Climate Protection Potentials in the Waste Management Sector

Project	Climate Protection Potentials in the Waste Management Sector
Timeline	2011-2014
Commissioned by	Federal Environment Agency "Umweltbundesamt" (UBA) www.uba.de – Dessau, Germany
Contractors	Insitute for Energy and Environmental Research (IFEU) www.ifeu.de – Heidelberg, Germany Oeko-Insitute www.oeko.de – Berlin/Darmstadt, Germany
Material Scope	Municipal solid waste (MSW), OECD-definition
Time scope	Baseline (latest data available to represent today) and scenarios based on year 2030
Geographic Scope	Three study regions: OECD-countries, India, and Egypt
Project aim	To identify potential for greenhouse gas (GHG) emissions mitigation via sustainable MSW management initiatives
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Rapidly increasing global economic and population growth, particularly in developing economies, will continue to ensure increases in urban growth and municipal solid waste (MSW) generation. It has also been well established that MSW management produces greenhouse gas (GHG) emissions, especially from the biodegradation of waste in landfills. Therefore, MSW management has emerged to be an important source of GHG emissions. Although GHG emissions from MSW are traditionally estimated as a small source of emissions (roughly 5% of total global GHG emissions) via classical inventory accounting methods, if analyzed from a lifecycle perspective, a fuller picture emerges that MSW represents a much larger share of total GHG emissions. Thus, there is potential for significant climate protection via GHG reductions from sustainable MSW management.

The lifecycle approach means that the municipal solid waste (MSW) flows are identified and followed from their origin to their final utilisation or disposal. An environmental balance is conducted to assess all the energy and associated GHG requirements and emissions across the lifecycle of the waste material. The environmental balance lifecycle approach includes accounting for emissions impacts (i.e., debits such as increases in GHG emissions associated with incineration, landfilling, recycling processes, and composting) against emissions savings (i.e., credits such as decreases in GHG emissions associated with avoided virgin production of materials via recycling, avoided grid-based electricity production via waste to energy in incineration, landfill gas recovery at landfills, and avoided fertiliser use due to application of compost).

Commissioned by the Federal Environment Agency working in conjunction with the Institute for Energy and Environmental Research (IFEU) and the Oeko-Institut, this project aims to identify potentials for mitigation of GHG emissions from the waste management sector for OECD-countries, India, and Egypt using the lifecycle approach. The goal of the study is to create a baseline for the current situation of MSW management and associated GHG emissions in each of the three study areas and then to create scenarios that project the MSW management situation out to year 2030. Against this baseline, future scenarios will be developed to provide an estimate of the potential for reducing GHG emissions associated with MSW management in year 2030. An ongoing dialogue and discussion with partners in the study areas will inform how the developed mitigation potentials can be achieved while planning and implementing an

integrated waste management system. Potential technologies that are modeled in the scenarios include MSW collection, sorting and treatment via recycling/composting, mechanical biological treatment (MBT), incineration (MSWI) with the potential for sorting residues to be used as refuse-derived fuel (RDF) in co-incineration (i.e., combined heat and power) and landfilling.

In India, the opportunity for improved MSW waste management is large. Preliminary estimates indicate that improper and unhealthy MSW management practices currently existing in India (i.e., open dumping and burning) translate into roughly 30 million tons of GHG emissions every year. The future scenarios developed for India indicate that with increases in relatively simple measures and technologies such as Mechanical Biological Treatment (MBT) and recycling, GHG emissions can be reduced by over 75% by 2030. This project aims to continue to develop more accurate and realistic scenarios for MSW management in India with the help of the project partners in Germany and India. At a recent workshop held in New Delhi (November 2012), relevant stakeholders, including Ministry of Urban Development and Ministry of New & Renewal Energy, State Officials and Municipal Officials, Waste Management Companies and NGOs discussed the current waste management situation in India and possible future developments. They also took into consideration the co-benefit of managing MSW in order to provide benefits to climate protection. Beyond climate benefits, India can reap other air quality, health, and social benefits as well as creating a MSW management system that is also economically sustainable.