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## **ENVIRONMENTAL ASSESSMENT OF WASTE MANAGEMENT IN BANJALUKA REGION WITH FOCUS ON LANDFILLING**

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### **Abstract**

This paper presents the application of life cycle assessment (LCA) modelling used in the process of comparing the best technology for disposal municipal solid waste (MSW) in the Banjaluka region. Three scenarios were considered: unsanitary landfill, sanitary landfill with gas collection and burning on flare and sanitary landfill with energy recovery. The Banjaluka landfill is currently an unsanitary landfill because a system for collecting and treating gas has not yet been implemented. The environmental impact from the current waste management system is dominated by the landfill, which has no gas collection. The construction of the gas collecting system with flare is planned for 2015 (70% efficiency, during 30 year period) which will make the Banjaluka landfill a sanitary landfill. The long-term plan encompasses using the landfill gas for heat generation (39% efficiency) and electric energy (19% efficiency), as well as improvement of leachate collection system (from present 60% to 80%) and gas collection (from present 70% to 85%). Landfill with energy recovery leads to saved emission and avoided impact potential in several environmental categories. A sensitivity analysis is applied to the sanitary landfill with gas collection and burning on flare. The results of sensitivity analysis for sanitary landfill with flare indicate that the overall environmental impact is sensitive to the gas collection efficiency, bulk density and period of gas collection.

*Key words:* landfill, leachate, life cycle assessment, waste

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