

Beyond waste – an examination of municipal waste management practices in the Maltese Islands using comparative material flow accounting and carbon footprint assessment to analyse current and the future planned scenarios

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Waste and greenhouse gas emissions (GHG) do not exhibit an obvious relationship. In the report ‘Waste and Climate Change’, the United Nations Environmental Programme (UNEP) notes that whilst waste management generates 3-5% of anthropogenic greenhouse gases (GHG), improved positioning can cause it to shift from being a minor source to a major saver of GHG, particularly since emissions and savings can be attributed to the system’s various stages (1).

Similarly to the above scenario, small islands and GHG are not often correlated. However, despite having less pronounced environmental impact than larger countries, small islands maintain legal, social and economic obligations to take responsible environmental action.

This research’s focus is municipal waste (MW) management in the Maltese Islands in terms of GHG emissions. Taking 2012 as a base year, the analyses commences with a material flow analyses (MFA) based on Eurostat’s Economy-wide Material Flow Accounts (EW-MFA). Utilising the MFA as a base, GHG emissions will be calculated with the Carbon Footprint Tool for Waste Management (CO2ZW) (2) including current transport required for the system to be functional. These tools will then be utilised to analyse the system proposed under the Waste Management Plan 2014 -2020.

Together with examining and comparing the current and proposed waste management systems to determine which of them provides higher sustainability in terms of GHG emissions, the research aims to advance the notion that sectorial strategies must encompass a holistic view of their impacts. Preliminary results note that the prevalent landfilling practices are the main source of both direct and indirect GHG emissions, however, recycling and material recovery are saving over 10, 000t CO₂eq per year. Due attention should however be paid to

both urban and interurban transport of waste since the absence of optimised collection routes and the long distances travelled for waste to be recycled are contributing strongly to GHG emissions.

- (1) United Nations Environmental Programme (UNEP). Waste and Climate Change. Global Trends and Strategy Framework. Osaka/Shiga. UNEP. Division of Technology, Industry and Economics. 2010. <http://www.unep.or.jp/ietc/Publications/spc/Waste&ClimateChange/Waste&ClimateChange.pdf> (accessed November 15, 2014).
- (2) The CO2ZWtool was developed by the Sostenipra Research Group (<http://www.sostenipra.cat>) with funding provided by the European Commission via the Zero Waste Project (1G-MED08-533). CO2ZW provides a means of calculating the greenhouse gas (GHG) emissions (in carbon dioxide equivalents) emanating from waste operations in European Municipalities.