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Influence of vegetation cover of depleted peat deposits at the emission and absorption of carbon dioxide

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The total peatlands area in Belarus before the beginning of drainage and peat extraction was 2,939,000 hectares, or 14.2% of the total territory of the Republic. Wide-scale melioration and industrial peat extraction have led to reduction of their virgin area by more than 40% and to degradation of environment on a local level.

Currently total area of depleted peat deposits makes about 260 thousand hectares.

Carbon dioxide is a product of vital activity of aerobic organisms that make decomposition of organic matter, and because of this oxygen is taken from the atmosphere and is used for biochemical oxidation of the residual peat layer and carbon dioxide is emitted into atmosphere.

Emission of carbon dioxide into atmosphere from the depleted peat deposits depends on the type of peat deposit, level of peatlands water, current vegetation. Mineralization of peat depends on the humidity, temperature and aeration of peat layer.

Emission of carbon dioxide from the depleted and not covered with grass plots of raised bogs made 2,9–13,2 (in average –9,5 tons CO_2/ha per annum), from fen mires - 4,4–20,6 (in average –14,3 tons CO_2/ha per annum) .

Emission of carbon dioxide from the depleted and covered with grass plots of raised bogs made 3,3–9,9 (in average – 5,8 tons CO_2/ha per annum), from the fen mires – 4,4–12,8 (in average – 9,9 tons CO_2/ha per annum).

Average annual emission of carbon dioxide from depleted covered with trees and shrubs plots of raised peatlands made (-1,2)–4,4 (in average – 2,9 tons CO_2/ha per annum), from fen mires – (-1,5)– 1,4 (in average – (-0,8) tons CO_2/ha per annum).

Balance of carbon dioxide for covered with trees and shrubs sites of depleted peat deposits consists of emission of organic matter of peat into atmosphere in the process of mineralization and absorption of carbon dioxide in the process of increment of vegetation biomass. At the depleted peat deposits of fen type covered with trees and shrubs absorption of carbon dioxide exceeds its emission.

However drained peat deposits used in the forestry are fire dangerous. Almost always this brings down to zero increment of timber in the result of peatlands drainage.