The potential of Waste-to-Energy Plant in Central Macedonia in the Context of Circular Economy

D. Geroliolios*, M. Batsioula*, S. Skoutida*, L. Melas*, C. Karkanias*, A. Malamakis*, S. Patsios**, G. F. Banias* and N. Mousiopoulos***

*Laboratory for Environmental Engineering & Sustainability, Institute for Bio-Economy and Agri-Technology, CERTH, 10th km Thermi – Thesniki, Rd., 57001 Thessaloniki, Greece

(E-mail: d.geroliolios@certh.gr)

**Natural Resources & Renewable Energies Laboratory, Chemical Process & Energy Resources Institute, CERTH, 6th km Charilaou-Thermi Rd., 57001 Thessaloniki, Greece

***Sustainability Engineering Laboratory, Mechanical Engineering Department, Aristotle University Thessaloniki, Greece

Abstract

According to the notion of circular economy and the European Green Deal, one of the most significant EU requirements for waste management is the limiting of landfilling to 10% of total waste output by 2030. This paper examines the existing waste management system in the region of Central Macedonia. A forecast for solid waste production during 2020-2030 is developed using regression analysis based on data gathered from multiple sources (LSWMP, NSWMP, RSWMP) on the existing situation in solid waste production. In order to meet the 10% landfilling goal, the feasibility of deploying a Waste-to-Energy facility is analyzed in three possible scenarios based on predicted waste output. An integrated solid waste management system based on circular economy is the primary focus of this paper.