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Acid News

PHOTO: BUNDESUMWELTMINISTERIUM, GERMANY

NEC AND LCP DIRECTIVES

At last getting somewhere

Binding ceilings for each country's emissions, extension of rules for large combustion plants

ON JULY 3 the conciliation delegation of the European Parliament accepted the compromise texts of two new directives for air quality that had been arrived at in negotiation in June with representatives of the Council of Ministers. One was that setting national emission ceilings for various air pollutants, the other to control emissions from large combustion plants (LCPs). They are expected to take effect shortly after the conciliation texts have been formally accepted both by the Council and Parliament, which should be this autumn, probably in September.

In general it can be said that although the Parliament had succeeded at least to some extent in making improvements over the Council's common position of June 2000, especially in regard to the requirements for LCPs, the Council managed to ward off all of the Parliament's more thoroughgoing proposals. The compromise texts have therefore come largely to reflect the attitude of the Council, where the southern European members, together with the United Kingdom, Ireland, and Finland, were most strongly opposed to any further tightening up of the emission requirements.

NECs. The aim of this directive is to put limits to the member countries' emissions of the four air pollutants – sulphur dioxide, nitrogen oxides, volatile organic compounds, and ammonia – that contribute most conspicuously to acidification, the formation of ozone, and eutrophica-

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Acid News

is a newsletter from the Swedish NGO Secretariat on Acid Rain, whose primary aim is to provide information on the subjects of acid rain and the acidification of the environment.

Anyone interested in these problems 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 distributed free of charge.

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

The Swedish NGO Secretariat on Acid Rain
Box 7005, S-402 31 Göteborg, Sweden

Tel: +46-31-711 45 15. Fax: 711 46 20

E-mail: info@acidrain.org

Internet: www.acidrain.org

Editor: Christer Ågren (cagren@acidrain.org)

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THE SECRETARIAT

The Secretariat has a board comprising 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 operates by

• Keeping under observation political trends and scientific developments.

• Acting as an information centre, primarily for European environmentalist organizations, but also for the media, authorities, and researchers.

• Producing information material.

• Supporting environmentalist bodies in other countries in their work towards common ends.

• Acting as coordinator of the international activities, including lobbying, of European environmentalist organizations, as for instance in connection with the meetings of the Convention on Long Range Transboundary Air Pollution and policy initiatives in the European Union.

• Acting as an observer at the proceedings involving international agreements for reducing the emissions of greenhouse gases.

The quicker the better

THE MAN-MADE emissions of sulphur dioxide are now almost two-thirds less in Europe than they were in 1980, with a consequent steady improvement in air quality. The depositions of sulphur are now also much lower – having fallen along with the emissions. The acidification of soil and water nevertheless remains a serious problem.

There are several reasons for this, the main one being that depositions are still exceeding nature's ability in many places to neutralize the additions of acid. In other words, there is an exceeding of the critical load. As long as that goes on, so will the process of acidification.

Then, too, there are the depositions of nitrogen compounds – coming from the emissions of nitrogen oxides and ammonia, which also contribute to acidification – and the emissions of these have not declined to anything like the same extent as those of sulphur.

Recovery is also delayed by the fact that the soil has accumulated great amounts of sulphur as a result of many decades of heavy depositions, and research has now shown that it will take many more decades to get back to normal.

It will take still longer, too, for the soil to regain its quantum of easily available base cations that are essential nutrients for trees and plants generally, but have been "washed out" of the soil in the process of acidification. The supply of these cations is dependent mainly on the rock's rate of weathering, which is slow in Scandinavia, where the bedrock consists mainly of gneiss and granite, which do not weather easily.

Thus, despite the reduced depositions, sulphur (in the form of sulphate) and hydrogen ions continue to leak out of the soil, delaying in turn the recovery of freshwaters.

In order to maintain life in some 8000 lakes and a number of streams, Sweden spends a good 200m kronor a year (22m euros) on liming. (Of the 90,000 or so lakes in Sweden, about 20,000 are deemed to be markedly affected by acidification.) Of late, too, liming and so-called vitality fertilization has been carried out on a limited scale on forest soils. While liming is known to be necessary for the maintenance of life in surface waters, treatment of forest soils is thought likely to help hasten recovery. But chemical treatment of this kind – no matter how necessary – misses the basic cause of acidification, and is definitely no alternative to reducing the emissions of the pollutants that cause it.

It must be obvious that the sooner we can bring about a reduction of these emissions to the level where acidifying depositions no longer exceed what nature can withstand, the less will be the damage from acidification and the quicker the recovery.

Maximum emission levels for 2010 have been set down for the EU in the recently adopted directive on national ceilings for emissions (the so-called NEC directive). Strong opposition from several of the member countries has meant however that the ceilings came to be set so high that not even the interim environmental targets for 2010 will be met.

There will nevertheless be possibilities for improvement when the directive comes up for review in 2004, 2008, and 2012. On the insistence of environmentalists and the European Parliament, it now says in the directive that at times of review proposals can be made for possible further reductions of emissions, with the aim both of attaining the interim environmental objectives by 2010, and of meeting the long-term ones by 2020. The least that can now be asked is that the long-term aim of "no exceedance of critical loads and levels by 2020" should be adhered to. But there is every reason, too, to strive for a more rapid achievement of that aim.

CHRISTER ÅGREN

Environmental Signals 2001

ONCE AGAIN THE EU environmental agency, EEA, has published a report[1] on developments within its sphere, using so-called indicators to see how far progress is being made in the direction of sustainability. Here are some of the outstanding findings:

❑ During the nineties the use of energy continued to increase in the EU, although not quite at the same rate as its GDP. The increase was in any case small, barely 1 per cent a year, which is lower than envisaged in EU's indicative targets. The emissions of carbon dioxide fell somewhat more in relation to GDP, largely as a result of less coal burning in the UK and Germany. The use of coal in the EU generally dropped by 30 per cent between 1985 and 1998.

❑ During that period the use of energy from renewable sources went up by 25 per cent in the EU. Renewables now account for 5.9 per cent of the total energy supply there, which is however far from the EU's indicative target for 2010, 12 per cent.

❑ The sector in which the use of energy has been increasing fastest is transportation, where it rose by 47 per cent in the period, as against an average of 4 per cent for all other sectors. More than 30 per cent of the final energy use in the EU is now claimed by transportation.

❑ The real price of motor fuel in the EU (current price less inflation) was lower in October 2000 than it had been at the end of the eighties.

❑ The emissions of precursors to the formation of ground-level ozone sank by 22 per cent between 1990 and 1998. The figure represents the sum of the potential for ozone forming of nitrogen oxides, VOCs, and carbon monoxide.

❑ The emissions of acidifying substances fell by 32 per cent between 1990 and 1998. The figure in this case represents the sum of the potential for acidification of sulphur dioxide, nitrogen oxides, and ammonia.

❑ Sulphur from large combustion plants fell away by 60 per cent. A great part of the emissions of acidifying substances in the EU still comes however from these plants: 65 and 21 per cent respectively for sulphur and nitrogen oxides.

There are no new figures in the present EEA report for greenhouse gases. According to one of its earlier reports (that of last March) the emissions of the six gases of the Kyoto protocol were down by 4 per cent from 1990 to 1999 (see AN 2/01).

Now the EEA says that it is still striving to find better indicators, and that the next step, after agreement on them has been reached, will be for policy makers to apply them to quantitative goals.

In his introduction to the report the agency's executive director, Domingo Jiménez-Beltrán, draws a parallel to the convergence criteria for the EU's economic and monetary union (EMU), which quickly made it possible to change the member countries from separate entities to parts of "Euroland," with a common currency. Applying similar criteria in the case of sustainable development would, in his view, markedly hasten progress in respect of the environment.

PER ELVINGSON

Environmental Signals 2001. Environmental Assessment Report No. 8. Published by European Environment Agency, Kongens Nytorv 6, 1050 Copenhagen K, Denmark. 112 pp. Euro 16.00. Can be ordered from all national distributors of EU publications. Electronic version free of charge at http://eea.eu.int.

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tion. To that end it sets ceilings for each country to the emissions of each of these pollutants, for attainment by 2010.

The eventual ceilings were no more than those agreed upon within the Council in June a year ago (see Table 1). Thus nothing has come of the Parliament's efforts to get them made lower (AN 2/01). At least not this time. But it also says in the directive that there is to be a first review in 2004, when the Commission will be able to propose further measures, such as a lowering of the ceilings.

The Commission has moreover also been enjoined, in preparation for the reviews in 2004 and 2008, to look into the possibilities of attaining the long-term aims for improvement of environmental quality by 2020, which are: no exceeding of critical loads, and the effective protection of all people against recognized health risks from air pollution.

There is also a new section in the directive entailing the Commission to investigate and report on the extent to which international shipping and air traffic contribute to acidification, eutrophication, and the formation of ground-level ozone. A report on shipping is to be ready by 2002, that on air traffic by 2004. Each is to specify a program of action to reduce emissions from the sector concerned.

LCPs. The aim of this directive is to reduce the emissions of specified air pollutants (sulphur dioxide, nitrogen oxides, and dust) from large combustion plants – that is, those with a rated thermal capacity of at least 50 MW – chiefly by setting emission limit values (ELVs) for the pollutants in question. The limit values will vary according to the age and capacity of the plants, as well as the type of fuel they burn. The new LCP directive will replace the existing one from 1988 (Dir.88/609/EEC).

It has largely been due to the Parliament's efforts that the terms of the new directive are not restricted to new plants – that is, those built after 2003. (Table 2).

Existing plants can be separated into two categories: those built before 1988 (the ones so far called "existing"), and those built from 1988 up to 2003 (now "new" plants). For the latter the ELVs in directive 88/609/EEC have applied since 1988. The new directive will not only mean a tightening-up of the requirements for "new" plants, but also the introduction of ELVs for "existing" ones. See Table 3.

PHOTO: AUDIOVISUAL LIBRARY EUROPEAN COMMISSION

Road traffic is responsible for a great part of the emissions of nitrogen oxides and volatile organic compounds – two of the pollutants for which ceilings have now been set for each EU country.

In the case of the latter there are however several loopholes. One is that permitting the member countries to devise plans for a national reduction of emissions, which will ensure the same emissions total as applying ELVs for individual plants would have done. Emission "bubbles." It will also be possible to avoid ELVs for plants that are not going to be operated for more than 20,000 hours after January 1, 2008. "Relaxed" ELVs are to be allowed for peak-load plants that will be operated for less than 2000 hours annually from 2008 and 1500 hours onwards from 2016.

The Parliament tried both to get the ELVs lowered and to eliminate or at least circumscribe the loopholes, but with limited success. However, during the review of the directive in

Table 1. The national ceilings for 2010 in the NEC directive. The figures for 1990 are the latest reported by each country to the LRTAP Convention (see p. 20). 000 tons per year.

