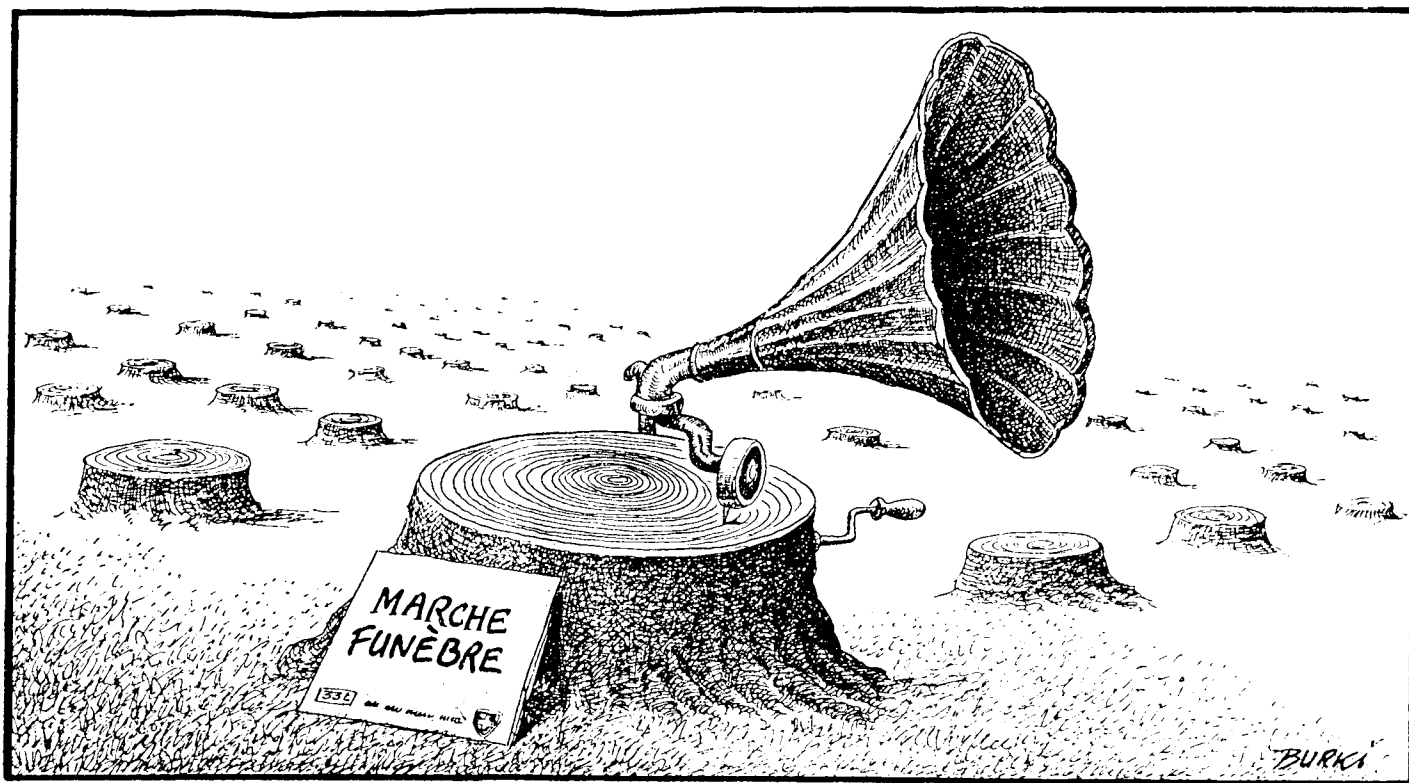


Acid News

No. 3, October 1987

A Newsletter from the Swedish and Norwegian NGO Secretariats on Acid Rain



Drawing: Burki, © 24 Heures

NUCLEAR POWER

Phasing out no problem

In a referendum in 1980, a majority of Swedes voted in favour of abolishing nuclear power. Parliament later followed suit, fixing the year 2010 as the date by which all nuclear power should have been phased out in Sweden. Moved by the Chernobyl disaster, in 1986 the Swedish government appointed a group of experts to examine, amongst other things, the environmental and economic consequences of rapidly halting nuclear generation. In order to provide the necessary facts for the

expert group, a report* has now been made by the National Environmental Protection Board.

Besides studying the effects of a rapid phasing out of nuclear power in Sweden itself, the authors of the report have also considered what it would mean to Sweden if the generation of such power were to be stopped throughout Europe.

The report starts in fact with the assumption that no power will be generated in nuclear plants in Europe after 1995. In calculating what will be needed

to make up for the shortfall, it is assumed that the European consumption of energy will have increased by 26 per cent between 1980 and 1995. This does *not* however take into account any possible measures for saving energy or switching to alternative sources such as solar, wind, or wave power.

In 1980 in Europe, energy came mainly from the combustion of fossil fuels, with oil accounting for 41 per cent, coal 29 per cent, and gas 20 per cent. Only 2.4 per cent came from

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Acid News

A newsletter from the Swedish and Norwegian NGO secretariats on acid rain.

ACID NEWS is a joint publication of the two secretariats, whose 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 secretariats at either of the addresses below. All requests for information or material will be dealt with to the best of our ability.

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

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THE SECRETARIATS

The Swedish NGO Secretariat on Acid Rain is supported by the following environmental organizations:

- The Environmental Federation (Miljöförbundet)
- The Swedish Anglers' National Association (Sportfiskarna)
- The Swedish Society for the Conservation of Nature (Svenska Naturskyddsföreningen)
- The Swedish Youth Association for Environmental Studies and Conservation (Fältbiologerna)

Address and telephone: see above.

The Norwegian secretariat, "The Stop Acid Rain Campaign/Norway," is organized by six non-governmental organizations concerned with the environment:

- Nature and Youth (Natur og Ungdom)
- The Norwegian Forestry Society (Det Norske Skogselskap)
- World Wildlife Fund/Norway (Verdens Villmarksfond)
- The Norwegian Association of Anglers and Hunters (Norges Jeger- og Fiskeforbund)
- The Norwegian Society for Conservation of Nature (Norges Naturvernforbund)
- The Norwegian Mountain Touring Association (Den Norske Turistforening)

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continued from page 1

nuclear power, and 7.7 per cent from other sources. See Table 1.

The emissions of sulphur dioxide then amounted altogether to 65 million tons, of which 51 million, or about 80 per cent were formed by combustion, and 13 million tons emanated from industrial processes generally. Table 2.

As a result of the measures that various countries have undertaken to carry out in order to reduce emissions, it is expected that those of sulphur dioxide will be about 44 million tons in 1993. Phasing out nuclear power by 1995, and replacement with fossil fuels — coal, oil, and gas — would boost this figure by 7 million tons. This increase could however be completely offset, simply by enforcing rather stricter environmental requirements, such as limiting the sulphur content of heavy fuel oil to 1.5 per cent. It may be noted that since 1984 the limit in Sweden has been 1 per cent.

The emissions of nitrogen oxides are expected to increase from 18 million tons in 1980 to 21 million in 1995. There would

be a further increase of 3 million tons, to 24 million, if fossil fuels have to be used to generate electricity that would otherwise have been produced in nuclear plants.

With the aid of models, estimates have been made of the fallout of sulphur and nitrogen over Sweden in each particular case. In 1980 the depositions of sulphur amounted to 359,000 tons, falling by about 10 per cent to 322,000 tons in 1983. By 1995 such depositions are calculated to be 227,000 tons if the nuclear power stations are still operating, and 264,000 tons if such power has been phased out. Compared with 1980 this would mean reductions of 37 and 26 per cent.

The depositions of nitrogen are expected to increase, no matter whether the nuclear plants are working or not. If they are still working, the increase will, according to estimate, be 7 per cent. Otherwise it would be 15 per cent. The report emphasizes however that there is an element of uncertainty in regard to the forecast for nitrogen.

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Table 1: Regional emissions of SO₂ in terms of 000 000 tons a year and g S/MJ of fossil fuel.

