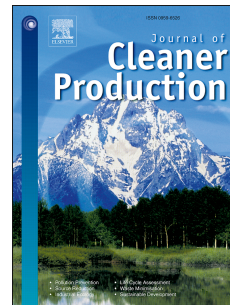


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## Considering life-cycle environmental impacts and society's willingness for optimizing construction and demolition waste management fee: an empirical study of China

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**Abstract:** A large amount of construction waste is generated every year over the world. Many studies indicated that waste management fee is an effective approach that could minimize the generation of waste and maximize the diversion rate of landfills. However, there are limited number of studies conducted on determining the waste management fee for construction waste. This study proposes a method to optimize the construction waste management fee by considering life-cycle environmental impacts of construction waste and society's willingness to improving the management of construction waste. This contributes to the knowledge body of construction waste management by expand the current models from these aspects. The environmental impacts taxes are selected as the evaluation basis that avoided subjective consequences in previous models. This study provides a series of suggestions for construction waste management sector in China to determining construction waste management fee, based on the findings. It is suggested that the waste management fee for 1 ton of metal waste could be 60.42 yuan (about US\$9.30), followed by wood waste 38.47 yuan (about US\$5.92) and masonry waste 27.65 yuan (about US\$4.25). The average waste management fee for unit comprehensive construction waste of all types of buildings could be 23.61 yuan/ton (about US\$3.63/ton). The average waste management fee for unit construction area (1 m<sup>2</sup>) of all types of buildings is 0.81 yuan/m<sup>2</sup> (about US\$0.12 m<sup>2</sup>). The proposed method and suggestions could be helpful for waste policy makers as well as researchers for developing construction waste management fee schemes. It worth to mention that these proposed waste management fee would vary over time and regions, as any change of factors in the calculation models would result in a change of the final result. As the application of waste management fee would affect the attitudes and behaviors of stakeholders including the government departments, owners of landfills, collection and transportation parties, waste recycling parties, landfills parties and so on. The determination of waste management fee is a very complex issue and need to be solved via systematic approaches from different perspectives.

**Keywords:** C&D waste; waste charging fee; life-cycle assessment; willingness to pay; waste management.

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