

The invention relates to the safe and cost-effective operation of landfills and solid municipal waste (SMW) disposal sites, specifically, technologies for generating electrical and thermal energy from landfill gases and their comprehensive processing, and can be used at SMW landfills and dumps primarily for the energy recovery of landfill gases. Method for utilizing landfill gas is proposed, in which a network of wells is formed within the SMW landfill or dump, from which landfill gas is extracted using a vacuum pump; the gas is first purified of particulate matter, after which the purified landfill gas is transported to a heat engine equipped with a cooling system and an exhaust gas removal system, mechanically connected to a generator, and the electrical energy generated by the generator is fed into the power grid. After purifying the landfill gas of particulate matter, carbon dioxide is removed from it by absorption with an aqueous solution of amines, after which the absorbent undergoes thermal desorption and the carbon dioxide is removed from it, with the heat required for this process being obtained in a heat recovery unit connected to the cooling system and the exhaust gas removal system of the heat engine. The method enables the energy-efficient removal of carbon dioxide from landfill gas while simultaneously increasing the concentration of biomethane in it, thereby helping to increase electricity generation through the energy recovery of landfill gas.