	Combustors Mt/year	g S/MJ	Industrial processes Mt/year	Total Mt/year
Northwestern Europe	9.2	0.16	2.2	11.4
Southern Europe	6.7	0.20	4.0	10.7
Eastern Europe	15.5	0.41	2.0	17.5
USSR	20.0	0.21	5.0	25.0
Total	51.4	0.23	13.2	64.6
Sweden	0.33	0.12	0.15	0.48

Table 2: Energy consumption in Europe in 1980 (Mteq).

	Solid fuels	Liquid fuels	Gas	Nuclear energy	Other	Total
Northwestern Europe	190	341	138	36	48	
Southern Europe	66	275	47	15	40	
Eastern Europe	250	119	67	5	12	
USSR	330	441	331	12	122	
Total	836	1,176	583	68	222	2,885
Procentual share	29	41	20	2.4	7.7 %	

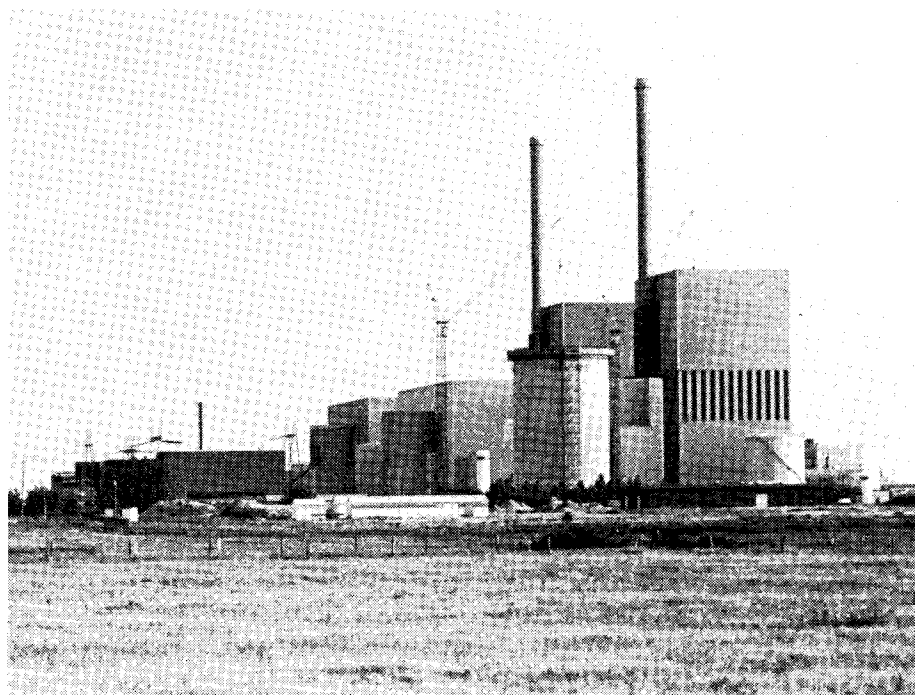
The increased depositions of sulphur and nitrogen that will result if the nuclear power plants in Europe are shut down will in turn mean increased harm to the soil, forests, surface and ground water in Sweden.

At present some 16,000 lakes in Sweden are thought to be seriously acidified, and 2,000 of them very seriously. Given the fallout in 1995 if the nuclear power plants were still in operation in Europe, about 5,000 of these acidified lakes might be expected to recover, either completely or in part, as a result of the decrease. If nuclear power has been stopped, perhaps only 3,000 would recover.

The report also includes a study of the effects on climate, both in Sweden and worldwide. In 1995 the world's nuclear plants were producing 0.2 terawatt years. If fossil fuels were substituted for nuclear to the extent of 1.0 TW years, there would be an average global rise in temperature of 0.1°C. This may be set against the expected rise of 1.5°C by 2025 that is envisaged in today's forecast. Half of the rise would be attributable to carbon dioxide. This shows, according to the report, that the problem of the climate cannot be avoided, nor would it be mitigated even by a great expansion of nuclear power production.

It should be borne in mind that the assumption of a 26-per-cent increase in energy consumption, combined with the replacement of all nuclear plants with fossil-fuel burners, is highly unfavourable from the environmental point of view. There is a good chance that energy consumption will not increase at the assumed rate, and fossil fuels will not necessarily be the only substitute for nuclear power. Energy saving, the more efficient use of energy, and energy from other sources may also play a part.

The report also recalls that it will be necessary, if the acidification of the soil is to be halted, and the damage to lakes and



Barsebäck, Sweden; controversial on account of nearness to Denmark. Photo: André Maslennikov/IBL

streams curbed, not least over large areas of Scandinavia, to reduce the European emissions of sulphur dioxide by at least 80 per cent, from the 1980 level. It should however be noted that even with such a reduction, some 3,000 of the most vulnerable lakes in Sweden, for instance, will remain acidified.

An 80-per-cent reduction would imply that the total European emissions of sulphur dioxide should not exceed 13 million tons a year. The technical means for achieving such a reduction exist, but need supplementing with extensive controls. Assuming that the emissions from industrial processes can be halved, the following requirements would suffice to bring about the necessary reduction:

Light fuel oil	Max. 0.15 per
and diesel fuel	cent sulph.
	content
Heavy fuel oil	Max. 0.2 per
	cent sulph.
	content
Coal	Max. 0.03 g
	S/MJ

If applied at the same time as nuclear power is phased out, these requirements would result in a reduction of sulphur emissions by 79 per cent. Otherwise the reduction would be 80 per cent.

The conclusions I draw from the report are as follows:

1. The proposed international measures for limiting emissions of sulphur and nitrogen oxides are altogether inadequate. Even a year ago the European environmentalist organizations were able to state, on the basis of fresh scientific research into environmental tolerances, the so-called critical loads, that the European emissions of sulphur dioxides and nitrogen oxides would have to be reduced by 90 and 75 per cent respectively (see *Acid News*, No. 3-4/86).

2. In order to achieve the necessary reductions, we shall have to apply very strict controls for stationary as well as mobile sources of pollution, reduce energy consumption, increase the use of alternative sources of energy, and change our transportation systems.

3. The effect of nuclear power, as regards both acidification and the climate, is and will remain of relative unimportance. And it will decline still further and become practically without meaning if the measures outlined under 2. are carried out. It will therefore be simultaneously possible *both* to phase out nuclear power *and* to reduce the emissions of pollutants.

Christer Ågren

* Miljökonsekvenser av förtida avveckling av kärnkraften i Sverige, SNV Rapport nr 3268. Available from SNV, Box 1302, S-171 25 Solna, Sweden.

Difficulties for NO_x Protocol

An international agreement for curbing the pollution of the air by nitrogen oxides is now being worked out within the United Nations Economic Commission for Europe (ECE). In September a Working Group set up under the "Convention on Long-range Transboundary Air Pollution" discussed a draft protocol on nitrogen oxides similar to that for sulphur, which came into force on September 2 and calls for a general reduction of 30 per cent of the emissions of sulphur dioxide.

At the meeting of the Working Group, substantive agreement was reached on 12 of the 16 proposed articles of the protocol, which together with a Technical Annex would lay down rules for bringing down emissions of nitrogen oxides from stationary sources (power plants, industries) and motor vehicles.

Differences remain however in regard to the four most impor-

tant paragraphs of the proposed protocol. These concern time schedules and the actual percentage of the reductions that are to be achieved. The countries that really are planning to take steps to reduce emissions of nitrogen oxides can be seen from the report entitled "National Strategies and Policies for Air Pollution Abatement," published by the ECE in August this year. This is the first major review of national policies on the basis of information received from all thirty-one Parties to the Convention. It appears that the only countries announcing a reduction of NO_x emissions by 30 per cent by 1995 are Austria, West Germany, France, Luxembourg, Sweden, Switzerland, and Czechoslovakia. All the others are either planning to keep their emissions at present levels or let them rise in the nineties.

Even the Scandinavian aim of presenting a united front in regard to international protocols

for environmental protection has broken down here. All three major countries except Sweden speak of an increase in emissions: Finland and Denmark by 9 and 29 per cent, respectively, by 1995, and Norway by 20-25 per cent by the year 2000, according to a forecast of the Norwegian Central Statistics Office. This last has been labelled an environmental scandal by newspapers in Norway.

