followed by technical measures in e.g. the shipping and industry sectors. Can be downloaded from www.mnp.nl/en/publications/2007/

Strategies and Policies for Air Pollution Abatement – Review 2006

73 pp. Report ECE/EB.AIR/93. Provides an update on the current state of the Convention on Long-Range Transboundary Air Pollution and shows trends in emissions. Published by the UN Economic Commission for Europe. Downloadable from www.unece.org/env/lrtap/conv/conclusi.htm

Recent publications

Index of articles 2003-2007

Like to know what has appeared in Acid News over the last five years on subjects such as health effects and heavy vehicles? Now you can find out easily using the four-page index in pdf format on our website at www.acidrain.org (choose Publications, then Index of articles). All the articles printed since Acid News was first published in 1982 are indexed on our website. The magazine has been published online since 1996.

Sex, Sulphur, and a Fishy Business

This film, subtitled "A kind of twisted documentary on acid rain in Scandinavia", explains air pollution problems in an unconventional way. It was previously distributed in VHS format, but is now available as a DVD. Available free of charge within Europe, please contact the Secretariat.

Pollution Control Handbook 2008

A guide to UK and European pollution control legislation, covering industrial pollution control, air quality management and air pollution, and noise. Published by Environmental Protection UK (formerly NSCA). £95.00. Can be ordered at www.environmental-protection.org.uk/publications/

Estimating the environmentally compatible bioenergy potential from agriculture

Report by the European Environment Agency, confirming that there is a large potential for bioenergy production from agricultural biomass in Europe. However, the increasing demand for biofuels raises concerns about additional pressure on Europe's environment and farmland biodiversity.

EEA Technical report no. 12/2007. http://reports.eea.europa.eu/technical_report_2007_12/en

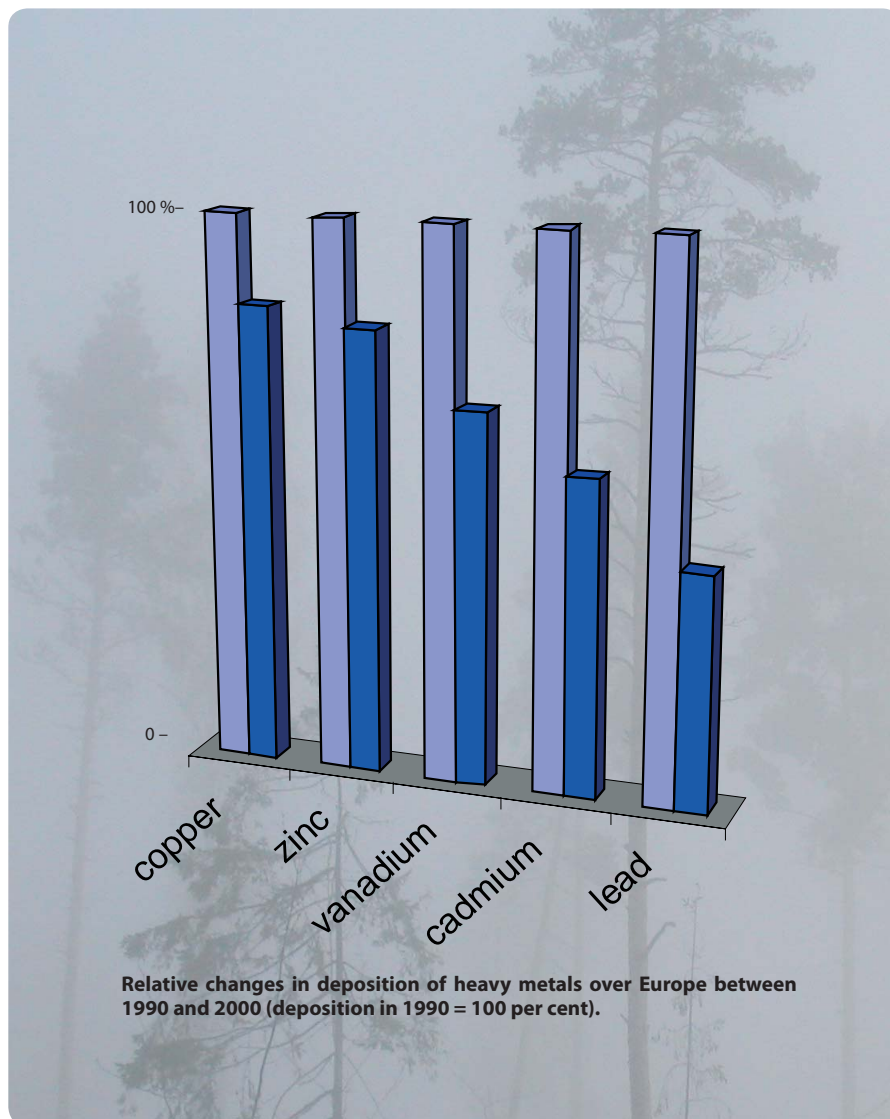
Better management of municipal waste will reduce greenhouse gas emissions

