The impact of mechanical pre-treatment of municipal solid waste (MSW) on its biogas production potential was examined. Mechanical separation allowed the following size-fractions to be obtained: fine fraction – mineral fraction of municipal solid waste (MFMSW) (Ф < 20 mm), middle fraction – organic fraction of municipal solid waste (OFMSW) (20 mm < Ф < 80 mm), and coarse fraction (Ф > 80 mm). The most suitable fraction for biological treatment was OFMSW, containing about 76% of high rate biodegradable organic fraction (HRBOF). The rate constant of degradation for organic compounds in OFMSW was 0.23 d\(^{-1}\). It was shown that total gas production (TGP) during 10 years may achieve 550 m\(^3\)/Mg OFMSW. Mechanical pre-treatment may allow a 45% decrease of the amount of landfilled MSW resulting in a reduction of greenhouse gas emissions of up to 70 m\(^3\)/Mg over 10 years of landfilling (in contrast to MSW landfilling – 213 m\(^3\)/Mg). The experimental results revealed that gas production potential should be determined on the basis of HRBOF content and measurements of the biogas production.