	SO_2		NOx		VOCs		Ammonia	
Country	**1990**	**NEC 2010**	**1990**	**NEC 2010**	**1990**	**NEC 2010**	**1990**	**NEC 2010**
Austria	91	39	193	103	345	159	80	66
Belgium	372	99	339	176	354	139	107	74
Denmark	182	55	272	127	169	85	128	69
Finland	260	110	300	170	209	130	38	31
France	1278	375	1865	810	2459	1050	790	780
Germany	5321	520	2706	1051	3221	995	765	550
Greece	506	523	326	344	334	261	79	73
Ireland	186	42	118	65	110	55	112	116
Italy	1651	475	1938	990	2213	1159	466	419
Luxemb.	15	4	23	11	19	9	7	7
Netherl.	202	50	580	260	502	185	226	128
Portugal	359	160	317	250	380	180	105	90
Spain	2049	746	1156	847	2790	662	472	353
Sweden	119	67	338	148	526	241	51	57
UK	3754	585	2756	1167	2657	1200	365	297
EU15	**16345**	**3850**	**13227**	**6519**	**16288**	**6510**	**3791**	**3110**

2004, the Commission is to consider whether it will be necessary and possible to lower the ELVs and close the loopholes.

By providing, for example, a stimulant to combined heat-and-power production – thus making for an increase in energy efficiency, with a consequent reduction of emissions – the new directive will bring other environmental gains. Stricter rules for the measurement and reporting of emissions will moreover assist the production of more detailed and better analyses for the reviews.

The acceptance and application of these new directives will mean that the EU can, through its own legislation, now meet the ceilings set in 1999 in the Gothenburg protocol under the Convention on Long-range Transboundary Air Pollution. In other words, a green light, both for the EU and the member countries that have not yet done so to ratify that protocol.

A remaining matter will be the ceilings that will have to be put into the NEC directive as new members from Central and Eastern Europe are admitted to the EU. Although it might seem simplest merely to take the ceilings those countries already have under the Gothenburg protocol, the Commission's analyses have shown that they are totally inadequate for meeting even the interim requirements for 2010, not to mention for dealing with the long-term problems.

CHRISTER ÅGREN

Table 2. Emission limit values for SO_2 and NOx from plants to be built after 2003 (mg/m³).

	Sulphur dioxide			Nitrogen oxides		
Plant size (MW_{th})	**50-100**	**100-300**	**>300**	**50-100**	**100-300**	**>300**
Solid fuels[1]	850	200	200	400	200	200
Liquid fuels	850	400-200[3]	200	400	200	200
Biomass	200	200	200	400	300	200
Natural gas[2]	35	35	35	150	150	100

[1] Where the emission limit values for SO_2 cannot be met due to the characteristics of the fuel, installations smaller than 300 MW_{th} shall achieve either 300 mg/m³ SO_2 or a rate of desulphurization of at least 92 per cent. Larger plants must achieve a rate of desulphurization of at least 95 per cent or a maximum of 400 mg SO_2/m³.

[2] Specifically for gas turbines using natural gas, the limit value in most cases being 50 mg NOx/m³.

[3] Linear decrease.

Table 3. Emission limit values to be applied from January 1, 2008 for SO_2 and NOx from existing plants (built before 2003). Plant size in MW_{th} and emission limits in mg/m³.

	Sulphur dioxide			Nitrogen oxides	
Plant size	**50-100**	**100-500**	**>500**	**50-500**	**>500**
Solid fuels	2000[1]	2000-400 [1,2]	400[1]	600	500[3]
Plant size	**50-300**	**300-500**	**>500**	**50-500**	**>500**
Liquid fuels	1700	1700-400 [2]	400	450	400
Plants size	**>50**			**50-500**	**>500**
Natural gas	35			300	200

[1] Where the emission limits for SO_2 cannot be met due to the characteristics of the fuel, various rates of desulphurization shall be achieved (from 60 to 94 per cent, with the highest rate applicable for plants with a greater capacity than 500 MW_{th}).

[2] Linear decrease.

[3] From January 1, 2016 the emission limit value will be 200 mg NOx/m³.

NEWS IN BRIEF

To control ammonia in farming

One outcome of the Gothenburg protocol of 1999 is that there is now an international agreement for reducing emissions of ammonia. In the protocol it is stated that the signatories must all have adopted, within a year of its coming into force, an "advisory code of good agricultural practice to control ammonia emissions." In order to further the process, the Ammonia Expert Group of the Convention on Long-range Transboundary Air Pollution has produced a guide document setting forth possible ways of reducing emissions. It says that by using the most effective ways of spreading manure, the evaporation of ammonia can be cut by 90 per cent, and by 70-95 per cent by roofing over manure in storage.

See **UN/ECE Ammonia Expert Group. Berne, 18-20 September 2000. Proceedings**. UM-133-E, 2001. Published by the Swiss Agency for the Environment, Forests and Landscape, CH-3003 Bern, Switzerland. Internet: www.admin.ch/buwal/publikat/d.

Aiming at 2030

In June, as part of the country's fourth plan for environmental policy, the Dutch environment ministry put forward a new list of targets that includes emission cuts of 40-60 per cent for carbon dioxide, 80 and 90 per cent respectively for nitrogen oxides and sulphur dioxide, 70-90 per cent for volatile organic compounds, 85-95 per cent for fine particles, and 75-85 per cent for ammonia. All by 2030, with 1990 as the baseline year. In its statement the ministry emphasizes the need for greater international cooperation if the aims are to be achieved in a number of cases. The Netherlands would for instance like to see a global network of nature reserves and buffer zones set up by 2020.

Environment Daily, June 14, 2001.

Better than it might have been

At a meeting in Bonn, Germany, this last July, an agreement was reached as to how the climate protocol, signed in Kyoto in 1997, was to be interpreted. Although much weaker than intended, it is now considered capable of becoming effective even without the adherence of the United States.

PHOTO: BUNDESUMWELTMINISTERIUM, GERMANY

In Kyoto the industrialized countries undertook to have reduced their emissions of gases affecting the climate on an average by 5.2 per cent by 2012, from the levels prevailing in 1990. But to arrive at any agreement at all, it was necessary to leave several important matters unresolved. In Bonn, however, after almost four years of negotiating, solutions could be found.

CARBON SINKS. Among the most difficult issues was the amount of credit any developed country could be allowed in attainment of its Kyoto target through the use of sinks – activities that absorb carbon from the atmosphere. It was agreed that revegetation and the management of forests, crop and grazing lands would be among the eligible activities.

By the use of a formula, quotas for forest sinks were set for each country. In most cases the sinks can only be used to offset a small part of the reductions that would otherwise have to be made – although Canada and Japan was given liberal allowances in order to get their agreement. To the dismay of the EU countries, no agreement could be reached on ceilings to the amount of agricultural activity that could be reckoned in the sink.

CDM. Rules were also adopted in regard to the Clean Development Mechanism, by which developed countries can invest in climate-friendly projects in less developed ones and receive credit for the emissions so avoided. Energy efficiency, renewable energy, and forest sinks are specified as projects that can qualify for use in this mechanism.

TRADING AND JI. Rules were set, too, for the international emissions-trading regime, by which developed countries can buy and sell emissions credits between themselves, and for Joint Implementation, enabling OECD countries to gain credit from investing in projects in countries with economies in transition.

The EU countries could get no agreement to their wish for a ceiling on the extent to which any country could fulfill its quota through the use of the trading, JI, and CDM mechanisms. All that was said was that the mechanisms should be "supplemental to domestic action" and that domestic action should constitute "a significant element to the effort made by each Party." They did however succeed in prohibiting the inclusion of nuclear power in JI and CDM projects.

COMPLIANCE. Under a compliance mechanism, any country will, during the second period of the protocol, starting in 2013, have to eliminate an extra 1.3 tons for every ton of gas emitted beyond its target during the first period. Countries that overrun their targets must set up plans for compliance that give priority to domestic action for reducing emissions. No country will have any right to sell or transfer emissions certificates before it has regained compliance.

The EU countries regard this part of the agreement not only as essential for the credibility of the protocol, but also as a condition for the proper functioning of trading in emission permits.

FUNDING. Industrialized countries have pledged the provision of "predictable and adequate funding" to mitigate the effects of climate change in poorer countries. In a separate political declaration the EU, Canada, Switzerland, New Zealand, and Iceland said they would provide 450 million euros annually for the funds (there will be three new ones) by 2005, with a review in 2008. Japan agreed to increase its present contribution.

The unanimity in Bonn does not mean that the protocol will now become automatically effective. There will first have to be ratification in at least 55 countries, as well as by so many Annex I countries as will

account for at least 55 per cent of that group's emissions in 1990. Since the US, which was emitting a good third of these countries' emissions in 1990, has stayed outside the agreement, it will be necessary to have the ratification of almost all the other Annex I countries for the protocol to come into force.

It remains to be seen what the effect of sinks and flexible mechanisms will be on the measures taken by individual countries. It seems likely that the actual reduction of emissions over twenty years by the countries in question will be 2 per cent, not 5.2 as originally agreed, mainly because of the extra leeway provided by the sinks. According to estimates made by Greenpeace, emissions may even show a slight increase.

Although the commitments now made are obviously very modest in comparison with what will probably have to be done, they do nevertheless represent a breakthrough. By 2010 the emissions from the countries concerned would otherwise have been 25 per cent over 1990 levels, according to these countries own energy scenarios.

The reactions to the Bonn agreement have consequently been for the most part positive, even from environmentalist groups. The general attitude is that it is better to have a weak agreement that allows for improvement than no agreement at all. A collapse in Bonn, with several countries withdrawing from the process, would have meant having to start negotiations all over again. The Belgian minister for energy, Olivier Deleuze, head of the EU delegation, probably spoke for many other delegates when he said: "I prefer an imperfect, living agreement to a perfect one that doesn't exist."

Several commentators have moreover observed (with address to President Bush and the US) that the agreement constitutes a victory for the multinational negotiating process. The EU representatives expressed the hope that it would encourage the American administration to reconsider its decision not to ratify.

PER ELVINGSON

Further information: Links to relevant documents are available at the Secretariat's website www.acidrain.org/climate.htm.

KYOTO PROTOCOL

No damage seen to the US economy

THE REASON President Bush gave for not signing the Kyoto protocol was that reducing emissions by 7 per cent would harm the American economy. But according to WWF, the World Wildlife Fund, the effect could be just the opposite.[1] The US could meet its obligations to reduce greenhouse gases under the treaty and yet save $50 billion annually by 2010, and something like $135 billion by 2020.

"Far from being the economically crippling burden that the Bush Administration alleges, US efforts to reach a binding emissions reduction target could initiate a national technological and economic renaissance with cleaner energy, industrial processes and products in the coming decades," said Jennifer Morgan, director of the WWF climate change campaign.

Using US Department of Energy models for policy analysis, the WWF report combines domestic policies and measures with some of the flexibility mechanisms that will be available to countries that ratify the protocol, to assess the cost to the US economy. New standards for domestic appliances, auctioning of carbon emission permits, improved fuel economy in passenger vehicles, cogeneration of heat and power, minimum standards for the production of renewable energy, increased use of high-speed rail, with other measures, would enable the US to reduce its energy consumption by 11 per cent by 2010 and 30 per cent by 2020.

By 2010 carbon emissions would have dropped to no more than 2.5 per cent above 1990 levels, and be well below them by 2020. The rest of the Kyoto quota could be met by reductions of other greenhouse gases and by taking advantage to some extent of the Kyoto market mechanisms. If the US does nothing, its carbon emissions will have risen by 35 per cent by 2010, according to the report.

Among the proposed measures is the development and use of new technologies, which would "enhance the standing of the United States as a supplier of innovative and environmentally superior technologies and practices."

