



## **Ambient noise site investigation of landfill in Central Aisa**

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Within the European Framework programme FP6, the NISMIST research project focuses on the analysis and management of municipal landfills in seismically active regions in Central Asia. It concerns the development of a GIS-database of landfills in 5 participating NIS countries (Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan and Turkmenistan), the environmental risk analysis including the seismic hazard and the emission potential and the recommendations for the risk-reducing remediation measures and waste management strategies. One of the objectives of this project in its early stage is to fully characterize dynamically some selected representative landfill sites in order to perform the dynamic analysis of seismic hazard of landfills.

This paper explores the possibilities offered by the ambient noise vibration technique to evaluate some dynamic characteristics of the waste and the underlying loess deposit of a landfill site in Bishkek, Kyrgyzstan, mainly the first fundamental resonance frequency and the seismic amplification factor. The results of this ambient noise site investigation are compared with some traditional geophysical methods. It demonstrates a better in-situ dynamic characterization of landfill site in developing countries using the relatively modern and low-cost geophysical technique.

The results of this first noise ambient site investigation on a representative Central Asia landfill show the applicability of the ambient noise method to the MSW land-

fill case. It needs to be confirmed with a more detailed analysis, combined with the current geologic, geophysical and geotechnical knowledge of the landfill site. Alone, the spectral ratio H/V technique is not sufficient to characterize dynamically a landfill site. It merely demonstrates the possibilities offered by the relatively modern technique of ambient noise vibrations for a better in-situ dynamic characterization of the main landfill of Tashkent city and paves the way for the next site investigations of Central Asia landfills using the simple and low-cost geophysical technique of ambient noise measurements.