Nor do the other eastern bloc countries, as well as Italy, the United Kingdom, and the United States seem to have any intention of taking effective measures for reducing their total emissions. All in all, the outlook for the next meeting of the Executive Body of the Convention on Long-range Transboundary Air Pollution, on November 16-20, where a draft NO_x Protocol should have been adopted, does not seem very good.

Reinhold Pape



Harz; West Germany. Photo: Dan Rapp.

Europe: yesterday, tomorrow

As a basis for discussions of ways and means for curbing emissions of sulphur and nitrogen oxides within the ECE area (Europe and North America), it is essential to have data. Acid News has therefore tried to put together the available information from the various countries concerning their emissions during the base year 1980 on the one hand, and on the other forecasts for the middle of the nineties.

As will appear from the table, so far the necessary information is lacking, in whole or in part,

from a number of countries. Moreover, countries do not always calculate the amounts in the same way. This is particularly so in the case of nitrogen oxides.

Despite these deficiencies, we feel that the figures should be of interest. It may be hoped in any case that all the countries will soon be able to produce the relevant data regarding their present emissions as well as forecasts for the future, and also that their methods of calculation will be coordinated and harmonized.

Country	Sulphur dioxide (SO ₂)			Nitrogen oxides (NO _x)		
	1980	1995	Change %	1980	1995	Change %
Austria	354	105 ¹	-70	216	149	-31
Belgium	799	544	-32	442	430	- 3
Bulgaria	1,034 ²	—*	—	150 ³	—*	—
Czechoslovakia	3,100	2,140	-31	1,204	950	-21
Denmark	438	229	-52	251	325	+29
Finland	584	270	-54	280	305	+ 9
France	3,558	1,800 ⁴	-51	1,867	—*	-30 ¹⁸
German Dem. Rep.	4,000 ²	—*	-30 ¹⁷	800 ²	—*	—
Fed. Rep. Germany	3,200	1,100	-66	3,100	1,700	-45
Greece	800	—*	—	127	—*	—
Hungary	1,633	1,140	-30	300 ⁵	—*	—
Ireland	219	251	+15	67	123	+84
Italy	3,800	—*	-30	1,480 ⁶	—*	—
Liechtenstein	0.35	0.08 ⁴	-77	0.45	—*	—
Luxembourg	22.9	9.6 ⁴	-58	23	14.7 ⁴	-36
Netherlands	487	239	-51	535	515 ⁷	- 4
Norway	141	84 ⁸	-40	215 ⁹	—*	—
Poland	4,100	4,900 ¹⁰	—	840 ⁹	—*	—
Portugal	266	—*	—	166	—*	—
Romania	200	—*	—	390 ¹¹	—*	—
Spain	3,250	3,053 ¹²	- 9	950 ¹¹	—*	—
Sweden	483	156	-68	328	240	-27
Switzerland	126	58 ¹³	-54	196	147 ¹³	-25
Turkey	276	—*	—	175	—*	—
USSR	12,800	8,900 ¹³	-30	2,790	—*	—
United Kingdom	4,670	3,050 ¹⁴	-35	1,916	1,800 ¹⁵	- 6
Yugoslavia	1,175	—*	—	190	—*	—
Europe	51,500	—	—	19,000	—	—
Canada	4,650	—*	-50 ¹⁶	1,725	—*	—
USA	23,200	—*	—	20,300	20,680	+ 2
North America	27,850	—	—	22,000	—	—

Data from "National strategies and policies for air pollution abatement," ECE/EB.AIR/14, United Nations, 1987.

Figures show total annual emissions in thousands of tons, in terms of SO₂ and NO₂.

* No data available

Notes

1. Mean value for the range 98-113,000 tons
2. EMEP estimate
3. Emissions in 1984
4. Forecast for 1990
5. Emissions in 1986
6. Mean value for the range 1,410,000-1,550,000 tons
7. Forecast for 2000
8. Mean value for the range 70,000-98,000 tons
9. Emissions in 1985
10. Forecast for 1990, not taking into account abatement measures planned for 1986-1990

11. Data from EMEP/MSC-W Note 2/87; emissions in 1983
12. Forecast for 1992
13. Forecast for 1993
14. Forecast for 2000; mean value for the range 2,600,000-3,500,000 tons
15. Forecast for 2000; mean value for the range 1,500,000-2,100,000 tons
16. Official reduction target, to be reached by 1994
17. Official reduction target, to be reached by 1993
18. Official reduction target, to be reached before 2000

Literature

National Strategies and Policies for Air Pollution Abatement (1987)

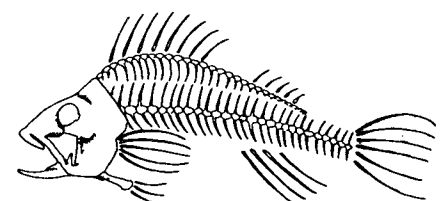
United Nations Economic Commission for Europe, 56 pp, 18.00 US dollars. First major review of national strategies and policy measures based upon information received from all 31 Parties to the Convention on Long-range Transboundary Air Pollution.

The review covers the following principal subjects:

- Emission status and trends
- National strategies and policy measures (legislation, economic incentives and disincentives, required control technologies)
- Administrative structures for enforcement, monitoring, and support
- International activities related to abatement of sulphur and nitrogen emissions.

An Annex presents country-by-country tables containing the latest available official figures (1980-1985) and forecasts to 1995 on: national emissions of sulphur dioxide, nitrogen oxides, and hydrocarbons/volatile organic compounds; national energy consumption and energy mix; national policy measures; national standards (ambient air quality, fuel quality, emissions); status of the Convention on Long-range Transboundary Air Pollution and its related Protocols; and the participation of States in international co-operative programs for air-pollution monitoring and assessment.

Can be ordered from United Nations, Sales Section, New York or Geneva (sales No. E.87. II E.29).



European Forest Damage

Air pollution is an essential, causal factor in the destabilization or even breakdown of forest ecosystems. In large parts of Europe, the number of trees affected remains intolerably high, as regards conifers as well as broadleaves. In 1986 the damage increased substantially for broadleaved trees and slightly for conifers, which however continue to be the first victims — in absolute figures — of air pollution effects.

These are the main findings of a Forest Damage Survey in Europe for the year 1986, which was presented to the Working Group on Effects under the Convention on Long-range Transboundary Air Pollution, which met in Geneva on July 1-2, 1987.

The report summarizes the results of a first joint effort to compile comparable data concerning the impact of air pollution on the health of forests in Europe. Although not all the observed damage can be entirely attributed to the effects of air pollution, it is safe to assume that many secondary biotic risks spread more rapidly in trees weakened by pollution.

In order to harmonize the methods of assessing forest damage in the participating countries, an ECE Manual has been adopted. This specifies among other things that defoliation due to biotic or abiotic causes (loss of needles or leaves) of sample trees shall be classified as follows:

- class 0: needle/leaf loss of up to 10 per cent = no defoliation
 - class 1: needle/leaf loss of 11-25 per cent = slight defoliation
 - class 2: needle/leaf loss of 26-60 per cent = moderate
 - class 3: needle/leaf loss of over 60 per cent = severe
 - class 4: dead tree
- (in the attached tables, results have been aggregated for classes 1 to 4, 2 to 4 and 3 + 4).



Widespread destruction of spruce in the Oberharz region. Photo: Paul Machenthon.

Of the 29 Parties to the Convention participating in the International Co-operative Programme for the Assessment and Monitoring of Air Pollution Effects on Forests, nine submitted the results of forest damage surveys carried out at the national level; another six countries submitted the results of surveys of selected forest re-

gions supposed to be affected by air pollutants. In 1987, still more countries will be participating in the forest damage survey, and several countries will extend their surveys from regional to nation-wide assessment.

The forest lands in those European countries that have carried out forest damage surveys

Table 1: Percentage of coniferous trees with different degrees of defoliation in 1986, based on full-scale national surveys.

