Integration of Social Issues using Life Cycle Approaches in Household Waste Management in India

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Abstract

Background, Aim and Scope: In India, household waste (HW) forms a major part of municipal solid waste (MSW). Mismanagement of MSW is mostly attributed to the rising population, rapidly changing consumption patterns, negligence and lack of participation of people, low environmental awareness among masses and under-performance of concerned authorities. Therefore, the public mindset, level of awareness, implementation of effective policies and enforcement of efficient waste management regulations should begin at home. The present study intends to develop a conceptual and methodological framework for integration of social issues into environmental LCA relevant to India. It focuses on Household Waste Management (HWM) practices within a select area of Mumbai and uses the life cycle based approaches involving various socio-economic parameters.

Materials and Methods: A cradle-to-grave analysis is used considering households as the “functional unit;” generation of waste within the households as “the cradle” and its final disposal (collection from home by garbage collectors) as “the grave.” The study also assesses the health impacts of HWM during various stages of the waste. The life cycle of household waste was divided into four main stages – Generation, Storage/Handling, Re-use/Recycle, and Final disposal. Due to lack of an LCA database in India, the study uses secondary data available elsewhere. In addition, primary data is collected through a comprehensively designed questionnaire to capture people’s attitude, perception and willingness for sustainable HWM. The questionnaire was circulated among 100 households having different socio-economic status. The data analysis is based upon various socio-economic parameters of households.

Results and Discussion: The results indicate that peoples’ attitude towards HWM varies with their literacy and income levels. In general, higher education and income levels result in better HWM. Employment, age and gender also affect HWM to a certain extent. Preliminary data analysis using a life cycle approach reveals that at each stage of HWM, the households (functional unit) were more concerned about meeting their personal needs than caring for the societal benefits in terms of health and environment. Although they are quite sensitive to HW at generation, handling (collection and storage) and utilization (reuse, recycle and trade of waste) stages, they are not much concerned about its final disposal and subsequent impacts. In all stages of HWM, the socio-economic status of households plays a significant role and also influences other aspects such as households’ buying behaviour, perception and attitude towards environmental issues.

Conclusions: The detailed data analysis is ongoing and is likely to be completed over the next few months to achieve comprehensive results. Based upon the preliminary results of the study, it is concluded that higher income and education levels often result in better HW management. On the other hand, some low-income households, despite their concern for environment, are unable to take up eco-friendly activities in their day-to-day life. The study highlights the human dimension of the social system and ensures the involvement of all stakeholders. It may create greater awareness at household, community, city and national levels resulting in conducting day-to-day activities in a socially and environmentally responsible manner.

Recommendation and Perspectives: Life cycle approach suggests that HWM in Mumbai needs increased attention of all concerned stakeholders including households, municipal authorities and decision makers. Greater awareness at the local and community levels will educate individuals to adopt eco-friendly approaches to their activities, including better management of the HW. It is recommended that enforcement of technical and policy measures are needed for improving the conditions in terms of HW management in particular and the environmental conditions of the household sector, in general. This could be achieved through promotion of environmental awareness at all levels. Local political leaders should come forward and play an important role in motivating the people and authorities to work in tandem to take care of HW through its efficient management.

Keywords: Household Waste Management; Life Cycle Approach; Socio-economic parameters; Mumbai; India.

References