By 2020 the cumulative net saving resulting from putting together all the costs and savings of the proposed polices would, in the WWF's estimate, be $105 billion, and approximately $576 billion in 2020. A 50-per-cent reduction of sulphur emissions by 2010 compared to base case, or 68 per cent below 1990 levels, as well as a decrease in fine particles and emissions of nitrogen oxides, VOCs, and mercury, would be among the additional benefits.

[1] **The American Way to the Kyoto Protocol. An Economic Analysis to Reduce Carbon Pollution**. A study made for World Wildlife Fund. Available electronically on www.panda.org.

Something has now been set going

Despite omissions, new strategy nevertheless incorporates many of the initial aims

AT THE EU SUMMIT in Gothenburg last June, the political leaders of the member countries agreed on a strategy for sustainable development. Expectations in regard to the outcome of the meeting had been high, partly because it seemed that environmental matters were at last to find a place at the top political level, but also because the Commission's draft proposal was generally regarded – by environmentalists too – as an exceptionally promising document.

The proposal had been presented in the form of a so-called communication about a month in advance of the Gothenburg meeting. It laid down, for instance, that "all policies must have sustainable development as their core concern," pointing in particular to six problem areas that the Commission considered to be posing "severe or irreversible threats to the future well-being of European society," with especial emphasis on climate change, public health, resource management, and transport-related issues.

One of the reasons why the Commission's document was so warmly welcomed was that it contained an unusual number of clearly defined aims, as well as proposals for action within a definite time limit – in stark contrast to its ideas for a sixth environmental action plan that had been released earlier in the spring and been heavily criticized – precisely on account of its lack of clear aims and clear proposals for achieving them. Here are some of the items in the Commission's proposal for a strategy for sustainable development.

As regards emissions of greenhouse gases, the Commission considers the Kyoto protocol as no more than a first step, saying that a more long-term aim should be to reduce them by 20 per cent from 1990 to 2020. To achieve that it would employ taxes on energy aimed at ensuring "full internalization of external costs," phase out subsidies to the production and consumption of fossil fuels, and introduce measures to bring down the demand for energy.

As means of dealing with problems relating to transportation, the Commission would decouple its growth from that of GDP (gross domestic product), and institute action to bring about a shift from road use to rail, water, and public passenger transportation. Such aims as well as others should be achieved by means of a charging system so arranged that by 2005 at the latest the prices for all the various modes of trans-

The environment action program

At their meeting on June 7-8 the EU environment ministers agreed on the attitude they should take to the EU's sixth environment action program (AN 1/01), which is to be the basis for EU work on the environment up to 20l0.

The ministers were on the whole satisfied with the Commission's proposals, but made some additions. As regards air pollution, the Council wants a thematic strategy to be developed with a view to reach the long-term objective of no exceeding of critical loads and levels.

The EU Parliament, which had already adopted a special report in plenary session on May 31, wanted to make a lot of changes.

The rapporteur, the Finnish Social Democratic member Riitta Myller, had called for a clearer definition of the aims – including more long-term ones, reaching beyond the year 2010 – as well as fixed dates for their achievement. Parliament wants for instance emissions of the greenhouse gas carbon dioxide to be reduced by as much as 30-40 per cent from 1990 to 2020.

The Parliament's second reading will be held this autumn.

portation, including airplane, should reflect the costs to society.

It soon became evident at Gothenburg that the member countries were far from prepared to accept the Commission's proposals. The strategy that was eventually adopted certainly did incorporate many of the broader aims of the original, but almost all of the more radical and more definite ones were either dropped or distinctly weakened. The proposal to reduce the emissions of greenhouse gases by 20 per cent by 2020 was, for instance, omitted altogether. But at least something has now been set going, and as from next year the strategy that has now been launched is to be reviewed at every spring summit of the EU leaders.

CHRISTER ÅGREN

[1] **A sustainable Europe for a better world: A European Union strategy for sustainable development**. (COM(2001)264) 15 May 2001. The full text is on http://europa.eu.int/comm/environment/eussd/index.htm and the Council conclusions (in all official EU languages) at www.eu2001.se/static/se/eusummit/conclusions.asp

Further: The comments of the environment watchers EEB and T&E – on the Commission's communication as well as on the Council's final document – can be seen as press releases on their respective websites: www.eeb.org and www.t-e.nu.

GROUND-LEVEL OZONE

Differences on directive still need sorting out

AT A SECOND READING on June 13 the European Parliament passed a report containing proposals intended to tighten up the new directive on air-quality standards for ground-level ozone.

The members gave full support to the proposals put forward by the rapporteur, the Liberal MEP Chris Davies from the UK. Parliament will thus be demanding that the maximum number of days on which ozone levels can be allowed to exceed the World Health Organization's recommended limit value of 120 micrograms/m^3 should be 20 instead of the 25 days agreed by the Council, with 2010 as the final date for implementation.

Again, as at the first reading, the parliament is calling for the inclusion of a definite date (2020) for attainment of the long-term aim of a complete stop to any exceeding of the limit value recommended by the WHO – a demand that the Council had rejected.

The Parliament also wanted the implementation of the terms of the directive to be more binding than the member countries are proposing. It would try to ensure that by substituting "to be achieved save where physically impossible" for the more vague "to be achieved as far as possible." The proposed new wording is a concession to the Mediterranean countries, who claim that the peculiarities of their climate are a cause of high ozone levels. The text in any case represents a clear watering-down compared with the Parliament's first version, requiring the limit values to be binding without exception.

Among the other changes is a proposal that the member countries should be obliged to report, with an explanation, any exceeding of the target value, as well as having in general to report more precisely.

While welcoming this outcome, the European Environmental Bureau (EEB) expressed in a press release some disappointment at the Parliament's rejection of amendments seeking to improve the dissemination of information to the public, as well as at others assessing the reduction potential of short-term plans.

The Council is to decide within four months whether the Parliament's proposals can be accepted by the member countries. Since most of the proposals that were put forward at the first reading, and were rejected by the Council still remain, resort will probably now have to be made to the conciliation process.

CHRISTER ÅGREN

EU NEWS IN BRIEF

Call to action

In a resolution passed last month, the EU Parliament is calling on the Commission to follow up the Bonn climate agreement with "concrete Directive proposals" by the end of the year for an EU emissions-trading regime. It is also urging the Commission to come forward with a proposal for EU ratification of the Kyoto protocol before the next UN climate-change conference begins in Marrakech in October, and to propose specific measures for reducing emissions of greenhouse gases in the EU.

Incompatible aims

As Friends of the Earth and the CEE Bankwatch Network have pointed out in a recent report, some of the aid the EU is giving to candidate countries in Eastern and Central Europe runs contrary to the EU countries' own aims for sustainable development. There are examples of this in the agricultural and transportation sectors, where pre-accession funds are often earmarked for the support of industrialized agricultural production and expansion of the Trans-European Network, which means mostly road building. Such priorities obviously lead to practices that are generally recognized as unsustainable – to intensive agriculture and dependence on cars.

[1] **Billions for Sustainability? II** can be downloaded from www.bankwatch.org

Will that be allowed?

Hungary, Estonia, and the Czech Republic had finished off all the environmental aspects of negotiations for admission to the EU by the end of May, and were followed by Lithuania in June. The big problem was, as expected, the directive on treatment of wastewater, making it necessary to allow the longest transition periods – until 2010 for Estonia, Lithuania, and the Czech Republic, and 2015 for Hungary. Hungary has moreover been allowed to delay implementation of the directive on large combustion plants until the end of 2004, and Estonia and Lithuania to 2006 and 2008 for emissions of volatile organic compounds from petrol distribution. There is now a possibility that the European Parliament, which has wanted to restrict the transition periods to five years at the most, will put in a veto.

Small petrol engines

The Commission's proposal for a flexible introduction of new exhaust standards for small petrol-engined machines has been turned down by the Parliament's environment committee.

This is a matter of machines such as lawn mowers, generators, and chain saws, which together emit large amounts of volatile hydrocarbons. The Commission was proposing standards on US lines, by which manufacturers could continue to sell engines that fail to meet the requirements, provided they compensate that with other engines that meet them with a wide margin. It would also have allowed trading in emission permits.

The Parliament's environment committee found the idea unacceptable, as being incompatible with clear consumer information, discriminating against small manufacturers and generally being difficult to administer and control. The Commission's proposal will be debated by Parliament in plenum at the end of September.

Pleasure craft

The environmentalist *Seas at Risk* organization calculates, on the basis of a study made by the Dutch research institute TNO,[1] that under the proposed Recreational Craft Directive, pleasure boats would be allowed to emit ten times the amounts of pollutant now permitted to motorcycles and similar road vehicles. The best way of reducing emissions from pleasure crafts would, it says, be to switch over from two-stroke to four-stroke engines. The latter should moreover be equipped for exhaust cleaning in the same way as road vehicles.

No calls for improving the environmental performance of small-craft engines were heard at the first reading of the proposed directive in the European Parliament last July. The matter is scheduled to be taken up at the next meeting of the Council of Ministers in October.

[1] **Water pollution by recreational boat engines.** TNO research institute Delft, Netherlands. Available at www.waterpakt.nl

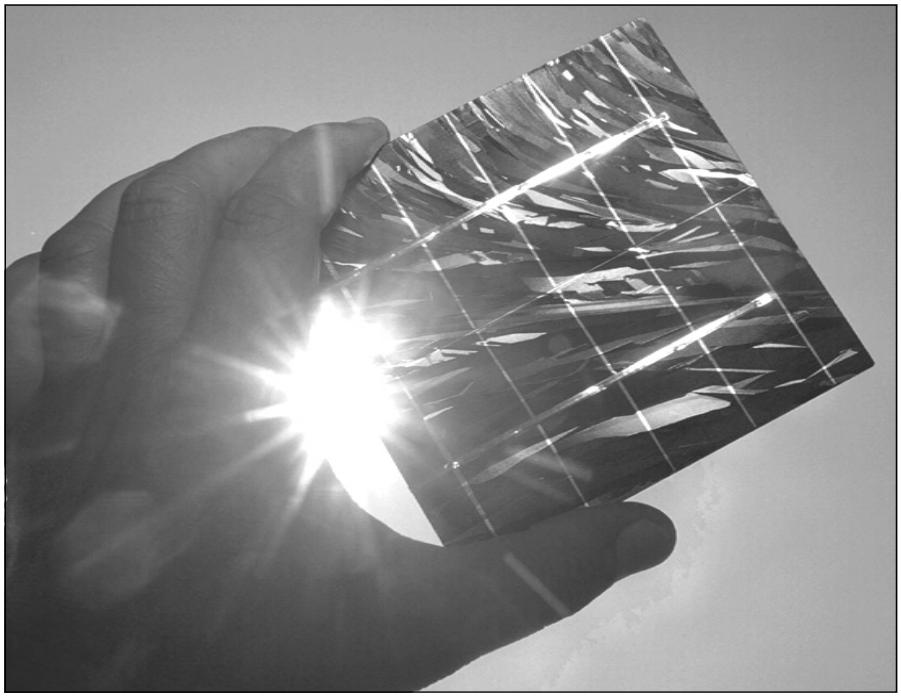


PHOTO: BUNDESUMWELTMINISTERIUM, GERMANY

ELECTRICITY

Wide range in real cost of generation

THE PRICE OF ELECTRICITY made from the burning of coal and oil would have to be doubled if it were to include the costs of damage to the environment and health. If generated from gas it would be 30 per cent more.

