

AIR POLLUTION CONTROL POLICY AND RESEARCH IN AUSTRIA

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ABSTRACT

The main goal of the Austrian pollution control policy is the reduction of all relevant emissions to the lowest possible level which can be reached by advanced technologies. Generally, air quality is tried to be improved by Emission Standards rather than Ambient Air Quality Standards.

The emissions of SO₂ have been reduced by almost 50 % from 1980 to 1984. Until 1995 a 70 % reduction based on the 1980 emissions is projected.

Measures to reduce NO_x have been taken only recently and have not yet shown considerable effect. A 30 % reduction is the target for 1995. The Austrian government considers stringent emission standards for motor vehicles the most effective measures to reduce NO_x, hydrocarbons and carbon monoxide. Therefore, from January 1987 (for large cars) and from 1988 (for small cars) the U.S. 1983 emissions standards for passenger cars are mandatory, which at present can be reached only with catalytic converters. The supply of lead-free gasoline at all gas stations with competitive prices has been regulated by law.

Research in the field of air pollution effects on the environment includes a program especially aimed at the problems connected with forest damages. It is funded with about 120 Mio. A.S./yr, of which 2/3 goes to damage monitoring.

INTRODUCTION

The Austrian government is very concerned about the present environmental pollution. In respect to air pollution this concern is not only about acidifying pollutants, but all air pollutants:

SO₂, nitrogen oxides, carbon monoxide, anthropogenic hydrocarbons, heavy metals and last but not least: in the future surely an emphasis will be put on the problems connected with the controlled or uncontrolled release of radiation or radiation emitting isotopes.

Austria considers air pollution as the main and primary source of forest destruction and as a contributing factor to the pollution of soil and water. With some luck as most of the soils and waters are well buffered, Austria has not had many problems with the acidification of lakes and streams like some countries in Northern Europe.

On the other hand there are great problems in Austria with the rapid growing

forest damages caused by air pollutants. Austria is very rich in forests: about 30 % of the Austrian surface is covered with forests. The last annual survey in 1985 showed about 1/3 of the Austrian forests with visible damage, 5 % of the forests seemed to be heavily damaged. As visible damage is only the last sign of the negative effects of air pollution, the figure of affected forests in Austria must be considered much higher.

About half of the forest damage, especially in mountain valleys, seems to be caused by home-made air pollution, mostly by SO₂. But the other half of the damage is caused by long range transport of air pollutants from countries in the north and west of Austria, mainly by photooxidants in combination with SO₂ and/or nitrogen oxides.

From the present knowledge it is concluded that the damages are result of direct damage by air pollution rather than by forest soil acidification, although considerable soil acidification can be noticed. Anyway, in the long term, soil acidification and soil toxification is considered to be a large environmental threat.

One other concern of the Austrian government is to keep our atmosphere generally clean and stable. Until now there is not very much known about the atmospheric chemical and physical equilibrium and its effects on the environment in the long term.

Being aware that environmental pollution - like environmental media - knows no national borders, Austria considers itself among the most active advocates of close multilateral and bilateral co-operation in the field of environmental protection. This is why Austria also considers the ECE-Convention on Long-Range Transboundary Air Pollution as an instrument of major importance for international cooperation in the field of air management.

Austria has signed the SO₂-Protocol to this Convention, which binds the Contracting Parties to reduce SO₂-emissions by 30 % till 1993 on the basis of 1980.

In 1985 Austria had reached already a 50 % reduction of SO₂-emissions compared to 1980 and now actively promotes the speedy implementation of the negotiations concerning a NO_x-Protocol of similar form.

NATIONAL POLICIES

Strategy

The main goal is to reduce the emissions of air pollutants to a level as low as possible which can be reached by advanced technologies, regardless of the emissions being scientifically proved to cause damage or not.

Generally, air quality is tried to be improved by Emission Standards rather than Ambient Air Quality Standards. For instance, in the air pollution sector, a

new law is to become effective soon, which demands, that large pollution sources have to continuously adopt the latest available proven technology regardless of the emission standards allowed for the source in the first place. These regulations also apply on old plants.

Emission reductions

The following table shows the emission levels of 1980 and 1984 (data in 1000 tons/year):

	1980	1984
SO ₂	354	180
NO _x ^a	216	216
CO	1070	1045
C _x H _y ^b	121	119
Partic.	48	50
Pb	0,9	0,3 ^c

^a as NO₂

^b Data for combustion sources only. Rough estimates for all anthropogenic C_xH_y-emissions in 1985 range from 250.000 - 350.000 tons.

