In this work, the influence of different operating conditions on the biogas production from mechanically-biologically treated (MBT) wastes is investigated. Specifically, different lab-scale anaerobic tests varying the water content (26-43% w/w up to 75% w/w), the temperature (from 20 to 25 degrees C up to 55 degrees C) and the amount of inoculum have been performed on waste samples collected from a full-scale Italian MBT plant. For each test, the gas generation yield and, when applicable, the first-order gas generation rates were determined. Nearly all tests were characterised by a quite long lag-phase. This result was mainly ascribed to the inhibition effects resulting from the high concentrations of volatile fatty acids (VFAs) and ammonia detected in the different stages of the experiments. Furthermore, water content was found as one of the key factor limiting the anaerobic biological process. Indeed, the experimental results showed that when the moisture was lower than 32% w/w, the methanogenic microbial activity was completely inhibited. For the higher water content tested (75% w/w), high values of accumulated gas volume (up to 150 Nl/kgTS) and a relatively short time period to deplete the MBT waste gas generation capacity were observed. At these test conditions, the effect of temperature became evident, leading to gas generation rates of 0.007 d(-1) at room temperature that increased to 0.03-0.05 d(-1) at 37 degrees C and to 0.04-0.11 d(-1) at 55 degrees C. Overall, the obtained results highlighted that the operative conditions can drastically affect the gas production from MET wastes. This suggests that particular caution should be paid when using the results of lab-scale tests for the evaluation of long-term behaviour expected in the field where the boundary conditions change continuously and vary significantly depending on the climate, the landfill operative management strategies in place (e.g. leachate recirculation, waste disposal methods), the hydraulic characteristics of disposed waste, the presence and type of temporary and final cover systems. (C) 2015 Elsevier Ltd. All rights reserved.