

## FINAL REPORT

Study title: “Pre-Feasibility study for the implementation of an integrated waste management system including collection, transport, treatment and landfilling in the Peja region (Republic of Kosovo)”

In the context of the Soft-Loan-Preparation-Programme:



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## Executive Summary

The present pre-feasibility study was assembled during the last six months, starting in mid-June 2014. The goal of the study was to create a concept for the establishment of an integrated, modern waste management system for the Peja region, Republic of Kosovo in accordance with EU Standards. The integrated waste management system is based on legal, technical and financial aspects, whereupon it was discussed that the project could possibly be financed with the help of an Austrian soft loan, among other solutions.

The Peja region is one of seven districts of Kosovo and is located in the Western part of the country. With its mountains and natural parks, the region offers remarkable touristic potential. The region's capital is the city of Peja, with over 95 000 inhabitants. Apart from Peja, the scope of the project consists of a further four municipalities (Decan, Klina, Junik and Istog) with altogether 220 338 inhabitants and 36 923 households. The type of waste discussed within the study refers mainly to municipal solid waste which consists of household waste, household-similar waste from commercial enterprises and industry as well as park and greenery waste.

As a first step, an assessment of the current waste management services, as well as the status of the landfills in use was carried out, whereupon several problems were identified. (1) Waste management services are mainly focused on urban areas leaving the majority of rural settlements without any services at all. An average of 50% of the total population is currently without any organized waste management service. (2) The used waste collection (bins and containers) and transport equipment (trucks) is outdated or insufficient. (3) There are two 'official' landfills in use. One is used by the municipalities of Peja, Klina, Decan and Junik as a regional landfill and a smaller one is used by the municipality of Istog. The Peja regional landfill has already exceeded the capacity it was originally designed for, showing an urgent need for reconstruction, recultivation and a change in operational techniques and procedures which are currently causing substantial environmental pollution. (4) Waste fees are mainly set-up as flat monthly charges to households, businesses and public institutions and differ between municipalities. The fees for households are neither related to the volume of generated waste nor provide any incentives for waste avoidance. The average household waste service fee in all areas of the region is 4 EUR per month, and the current waste collection efficiency ratio is approximately 60%. (5) No appropriate disposal of medical, hazardous or construction waste is catered for.

Due to the lack of precise figures regarding waste generation and composition in the Peja region, it was decided to use information from a currently implemented project funded by the Japan International Cooperation Agency (JICA) in the municipality of Prizren. It was assumed that the data obtained was relevant for the whole of Kosovo, and was confirmed by representatives of the Peja region municipalities. For projection within the present study, a unit generation rate of 222 kg/capita/year for urban and 174 kg/capita/year for rural areas with an annual growth rate of 1.6%

was considered, resulting in total waste of 27.500 tons/year in 2015, increasing to 55.000 tons/year in 2050.

Considering waste collection improvements, it is recommended to keep most of the existing containers and at least to start using waste bags in rural settlements, where there is no service yet. In the mid-term all residential areas or individual houses ought to be equipped with standardized 1.1 m<sup>3</sup> containers or 120 liter bins. Waste transportation standardized 11 – 20 m<sup>3</sup> trucks combined with smaller open top vehicles should be introduced. The total investment for collection and transport equipment amounts to 3.5 million EUR. Purchase may be done with the help of a soft loan.

The Peja regional landfill generally provides favorable conditions such as its location, access, geological characteristics and area available for further extension. Conditions that all support the decision to keep the future regional landfill on the existing site. The upgrade to a sanitary landfill will be done in two main stages. The first stage represents works and improvements related to the landfill within the existing area. The measures will focus mainly on improving operational procedure including proper water management or reduction of the actively used area, passive degassing and partial recultivation. The second stage represents activities related to the extension of the landfill beyond the perimeters of the existing landfill. The landfill extension will generate additional volume solving the problem of waste disposal for a long time. Additional capacity of approx. 1 430,000 m<sup>3</sup> or 1 716,000 tons will be created. The landfill with the planned extension stages will have sufficient volume for disposal of waste generated in the Peja region up to the year 2050 or around 35 years. The initial investment for the first stage including landfill body works, leachate treatment, landfill equipment and recultivation will amount to 3 million EUR. Some components may be financed by a soft loan.

The second “official” landfill in the municipality of Istog will have to be closed and recultivated together with the other main dumps in the region. The numerous smaller dumps will have to be cleaned up and completely abandoned. As closure, recultivation and remediation of the dumps will generate substantial costs, it is deemed reasonable that every municipality should carry out the closure of its dumps and generate separate funds for these purposes.

Recycling activities on a regional level were analyzed and discussed. The municipal authorities in the Peja region are facing severe challenges such as the huge number of unserved population, a poor payment collection rate and the urgent need for additional landfill capacity. Thus, it is considered that during the initial phase (2015-2020) of upgrading the waste management services the municipalities should primarily focus on three topics. This includes extending the service coverage to all currently un-served settlements, increasing the landfilling standards and practices and bringing the waste collection fee rate to a level which covers costs. This will automatically result in increased costs, thus increase the level of waste fees. Starting around 2020 a pilot project for separate collection could be initiated. Financing of these potential activities is not considered as part of the waste service improvement project discussed herein.

To assess the population's ability and willingness to bear increased waste tariffs for improved waste management services, a willingness-to-pay analysis was made. Main results of the analysis was that an increase in tariffs for SWM is a realistic option but has to be accompanied by visible effects. The analysis also showed that only households with a monthly income of less than 250 EUR are not able to afford an increase. Such households represent 15% of the population. For this part of the population social tariffs supported by subsidies or cross-financing might be considered.

A financial analysis was carried out to assess the project's financial viability and sustainability. The analyzed project has an overall positive performance (positive Net Present Value) but does, however, show negative cash flows during the initial five years. The project's revenue will mainly result from waste tariffs. The initial waste tariff applied is 42 EUR /ton and will be annually increased by 2.5% to a maximum of 70 EUR /ton in 2036. The initial tariff equals an average of EUR 3.5 /household/month for the region, which according to the willingness-to-pay analysis is realistic. The cumulative cash-flows will become positive only in year 17, as this is linked to the affordability of projected waste service tariffs. The indicated tariffs correspond to the waste volume generated by the households. A sharp increase in revenue is expected to be achieved after the first 6-7 years as a result of waste coverage extension and an increase in waste collection efficiency. A sensitivity analysis was conducted measuring the influence of revenue changes on cumulative cash flows. The analysis shows that a sharp increase in revenue of 20% would lead to remarkable improvement of the break-even period to 10 years, whereas a decrease in revenue to the same extent would postpone the break-even point even beyond the 30 year project lifecycle. This shows that the future revenue from waste tariffs are among the most critical factors for accomplishing financial sustainability of the project. Project financing will be most probably realized through of mixed financing: combining a grant with a soft loan and possibly a minor commercial loan.

To enable the best possible implementation and organization of this regional project, the establishment of a Regional Solid Waste Management Agency (RSWMA) is recommended. Implementation of the project should be realized in several stages.

The proposed project will have positive effects on the environment as a result of avoided/reduced discharge of contaminants into ground and surface waters and reduced air emissions.