^c Data for 1985

Sulfur dioxide. Austria reduced SO₂-emissions from about 354.000 to/yr in 1980 to about 180.000 to/year in 1984 or almost 50 %. Until 1995 a further reduction of SO₂-emissions to about 100.000 to/yr is projected. This will be a 70 % reduction from the 1980 figures.

This was achieved mainly by fuel switching from heavy fuel oil to natural gas, by fuel oil desulfurization and by flue gas desulfurization in most of the thermal power plants.

Sulfur content standards in fuel oil have been lowered between 1982 and 1984:

for heating oil	from 0,5 % to 0,3 %
for light fuel oil	from 1,5 % to 0,5 %
for medium fuel oil	from 2,5 % to 1,0 %
for heavy fuel oil	from 3,5 % to 2,0 %

A further lowering of these standards is currently under review, subject to technical feasibility. More than 20 % of the heavy fuel oil offered at present has a sulfur content of only 1 %.

Nitrogen oxides, hydrocarbons, carbon monoxide. Measures to reduce NO_x have been taken only recently and have not yet shown considerable effect. The present

target is a reduction of at least 30 % by 1995.

By law all new thermal power stations have stringent emission limits and are fitted with Selective Catalytic Reduction units. Some old plants are being retrofitted with SCR-units, too.

The Austrian Government considers stringent emission standards for motor vehicles the most effective measures to reduce NO_x , hydrocarbons and carbon monoxide. A remarkable reduction of atmospheric pollutants will be reached by a whole package of measures:

All diesel-cars licensed since January 1986 have to comply with the US-83 standards. All newly licensed gasoline-driven cars above 1,5 l will have to meet the strict US-83 standards as of 1987 and all cars will have to meet these standards as of 1988. At present these standards can be reached only by automobiles equipped with catalytic converters, which reduce emissions from automobiles for about 90 %.

For the next 10-15 years there will be no alternative to the catalytic converter, but every technology which fits the standards is accepted. Diesel cars are not regarded as an alternative to the automobile emission problem. With suitable technical solutions being developed, some stringent measures will be set for diesel cars too.

The supply of lead-free gasoline as the prerequisite for the introduction of the catalytic converters has been regulated by law in 1985; as a result, every gas station supplies regular lead-free gasoline. To achieve competitive prices, taxes on gasoline have been shifted from regular unleaded to premium leaded gasoline. So unleaded gas is about 5 % cheaper than leaded gas.

Emissions from all licensed automobiles are subject to a yearly control.

As far as speed limits are concerned the opinion of the Austrian government is to enforce the existing speed limits of 100/130 km/h rather than imposing lower speed limits with only little enforcement, although on the level of local state government lower speed limits have been set.

RESEARCH

A lot of research is carried out in the field of air pollution effects on the environment, but it is not literally named as Acidification Research. Austrian research covers air quality and deposition monitoring, international air pollutants transport research programs (EMEP, EUROTRAC), basic research on atmospheric chemistry, studies of environmental and health effects of air pollutants as well as handling and evaluation of environmental data.

A special coordinated program which started in 1984 is aimed at the problems of the dying forests. It is called "The Research Initiative Against the 'Waldsterben'".

This research program is conducted by the 3 competent Ministeries: While the Federal Ministry of Agriculture and Silviculture is responsible for practical themes like damage monitoring or the management of affected forests, the Federal Ministry of Health and Environment is responsible for air monitoring including the EMEP-stations and the Ministry of Science and Research leads the scientific program; this is mostly directed at the diagnosis and the analysis of the causes of the forest dieback.

The whole program - planned for 5 years - is being funded with about 120 Mio. A.S./yr, most of it goes to damage monitoring. Scientific research is funded with about 30 Mio. A.S./yr. It is clear, that a small country like Austria personally and financially cannot conduct research in all relevant fields of the forest damage science. Therefore the program concentrates on specific topics, which are typical for the Austrian situation or which are not done somewhere else. For this reason there is a high interest to coordinate research with all interested and involved countries so duplicated effort could be minimized.

As a research strategy all research work is concentrated on only a very few sites. On 3 research locations (one in the northwest of Austria near the German and Czechoslovakian border; one in a SO₂-loaded mountain valley; one in the eastern "Wienerwald") scientists study a very few trees thoroughly from a multidisciplinary aspect.

In addition to these scientific research efforts a technical research initiative will be started in 1986 with the aim of the development of new emission control technologies. The funding will be about 200 Mio A.S. for 5 years.