Air Pollution Profile of Turkey

As is the case with all environmental problems, the two primary causes of air pollution in Turkey are urbanization—which has been rapid since the 1950s—and industrialization. Before industrialization more than 80% of the population lived in rural areas; now more than 60% live in the cities and industrial complexes. Among the developments contributing to air pollution in the cities are incorrect urbanization for the topographical and meteorological conditions, incorrect division of urban land into lots, low quality fuel and improper combustion techniques, a shortage of green areas, an increase in the number of motor vehicles and inadequate disposal of wastes.

An environment law was brought into effect in 1983. Air pollution standards are determined by the Prime Ministry Environment General Directorate; the pertinent regulation was brought into effect on 2 November 1986. Emission limit values relate mainly to SO_2, CO, NO_2, NO, O_3, total suspended particulates (TSP), hydrocarbons, lead, cadmium and thallium.

Combustion of coal and various kinds of heating oil cause excessive air pollution in Istanbul, Ankara, Bursa and Erzurum during the winter months. Cities in Turkey with significant levels of SO_2 and TSP in the winter months of 1990–94 are shown in Figs 1 and 2.

Fig. 1 Average concentration of total suspended matter in 1990–94 winter months in some cities (μg/m³)

Although attention has been given in recent years to the problem of air pollution created by industrial installations, only 6.3% of existing plants have installed necessary equipment to prevent environmental pollution.

Industrial sources of air pollution in Turkey are mainly the fertilizer, iron and steel, paper and cellulose, sugar, cement, textile, petrochemical, pesticide, leather and energy production industries. Average yearly levels of SO_2 and total suspended matter emitted by the main polluting industries are given in Table 1.

Fig. 2 Average concentration of SO_2 in 1990–94 winter months in some cities (ppm)

Concentrations of O_3, NO_x, SO_x and particulate matter were measured in the Uludag National Park, well known as a ski resort and the highest mountain of west Turkey. The aims of these measurements were to track the transportation of the main air pollutants from Europe to Turkey and to investigate the influence of acid rain on the forest of the Uludag National Park (a Eurotac project).

Table 1 Average yearly levels of SO_2 and particulate matter emitted from the main polluting industries (ton/year)

Industry	Particulate matter	SO_2
Power plants	3940 000	1430 000
Iron & Steel	3330 000	–
Cement	2270 000	32 000
Sugar	290 000	49 000
Metal	5200	30 000
Fertilizer	14 000	30 000

Fig. 3 The concentration of O_3 between 1993–94 which is measured in Uludag National Park (ppm)

An air pollution monitoring station was set up in the Sarialan region (40°10′N 20°08′E) of the Uludag National Park. Ozone concentrations were measured under various meteorological conditions for two years from March 1993 to 1995. During the summer months, the ozone concentrations were rather high due to the transport of photochemically produced ozone precursor gases from the urban and industrial areas. Ozone peaks observed during the night were due to stratospheric injection. Figure 3 shows the concentrations of ozone measured in the Uludag National Park between 1993 and 1994.

References

1 Environmental Profile of Turkey. *Air Pollution*. Environmental Problems Foundation of Turkey Publication, 1995, pp. 39–89.

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