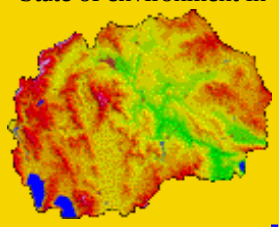
State Of Environment Report

State of environment in



Republic of MACEDONIA

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SOIL

The production of food articles based upon soil use depends on the very quality of the soil itself and on the extent of its pollution. The most predominant causes to the disturbing and endangering of soil quality in Macedonia include polluted waste waters, air particles, surface coal and mineral raw material excavation, erosion, the improper use of chemicals in agriculture, the traffic lines, the landfills, the urban and rural settlements, livestock farms with inadequately build supplementary facilities, weekend cottage settlements, infrastructure systems etc.

Out of the total territory of the Republic, some 50% belong to the farming sector (a total of 1.291.251 ha. Since the 1960-ties, 18.6% of farming stock have been lost which makes 0.5% farming soil permanent loss annually. The abandoning of arable soil within rural areas as a result of population migrations, the turning of farming into non-farming soil (i.e change in the soil use, the non-farming soil then being used for planned or not-planned building) and other types of using high-quality farming soil for non-farming purposes have all contributed to significant disturbances within the environment itself.

Structure of the Farming Soil

Arable soil (ha)										
	Total surface area	Farming soil	Total	Plowed fields and gardens	Orch - yards	Vine - yards	Meadows	Passtures	Forests	Futile soil
R. Macedonia	2.543.216	1.291.251	657.689	554.162	19.633	29.298	54.596	631.704	1.021.139	230.826

Source: The 1997 Statistical Yearbook of the Republic of Macedonia

Approximately 50% of the country's surface area include arable soil and pastures, of which 82% is of IV and VII exploitation classes.

The high percently share of fallow land and non-arable plowed fields is quite specific (193.000 ha or 35.1% of the total surface area of plowed fields and gardens. Fallow areas are potential sources of erosion causing soil layer decline and degradation. Erosion forces are registered through occurrences such as downpour floods, arable soil, traffic line, hydro-melioration system and accumulation system covering. The permanent consequence of al this is the drainage of nutrition and other significant elements from the soil essence. More intensive erosion processes (category 1 to 3) cover 9.423.62 km2 i. e 38% of the country's territory. Other erosion categories (3-5) have been tending to degrade up to 96.5% of the total soil area, or 24.813 km2, with a mean annual production of 16.995.132 m3 and a mean annual overflow of 7.531.911 m3. Turned into hectare equivalent with the soil layer 20 cm thick, this amounts to 20.300 ha arable soil permanent loss.

Mineral fertilizers to improve yields include nitrogen, phosphorus, potassium and complex fertilizer types. When these are excessively used, the soil cannot "hold" the fertilizer in question any more, and then fertilizer component drainage occurs to ground waters, nearby watercourses and irrigation systems. Soil quality may thus be disturbed by nitrates, nitrites, phosphorus, phosphorus compounds and other harmful substances. Most of the farming soil belongs to the social sector where organized control is feasible over the usage of chemical fertilizers and substances for protection against pests. The use of artificial fertilizers in garden production may result in considerable yields, and this may make individual farmers apply chemical fertilizers excessively. There is no organized control performed in this area, in spite of the fact that the direct threat of poor quality food originates exactly from the unwise fertilizer

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application. The social sector artificial fertilizer usage has been decreasing in the last ten years, coming down from 470 kg/ha to 180 kg/ha with plowed fields, or from 390 kg/ha to 160 kg/ha with arable soil. The use of artificial fertilizers within the private sector is lower than in the social one, and is even absent with certain plants. The usage of chemical substances for plant protection (fungicides, herbicides and pesticides) has also decreased and amounts to 556 tones (as for 1996).

The level of knowledge on soil quality is lower than the one on water and air quality: the hard metal presence in the soil has not been fully investigated. Yet, it has been definitely confirmed by several occasional micro-tests in the areas surrounding the Veles Smelter, the Toranica Mine, along the Skopje-Veles highway etc.. The presence of hard metal s in the soil results in hard metal contents in garden products in considerable concentrations.

Harmful Substance Concentrations in Garden Products in the Veles Region

	Spring			Autumn		
Vegetable type	Lead	Cadmium	Zinc	Lead	Cadmium	Zinc
GREEN SALAD						
Drenjevica	15,1	2,8	51,0	75,5	4,4	71,3
Recani	14,1	2,3	36.6	28.0	2.6	39.2
Basino selo	11.4	1.7	33.9	15.6	1.0	45.2
SPINACH						
Drenjevica	24.9	2.4	74.3	39.2	4.6	46.8
Recani	19.3	1.6	54.3	23.6	4.5	34.8
Basino selo	15	1.4	50.5	24.4	3.2	56.8

Source: The Republic of Macedonia National Environmental Action Plan (NEAP)

The above concentrations have been provided in mg/kg and are located at various distances from the Veles Smelter; they were measured by the National Hydro-Meteorological Agency (RHMZ) in 1990.

There is no measurement (monitoring) network for the monitoring of soil pollution status. Also, there are no maximum allowed concentrations of harmful substances in the soil specified by the Law. This prevents the continuous control over the soil pollution extent, which should otherwise be the basis of healthy food production and ground and surface water quality maintaining.

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