The aim of the EU research program EXTERNE, from which those findings have come, has been to assess the external costs associated with the use of electricity – costs that are there, but are not included in the price. They may refer for instance to the effects on health of pollutants emitted to the air in the generation of electricity.

Some twenty separate research projects have been going on under the program. Studies made in twelve EU countries have shown electricity generated from hard coal, lignite, and oil to have by far the greatest external costs – averaging 5.7 cents (euro) per kilowatt-hour as against an accepted generating cost of around 4 cents. Second comes peat, with 3.5 cents in external costs (although only two studies were made in this case). The external costs relating to the burning of natural gas are much lower, amounting on an average from twelve studies to 1.6 cents per kilowatt-hour.

Still lower are the external costs of generation from renewable sources. At 0.1 cent/kWh windpower is easily the best, followed by hydropower (just over 0.4 cents), photovoltaic solar (0.6), and biomass burning (1.4). Nuclear power also comes out with a relatively low average, just under 0.4 cents, which is explained in the study by its low influence on global warming and the low probability of accidents in EU nuclear plants.

The estimates take into account a wide range of externalities, among them being public health, global warming, occupational health, and damage to materials. Ignoring the climate factor because of the greater uncertainty of cost allocation, the Commission assesses the overall external costs from the generation of electricity at 1-2 per cent of the EU's gross domestic product (GDP). Applying the same model to road transportation would seem to add the equivalent of another 1-2 per cent of GDP.

Sources: **Environment Daily**, July 23, 2001. **European Commission** , July 20, 2001.

COAL SUBSIDIES

Call for a reduction

UNPROFITABLE COAL MINING continues to be subsidized in the EU countries at a rate of 2 billion euros a year – mainly in Germany and Spain, but also in France and the UK.

The EU Commission is now out to get these subsidies reduced. Next summer the present rules for state subsidies to the coal industry will lapse, together with the European Coal and Steel Treaty. As from 2008 the Commission only wants the production capacity necessary for securing EU energy needs to be eligible for state support.

No scale has yet been set for the subsidies that will be allowable after 2007. Coal production is however expected to be considerably lower than it is now, since – as the Commission puts it – most EU coal "cannot and will not be able to compete with imports from third countries." Only in the UK is there a non-subsidized coal industry of any size.

Coal output in the EU amounted to 85 million tons in 2000, as against 268 million in 1975. Two of the candidate countries, Poland and the Czech Republic, produce considerable quantities of coal; in 1999 it was 112 and 14 million tons.

The Commission's urging is fully in line with repeated high-level calls for a reduction of environmentally damaging subsidies, although it doesn't actually say so.

Sources: **Environment Daily**, July 30, 2001. European Commission press release July 25, 2001.

ENVIRONMENTAL TAXES

Not so good they might be

ALTHOUGH environmental taxes are now being employed to a widespread and increasing extent in the EU, low rates and numerous exemptions have meant that the effects on the environment have for the most part been little.

According to a study[1] of such taxes omitting those related to energy, published by the European Commission, they have often been introduced independently of any others, and rather for the purpose of increasing revenue than of affecting production and consumption. They have however been incorporated in a wider strategy in three countries: Germany, the Netherlands, and the UK.

Named as a successful example of the employment of fiscal instruments is the Swedish charge on emissions of nitrogen oxides from combustion plants, which brought a reduction of those emissions by 40 per cent per unit of energy in the six years to 1998.

The authors say that in future more taxes with a direct incentive effect should be introduced. They also recommend more "dynamic" cost-benefit assessments of proposed taxes, suggesting that this will also justify fewer exemptions.

[1] **Study on the Economic and Environmental Implications of the Use of Environmental Taxes and Charges in the European Union and its Member States**. Can be found at http://europa.eu.int/comm/environment/enveco/taxation/environmental_taxes.htm.

EU NEWS IN BRIEF

Claiming progress

Announcing an average reduction of 3 per cent in the emissions of carbon dioxide from new cars in the EU from 1999 to 2000, the European car makers claim, through their trade association ACEA, to be well on the way to fulfilling their promise to the European Commission to have them reduced by 25 per cent between 1995 and 2008 (from 186 g CO_2 per km, on an average, to 140 grams). The association gives more engines with direct injection, especially diesels, as the main reason for the present progress.

Environment Daily. May 30, 2001.

To make cleaner cities

The European Commission has selected fourteen cities out of seventy-four applicants to take part in a research and development program, Civitas, to make for clean urban transportation. Those chosen are Aalborg, Barcelona, Berlin, Bremen, Bristol, Cork, Gothenburg, Graz, Lille, Nantes, Rome, Rotterdam, Stockholm, and Winchester – with the parallel participation of five cities in the candidate countries: Bucharest, Gdynia, Kaunas, Pecs, and Prague.

The participants in this project are to combat congestion and pollution through the application of technologies and measures that will make energy a part of urban transportation policy, in particular by promoting energy efficiency and the use of "clean" fuels. The aim is to make for the development of attractive alternatives to the use of private cars in cities. The EU will provide 35 per cent of the money for the projects and the cities the rest.

More information on the cities in question, and the types of measures they will adopt, can be found at http://europa.eu.int/comm/energy_ transport/en/cut_en/cut_civitas_en.html

More money for NGOs

The Commission has proposed a big rise in EU funding for environmentalist groups. This would mean increasing EU support for green NGOs from the present 2.65m euros a year to 6.4m next year. Groups in eastern European countries would also be eligible for funding..

Environment Daily June 22, 2001. The proposal is available at http://europa.eu.int/comm/environment/docum/01337_en.htm.

Big emissions from ships in Danish waters

Emissions must be curbed if acidification is to be effectively reduced, says EPA spokesman

THE EMISSIONS of sulphur dioxide from shipping in the waters around Denmark are more than twice as great as those from the country's land-based sources. Estimates for 1999-2000 made by the Danish EPA show them to have been 133,000 tons as against 56,000.

Following the opening of the Store Belt and Öresund bridges emissions from the ferries have fallen away considerably, as have those from pleasure craft. Since however 95 per cent of the emissions come from cargo ships, these reductions have had little effect on the total figure. It is however difficult to say exactly how the emissions from cargo ships have changed, as a new method of calculating them has been used since the last inventory 1995-96. The available data indicate however a distinct increase since then.

While ships' emissions of nitrogen oxides are also considerable, in this case they are about matched by those from land – amounting to 236,000 tons a year as against 210,000 tons from land-based sources.

"If acidification is to be effectively reduced, we shall have to limit the emissions of sulphur dioxide from ships," declares Karsten Skov of the Danish EPA, which is considering new measures jointly with the country's Maritime Authority – one of which would be a system of dues, differentiated according to the ship's environmental performance, such as has been practised for several years in Sweden. They expect to be able to put forward a proposal before the end of the year.

PHOTO: THE SWEDISH SHIPOWNERS' ASSOCIATION

The above figures derive from a generous interpretation of Danish waters – making them extend from a line drawn between Norway and the Netherlands and another in the Baltic between Sweden and Poland, extending from the 6th to the l6th longitude.

PER ELVINGSON

The full report, **Energiforbrug og emissioner fra skibe i farvandene omkring Danmark 1995/96 og 1999/2000** is only available in Danish, but there is an English summary. Available at www.mst.dk/udgiv/publikationer/2001/87-7944-505-5/html/

Norway

The Statoil company is to be allowed a relaxation of the emission requirements for a planned gas-fired power plant in exchange for reducing the emissions of nitrogen oxides from two of its supply ships in the North Sea. By designing the vessels so as to let them run on liquified natural gas, their emissions of NOx can be reduced by 85 per cent or 420 tons a year. The cut from one ship alone will be equal to half of the emissions of NOx from a gas-fired power plant.

Running the ships on LNG will involve an extra cost of 9m Norwegian kroner a year. Expressed as the cost of reducing NOx emissions, that would be 22 kroner per kilogram, as compared with the 30-40 kroner it would cost to equip a gas-fired plant for NOx cleaning to the extent required by Norwegian law.

Because of their emissions of carbon dioxide, however, gas-fired power plants are questioned in Norway, and it is uncertain whether any will be built.

Car Lines, 2001-4, August 2001.

Hamburg

As from July 1, vessels entering this port will be granted a 12-per-cent rebate on harbour dues if they meet at least one of the following requirements:

- ❏ Are using bunker oil with a maximum sulphur content of 1.5 per cent.
- ❏ Can show emissions at least 15 per cent lower than required in Annex VI of the MARPOL convention.
- ❏ Only use paints free of the poisonous substance TBT (tributyl tin).

For large vessels the rebate will amount to DM1000-2000 each time.

Fuller information from Umweltbehörde Hamburg, www.hamburg.de.

Alaska

Under a bill passed late in June by the state legislature, Alaska will be the first state in the US to regulate pollution of air and water by cruise ships.

Due in part to ever larger ships, capable of carrying thousands of passengers, cruise travel to Alaska has grown dramatically over the last decade. Concern over the pollution from the ships, the largest of which fly foreign flags and have been exempted from many US laws, has grown along with the passenger loads.

The bill gives authority to monitor and enforce Alaskan state standards for the ships' emissions of sewage and air pollutants; and to fund the program, cruise companies will be charged $1 for each passenger.

Car Lines, 2001-4, August 2001.

Reductions in view

Whereas new rules for large combustion plants in the United States point to great improvements, in the EU they are markedly weaker.

BECAUSE OF two new EPA rules, commonly referred to as Section 126 and the NOx SIP call, power plants and industrial facilities in twenty-five states of the central and eastern parts of the US will have to substantially reduce their summertime emissions of NOx, starting in 2003.

Commitments to install control technology in the form of selective catalytic reduction (SCR) have subsequently been announced for some 115 major generating units at power plants all over the eastern part of the country, representing a total of more than 60,000 MW of capacity. The primary aim is to bring down the high concentrations of ozone currently occurring at ground level over large areas of the east during the summer months – a key element in that being nitrogen oxides, the emissions of which can be greatly reduced by SCR. It is expected that most of these retrofits will have been made before the start of the ozone season in 2003.

As it says in a new report[1] from NESCAUM, the Northeast States for Coordinated Air Use Management. "This expected timely implementation of new NOx control requirements demonstrates yet again the power of effective regulation to yield results."

These American requirements can be viewed in the light of those that have lately been debated for the EU in anticipation of a new directive for large combustion plants (see front page). According to the EPA rules, the emissions of NOx from such plants may not exceed 0.15 lbs per million Btu of thermal input as an average for each state. That corresponds to 185 mg/m^3 and amounts to a reduction of about 85 per cent compared with the uncontrolled emissions of NOx from most large coal-fired power plants.

When negotiating the new LCP directive, several of the EU member countries did however oppose a proposal from the Parliament which, if adopted, would have meant that the limit for NOx emissions from the very largest plants (with thermal capacities of more than 300 MW) would have been 200 mg/m^3.

The US requirements are not binding limit values in the sense that they must be met by each individual plant. Each state is free to devise its own means of attaining the required reductions, and flexible market-based approaches, such as emissions trading, are in fact encouraged.