A briefing from EEA explaining how better processing of municipal waste will continue to reduce emissions of greenhouse gases from this sector, while calling for greater attention to increasing volumes across Europe.

EEA Briefing 1/2008, available in 26 languages. Can be downloaded at www.eea.europa.eu.

Valuation of air pollution ecosystem damage, acid rain, ozone, nitrogen and biodiversity – final report

95 pp. By ECOLAS, on behalf of the European Commission's DG Environment. Available from http://ec.europa.eu/environment/air/valuation/index_en.htm



Reduction in heavy metals deposition over Europe

Heavy metals in the atmosphere may travel over large distances before being re-deposited on land. One effective way of monitoring how deposition changes with time is to measure concentrations in moss. A bio-monitoring network coordinated by the United Nations Economic Commission for Europe (UNECE) provides data on the concentration of 10 heavy metals in mosses from about 7,000 sites across Europe.

An analysis of trends between 1990 and 2000 reveals the following:

► Whereas the arsenic, cadmium, copper, lead, vanadium, and zinc concentra-

tion in mosses decreased significantly between 1990 and 2000, the decreases for chromium, iron, mercury and nickel were not significant.

► The chronological trends for cadmium (-42%), lead (-57%) and mercury (-8% between 1995 and 2000) were similar to those reported by EMEP regarding modelled total deposition in Europe.

The observed chronological trends in the concentration of heavy metals were not only metal-specific but also country-specific.

Further information: <http://icpvegetation.ceh.ac.uk>

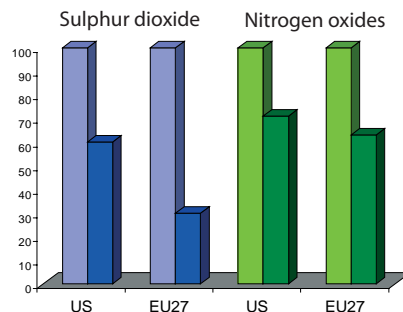
Acid emissions in the US decreasing

Emissions of sulphur dioxide (SO₂) from electric power generation sources within the US Acid Rain Programme fell sharply in 2006, with reductions of 830,000 tonnes from 2005 levels and an overall reduction of 40 per cent from 1990 levels, reports the US Environment Protection Agency (EPA).

In the US, the electric power industry accounts for 70 per cent of total annual SO₂ emissions and 20 per cent of those of nitrogen oxides (NO_x).

Since 1990, total US emissions of SO₂ have fallen by 40 per cent, from 23.1 million tonnes to 13.8 million tonnes in 2006, and those of NO_x have come down by 29 per cent, from 25.5 to 18.2 million tonnes. (For comparison, emissions of SO₂ and NO_x in the 27 member states of the EU fell by 70 and 37 per cent, respectively, from 1990 to 2005.)

The emission reductions in the US have led to what the agency describes as: "A significant decrease in acid deposition, resulting in improved water quality in US lakes and streams. Reduced



Emissions in the US are falling – but not nearly as quickly as in the EU. The bars show the relative changes between 1990 and 2005 in the US and EU for sulphur and nitrogen oxides (emissions in 1990 = 100%).

formation of fine particles, improved air quality and human health related benefits are all results from the reduction of these emissions."

