



## **Dynamic analysis of municipal solid waste landfills**

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Strong ground motions affecting municipal solid waste landfills may cause severe environmental or safety risks, such as groundwater and soil contamination, threat of human lives or damage to operational facilities. The NISMIST (Management of environmental risks associated with landfills in seismically active regions in the New Independent States of Central Asia) project, within the 6<sup>th</sup> Framework Programme of the European Commission, was launched, among other objectives, for analysing the dynamic behaviour of municipal solid waste landfills in the seismically active regions of the New Independent States (NIS) of Central Asia. Two examples of dynamic analyses of selected landfills in Kyrgyzstan and Tajikistan were conducted with the finite-difference programme FLAC3D. Features, advantages and disadvantages of this programme are discussed and the results of the response analysis of the selected landfills, subjected to an earthquake with a peak ground acceleration of 0.5g, are presented. Slope instabilities occur at both sites after approximately 12 seconds. An additional investigation was conducted dealing with the stability of buried PVC gas and leachate collection pipes. The results showed failure due to excessive deflections based on low pipe stiffness and soil support.