Whereas the US requirements have to be met at the latest by 2003-04, the envisaged date for the EU is 2008. The EU draft directive contains however provisions allowing "bubbles" for all of a country's emissions from "existing" plants (built before 1988) as an alternative to limits for each individual plant – in other words, something like the American system. But it does also include the possibility of freeing such plants from the terms of the directive if they are not going to be operated for more than 20,000 hours after January 2008.

CHRISTER ÅGREN

[1] **Power Companies' Efforts to Comply with the NOx SIP Call and Section 126**. Available on internet, can be downloaded from www.nescaum.org.

Promoting renewable energy in Poland

A market for green electricity will help electricity distributors in Poland to meet their legal obligations to use green energy sources, according to Reuters. This new market, operated by the Polish Power Exchange, will allow distributors to buy electricity from green sources such as wind, geothermal and solar power. Under Polish law, utilities must already obtain 2.4 per cent of the total energy that they sell to consumers from green sources, and by 2010, they will be obliged to increase green energy to 7.5 per cent of their total.

Green Horizon, July 19, 2001.

More dangerous than thought

EXHAUST FROM DIESEL ENGINES has been found to account for 78 per cent of the total extra risk of cancer from all hazardous pollutants in the outdoor air in the United States, from a new analysis[1] based on data from the US Environmental Protection Agency.

The massive EPA study here in question gives detailed estimates of the levels of 41 most hazardous air pollutants in every US community. A previous version had not included anything on emissions of diesel particulate.

"The bad news is that cancer risks from air toxics are much higher than the public has been told of. The good news is that a great deal of the air toxics problem can be addressed by focusing on just this one pollutant. Cutting diesel exhaust has to be priority number one for everyone concerned about the health of our air," was the comment of David Roe, senior attorney for Environmental Defense.

That so much of the effect should be due to diesel emissions is considered surprising. In a supposedly clean city such as San Francisco, for instance, the risk level is 2600 additional cases of cancer per million, with 90 per cent of the risk coming from diesel emissions. The target for air toxics in the Clean Air Act is a maximum of one additional case per million.

The emissions come both from diesel vehicles on the roads, such as buses and trucks, and from offroad equipment such as bulldozers and heavy construction machinery. "Offroad diesel equipment is a big part of the problem that most people don't realize and is long overdue for emission controls," Roe says.

[1] By Environmental Defense. The information above is based on its press release of July 12, 2001, on www.environmentaldefense.org.

The quantities of hazardous air pollutants can be translated into cancer risk, both nationally and at the local level, by using the Environmental Defense website scorecard www.scorecard.org.

No longer the right name for it

Since the fall of the iron curtain the air quality has come close to that of EU countries

THE ILL-FAMED Black Triangle in Central Europe can no longer live up to its name. Huge reductions of the emissions of pollutants from the big combustion plants in the region have seen to that.

The triangle comprises northern Bohemia in the Czech Republic, in Germany the southern part of Saxony, and southwestern Silesia in Poland. Half of the 6 million people living in that area of 34,000 sq km are Germans. The name came from the effects of burning brown coal from vast local deposits, especially during the period following the Second World War. Health, as well as the environment, was badly affected.

Immediately after the fall of the Iron Curtain, the three countries concerned started a collaborative effort to deal with the situation, signing a joint declaration of intent already in 1991. A common system was developed for monitoring air quality, and arrangements made for an effective exchange of data.

Measures taken in all three countries, mostly without foreign aid, have subsequently resulted in huge reductions of the emissions from big stationary plants in the region. Between 1989 and 1999 emissions of sulphur dioxide from large plants fell off by 92 per cent, and of nitrogen oxides by 80 per cent. The greatest reduction of sulphur dioxide occurred in Saxony, where it was 99 per cent. See charts below.

Now that the emissions from large combustion plants have been cut back, it will be all the more necessary to deal with the pollution from road traffic.

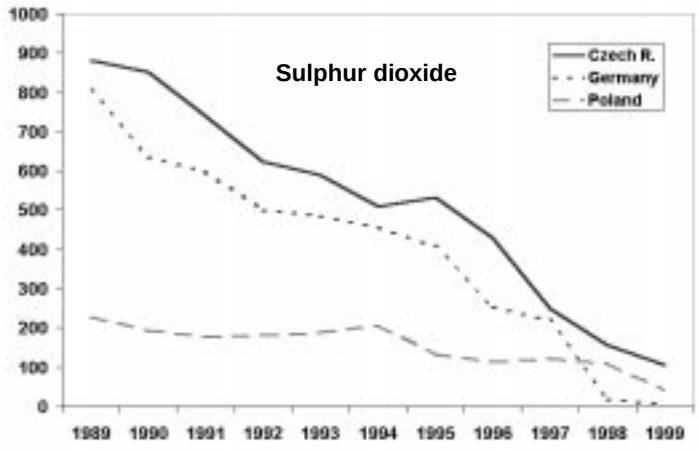
There has consequently been a marked improvement in air quality – so much so that the yearly averages for sulphur dioxide, nitrogen dioxide, carbon monoxide, and particulate matter no longer exceed the EU limit values. Apart from local hotspots, too, the 24-hour averages are not being exceeded either – except in the case of ground-level ozone, which is however a general problem in the EU. As the environmental authorities are proud to note in a common report, "The air quality in the Black Triangle is approaching that of the EU member states."

From that report it also emerges that the large combustion plants are no longer the only and dominating problem. The air quality is also affected by transboundary pollution and emissions from road traffic. In Saxony, for instance, the emissions of nitrogen oxides from motor vehicles are now twice as great as those from large combustion plants.

PER ELVINGSON

Common Report on Air Quality in the Black Triangle Region 1999. Parallel texts in English, German, Czech, and Polish. Joint publication of the three countries environment authorities. Can be obtained from the Umweltbundesamt, Postfach 33 00 22, 14191 Berlin, Germany. Fax +49-30-8903 2912. Also in pdf format at www.umweltbundesamt.de (select "Veröffentlichungen").

Emissions of sulphur and nitrogen oxides from combustion plants in the Black Triangle, 1989-99. The figures from the Czech part are for all plants with a capacity of more than 0.5 MW, from the Polish and German parts more than 50 MW. Kilotons per year.



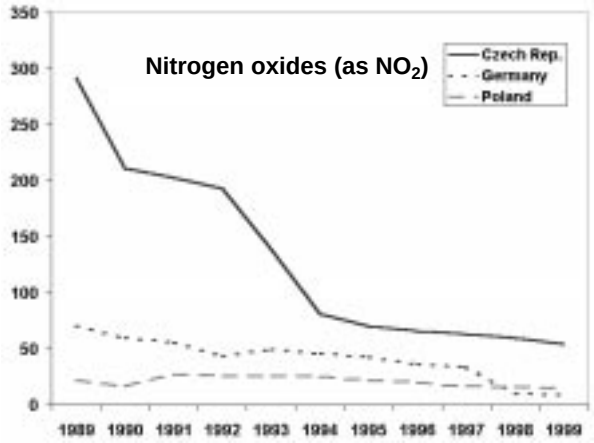


PHOTO: CHRISTER ÅGREN

The Jänschwalde power plant in eastern Germany still burns lignite, but after it had been fitted for flue-gas desulphurization in 1993 its emissions of sulphur dioxide dropped from the former 157,000 to 20,000 tons a year.

GERMANY

Huge improvements in east and west

AN ITEM HEADED "East German progress" in Acid News five years ago (1/96) gave the news that the emissions of sulphur dioxide from East German power plants had been halved since the fall of the wall, having dropped from 1,840,000 tons in 1990 to 910,000 in 1995. While half of the change could be ascribed to the closing down of a number of old plants – East German electricity output having dropped by a quarter in the meantime – half was due to the modernizing and equipping of other older plants for flue-gas cleaning.

But there has been no stop to this trend. According to the latest figures from WDEW (Verband der Elektricitätswirtschaft), the German power companies' trade association, the emissions of sulphur dioxide in eastern Germany had dropped to as little as 40,000 tons last year – or by 98 per cent since 1990 – despite a 6-percent increase in the production of energy from fossil fuels during the same period.

Power generation has become much cleaner in western Germany too, although this is mainly due to investments made in the eighties. Consequently the emissions of sulphur from this sector had come down by 87 per cent between 1982 and 1990, from 1,550,000 tons to 200,000 tons. That figure has since been halved, bringing emissions down to a mere 100,000 tons in 2000. There has thus been a total reduction of 94 per cent since 1982.

There has also been a considerable drop in the emissions of nitrogen oxides from the power sector – in Germany as a whole by 50 per cent between 1991 and 2000. The greatest change was in eastern Germany, where emissions fell by 67 per cent. But as in the case of sulphur dioxide, the greatest effort had been made in the eighties in western Germany. Retrofitting for catalytic cleaning had, among other measures, then brought the emissions of nitrogen oxides from power generation down in that part of the country by two-thirds.

Investments in consideration of the environment cost the power generators in eastern Germany somewhat over DM3.5 billion in the nineties, according to WDEW.

PER ELVINGSON

Sources: WDEW Umweltschutz-Bilans, July 16, 2001. Available (in German) at www.strom.de. WDEW press release, June 5, 2001.

IN BRIEF

Inconsequent

If they are to support the agreement made in Bonn in regard to climate change, the international finance institutions will have to stop giving loans to projects that increase the use of fossil fuels and nuclear power, says Petr Hlobil of the CEE Bankwatch Network, commenting that it is unreasonable that we should pay to make worse the problems that we are collectively trying to solve.

It is also noted in the CEE press release that the Bonn agreement rejects nuclear power as a viable means of meeting the climate targets. The European Bank for Reconstruction and Development, EBRD, is nevertheless giving loans to nuclear projects, some being to keep Soviet-designed reactors going in Ukraine. They should, says CEE Bankwatch, follow the example of the World Bank by ceasing to lend money for such projects.

Press release from CCE Bankwatch Network (www.bankwatch.org), July 23, 2001.

Windier

Germany is airing great plans for using offshore windpower as a means of achieving climate aims and simultaneously phasing out nuclear capacity. In June the environment minister, Jürgen Trittin, unveiled a scheme aimed at the generation of 75-80 TWh by wind by 2030. That would be the equivalent of about 60 per cent of the electricity generated in German nuclear plants last year. It will need some 4000 wind turbines. The intention is to have the project financed by private capital. There is already a law for supporting renewable energy in Germany that guarantees the windpower producers a price of DM0.178 (0.09 euro) per kWh.

Environment Daily, June 7, 2001.

Energy award

A competition for the world championship in sustainable energy solutions, masterminded by the O.Oe. Energiesparverband, Austria, has been announced for the third year in succession. Last year the Energy Globe Award 2001 attracted over a thousand entries from seventy-five countries. The deadline by which projects have to be submitted for the 2002 award is October 24, 2001.

Further details at www.esv.or.at/energyglobe or from O.Oe. Energiesparverband, Landstrasse 45, A-4020 Linz, Austria. Tel. +43 732 6584 4386, e-mail office@esv.or.at.

Guidelines for sustainability

TO TRY AND DECIDE what sort of transportation system would be environmentally sustainable, and how it could best be attained, the OECD has let a group of experts from nine countries examine the situation and propose guidelines for action in a project called EST, standing for Environmentally Sustainable Transport.