Country	No defoliation (class 0)	Slight to severe (classes 1-4)	Moderate to severe (classes 2-4)	Conifer forest area surveyed (in 1000 hectares)
Sweden	82.3	17.7	2.1	19,400
Luxembourg	79.8	20.2	4.2	31
Finland	72.5	27.5	8.7	18,484
Norway	71.1	28.9	12.0	4,803
Austria	63.5	36.5	4.5	2,075
Czechoslovakia	50.8	49.2	16.4	1,570
Switzerland	48.0	52.0	16.0	777
German Federal Republic	47.2	52.8	19.5	4,883
Netherlands	40.8	59.2	28.9	190

Table 2: Percentage of coniferous trees with different degrees of defoliation in 1986, based on surveys of selected regions.

Country	No defoliation (class 0)	Slight to severe (classes 1-4)	Moderate to severe (classes 2-4)	Conifer forest area surveyed (in 1000 hectares)
Bulgaria	68.8	31.2	5.9	450
France	62.0	38.0	12.5	1,000
Spain	61.3	38.7	18.2	500
Yugoslavia	61.2	38.8	23.0	360
Hungary	60.4	39.6	15.0	100
United Kingdom*	33.0	67.0	28.9	1,461

* Primarily attributed to climate and fungi, air pollution effects cannot be quantified but are not excluded.

cover about 143 million hectares; of these, 84 million hectares are conifer forests with spruce and pine as the main species, and 59 million hectares are broadleaved forests with beech and oak predominating.

The survey covered 50 per cent of the conifer forests and about 25 per cent of the broadleaved forests in Europe. In tables 1 and 2, the participating countries are ranked according to forest damage of low, moderate or high intensity. (The ranking is based on the percentage of trees with "no defoliation." If the ranking were based on the percentage of trees with moderate to severe defoliation, the order of countries would change.)

Table 1 lists the countries which carried out full-scale surveys covering the entire national forest area; table 2 lists countries which concentrated their forest damage surveys to risk areas. As these regions may not be representative of the country's entire forest area, they have been listed in a separate table.

The forests of Central Europe are by far the most heavily affected by air pollution. It should be noted, however, that in Norway and Sweden, class 0 ("no defoliation") includes trees with up to 20 per cent defoliation, and assessment of defoliation is confined to the upper half and upper two-thirds of the crown in spruce and pine, respectively. It can be assumed that if the standard ECE classification (0 = up to 10 per cent defoliation) were used instead, the results from these countries would come closer to those observed in Central Europe.

As regards conifer forests, the tables show that of 15 countries in five (or eleven if the countries listed in table 2 are included) defoliation (needle loss classification 1 to 4) and substantial defoliation (classes 2 to 4) occurred in 30 per cent and 10 per cent of all sample trees, respectively.

Results for broadleaved forests from seven European countries show that in some countries the level of defoliation (classes 1 to 4) is slightly higher



Harz; heath landscape follows destruction of forests. Photo: Christer Agren.

than for conifers; it affects between 43 per cent and 55 per cent of sample trees in Austria, Switzerland, the Netherlands and the Federal Republic of Germany.

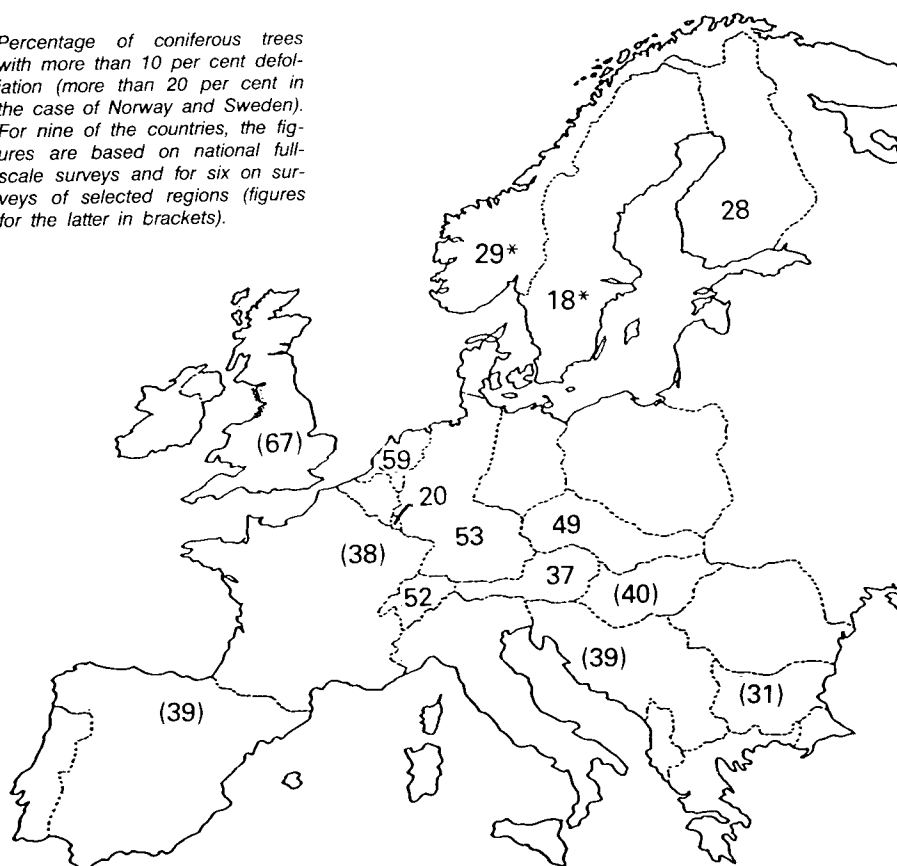
Austria, France, the Federal Republic, and Switzerland report particularly severe damage in the higher parts of mountain regions.

As a rule, trees less than 60 years old were found to be less affected by air pollution than older trees.

The 1986 ECE survey was carried out with the support of the

United Nations Environment Programme (UNEP), and will be repeated and expanded in 1987. As part of the same project, an international training course was organized for forest experts from all participating countries, to ensure the use of common methods and techniques for the assessment of forest damage. It was held at Freiburg-im-Breisgau (Federal Republic of Germany) from June 29 to July 3, 1987, and included field inspections of some of the Black Forest areas which are most heavily affected by air pollution.

Percentage of coniferous trees with more than 10 per cent defoliation (more than 20 per cent in the case of Norway and Sweden). For nine of the countries, the figures are based on national full-scale surveys and for six on surveys of selected regions (figures for the latter in brackets).



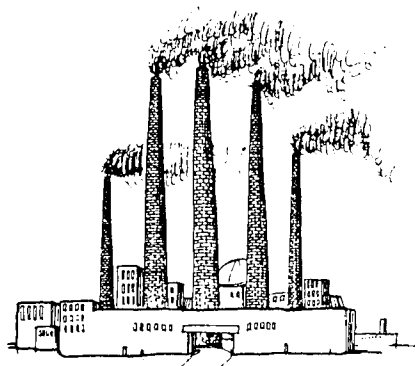
How the nations stand

The International Institute for Environment and Society in West Berlin has a long tradition of analyzing clean air policy in Europe and elsewhere. It has now published a very interesting report entitled "Clean Air Policy in Europe — A Survey of 17 Countries."

The study reveals progress so far made in western Europe towards the attainment of clean air. It also shows that while SO_2 emissions have been reduced throughout Europe, little has been done about NO_x . There is reason to fear that there may even be an increase in such emissions during the next few years.

The report first describes in detail the early developments within the Geneva Convention on Long-Range Transboundary Air Pollution and the directives from the European Community showing how the governments of Great Britain and the Federal Republic of Germany used their influence to make the text of the ECE Convention very vague in regard to the measures that were to be carried out. For example, the signatory states merely obligated themselves to endeavour to limit and, as far as possible, gradually reduce and prevent air pollution. As regards the reduction of emissions, the states only undertook to use the best available technology that is economically feasible.

In contrast to Great Britain, the Federal Republic of Germany later made a fundamental change in its position with regard to international measures aimed at limiting transboundary air pollution. The reasons of this change was the rapid increase in forest damage in that country and the resulting, sometimes heated public debate about overly lax air-pollution control policies. It had become all too clear that the problems of the Federal Republic of Germany could not be solved merely by national measures.



