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ECONOMIC CONSEQUENCES OF BANK EROSION IN THE LOWER PART OF THE KOLUBARA RIVER BASIN, SERBIA

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Abstract

Anthropogenic influences on the hydrological network in the lower part of the Kolubara River have been notably intensive since 1959, when huge river regulation works were constructed to open new mining fields for lignite exploitation. From that moment, the Kolubara River flowed through the Pestan's riverbed (its right tributary), and the bank erosion became stronger, resulting in the lateral migration of the river course on one hand and land loss, land use changes, and economic consequences on the other hand. The economic effects caused by bank erosion were analysed both via the loss of land and the reduction in the volume of agricultural production. In the period 1967-2010, bank erosion caused a land loss of 67.3 ha, including 39.6 ha of arable land. The total value of the land loss by 2010 was 80,560 USD, and the total loss in agricultural production was 634,240 USD (1982=100). The second aim of this study was to investigate the costs and benefits of bank protection using the method of bank revetment construction at the moment bank erosion became more intense and during the latest phases. The results of this research suggest that any delay in the investment in Kolubara River bank protection could be adverse. If the bank revetment along the endangered river banks was built in 1967, all investments would have been recovered through income from agricultural production and selling the lost land by 2010. The results should provide information for river engineering, environmental planners and policy makers who must deal with decisions regarding planning and the protection of bank erosion.

Key words: bank erosion, bank protection, economic effects, land use changes, loss of land

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