Instruments and measures

Air pollution can be reduced in many ways. The authorities are following three main approaches to try to reduce acid deposition over Norway:

1. International influence. Reducing Norwegian emissions alone will do little to improve the state of the environment in Norway. More than 90 per cent of the acid rain that falls in Norway originates abroad, so Norwegian negotiators and politicians are working hard to persuade neighbouring countries to reduce their emissions.
2. Legislation. The authorities have introduced laws, rules and regulations to limit pollution. Licences issued to industrial enterprises are intended to ensure that emissions are gradually reduced. This has been the most important means of reducing Norwegian sulphur emissions.
3. Use of market forces. Environmental taxes can be introduced to make polluting products more expensive than "environmentally-friendly" ones. In Norway, the tax on mineral oil has been used as an instrument to reduce sulphur emissions by making part of it dependent on the sulphur content of the oil.

Unlike emissions of gases that threaten to enhance the greenhouse effect, acid emissions can be eliminated almost completely, although it is more difficult to remove NOX than SO2. Many methods are available, some preventive and some remedial.

Energy efficiency measures (for instance improvements of industrial processes to reduce energy requirements and better insulation of buildings) reduce both acid emissions and other emissions that may be harmful (e.g. CO2, hazardous substances).

A different energy carrier can be used: a changeover from coal to oil or from oil to gas or hydroelectric power reduces emissions.

A changeover from high- to low-sulphur oils has given good results in many towns.

Purification of fuel. Before combustion, up to 35 per cent of the sulphur content of coal and oil can be removed by chemical washing.

Sulphur dioxide can be removed from waste gases formed by the combustion of coal or oil by adding lime or other chemicals that absorb SO2. Ammonia can also be added to reduce NOX emissions.

One commonly used method of removing sulphur is known as flue gas desulphurization (FGD). Sulphur is removed after combustion of the coal or oil by means of various types of filters. A desulphurization method using sea water has been developed in Norway. This removes more than 95 per cent of the sulphur.

Burners specially constructed to give off as little NOX as possible can reduce NOX emissions by up to 40 per cent.

Catalytic converters in car engines, wood stoves, oil burners, etc. convert NOX to harmless nitrogen. In Norway, catalytic converters are required in new petrol engines.

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