The new attitude of the Federal German government found public expression at the "Conference on the Acidification of the Environment" which was organized by the Swedish government in Stockholm in June 1982. There, to the surprise of many observers, the representatives of the Federal Republic supported the efforts of some states to establish clear, controllable targets within the framework of an international program for the reduction of emissions. These states came to comprise the hard core of the so-called *30 Per Cent Club*, which took its name from the goal of decreasing by 30 per cent *either* their total annual SO_2 emissions *or* their transboundary fluxes from the base year 1980 to fixed target date (as a rule, by 1993).

Significant declines in NO_x emissions from stationary plants can moreover be expected in the Federal Republic of Germany during the next years.

In another central area of environmental policy, however, the Federal Republic brings up the tail end of the European parade: it is still the only European country in which there is no general speed limit on motorways. The decision of the Federal German government to reject the proposal for a speed limit of 100 kph on motorways (combined with a speed limit of 80 kph on other non-urban main highways), which was recommended by many experts and environmental organizations, not only hinders the necessary reduction of pollution from nitrogen oxides, but will also com-

plicate the possibilities of cooperation with other EC member states. The governments of several countries have already pointed out that the Federal German government should first exhaust every possibility of reducing pollution within its own borders before summoning other countries to undertake coordinated action, which — as some sceptical governments suspect — may in any case primarily benefit the German forest or shield German industry from competition.

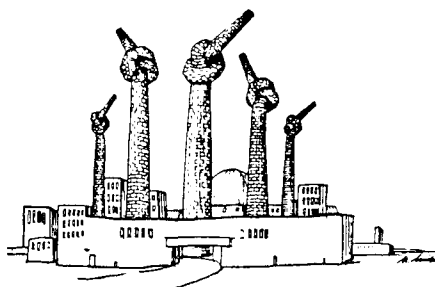
Since the Federal Republic of Germany has established controllable goals as its contribution to the reduction of transboundary air pollution, and has already implemented important measures towards their realization, it is now primarily the responsibility of other European states to take steps towards improving the situation. It seems likely however that some time will pass before other countries make comparable efforts. There are, to be sure, a number of countries which have undertaken to achieve measurable reductions in emissions, including countries which had adopted effective regulations on immission control even before the Federal Republic of Germany did so. However, other countries with high rates of pollutant export are currently not prepared to adopt clean air policies (and in some cases, as for instance eastern socialist countries or Spain, Portugal, and Ireland, will not be able to do so within the next few years) even with respect to SO_2 , let alone NO_x , comparable to those of the Federal Republic.

Great Britain, for example, which is the country with the highest level of total SO_2 emissions (basis 1980) and the second highest level of total NO_x emissions in western Europe and whose pollutants have a massive adverse affect other European countries, as a result of

stubborn adherence to the "tall-chimney" principle, has refused for years to undertake to reduce emissions, either through multi-lateral agreement or through EC regulation. (A small change in British air pollution policy has however occurred since 1986. See articles in *Acid News* 3-4/86 and 1-2/87.)

The report includes an attempt to construct a basis for an international comparison of the air pollution situation as regards SO₂ and NO_x in seventeen western European countries. It notes that the usual rankings that have been used until now generally only indicate the relative position of the various countries with respect to the amount of total emissions. For the year 1980, Great Britain is, according to this way of reckoning, the leading SO₂ polluter in West Europe (the Federal Republic of Germany being fifth), whereas the Federal Republic occupies the first place among NO_x polluters, with Great Britain second.

A ranking procedure which differentiates according to various criteria results however in a different conclusion. According to this procedure, Spain occupies the first place among the countries with unfavourable overall records in SO₂ pollution, with the United Kingdom and



the Federal Republic of Germany ranking second and tenth respectively. As regards NO_x, the Federal Republic is still number one, while Belgium comes out number two, before the UK (number three).

Tables 1 and 2 provide a complete overview of the rankings of all 17 countries according to the differentiated scheme of evaluation that has been applied here. In the various categories each country has been ranked according to available real data (on a scale of 1-17, or less where individual countries have received equal rankings). In any case the lower numbers always indicate a less favourable pollution situation as compared with higher ones. Thus, in the category "Sum of Ranking Values", the country with the lowest score has the worst overall position.

It should be noted that the rankings relate to performance during the *baseline year 1980*. This year was selected because it is often used as the

control within the framework of international agreements. It should however be borne in mind that the position of some countries has since improved decisively, especially with respect to SO₂ emissions. France, Austria, Luxembourg and Sweden are among the countries that have made progress. In the case of the Federal Republic of Germany, substantial improvement can be expected during the next few years as a result of the measures for reducing SO₂ emissions that have been introduced since 1983. In general, the improvements in the situation as regards SO₂ emissions can be expected in nearly all European countries.

On the other hand a comparable result as regards NO_x pollution can definitely not be expected.

For years nearly all countries have registered a continuously rising curve for NO_x emissions from stationary and mobile sources. There has been a particularly strong increase in vehicle emissions, which will persist as a result of a continued increase in the total number of vehicles on the roads and the amount of vehicle-kilometres driven, combined with the lax emission standards for NO_x set by the EC compromise. So far large-scale NO_x abatement tech-

Table 1: Ranking list of countries: total SO₂ emissions 1980. (Emissions in relation to different criteria.)

Country	Total Emission	Area (t/sq.km)	Inhabitants (kg per capita)	Gross Domestic Product (kg per unit GDP)	Energy Consumption (kg per unit of energy)	Sum of all Rank Numbers	Total Ranking SO ₂ Emissions
Austria	11	10	11	11	11	54	12
Belgium	6	1	5	8	10	30	4
Denmark	10	6	3	9	8	36	6
Finland	7	15	1	3	7	33	5
France	4	9	7	10	9	39	7
Germany, F.R. of	5	3	12	13	12	45	10
Greece	11	12	13	5	2	43	9
Ireland	13	11	8	2	6	40	8
Italy	2	4	6	6	3	21	3
Luxembourg	16	7	10	12	17	62	15
Netherlands	9	5	15	14	14	57	13
Norway	14	17	14	15	15	75	16
Portugal	12	14	16	4	5	51	11
Spain (1979)	3	8	2	1	1	15	1
Sweden	8	16	9	13	13	59	14
Switzerland ('79)	15	13	17	16	16	77	17
United Kingdom	1	2	4	7	4	18	2

Note: The lower the ranking number, the more unfavourable the emission situation.

nologies at stationary sources (e.g., denitrification plants or fluidized bed combustion systems) have not been installed in most countries — nor are they planned, except in rare instances, for the foreseeable future.

For some time SO₂ emission totals have been falling in a number of European countries; it is however very questionable for several reasons whether this fact alone will be sufficient to prevent further environmental damage: for one thing, there is still relatively little being done about the emissions of NO_x. For another, although several countries have already achieved or exceeded the goal of the "30 Per Cent Club", (to reduce total annual SO₂ emissions by 30 per cent before 1993 from 1980 levels), reports of damage from air pollution are nevertheless increasing rather than decreasing. It will therefore be necessary not only to start with effective measures in a pan-European framework against NO_x pollution, but to strengthen the measures designed to reduce SO₂ pollution as well.

On September 8, 1986, 21 European environmental protection organizations, meeting in a conference on "Acid Rain" in Stockholm, demanded that the total amount of SO₂ in Europe be reduced by at least 80 per cent by 1993 and total NO_x emissions by at least 75 per cent by 1995, at the latest. These demands are at present hardly politically achievable, but in the perspective of active environmental protection they would seem justified.

At the international level, and even more so at the national one, it has above all been environmental protection groups and organizations, which, often earlier than responsible governmental agencies, have called attention to emerging environmental problems and pressed for counter-measures. In many countries it was these groups and organizations which — often against the powerful resistance of economic interest groups — were able through various activities, sometimes including massive protest against

Such substantial participation of environmental organizations in international deliberations on environmental protection would, Helmut Weidner suggests, be an important step towards invigorating a still rather sluggish po-environmentally detrimental projects, to achieve stricter environmental regulations. Without the activities of these groups and organizations, the air-pollution situation in Europe would undoubtedly be much worse than it actually is.

