

# PPP Framework for Municipal Solid Waste Management: Case of Lebanese Municipalities

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## Abstract

Public authorities around the world have been historically responsible for the management of their municipal solid waste. In Lebanon, political conflicts and corruption, weak law enforcement and lack of planning in addition to the influx of over one million Syrian refugees presented barriers to the management of municipal solid waste. The sector have witnessed subsequent crises since the 1990s that were handled through erroneous emergency plans on every occasion leading to catastrophic results in terms of environmental and financial sustainability. Today in 2020, the Lebanese government facing unprecedented challenges on the financial and social levels, have failed to develop its national strategy for SWM knowing that both its coastal landfills have reached their design capacities while an enormous explosion at the port of Beirut on August 4th double these landfills' inflow waste stream and caused damages to the existing waste treatment facilities. Faced by these challenges, the main aim of this research is to develop a framework for local policy makers at the municipal level to engage in public private partnerships for the management of their municipal solid waste through a performance based remuneration system. These partnerships would help local policy makers to develop their infrastructure despite the existing financial and technical barriers they are facing in their municipalities. The roadmap established in this research for local Lebanese municipalities took existing

experiences into consideration along with the guiding reports from the World Bank and the Asian development bank to produce a framework based on four pillars that were implemented on a case study for one of Mount Lebanon union of municipalities. The paper's analysis yielded an integrated solid waste management plan whose financial analysis over 15 years yielded a positive NPV of 1,261,198 US dollars and an internal rate of return of 24.89% that exceeded the calculated weighted average of capital cost of 18.76% in the case of the base scenario that is based on an annual cash injection from the municipality of 3,800,000 US dollars. A sensitivity analysis was also performed on the key factor's influencing the project's viability. Based on the analysis, the project was found to remain financially viable for a maximum exchange rate of 2,530 Lebanese Liras for 1 US dollar, a maximum of 9.9% inflation rate while being less sensitive to user fees collection and revenues from compost sales with the availability of cash injections.

## Biography

Dimba Jawad working in the department of Civil and Environmental Engineering. He is from University – Louaize, Lebanon.