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Exploring the opportunity for Organic Household Waste (OHW) management technology options: An empirical investigation for Muharraq governorate

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Abstract

Organic Household Waste (OHW) fraction of the Municipal Solid Waste (MSW) has become a point of focus globally due to its harmful effects on the environment if it is not managed properly. OHW represents the highest waste composition amongst most of the high-income developing countries including Bahrain, signifying a major opportunity in the realm of conversion technologies. Thus, exploring the opportunity for OHW management through selecting the most preferable technology option for the Bahraini context based on its organic waste characteristics seems to be necessary, especially considering the harmful effects of dumping solid waste into the landfill; it may also represent a possible alternative to natural gas, which is the primary resource of energy used to generate power in Bahrain. This research aims to explore the opportunity for OHW management technology options using the "Case Study" methodology in Muharraq Governorate. By developing a parameter/technology matrix based on literature review and the experimental phase which will be achieved through OHW characterisation in the lab (that is considered important criteria of the preferred technology option selection), the results will then be matched with the matrix to select the most preferred technologies. The Economic Criteria is important for the technology selection decision making; thus, a cost-benefit analysis was conducted for each technology in the Bahraini context. The Social Criteria is also important in selecting the preferred technology for decision-making; the public awareness measured for people in Muharraq Governorate as an important key factor to ensure the success of any waste management practices in the country. Furthermore, interviews were conducted with experts in order to explore the enablers and barriers to the OHW technology adoption in Bahrain. Research objectives were achieved via quantitative and qualitative approaches, including empirical sampling and lab analysis of OHW of Muharraq Governorate. This study involved chemical and physical characterization, surveys, questionnaires and semi-structured interviews, Microsoft office "Excel", SPSS including ANOVA, t-test and Nvivo 12 for data analysis. The research may provide sufficient information for future adoption of evidence-based technology selection in order to manage OHW adoption in Bahrain, which contributes to the decision and policy-making processes. It may also provide a better understanding of OHW characterization in Bahrain, which may help further researches.

Biography:

Dr. Sumaya Yusuf is a Lecturer at the College of Graduate Studies, Natural Resources and Environment Department, Environmental Management Program. She earned her PhD and MPhil in Environmental Engineering from WMG, University of Warwick, UK, and MSc in Environmental Management from AGU in 2011. In 2007, High Diploma and PGC in Bio-system Sustainability as a Japanese government fellow, Hokkaido University, Sapporo, Japan. She graduated from the University of Bahrain, College of Science with BSc. in Biology in 2003.

She worked as admin assistant (2007-2012) at the College of Graduate Studies, Quality Assurance & Accreditation Coordinator, Acting Director for the Consultancies & Training Centre at AGU. Technical team member of AGJSR, Admin Coordinator of IWRM, UN Center of the Water Resources Management in the Arab Region- AGU. She worked as a Laboratory Assistant, at the Biology Department (2003-2006), College of Science, University of Bahrain.

Speaker Publications:

1. Abbas, S.Y., Kirwan, K. and Lu, D. (2020) Exploring Enablers and Barriers to Municipal Solid Waste (MSW)

Management Technologies Adoption in the Kingdom of Bahrain. Journal of Environmental Protection, 11, 377-398.

2. Abbas, S. (2019). Exploring the Opportunity for Organic Household Waste (OHW) Management Technology Options: An Empirical Investigation for Muharraq Governorate (Doctoral dissertation, University of Warwick).

3. Abbas, S.Y., Kirwan, K. and Lu, D. (2020) Exploring Enablers and Barriers to Municipal Solid Waste

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