A 2005 EPA study estimates that in 2010, the Acid Rain Programme's annual benefits will be approximately \$122 billion, at an annual cost of about \$3 billion: a 40-to-1 benefit-to-cost ratio.

View the 2006 progress report: epa.gov/airmarkets/progress/arp06.html

Northeast states renew call for power plant emissions cuts

The Ozone Transport Commission, OTC, an organization of 12 northeastern and mid-Atlantic states plus the District of Columbia, is asking the US Environmental Protection Agency to require further emission reductions from power generators, above and beyond those provided in the 2005 Clean Air Interstate Rule.

Reducing power plant emissions leads to fewer deaths, fewer respiratory and heart-related hospital admissions and emergency room visits, decreases in school absences, and higher worker productivity, a new study by the OTC has found.

The Clean Air Interstate Rule will permanently cap emissions of sulphur dioxide, SO₂, and nitrogen oxides, NO_x, in the eastern United States and establishes a cap-and-trade system for these gases.

When fully implemented in 2015, the Clean Air Interstate Rule is expected to reduce SO₂ emissions in 28 eastern states and the District of Columbia by over 70 per cent and NO_x emissions by over 60 per cent from 2003 levels.

Source: **Environment News Service**, 20 November 2007. Further information: www.otcair.org.

Further publications

Plan B 3.0: Mobilizing to Save Civilization

By Lester R. Brown, Earth Policy Institute. Plan B 3.0 provides a comprehensive plan for reversing the trends that are fast undermining our future. Its four overriding goals are to stabilize climate, stabilize population, eradicate poverty, and restore the earth's damaged ecosystems. At the heart of the climate-stabilizing initiative is a detailed plan to cut carbon dioxide emissions 80 per cent by 2020 in order to hold the future temperature rise to a minimum.

Can be downloaded free of charge, or purchased, at www.earthpolicy.org/Books/PB3/

Assessment of Climate Change for the Baltic Sea Basin

An up-to-date overview of the latest scientific findings in regional climate research on the Baltic Sea Basin, including climate changes in the recent past, climate projections up until 2100, and an assessment of climate change impacts on terrestrial, freshwater and marine ecosystems.

More than 80 scientists from 13 European countries were involved in this interdisciplinary project, which was coordinated by the GKSS Research Centre in Germany.

474 pp. €169.95. Published by Springer-Verlag. ISBN: 978-3-540-72785-9.

Global Environment Outlook: environment for development (GEO-4)

Report assessing the current state of the global atmosphere, land, water and biodiversity, describes the changes since 1987, and identifies priorities for action. GEO-4 is the most comprehensive UN report on the environment, prepared by about 390 experts and reviewed by more than 1,000 others across the world. Can be downloaded free of charge, or purchased, at www.unep.org/geo/geo4/

OECD Environmental Performance Reviews: Denmark

This book is part of the OECD Environmental Performance Reviews Programme, which conducts peer reviews of environmental conditions and progress in each member country. It scrutinizes efforts to meet both domestic objectives and international commitments. The analyses presented are supported by a broad range of economic and environmental data and lead to recommendations for further environmental and sustainable development progress.

Other countries that have recently (2007) undergone review are Belgium, New Zealand, China, and Switzerland. The publications are available from www.oecd.org (choose Online Bookshop).

Road map agreed on Bali

Two weeks of negotiations on Bali in December resulted in an agreement between nations on a roadmap for the negotiations that will lead to a new climate protocol.

The intention is that the new protocol should come into force before the Kyoto protocol expires in 2012, which makes the timetable fairly tight. The roadmap establishes a timetable for the next two years of negotiations, which if successful, will culminate in a new global climate agreement in Copenhagen in December 2009.

According to the final report of the Bali conference, the nations have agreed to launch a "comprehensive process" to im-

plement a "shared vision for long-term cooperative action". This will include a "long-term global goal for emission reductions" on the established UN principle of "common but differentiated responsibilities".

As expected, delegates did not manage to agree on any concrete targets for reducing emissions. But a footnote makes reference to documents from the Intergovernmental Panel on Climate Change (IPCC), which say reductions of up to 40 per cent by 2020 are needed to head off dangerous climate change.

