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PLANT SITE SELECTION FOR RECYCLING PLANTS OF WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT IN TURKEY BY USING MULTI CRITERIA DECISION MAKING METHODS

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Abstract

Waste Electrical and Electronic Equipment (WEEE) is increasing day by day more than the amount of municipal wastes in the developing world. According to researches of Ministry of Environment and Urbanism in Turkey, to meet growing waste demand in all regions, 850 collection points for the district municipalities and 15 large collection centres are needed. From this point of view, in this study, the site selection of the plants used for planning and recycling of electrical and electronic equipment wastes was realized using the methods of Multi Criteria Decision Making (MCDM). In this study, to determine the appropriate ranking of alternatives, Analytic Hierarchy Process (AHP), Analytic Network Process (ANP), ELECTRE and PROMETHEE that are different MCDM methods were used. In this context, this study is the first and only such research conducted in all of Turkey. For site selection in Turkey for waste recycling plants of WEEE, 7 criteria were used and 16 city alternatives were considered. The ranking of first 5 cities, which are observed with AHP, ANP, ELECTRE and PROMETHEE methods are given. In this point of view, the best alternatives are determined as İstanbul, Ankara and İzmir cities. In these results, “Population” and “EEE plant number” criteria have been effective since these have the largest weight.

Key words: multi-criteria decision making methods, site selection, waste electrical and electronic equipment

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