The project came to a head at an international conference held in Vienna, Austria, last October. The background to it all, together with the resulting conclusions and a list noteworthy local projects, has been set forth in a so-called synthesis report.

The group working on EST has produced massive evidence of the unsustainability of present trends in transportation should they be allowed to continue. In order to outline how EST could be attained, they have used a method known as backcasting – which, instead of proceeding from the present situation and seeing what measures would be needed to correct it, they start from what would be a desirable state of affairs in 2030 and then work backwards to find out what must be done to arrive at it.

To make matters quite clear the group has set a number of quantifiable parameters, such as reductions of 80 per cent for carbon dioxide and 90 per cent for nitrogen oxides, from levels occurring in 1990. A critical parameter turned out to be the emissions of carbon dioxide – since measures to reduce them would also contribute to the achievement of good air quality. But even if the transportation system would be totally non-fossil and clean problems such as noise and the need for land could remain, so those call for special measures to be solved.

Case studies showed that less than half of the changes needed to achieve the goal for carbon dioxide could be brought about by technical measures. If that goal is to be reached it will also be necessary to reduce road traffic generally, say, by making towns more compact and producing more things locally, loading vehicles more fully, downsizing cars, and making modal shifts – from road to rail, from private cars to public transport, cycling, and so forth.

Advantages in providing greater mobility and reducing the social cost

The report emphasizes the importance of impressing on people the advantages of EST in providing greater mobility in the long run and reducing the social cost of transportation.

The way the desired development can be brought about is described under ten heads, each with a checklist, in a separate Guidelines publication. The EST guidelines were endorsed by the OECD environment ministers when they met in May.

PER ELVINGSON

Synthesis Report on Environmentally Sustainable Transport EST and **Guidelines Environmentally Sustainable Transport EST.** Both published by the OECD and available on www.oecd.org/env/ccst/est. Paper copies can be ordered free of charge from OECD Environment Directorate, 2, rue André Pascal, 75775 Paris Cedex 16, France.

The EST Guidelines

1. Develop a long-term vision of a desirable transport future that is sustainable for environment and health and provides the benefits of mobility and access.

2. Assess long-term transport trends, considering all aspects of transport, their health and environmental impacts, and the economic and social implications of continuing with "business as usual."

3. Define health and environmental quality objectives based on health and environmental criteria, standards, and sustainability requirements.

4. Set quantified, sector-specific targets derived from the environmental and health quality objectives, and set target dates and milestones.

5. Identify strategies to achieve EST and combinations of measures to ensure technological enhancement and changes in transport activity.

6. Assess the social and economic implications of the vision, and ensure they are consistent with social and economic sustainability.

7. Construct packages of measures and instruments for reaching the milestones and targets of EST. Highlight "win-win" strategies incorporating, in particular, technology policy, infrastructure investment, pricing, transport demand and traffic management, improvement of public transport, and encouragement of walking and cycling; capture synergies (e.g., those contributing to improved road safety) and avoid counteracting effects among instruments.

8. Develop an implementation plan that involves the well-phased application of packages of instruments capable of achieving EST taking into account local, regional, and national circumstances. Set a clear timetable and assign responsibilities for implementation. Assess whether proposed policies, plans, and programs contribute to or counteract EST in transport and associated sectors using tools such as Strategic Environmental Assessment.

9. Set provisions for monitoring implementation and for public reporting on the EST strategy; use consistent, well-defined sustainable transport indicators to communicate the results; ensure follow-up action to adapt the strategy according to inputs received and new scientific evidence.

10. Build broad support and cooperation for implementing EST; involve concerned parties, ensure their active support and commitment, and enable broad public participation; raise public awareness and provide education programs. Ensure that all actions are consistent with global responsibility for sustainable development.

Among those that have done best

Environmentally sustainable transportation is no mere fantasy. There are already examples of it being achieved locally all around us, and prior to the conference of the OECD in Vienna a competition was arranged to pick out the best. Here are the winners in five different classes.

Mobility management

Joint ticket for public transportation and car sharing. Bremen, Germany. Ticket holders can ride by bus, streetcar, or car as they choose. More than 7000 have been participating.

Mobility CarSharing, Switzerland. The 36,000 members of a cooperative have 1400 cars available at 800 places in the country, 250 being railway stations. An attractive alternative to car ownership is provided through cooperation with public transport and rail operators.

Mobility management at Tullin hospital, Austria. An assessment of effects on the environment revealed that the greatest part of the hospital's emissions of carbon dioxide arose from personnel travel and the moving of goods. Agreements with the staff have meant more of them cycling or using public transportation, fewer using their cars.

Mobility management in the Vorarlberg Media Office building, Austria. As a result of various measures the emissions of carbon dioxide associated with travel in the course of work have been cut by 17 per cent.

Traffic saving community, Langenlois, Austria. Success of a campaign for a voluntary reduction of car travel, especially for short trips.

Green supply-chain management, Germany. By extensive rerouting, the post-order company Otto has drastically reduced the effects on the environment of transporting its products.

Transport chain emission-profiling for clients, Sweden. An emission-calculating tool developed by the carrier Schenker-BTL has made it possible to foresee the environmental effects of alternative ways of moving freight.

Car-free tourism, Austria. Numerous ways are being tried to develop this kind of tourism at two holiday resorts, Bad Hofgastein and Werfenweg.

Communication and awareness raising

Individualized marketing of public transport, Austria. Car use has been cut back in three cities – Linz, Salzburg, and Vienna – in consequence of information directed specifically at car owners. Public transportation was found to have been a fully acceptable alternative to riding by car in every third case, but for lack of information few motorists had previously thought of it.

A new marketing approach for public transport, Vienna, Austria. Campaign noticeably changed people's attitude to mass transportation, as did an

Information campaign for public transport, Oslo, Norway.

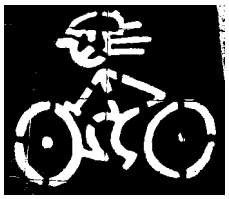
Technology and infrastructure

Fuel economy. Five years ago most of the car makers thought a car with a fuel consumption of 3 litres per 100 km would not sell. Greenpeace proved the contrary by redesigning an existing model so as to halve its consumption. Now there are a number of cars consuming no more than 3 litres on the market.

CNG city buses, Hungary. Buses driven by compressed natural gas (CNG) are being developed as replacement for old, polluting diesel types.

Hydrogen bus, Turin, Italy. Efforts to evolve a cleaner mass-transportation system include buses with fuel cells using hydrogen as a propellant.

Alternative mobility, Spoleto, Italy. Creation of a traffic-free zone in the city's historic centre by such means as moving walkways, lifts, and escalators.



Soft mobility network, Wallonia, Belgium. A network of cycle ways that will be 2500 km long and extend over the whole of Wallonia is being created on disused railway lines and canal towpaths.

Education and youth

Off ramp, Vancouver, Canada. A program to counteract an increasing tendency of parents to drive their children to school.

Culture and the arts

The renaissance of Kassel's Central Station, Germany. Surplus space in the station building is being used to create a cultural meeting point.

For a full account of the projects, see the EST Synthesis Report.

New proposal in the Netherlands

ALL VEHICLES will have to pay a kilometre tax for driving on the main roads in the Netherlands, according to a transport and mobility plan for the next twenty years which was presented by the government in May. The tax would be differentiated in line with the actual degree of congestion on the roads to be travelled and the environmental characteristics of the vehicles. The primary aim apart from reducing congestion is to cut down on noise and emissions of carbon dioxide.

Already in l998 the parties forming the coalition government had agreed that a system for congestion charging should be tried out during their mandate period, but because of pressure from the automobile association and the right-wing liberal party, the government decided first to water down the proposal, and then to abandon it altogether.

The current revival of the idea of a kilometre tax can be ascribed, according to Ton Sledsens of the Dutch Society for Nature and Environment (SNM) in part to the getting together of SNM, the Dutch Motorists' Association, the employers' organizations, and the trade unions.

Says Ton Sledsens: "The fact that these diverse bodies can agree, and the ministry of transport can give the idea a prominent place in a long-term plan, shows there to be increasing awareness that road pricing makes economic as well as environmental sense."

A study commissioned by SNM has shown an advanced scheme of differentiated road pricing to be technically feasible and capable of introduction by 2008. It would involve abolishing the present annual vehicle tax and changing the purchase tax on new cars to one based on fuel consumption. The total revenue from the taxation of road vehicles would thereby remain unchanged.

It appears from the study that considerable benefits could be expected, with some variation depending on the manner in which the system comes to be formed. The use of energy – and so the emissions of carbon dioxide – could decrease by 20-40 per cent, the emissions of nitrogen oxides by 40-50 per cent, and of particles (PM_{10}) by 50-70 per cent. The number of people affected by noise, as well as that of road casualties, could fall by 20 per cent, all in comparison with a reference scenario omitting the effects of road pricing.

PHOTO: AUDIOVISUAL LIBRARY EUROPEAN COMMISSION

If every road user had to pay what it really costs to make a certain trip, a more efficient transportation system would be the likely result, with the same mobility but fewer people using cars.

Transportation system will become more efficient and more sustainable

Congestion could be expected to fade considerably, although just how much will depend on such things as the way the charges are differentiated for time of day and stretch of road, as well as the ability of drivers to absorb this information.

While overall mobility would show only a slight decrease, car-based mobility would fall off much more, in relation to the expected growth figures. Charging for road use is not only likely to lead to more walking and cycling, and greater use of public transportation, but also to a higher rate of car occupancy. Better utilization both of roads and vehicles will mean that the transportation system as whole will become more efficient and more sustainable.

That is what appears from the SNM study. From the Dutch ministry of transport comes the word that although the government's proposal for road pricing is as yet incomplete, the aim is still to have it ready for putting before parliament this autumn.

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More can be read on the SNM website, www.snm.nl/roadpricing.html, which also gives the full text of the study, *Effectiviteit en haalbaarheid van een geavanceerde kilometerheffing*, together with an English summary.

Warning against spread of the American pattern

SPRAWLING URBAN development is helping to make road transportation the fastest-growing source of carbon dioxide emissions. As people move ever further out into the suburbs and even beyond, it becomes ever more difficult to provide public transportation, and with longer distances from home to work, shops, and leisure activities, fewer than ever are walking or cycling. The result is more and longer car trips – leading in turn to more accidents, more noise, and more air pollution.

Noting all this in a recent report,[1] the Worldwatch Institute goes on to point out that by the end of the decade a majority of the world's inhabitants will be living in urban areas. The decisions for urban design that are being made today, especially in cities in the developing world where car use is still low, will enormously affect global warming in the years ahead. The consequences would be disastrous if the US pattern of dependency on the car were to be followed in these places too.

Thirty years from now, China for example, excluding Hong Kong, is expected to have 752 million urban dwellers. If each were to copy the transportation habits of the average resident of the San Francisco area as they were in 1990, the annual emissions of carbon from transportation in urban China alone could exceed 1 billion tons – or about as much as was released from all the road transportation in the world in 1998.

"The United States has the world's most car-reliant cities," observes Molly O'Meara Sheehan, the author of the report, continuing: "US drivers consume roughly 43 per cent of the world's gasoline to propel less than 5 per cent of the world's population."

Sheehan gives a number of examples of what can and might be done, one that is particularly outstanding being the city of Curitiba in Brazil. Starting in 1972, it has built a system of dedicated busways, with zoning for higher-density development along those thoroughfares. Its 2.5 million people are now enjoying more parks and better quality of air.