The author says he knows of no cases where the demands of such groups, once adopted, have been revealed in retrospect to be irrational. There are, in contrast, many examples of environmental neglect resulting from the influence of economic interest groups on the formulation of environmental policy which has led to irreparable environmental damage. This demonstrably stimulating and ecologically responsible position of environmental organizations should be accorded stronger recognition at future international meetings on environmental protection. This could be achieved by stronger representation of these groups in the decision-making process, by formalizing, for instance their rights to participate and to be heard in international organizations and responsible EC institutions.

litical process. The introduction of new regulatory instruments through international agreement — international environmental policy has thus far shown itself to be little inclined towards innovation — could also facilitate progress in environmental policy. Among the possible measures are the following: effective international regulations concerning responsibility for environmental damage based on strict liability, proof of damage on the basis of statistical plausibility instead of strict causality, and the reversal of the burden of proof in the case of demonstrable environmental damage. As regards the least example, this would mean (given the current state of knowledge on the consequences of air pollution) that emitters should be required to demonstrate that the present levels of total SO₂ and NO_x emissions, as well as those targeted for the future, do *not* constitute a hazard to health and the environment.

Note: The above report, "Clean Air Policy in Europe: A Survey of 17 Countries," by Helmut Weidner, 77 pp, 1986, is available in English, German and French, and can be obtained free of charge from the International Institute for Environment and Society (IIUG), Potsdamerstr. 58, 1000 Berlin (West), FRG.

Table 2: Ranking list of countries: total NO_x emissions 1980.

(Emissions in relation to different criteria.)					
Country	Total Emission	Area (t/sq.km)	Inhabitants (kg per capita)	Sum of all Rank Numbers	Total Ranking NO _x Emissions
Austria	11	11	10	32	11
Belgium	7	1	4	12	2
Denmark	9	6	2	17	5
Finland (1978)	12	16	6	34	13
France	3	9	8	20	6
Germany, F.R. of	1	2	3	6	1
Greece	14	14	14	42	15
Ireland	16	13	13	42	15
Italy	4	7	11	22	7
Luxembourg	17	5	1	23	8
Netherlands	6	3	7	16	4
Norway	15	17	9	41	14
Portugal	10	10	12	32	11
Spain	5	12	13	30	10
Sweden	8	15	5	28	9
Switzerland	13	8	11	33	12
United Kingdom	2	4	7	13	3

Note: The lower the ranking number, the more unfavourable the emission situation.

FRG standards ineffective

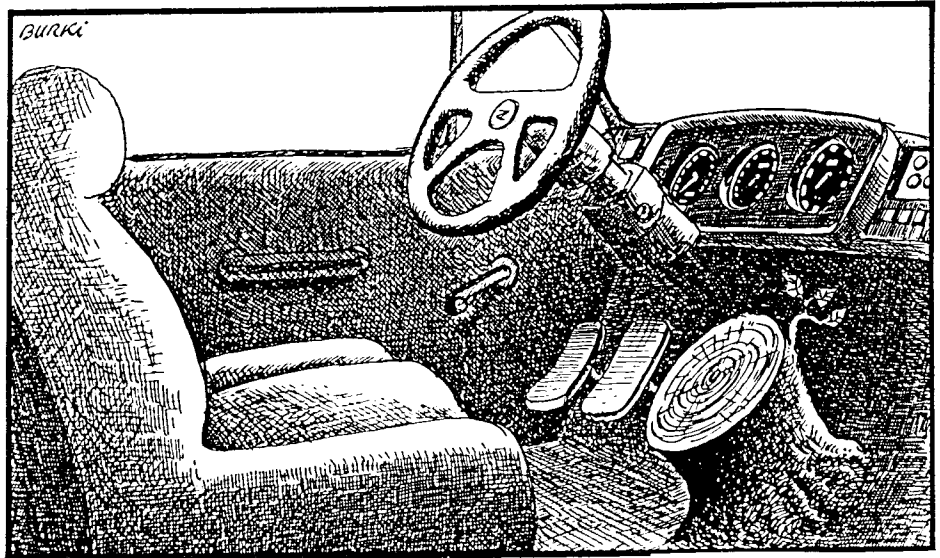
In the United States and Japan steps were taken over ten years ago to clean the exhaust gases from motor vehicles. In those countries three-way catalyzers, which remove 90 per cent of the pollutants, have long been obligatory for all new cars, and after opinion in West Germany had become aroused about four years ago as a result of reports of increasing forest death, the idea was to catch up with the Americans and Japanese. There was talk of a "breakthrough" and "optimal" decisions. The solution was to be found in technology, proposals for changing public attitudes and bringing about a general awareness of the problem by such means as the imposition of speed limits and car-free Sundays being relentlessly thrust aside. According to a study made for the federal government, air pollution would rapidly and definitely decline.

The outcome of the government's policy has now been revealed by official statistics: as a means of reducing the emissions from traffic the policy has been an almost complete failure.

At first glance the statistics appear to present an impressive picture. As of June 1987 some 5.2 million passenger cars were classified for tax purposes as "low polluting". But

- Emissions of nitrogen oxides from traffic, which nationally account for 55 per cent of the total, and in South Germany for 60-70 per cent, have not been reduced in the last four years but have actually increased. The emission figures for 1987 will be 10.7 per cent higher than they were in 1983. An increase of 3.8 per cent was noted during the last year alone.

- The employment of three-way catalyzers as the only rational way of reducing emissions has not turned out as intended. Only 11 per cent of the vehicles classified as low polluting are so equipped. In relation to all the



Drawing: Burki, © 24 Heures

passenger cars now (June 87) on the roads in West Germany, just 2.1 per cent have catalyzers.

- The rest of the "low-polluting" cars are either definitely old vehicles, which would allow no reduction of emissions, or else new cars that barely achieve the present lax standards.

- Altering existing vehicles has not worked out either. So far only about 1.5 per cent of the present fleet of 25 million older cars have been adapted so as to reduce emissions.

- Policy has also shipwrecked as regards the introduction of unleaded petrol. While more than a year was lost in which unleaded petrol cost more than the ordinary leaded type, causing sales of unleaded to be about zero, a further tax incentive introduced at the beginning of last year resulted in a relative increase in sales of no more than 20 per cent.

But what does a 20-per-cent share of the petrol sales total actually mean? Seeing that

- Petrol consumption increased during the last two years by about 9 per cent, and

- Even unleaded petrol contains some lead, or about one-twentieth of the amount in the leaded type, so it appears that this year the actual emissions of lead from cars will be just about 10 per

cent lower than they were last year. Since lead once liberated as heavy metal in the environment will not break down, the poisoning of the soil will continue at an almost unabated rate. It should be borne in mind that even if emissions were for instance halved, this would only reduce the increase in the rate at which the soil is becoming poisoned by lead by 50 per cent.

- The situation is still worse as regards trucks and aircraft which account for about 40 per cent of the total emissions of NO_x from traffic. So far no attempt has been made to curb the emissions from these sources, despite the rapid rate at which such traffic is expanding. The "voluntary agreement" between the federal government and the truck manufacturers to undercut the existing standards in the case of new vehicles by 20 per cent, hailed by the government at the end of 1985 as a victory, is without effect: the limit values are so high as to have been easily met for years by quite normal vehicles.

A closer examination of the official statistics for June 1987 reveals the following:

In June, 1986, the number of "low polluting" cars was put at 1.4 million. Then suddenly in July, just one month later, there were over 3 million. This spec-

tacular change was brought about because all of a sudden more than 1.4 million used diesel-driven vehicles were classed as "low polluting." This dickering with the statistics is costing the West German taxpayers 1.2 million DM, without reducing NO_x emissions by a single gram.

If one eliminates, from the total of 5.2 million "low-polluting" vehicles, the old cars and the normal proportion of diesels among the new ones, which could in any case have been sold without any tax incentives, the number of vehicles actually bought as low polluting, or altered to meet government requirements, becomes reduced to just under 2.8 million. Most of these moreover only meet the lax EEC standards, with very little reduction of the polluting effect.

When steps began to be taken to control emissions in 1985, most of the vehicles then classified as low polluting were equipped with three-way catalyzers. Subsequently however their numbers grew only slowly. On the other hand there was a distinct increase in cars that could meet the weak Euro-standards. Since these enjoyed the same tax advantages as catalyzer cars, the latter were literally forced off the market as a result of the government's policy.

