

## Evaluation of Different Waste Management Planning Strategies in an Industrial City

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**Abstract :** Industrial waste management regulates different stages of production, storage, transfer, recycling and waste disposal. There are several common practices for industrial waste management. However, due to various local health, economic, social, environmental and aesthetic considerations, the most optimal principles and measures often vary at each specific industrial zone. In addition, waste management strategies are heavily impacted by local administrative, legal, and financial regulations. In this study, a hybrid qualitative and quantitative research methodology has been designed for waste management planning in an industrial city. Firstly, following a qualitative research methodology, the most relevant waste management strategies for the specific industrial city were identified through interviews with environmental planning and waste management experts. Forty experts participated in this study. Alborz industrial city in Iran, which hosts more than one thousand industrial units in nine hundred acres, was chosen as the sample industrial city in this study. The findings from the expert interviews at the first phase were then used to design a quantitative questionnaire for the second phase of the study. The aim of the questionnaire was to quantify the relative impact of different waste management strategies in the sample industrial city. Eight waste management strategies and three implementation policies were included in the questionnaire. The experts were asked to rank the relative effectiveness of each strategy for environmental planning of the sample industrial city. They were also asked to rank the relative effectiveness of each planning policy on each of the waste management strategies. In the end, the weighted average of all the responses was calculated to identify the most effective waste management strategy and planning policies for the sample industrial city. The results suggested that among the eight suggested waste management strategies, industrial composting is the most effective (31%) strategy based on the collective evaluation of the local expert. Additionally, the results suggested that the most effective policy (58%) in the city's environmental planning is to reduce waste generation by prolonging the effective life of industrial products using higher quality and recyclable materials. These findings can provide useful expert guidelines for prioritization between different waste management strategies in the city's overall environmental planning roadmap. The findings may also be applicable to similar industrial cities. In addition, a similar methodology can be utilized in the environmental planning of other industrial cities.

**Keywords :** environmental planning, industrial city, quantitative research, waste management

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