Recently Bogota, the Colombian capital, has followed suit with a similar bus system. It has also extended its network of cycle paths and experimented with a car-free day in the middle of the work week. Even without cars, this city of 6.8 million has gone on functioning normally.

Bogota's story also illustrates the importance of higher population density to support buses and cycling: if Bogota had sprawled like a typical American city, it would cover more than twenty times as much land area as it does today.

Copenhagen is also mentioned as a good example, for its commitment to bicycle lanes and pedestrian walks, as well for attempts to confine housing development as far as possible to five corridors along bus and train routes. Another is Portland, Oregon, USA, which is commended for setting an outer limit to city expansion, with a consequent increase in urban building density.

The increased attention to light rail and other forms of public transport is regarded by Sheehan as a sign that people want to see a more sustainable development of their cities. A surge in light-rail construction had, by 2000, brought the total number of such systems in western Europe to more than a hundred, the highest since 1970. In the US, after decades of decline, the use of public transportation has increased over five consecutive years. Planners in Portland, Oregon, estimate that a new light-rail line there has made it possible to avoid building eight new parking garages in the region and adding two extra lanes to major highways.

[1] **Putting the Brakes on Sprawl**. Worldwatch Paper 156. By Molly O'Meara Sheehan. June 2001. 85 pp. US$5.00. Available from Worldwatch Institute, 1776 Massachusetts Ave. NW, Washington, DC 20036, USA. E-mail: worldwatch@worldwatch.org, Internet: www.worldwatch.org.

IN BRIEF

Charging for road use

It seems that London will be the first major city in Europe to start charging for road use as a means of relieving congestion in its central parts. According to the transport strategy presented by Mayor Ken Livingstone in July, car drivers will have to pay £5 (8.3 euros) a day to enter the designated area between 7am and 7pm Monday to Friday. Taxis and motorcycles would be exempt, as would cars belonging to disabled persons. Residents living within the tax boundary would pay only 10 per cent of the standard charge.

It is expected that traffic within the zone will be 10-15 per cent less as a result of the charge. Most of the expected revenue of £200m a year would be spent on improving London's public transportation infrastructure and services.

A more detailed scheme for charging will now be made and circulated for comment. The intention is to start it as soon as possible – 2003 being the date originally proposed.

Further information: www.london.gov.uk/mayor/strategies/transport

Another way

A bill presented by the German government in August would make all vehicles weighing more than 12 tons pay a kilometre charge for travel on the country's motorways. The proposed amount would be 27-37 pfennig (0.14-0.19 euro) per kilometre, depending on the vehicle's emissions and number of axles. In presenting the bill, minister of transport Kurt Bodewig warned that if attempts were made to avoid the charge by using other roads, it would be extended to them too.

Charging is expected to bring in DM5 billion a year. Minister Bodewig calls his proposal an important step towards transference of the cost of the infrastructure from the ordinary taxpayers to the road users.

German Transport Ministry, press release August 15, 2001.

No significant cost or damage to trade

LESSONS LEARNED from reviews of the environmental performance of twenty-nine OECD countries have just been summarized in a report[1] from the secretariat.

It notes among other things that the progress made in the l980s had been "consolidated and further advanced in the nineties," with improvements extending from lower emissions of many pollutants to the better protection of endangered species – adding that the policies that had led to these improvements had not in themselves brought any significant economic costs, the effect being limited to no more than 1-2 per cent of GDP. Nor have they, in the words of the report, created significant distortions in international trade or had negative effects on employment. On the contrary, environmental policies have often provided incentives for economic restructuring and technological innovation.

All is not well, however. Despite the efforts made to improve environmental conditions in OECD countries during the 1990s, problems remain in a number of areas. They include eutrophication of surface waters and pollution of ground water, emissions of NOx and small particulates, concentrations of ground-level ozone, increasing pressures on nature and biodiversity.

To meet national and international environmental commitments, it will be necessary to strengthen the integration of environmental, economic and social concerns in the design and implementation of policy in the near future, especially in the energy, transportation, and agricultural sectors.

The report says an increased use of market mechanisms will be needed to provide price signals that reflect social and environmental costs, and are not upset by environmentally damaging subsidies.

There will have to be an increased emphasis in environmental policies on implementation and enforcement. Openness, accountability, and access to information must be improved, and stakeholder participation further encouraged. And international cooperation needs to be increased still further.

[1] **Environmental Performance Reviews: Achievements in OECD Countries**. 126 pp. OECD, Paris 2001. ISBN 92-64-18294-2 (97 01 05 1).

Intercontinental transports of pollutants

Leading European and North American scientists have agreed that there is strong evidence for intercontinental movements of fine particles and ozone across the northern hemisphere between North America, Europe and Asia. They presented their findings at a conference on air pollution across the Atlantic and the Arctic held in the US in June, within the framework of the Convention on Long-range Transboundary Air Pollution.

Fine particles and ozone have been shown to travel across not only national borders but oceans as well. Thus it may not be enough to take local measures to control them, such as by clamping down on the use of cars during pollution peaks in order to meet air-quality standards, since some of the pollutants will be coming from overseas. A collective effort will now be made to develop models that will make it possible to define the extent of these intercontinental transports.

The material that was presented at the conference is available, together with a summary, on the web at www.ciesin.columbia.edu/pph/

For the most part steadily down

THE EMISSIONS of the four air pollutants sulphur dioxide, nitrogen oxides, volatile organic compounds, and ammonia continue to decline in Europe. It appears from the latest data reported by individual countries to the EMEP, concerning the year 1999, that the emissions of sulphur had become halved since 1990, while those of nitrogen oxides and VOCs had fallen by 24 and 29 per cent respectively. The emissions of ammonia had only come down by 17 per cent.

The emissions from international shipping, which lets out considerable quantities of SO_2 and NOx, are included in the figures above. The data in this case refers however to the traffic volume and types of vessel and fuel prevalent in 1990, and the EMEP statistics assume no change in the meantime.

As regards individual countries, the changes are most evident for SO_2. By 1999 Germany had brought down its emissions of this pollutant by no less than 4.5 million tons. Some countries actually increased their emissions of sulphur, most notable being Turkey, which added 76 per cent. That country also showed marked increases of NOx and VOCs.

In the latest protocol under the Convention on Long-range Transboundary Air Pollution – that from Gothenburg – a lot of countries undertook to reduce their emissions of the pollutants in question to definite levels by 2010. The EU countries have moreover made similar commitments in respect of the new directive on national ceilings for emissions (see pp.1, 4-5). The base year in all cases is 1990.

The table opposite gives the emission figures as reported to the Convention, together with the commitments for 2010. It can now be seen how well they are doing, after half the time has elapsed.

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Source: **Emission data reported to UNECE/ EMEP: Evaluation of the spatial distribution of emissions**. MSC-W Status Report 2001. EMEP MSC-W Note 1/01, July 2001.

European emissions of sulphur dioxide, nitrogen oxides (calculated as NO_2), ammonia, and VOCs. 1000 tons a year. The figures for 1990 and 1999 are those reported to EMEP, while those for 2010 show the EU countries' emissions as they will have to be under the NEC directive, and in the case of the other European countries the commitments made under the Gothenburg protocol.

	Sulphur dioxide			Nitrogen oxides			Ammonia			VOCs		
	1990	1999	2010	1990	1999	2010	1990	1999	2010	1990	1999	2010
Albania	*72*	*72*	–	*24*	*24*	–	*32*	*32*	–	*31*	*31*	–
Armenia	72	1	73	46	11	46	25	*25*	25	81	17	81
Austria	91	42	39	193	171	103	80	70	66	345	231	159
Belarus	637	164	–	285	142	–	*219*	*219*	–	533	240	–
Belgium	372	186	99	339	292	176	107	103	74	354	271	139
Bosnia & Herzeg.	480	480	–	*80*	*80*	–	*31*	*31*	–	*51*	*101*	–
Bulgaria	2008	943	856	361	202	266	144	60	108	217	118	185
Croatia	180	91	70	88	71	87	37	24	30	105	73	90
Cyprus	46	50	–	18	22	–	*4*	*4*	–	*18*	*22*	–
Czech Republic	1876	269	283	742	390	286	156	75	101	435	248	220
Denmark	183	56	55	272	210	127	128	96	69	169	128	85
Estonia	252	102	–	68	40	–	24	8	–	88	42	–
Finland	260	87	110	300	247	170	38	35	31	209	168	130
France	1278	682	375	1865	1530	810	790	805	780	2459	1784	1080
Georgia	248	9	–	130	30	–	*97*	*97*	–	46	19	–
Germany[b]	5321	831	520	2706	1637	1051	765	624	550	3221	1653	995
Greece	502	540[1]	523	326	382[1]	344	79	74[1]	73	334	397[1]	261
Hungary	1010	590	550	238	221	198	124	71	90	205	149	137
Iceland	24	27[1]	–	26	28[1]	–	*3*	*3*	–	13	10[1]	–
Ireland	186	157	42	118	119	65	112	127	116	110	95	55
Italy	1651	923	475	1938	1485	990	466	448	419	2213	1671	1159
Latvia	119	33	107	102	39	84	44	12	44	179	64	136
Lithuania	222	70	–	158	54	–	84	29	–	108	68	–
Luxembourg	15	4	4	23	16	11	7	7	7	19	15	9
FYR Macedonia	17	105[1]	–	*39*	15[1]	–	*17*	*17*	–	*19*	*3*	–
Moldova	265	12	135	100	17	29	49	25	42	157	22	100
Netherlands	202	100	50	580	408	260	226	175	128	502	282	185
Norway	53	29	22	219	231	156	23	27	23	302	351	195
Poland	3210	1719	1397	1280	953	879	508	341	468	831	731	800
Portugal	359	375[1]	160	317	369[1]	250	105	103[1]	90	380	484[1]	180
Romania	1311	912	918	546	319	437	300	221[4]	210	772	638[4]	523
Russian Feder.[a]	4460	2203	–	3600	2494	–	1191	657	–	3566	2355	–
Slovak Republic	543	171	110	225	118	130	63	36	39	148	79	140
Slovenia	196	104	27	63	58	45	24	20	20	44	40	40
Spain	2049	1498[1]	746	1156	1194[1]	847	472	*517*	353	2790	2515[3]	662
Sweden	119	63	67	338	261	148	51	55	57	526	421	241
Switzerland	43	26	26	154	99	79	72	68	63	279	165	144
Turkey	765	1347	–	628	911	–	*321*	*321*	–	462	613	–
Ukraine	2782	1132[2]	–	1097	455[2]	–	*729*	*729*	–	1369	665	–
United Kingdom	3754	1187	585	2756	1603	1167	366	348	297	2657	1744	1200
Yugoslavia	508	521[1]	–	66	66[1]	–	*90*	*90*	–	*142*	*142*	–
Baltic Sea[5]	*228*	*228*	–	*352*	*352*	–	0	0	–	*8*	*8*	–
North Sea[5]	*454*	*454*	–	*648*	*648*	–	0	0	–	*15*	*15*	–
Rem. NE Atlantic[a,5]	*901*	*901*	–	*1266*	*1266*	–	0	0	–	*25*	*25*	–
Mediterranean[5]	*1189*	*1189*	–	*1639*	*1639*	–	0	0	–	*34*	*34*	–
Black Sea[5]	*57*	*57*	–	*86*	*86*	–	0	0	–	*2*	*2*	–
Sum	**41,573**	**20,540**		**27,601**	**21,004**		**8,201**	**6,831**		**26,575**	**18,947**	

Italics = No official figure, data drawn from open sources or interpolated. [a] Part within the EMEP area of calculation. [b] Incl. East Germany in 1990 figures.
[1] 1998 data. [2] 1997 data. [3] 1996 data. [4] 1994 data. [5] International shipping.