All told, the measures taken by the federal government between January 1985 and June 1987 have stopped less than 2 per cent of the emissions of nitrogen oxides from passenger cars. During the same period

- Traffic with such vehicles increased by 8 per cent.
- In 1986 the average speed on the motorways increased by 3 kph, after having dropped a little the year before. Higher speeds caused NO_x emissions to start rising again.
- Transport work by trucks and aircraft increased during these last two years by 8 and 15 per cent.

Thus all the measures to promote the use of low-polluting vehicles did nothing to prevent

an increase in NO_x emissions, let alone reduce them. For the current year there is likely to be an increase of 2.5 per cent in such emissions from passenger cars, with the result that in 1987 all the NO_x emissions from traffic will exceed the 1983 figure by 10.7 per cent. The federal government's environmental policy has thus succeeded to this extent only: If nothing had been done, the NO_x emissions from traffic would not have been 10.7 per cent, but 16 per cent higher than they were in 1983.

Mathematics

A calculation may help to make matters clearer.

- In one year 9 per cent of the car fleet will be replaced by new vehicles. Since new cars are run 50 per cent more than old ones, they will perform 13.5 per cent of the transport work (9 per cent \times 1.5).
- Three-way catalyzers have the effect of stopping about 90 per cent of the NO_x emissions. If all new cars were so equipped, 12 per cent of the annual emissions from passenger cars could be prevented (13.5×0.9).
- If most of the new cars in the low-polluting category only met the EEC standards, less than 50 per cent of the NO_x emissions would be affected, thus reducing the total of such emissions from cars by barely 7 per cent per annum ($13.5 \text{ per cent} \times 0.5$).
- If instead of all new cars only half, say, were low polluting, the annual reduction would only amount to 3.3 per cent ($13.5 \text{ per cent} \times 0.5 \times 0.5$).
- Assuming that, as hitherto, no steps are taken to control the

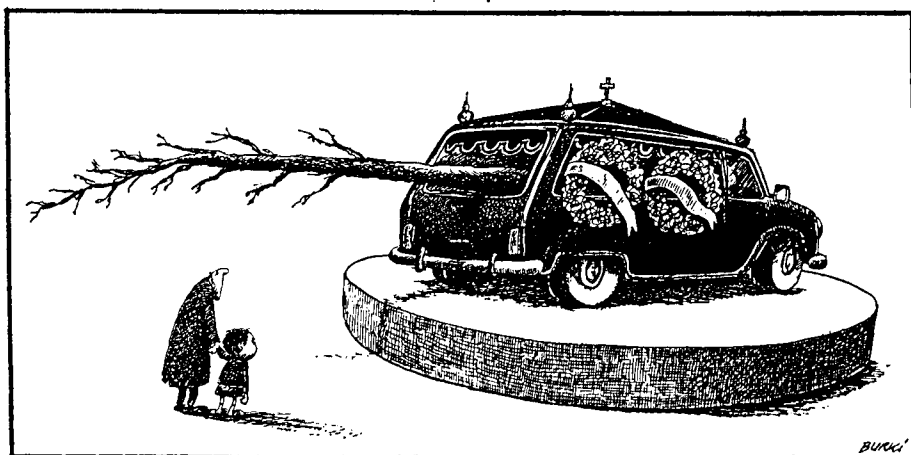
NO_x emissions from trucks and aircraft, and since passenger cars account for no more than 60 per cent of the total, only 2 per cent of the annual emissions from traffic could be prevented ($3.3 \text{ per cent} \times 0.6$). Even if all new vehicles were made capable of being classified as low polluting, the annual emissions of NO_x from traffic would be reduced at the most by 4 per cent.

- Only a few per cent increase in traffic per year would completely offset the effect of new low-polluting vehicles. Instead of a reduction of emissions, there would be an increase. Other factors, such as faster driving, could make matters still worse.

- When taking a longer view, it should be kept in mind that the 50-per-cent greater running of new vehicles assumed in the calculation only applies during the first year after acquisition.

If one were to make a more exact forecast, and assume that within a short time almost all the new vehicles would be approximately the same types as in the last two years, and classified as low polluting, it would then appear that the NO_x from traffic would not fall during the coming period either, but would remain at approximately the same high level as today. That would mean the end of the German forests.

This is what independent scientists and environmentalist groups had feared already in 1983. The federal government brushed aside their fears and ordered the above-mentioned study. The investigators deliv-



Drawing: Burki, © 24 Heures

ered the desired results. According to their findings the NO_x emissions would undergo a rapid, distinct decline, and by 1995 be down by 57 per cent.

Anyone who analyzes the study will hardly be surprised at the outcome. Among other things it assumed that

- Most of the vehicles classified as low polluting would be equipped with three-way catalyzers.
- Where technically possible, all the older cars of year models 1983-85 would be voluntarily altered so as to bring about a minimum improvement.
- There would be no increase in traffic during the next few decades.
- There would be no cars over ten years old on the roads (actually they amount to about 15 per cent of the total).
- The extent to which old cars are run was set unrealistically low. The investigators had "forgotten" that many mileage recorders only go as far as five figures, and start to count all over again after 100,000 km.
- It was only thought necessary to consider passenger cars. Trucks and aircraft, for which nothing had been done to control emissions, were left out of the picture.

Speed limits

It may be of interest to compare the present situation against the arguments put forward by the federal government when rejecting speed limits. According to the Grossversuch Tempo 100 test, a speed limit of 100 kph on motorways would reduce NO_x emissions by 32,000 tons a year. It may be overlooked that this test was carried out under highly unrealistic conditions, and its findings assumed to have been correct. In any case the government rejected a limit on speed, maintaining that a reduction of 32,000 tons was too little to justify it.

During the two-and-a-half years since January 1985, the existence of low-polluting cars has resulted in the emissions of nitrogen oxides being 48,000 tons less than they would

otherwise have been. If in that period there had been a speed limit of 100 kph on motorways, the amount saved would have been 1.7 times as much. But no one had ever proposed that limit alone. With a simultaneous speed limit of 80 kph on all other non-urban main roads, the reduction on NO_x would have been seven times as much as that resulting from all the various government measures. It would be the same in future: even according to the results of the Grossversuch test, speed limits of 100/80 kph would be more effective than all the existing measures until well into the nineties.

In principle two things are needed: all new cars to be fitted with three-way catalyzers as soon as possible, and among other measures sensible limits of 100 kph on motorways, 80 on other non-urban highways, and 30 kph in built-up areas.

It should be feasible to introduce the following package of measures for reducing the emissions of NO_x from traffic. It would be technically and scientifically possible, as well as being acceptable within the Community, since it takes into consideration the interests of other countries as well.

- Applying speed limits, possibly even more rigorous than those so far envisaged. Not only would this not cause any problem with the Community, but rather increase the republic's credibility with the other member countries. The 100/80/30 limits would immediately reduce the NO_x emissions by at least 10 per cent. A further effect would be to reduce the number of road deaths in the Federal Republic by at least 2,500 per annum, and the number of persons injured by at least 30,000 and seriously injured by at least 15,000.

- Applying the emission standards that have been in force in the United States and Japan for the last ten years for all new cars, as from the middle or by the end of 1988 — with the possibility of granting exemptions at the request of French, Italian,

or British manufacturers, whose sales amount to no more than 13 per cent of the West German market for new cars. By such an arrangement, it should be possible to solve the problem of Community relations. The extra cost for the catalytic converters could be offset by a stepwise reduction of the vehicle tax, thus avoiding a distortion of the car market on account of the exemption for imports from the other Community countries.

- Either a prohibition on the sale of leaded petrol (as in Switzerland and Austria) from the beginning of 1988, or alternatively a marked raising of the price of leaded as against unleaded petrol (as in the Netherlands and Denmark).

- A partial switching of freight carrying from road to rail. Per ton-kilometre, rail freight consumes only about one-sixth of the energy required for road haulage, and its emissions of NO_x are in the same proportion.

- Twelve car-free Sundays a year.

- A lowering of the NO_x limits for new diesel-driven vehicles by 50 per cent as from 1989.

