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A Multi-Sectorial Analysis of a Waste to Energy Plant

CUCCHIELLA, F *, D'ADAMO, I., GASTALDI, M.

Department of Industrial and Information Engineering and Economics, University of L'Aquila, Via Giovanni Gronchi 18, Zona Industriale Pile, 67100 L'Aquila,

**Corresponding author, federica.cucchiella@univaq.it*

Abstract

Currently waste management is a critical issue for several countries. Separate collection and recycling activities are growing; Germany, Netherlands, Belgium, Sweden, Austria and Denmark have drastically reduced the use of the landfill while Italy, United Kingdom and Spain give half of their waste to landfill. Real case studies and scientific papers have demonstrated the benefits of the waste to energy (WTE) facilities compared to the traditional incinerators. Typologies of waste suitable for the energy recovery are: unsorted waste, dry fraction from mechanical biological treatment, refuse-derived fuels (RDF) and also some special waste (e.g. medical).

To focus on waste management in Italy, this study uses a multi-sectorial analysis for a region, Abruzzo, reporting a high rate of landfilling. Plant dimensioning, comparison between WTE strategies, centralized or decentralized solution, location of plant are proposed and economic, environmental, financial and social analysis verify the sustainability of the suggested solution.

The outcomes deriving from the present research could be extended in developing countries where ever-increasing amounts of solid waste accompany rapid economic and population growth. Relevant is the municipalities ability to sustainably manage it all and solutions to these problems may be found in the results of the present research.

Keywords: *quantitative analysis, sensitivity analysis, sustainability, waste to energy, multi-sectorial analysis*
