

A CASE STUDY: MUNICIPAL WASTE MANAGEMENT IN ASTANA, KAZAKHSTAN (A GUIDELINE OF WASTE MANAGEMENT FOR DEVELOPING COUNTRIES)

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INTRODUCTION.

Astana, the capital city of Kazakhstan with a population of 700,000 people generates approximately 70 million tons of industrial waste per year [1,2]. Today landfills present the dominating part in municipal waste disposal, with 97% of the generated waste in Astana [2]. An old landfill created in 1974 contains 11-14 million tons of waste and could not be used for additional waste disposal [1]. Another landfill created in 2006 was designed to contain 2 million tons of waste and has already run out of its capacity [1]. The objective of this research project is to analyze waste management in three different cities: Ulsan in the Republic of Korea, New York in the USA and London in Great Britain, and based on the selection of the best waste management practices in these cities, propose guidelines for waste management in Astana. Such a work has not been presented before, so it will be the first step in the establishment of the proper waste management in the city of Astana.

MATERIALS AND METHODS.

Methodology of the research project included the following steps: an analysis of waste management in Astana and the selected three cities, selection of the most effective and appropriate for Astana conditions practices of municipal waste treatment, and comparison of the selected alternatives in terms of technical, environmental, and economic criteria at a pre-feasibility level.

RESULTS AND DISCUSSION.

This research is currently ongoing and as a preliminary result, it is noticed the need of: increasing proportion of recycling in the waste management system, constructing incineration plants in the city, improving waste collection with the involvement of private companies, and introducing volume-based charging system.

PRELIMINARY REMARKS.

The project is expected to have positive effects on the environment including reduction of hazardous emissions due to accumulation of municipal waste in the landfill and prevention of contamination of soil and groundwater by landfill leachate; economic effects such as creation of local jobs and enhancement of public sector in terms of hiring public companies and enterprises for waste collection and transportation.

REFERENCES.

1. Kwon C. (2008). Municipal Waste Management in Ulsan, Republic of Korea.
2. Inyutin S. (2010). The Report with Recommendations on Management of Hazardous Household Waste in Astana, Kazakhstan.