Further information: www.unfccc.int.

Norway aims to go carbon neutral by 2030

Norway, which had previously declared the ambition to become carbon neutral by 2050, now says that it will do so by 2030. Achieving this target will require Norway to cut total emissions by two-thirds domestically, the statement said. It has not been decided how this will be done, but a "significant sum" of money will be earmarked for investment in renewable energy and measures to reduce emissions

from the transport sector.

The remaining reductions will be achieved by spending around three billion kroner per year to combat deforestation in developing countries. Significant sums will also be invested in research on renewable energy and carbon capture and storage.

Norway is the world's fifth-biggest exporter of oil and western Europe's biggest exporter of natural gas.

Particulates from wood burning on the agenda

In December, Denmark announced a new regulation introducing emission standards for particles and carbon monoxide from wood-burning fireplaces, stoves and boilers. The regulation applies to both new and existing (second-hand) stoves, and enters into force on 1 June 2008. It is expected to cut particulates from this sector by 25 per cent by 2020, as compared to business-as-usual. Local authorities will be empowered to impose special conditions, such as higher chimneys, in built-up areas, and 4.5 million euro has been earmarked for an information campaign.

Also in December, Germany's environment ministry proposed to introduce limit values for particulate matter and carbon monoxide emissions from small wood-burning stoves. Modern pellet heaters are expected to easily meet the new standards, while older heaters that cannot prove compliance will have to be retrofitted with a filter or replaced as part of a long-term renovation programme from 2012 to 2024. A two-step approach is suggested, with stricter stage 2 emission limits for new stoves being introduced after 2015.

Further information: www.mst.dk, www.bmu.de

Coming events

For the latest news and direct links, please visit www.acidrain.org

IMO Marine Environment Protection Committee. London, 31 March-4 April. *Information:* www.imo.org

Climate Protection and Renewable Energy: Medium and Small Communities Facing the Challenge. Rovigo, Italy, 2-4 April. *Information:* www.iclei-europe.org

'A Breath of Clean Air' – Air Quality Spring Workshop. Northamptonshire, UK, 3-4 April 2008. *Information:* www.environmental-protection.org.uk

A Price Worth Paying: Making Road Charging Work for Europe. Brussels, Belgium, 9 April. *Information:* www.transportenvironment.org

CLRTAP Working Group on Strategies and Review. Geneva, Switzerland, 14-17 April 2008. *Information:* www.unece.org/env/lrtap

CLRTAP Task Force on Integrated Assessment Modelling. Madrid, Spain, 7-9 May 2008. *Information:* www.unece.org/env/lrtap

World Bioenergy Conference & Exhibition. Jönköping, Sweden, 27-29 May 2008. *Information:* www1.elmia.se/worldbioenergy

Transport and Energy: The Challenge of Climate Change. Leipzig, Germany, 28-30 May. *Information:* www.internationaltransportforum.org

2nd international conference on Harbours, Air Quality and Climate Change. Rotterdam, NL, 29-30 May 2008. *Information:* www.haqcc.org

Sessions of the Subsidiary Bodies of the UN Climate Convention. Bonn, Germany, 2-13 June 2008. *Information:* www.unfccc.int

16th European Biomass Conference and Exhibition. Valencia, Spain, 2-6 June 2008. *Information:* www.conference-biomass.com

EU Green Week 2008. Brussels, Belgium, 3-5 June.

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23rd European Photovoltaic Solar Energy Conference and Exhibition. Valencia, 1-5 September. *Information:* www.photovoltic-conference.com

CLRTAP Working Group on Strategies and Review. Geneva, Switzerland, 1-4 September 2008. *Information:* www.unece.org/env/lrtap

4th International Conference on Biomass for Energy. Kiev, Ukraine, 22-24 September 2008. *Information:* www.biomass.kiev.ua/conf2008

CLRTAP Working Group on Effects. Geneva, 24-26 September. *Information:* www.unece.org/env/lrtap

IMO Marine Environment Protection Committee. London, 6-10 October. *Information:* www.imo.org