- Abstaining from further extension of the highway network and using the savings to finance public transportation by rail and facilitate the movements of cyclists and pedestrians in cities.

Through these measures it would be possible to achieve a reduction of NO_x emissions from traffic by 1.5 million tons in 1988 alone. The government's present measures would not do this even by the end of the century. The most that could be attained by them would be a reduction of 0.6 million tons by 1995, which would mean a state of affairs equal to that in the sixties, when the trees began to suffer internal damage.

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Technology Transfer

Early in September East and West Germany signed an agreement on environmental protection, which is intended to enable the East to clean up its coal-burning power stations and factories. West German difficulties with air pollution, such as the smog emergency last winter, originate in part in the East.

Since it is the first bilateral agreement between F.R.G. and an Eastern-bloc state on environmental protection, this is an historic event. The negotiations, which were very difficult, requiring fifteen rounds in 1985 alone, were carried out on the basis of the final document on the conference for security and cooperation in Europe, and the results of environmental conferences in Geneva 1979, in Munich 1984 and Helsingfors 1985.

The agreement covers five main fields:

- Technology to reduce and monitor air pollution



- Measures to combat forest damage
- Environmentally acceptable waste disposal

- Nature conservation for fauna and flora
- Rational use of water.

The exchange of experts, of scientific and technical information in the fields concerned, as well as scientific meetings are part of the agreement. It could also bring windfalls for West German companies such as Thyssen and Steinmueller, which have become world leaders in "clean" technology under the impetus of West Germany's environmental concerns.

The agreement opens the way for a similar one with Czechoslovakia, another outside source of West German air pollution. A proposal to sell clean coal-burning technology to the factories of Bohemia is already being discussed and will probably soon be accepted.

Reinhold Pape

CFC's

Reduction means increase?

The world's first international treaty to limit production of chemicals that harm the ozone layer was signed in September 1987 in Montreal. Under the agreement, signed initially by 27 countries, nations should reduce by 50 per cent the consumption of chemical compounds known as CFCs or chlorofluorocarbons. Pessimists believe it could do more to protect international trade in chemicals than to protect ozone.

CFCs, which are used in aerosols and refrigerants, and for making plastic products, harm the ozone layer that protects life on Earth from harmful solar radiation. According to the complex formula now adopted, ozone levels in the stratosphere should remain within 2 per cent of the current level.

Delegates in Montreal negotiated a schedule for freezing, then reducing, production of CFCs 11, 12, 113, 114 and 115. These are all "fully halogenated" CFCs, stable enough to survive while moving upwards through the atmosphere to reach and destroy ozone in the stratosphere. After Britain dropped its objections, bromine-containing halons, which are not as common as CFCs but which deplete up to ten times as much ozone as CFCs, were included in the agreement.

The protocol would freeze all consumption of chlorofluorocarbons at levels prevailing in 1986. The freeze would take effect by Jan. 1, 1990. An exception was allowed for the Soviet Union, which would be permitted to freeze at levels prevailing

in 1990, when its five-year plan expires.

Chlorofluorocarbon consumption would then be rolled back by 20 per cent by 1994 and an additional 30 per cent by 1999. But global production of the chemicals would be permitted to rise as much as 10 per cent over 10 years in order to meet the needs of developing countries for industrial growth.

Scientists have not yet made exact predictions of the effects of this schedule on ozone levels, but Peter Usher of the UNEP says it may be hoped the agreement "will keep ozone depletion to within 2 per cent" of current levels. He says this is better than insisting on a more stringent treaty which would have had fewer signatories.

Reinhold Pape

Forest Alarm Tour 1987



"Save the Forest" was the slogan of the European Youth Forest Action (EYFA) when twenty young environmentalists toured through Poland, Czechoslovakia, West Germany, the Netherlands and England last July. Following the activities in the summer of 1986 more and more youth organizations all over Europe had become involved in discussions about the dying forests. Some 120 such organizations representing some 3 million young people are now supporting this youth movement. The idea for summer '87 had been to organize youth camps in Poland, West Germany, Netherlands, and the UK and send a youth delegation from camp to camp. But in Poland the authorities refused permission for the planned camping site and so the bus, covered with environmental slogans, had to tour unofficially through Poland.

The highlights were a study visit in the steelworks of Nova



Photo: Christine Myrvang.

Huta and a street action in Krakow, with a Norwegian rock band as an attraction and the distribution of leaflets and posters.

The bus tour brought dead trees from some of the most affected forest areas in Czechoslovakia and dumped them on the streets of Brussels just in front of the European Parliament. The trees were placed around the

monument for the European reminder to politicians that they still have not taken the decisions that are necessary for stopping European forest die-back.

The eighty participants of the environmental camp in Holland

organized several street actions in the heavily industrialized area of Ruhrgebiet and Euroregion. Activists climbed up a tower of the DSM chemical factory, one of the worst polluters in the Limburg area, where they hung up a banner, and protested in front of the Bayer headquarters in Leverkusen.

The activities in England included a street theatre in Birmingham, meetings with representatives of all political parties in London, handing over a resolution to Mrs Thatcher at No. 10 Downing Street demanding that she take responsibility for Europe's forests, and protests in front of CEBG headquarters, at the insufficiency of installing flue-gas cleaning at only three of their coal-fired power plants. Effective work by Friends of the Earth UK ensured very good press coverage of all these activities.

In conclusion it should also be mentioned that for the first time in Italy six environmentalist groups organized an international Forest Tour travelling from Rome to Milan. They organized excursions to forests in Terni, San Rossore, Vallombroso, and Bologna, and held several press conferences.

Reinhold Pape



Photo: Torodd Aas.

Rubbing the message in

Thousands of people from throughout the UK went out during the International Acid Rain Week last May to enjoy the trees in their locality and to look for signs of stress caused by air pollution. The "check on the woods" was part of the Forest Alert Campaign of Friends of the Earth UK. Previously hundreds of people had been taught to distinguish the classic symptoms of airborne pollution in trees. Such symptoms were observed at many places in Britain during this week. Politicians and journalists joined the tours and the wide press coverage included discussion of the harm caused by the emissions from the CEGB's coal-fired power plants and demands for the introduction of unleaded petrol in the United Kingdom.

Similar forest walks were also organized in other countries including the Netherlands, Sweden and Norway. In West Germany, Italy, Canada, and Poland bicycle rally protests took place against acid rain. The Youth Section of the West German Society for Environment and Nature Conservation (BUND) organized activities in more than ten cities and in Kiel alone there was a demonstration by six hundred cyclists. Protest resolutions were handed over to the embassies of France, UK, USSR and German Democratic Republic and Chancellor Kohl was unwillingly 'forced' to meet a BUND youth delegation on West Berlin's main shopping street. Although there had been several smog alarms in Berlin this year, Mr Kohl unfortunately had no understanding of the reasons for the activists wearing respiratory protection equipment.

In eastern Europe, excursions and lectures were organized by four environmental groups in Hungary on the topics of industry, home heating, traffic, agriculture/forestry, and air pollution. Sixty people demonstrated in Budapest's main shopping



Chancellor Kohl forced to meet BUND in West Berlin.

Photo: Carsten Sperling

street and all activities were rather well covered in the press. Public lectures were also held in Czechoslovakia and in Poland, where the cyclist demonstrators in Krakow, Poznan and Warsaw warned about the health effects of air pollution and encouraged the public to use more public transport and bicycles.

Activities in Norway and Sweden included a fishing contest in the city of Oslo, a limerick-writing contest on the subject of acid rain with the Norwegian broadcasting organization, the distribution of a newspaper and poster all over Sweden and the publishing of an action guide by the Swedish Society for the

Conservation of Nature, all receiving good press coverage. At the same time the report "Acid Rain — Yesterday, Today, Tomorrow", written by WISE, was presented on television in the Netherlands and made headlines on the front pages of all Dutch newspapers.

Many other activities, which can not be mentioned, also took place around the world during this campaign week, which once again was a success. The date for the next Acid Rain Week has already been decided: it will be the week before World Environmental Day, June 5, 1988.

Reinhold Pape

First Announcement

International Acid Rain Week 1988

May 29 — June 5, 1988
(World Environmental Day)

Start your preparations now!