The outcome has been varied

Many countries have failed to meet commitments to reduce emissions

TEN YEARS AGO, in 1991, a number of countries undertook – in the so-called VOC protocol to the Convention on Long-range Transboundary Air Pollution – either to have reduced or frozen their emissions of volatile organic compounds by 1999. According to the latest data, however, far from all have done so.

Eight of the countries that signed for a reduction of 30 per cent have failed to live up to their commitment. Worst was Portugal, which increased its emissions by 57 per cent instead of reducing them. The other seven, which have indeed brought down theirs, but insufficiently, were Finland, Italy, Luxembourg, Spain, Sweden, Liechtenstein, and Monaco.

The twelve countries that did clear the 30-per-cent bar were Austria, Belgium, the Czech Republic, Denmark, Estonia, France, Germany, The Netherlands, Slovakia, Switzerland, United Kingdom, and the United States.

Countries whose emissions were already low in 1988 had the option of signing with the sole obligation of freezing them, of which Bulgaria, Hungary, and Greece took advantage. The first two actually reduced their emissions (Bulgaria by as much as 62 per cent), while Greece failed, increasing them instead.

A third possibility under the protocol was to reduce emissions within a defined area – a so-called tropospheric management area, TOMA – while agreeing to freeze them for the country as a whole. Norway chose this alternative, but failed in both respects. Canada at least managed the overall freeze (the report does not give any TOMA figures).

It can thus be seen that only fifteen of the twenty-five ratifying countries have lived up to their commitments. The rest have either not tried hard enough, or not taken the task seriously. There are no penalties under the protocol.

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Country	Emissions		Difference	Commitment	Passed
	base year	target year			
Austria	378	231	-39%	-30%	YES
Belgium	488	271	-44%	-30%	YES
Bulgaria	309	118	-62%	0	YES
Canada[1]	2964	2777	-6%	0	YES
Czech Rep.	435	248	-43%	-30%	YES
Denmark	197	128	-35%	-30%	YES
Estonia	84	42	-50%	-30%	YES
Finland	213	168	-21%	-30%	**NO**
France	2702	1784	-34%	-30%	YES
Germany	3255	1653	-49%	-30%	YES
Greece	334	397	+19%	0	**NO**
Hungary	215	149	-31%	0	YES
Italy	2213	1671	-24%	-30%	**NO**
Liechtenstein	1.5	1.3[2]	-13%	-30%	**NO**
Luxembourg	19	15	-21%	-30%	**NO**
Monaco	0.7	0.6[3]	-15%	-30%	**NO**
Netherlands	538	282	-48%	-30%	YES
Norway[1]	276	351	+27%	0	**NO**
Portugal	308	484	+57%	-30%	**NO**
Slovakia	148	79	-47%	-30%	YES
Spain	2711	2515	-7%	-30%	**NO**
Sweden	555	421	-24%	-30%	**NO**
Switzerland	324	165	-49%	-30%	YES
UK	2662	1744	-34%	-30%	YES
USA	23466	16461	-30%	-30%	YES

[1] Overall figures. TOMA data lacking.

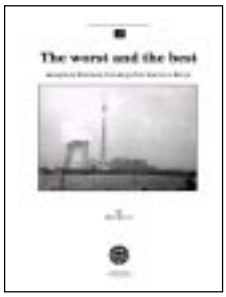
[2] Latest reported data, for 1994.

[3] Ditto, 1998.

All the emission figures are taken from **Emission data reported to UNECE/EMEP: Evaluation of the spatial distribution of emissions. MSC-W Status Report 2001. EMEP MSC-W Note 1/01, July 2001.** The information on national commitments under the protocol is from the Convention's website www.unece.org/env/lrtap/vola_h1.htm.

Secretariat publications

The worst and the best



Large combustion plants are by far the greatest source of emissions of acidifying substances in Europe. Here are up-to-date lists a) of the largest single emitters of sulphur, and b) those power plants that are already doing better than is supposed to be attainable from the use of the "best available technique" in the new EU legislation.

Atmospheric emissions from large point sources in Europe. By Mark Barrett. APC Series No. 15. 2000.

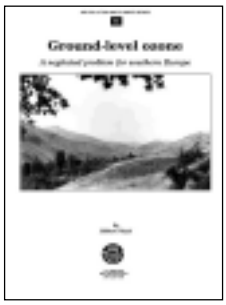
The outlook for 2010

Even if all the planned measures aimed at cutting down the emissions of acidifying air pollutants during the next ten years should in fact be carried out, acidification is likely to remain a threat to many plant and animal species as well as whole ecosystems.

In this study the outlook has been examined in the light of various assumptions as to the possible trend of emissions. It appears from it that the problems of continued acidification may have been considerably underestimated.

Acidification 2010. By H. Pleijel, I. Andersson and G. Lövblad. APC Series No. 10. 1999.

Ozone over southern Europe



This is the first overall survey to have been made of the problems associated with ground-level ozone in southern Europe, where concentrations are frequently exceeding levels that can be injurious both to health and vegetation.

Ground-level ozone. A problem largely ignored in southern Europe. By Håkan Pleijel. APC No. 12. 2000.

Need not cost so much

A detailed examination of the Commission's proposed directive for national ceilings on emissions of air pollutants shows that they could be reduced at a much lesser cost than has previously been assumed – provided the member countries really take their plans for dealing with the climate problem seriously.

Getting more for less. An alternative assessment of the NEC directive. By Christer Ågren. APC Series No. 13. 1999.

To reduce air pollution at sea

The decline of air pollution from land sources is bringing the matter of ships' emissions ever more to the fore. This study examines various ways of dealing with that problem, describing the available techniques as well as the possibilities of applying economic instruments to the same end.

Economic instruments for reducing emissions from sea transport. By Per Kågeson. APC Series No. 11. 1999.

Summarized

Emissions from ships could be reduced very cost-effectively compared with what would have to be done to achieve similar results ashore. The study advertised above is here summarized in an 8-page pamphlet in eleven languages: English, German, French, Flemish, Danish, Polish, Russian, Estonian, Lettish, Lithuanian, and Finnish.

How to order. Single copies of any of the above can be had from the Secretariat (free of charge within Europe). Please call for quotation if more copies are required. All these publications can be downloaded at no cost as pdf files on www. acidrain.org. Select "Publications".

Sex, sulphur, and a fishy business

Could a film be of use to you as a means of driving home to people the problems of acidification in a rather unconventional manner? If so, *Sex, sulphur, and a fishy business* may be what you want. Sponsored by the secretariat among others, it has been produced by Dockhouse Film & TV AB and shown on TV both in Norway and Sweden. A winner of several prizes at international film festivals.

Distributed as VHS video. 58 minutes.
Single copies free of charge within Europe.

Potential for twice the Kyoto reductions

IN MARCH last year the Commission started the European Climate Change Programme (ECCP) to see which would be the most cost-effective ways for the EU to fulfill its undertakings under the Kyoto protocol to cut down emissions of greenhouse gases. Included in the seven groups appointed for the purpose were representatives of industry and NGOs as well as of the member states.

After having considered 40 possible measures, the Commission has come to the conclusion that it would be cost-effectively possible to achieve twice the reductions required of the EU in the protocol: between 664 and 765 million tons of CO_2 equivalents instead of 336 million. Measures were considered to be cost-effective if the outlay was less than 20 euros per ton of CO_2eq.

In the report that has now been issued distinction is made between measures that are "at an advanced stage of preparation," those that are "in the pipeline" and others for which more work is needed.

In the first category are eight measures that are estimated to be cost-effectively capable of doing away with some 240 million tons of CO_2 equivalents. The proposed measures include a framework directive for an EU emissions-trading scheme, besides directives on the energy performance of buildings, on biofuels, and energy-efficient public procurement.

Eleven measures in the pipeline category are estimated to have a potential for the cost-effective reduction of a further 140 million tons of CO_2 equivalents. Among them are directives on combined heat and power, minimum efficiency standards for electrical equipment, and a revision of the IPPC directive (integrated pollution prevention and control), besides a proposal for rules concerning technology procurement.

The measures considered to be in need of further work concern among other things the promotion of heat production from renewable energy sources, long-term agreements with energy-intensive industries, fiscal

measures for passenger cars, a voluntary agreement with the car makers regarding light commercial vehicles, and further technological improvements for vehicles and fuels.

In the Commission's view the ECCP findings coincide well with those of a group of consultants, whose report *Economic Evaluation of Sectoral Emission Reduction Objectives for Climate Change* was presented in May. There the cost of achieving the Kyoto goals was put at 3.4 billion euros a year, or 0.6 per cent of the EU's collective GDP.

The ECCP work will be brought to a head this autumn with a strategic document from the Commission, followed by concrete proposals which will be submitted to the Council and the European Parliament.

The ECCP report can be downloaded at http://europa.eu.comm/environment/climat/eccp.htm.

The six greenhouse gases in the Kyoto protocol have different potentials for climate warming. In order to be comparable they are therefore all expressed in CO_2 equivalents. The conversion factors have been laid down by the Intergovernmental Panel on Climate Change (IPCC).

Coming events

Nitrogen. 2nd Conference. Potomac, Maryland, USA, October 14-18, 2001. *Information*: Rhonda Kranz, The Ecological Society of America, 1707 H Street, NW, Suite 400, Washington, DC 20006, USA. E-mail: nitrogen@esa.org. Internet: http://esa.sdsc.edu/n2001.

International Conference on Environmentally Sustainable Transport – Is Rail on Track? Eskilstuna, Sweden, October 25–26, 2001. Conference co-organised by the OECD Environment Directorate and the International Union of Railways (UIC), and hosted by the Swedish National Railway Administration. *Information*: www.oecd.org/env

COP7 – Seventh Conference of the Parties to the UN Framework Convention on Climate Change. Marrakesh, Morocco, October 29-November 9, 2001. *Information*: www.unfccc.int

EU Environment Council. Brussels, Belgium. October 29, 2001.

VI Global Conference on Environmental Education. New Delhi, India, November 6-10, 2001. *Information*: Indian Environmental Society. E-mail: iesenro@del2.vsnl.net.in. Internet: www.iesglobal.org

Climate Change & the Role of Large Cities. Stockholm, Sweden, November 14-16, 2001. *Information*: charlotta.hedvik@miljo.stockholm.se

Second International Conference on Plants and Environmental Pollution. Lucknow, India, November 15-19, 2001. Organized by International Society of Environmental Botanists and National Botanical Research Institute, Lucknow, India. *Information*: K.J. Ahmad, e-mail: nbri@lw1.dot.net.in. Internet: www.icpep.org

EU Environment Council. Brussels, Belgium, December 12-13, 2001.

Executive Body for the LRTAP Convention. Geneva, Switzerland, December 11-14, 2001.

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