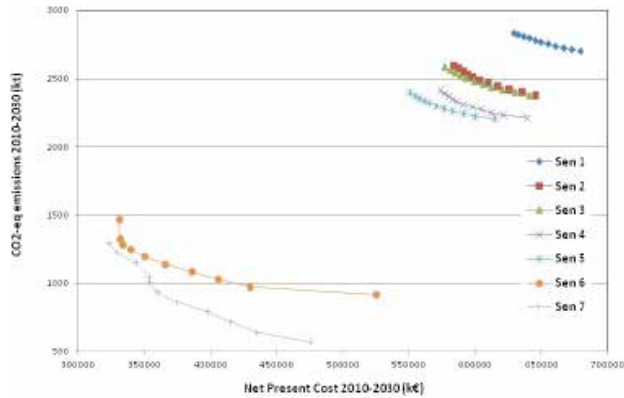


## Pilot implementation

### Local Action Plans

The project examined various WM options in relation to their GHG emissions. The results of the software tool enabled the identification of procedures and practical tools for the development of three Local Action Plans, which aim to reduce GHG emissions from WM activities at local level.



Each Action Plan sets specific quantitative goals for GHG emissions reductions, specifies the means to attain them, as well as the relevant investments that need to take place and the timing of these investments. Furthermore, it contains an appropriate monitoring programme.

According to **WASTE-C-CONTROL Tool** results, the anticipated emissions reductions from the LAP implementation (20-yr period) are:

- > Region of Eastern Macedonia & Thrace: 1,600 kt CO<sub>2</sub> eq (65%)
- > Region of Western Macedonia: 192 kt CO<sub>2</sub> eq (36%)
- > Regional Union of Chania, Crete: 75 kt CO<sub>2</sub> eq (18%)

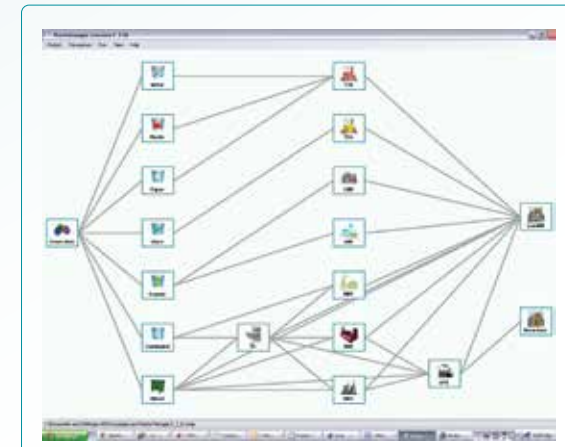
# WASTE CONTROL

## Waste Management Options for Greenhouse Gases Emissions Control

LIFE09 ENV/GR/000294



[www.epem.gr/waste-c-control](http://www.epem.gr/waste-c-control)



## Overview

Greenhouse gases (GHG) can be produced at each stage of a product's life cycle: from raw material extraction, transport, manufacturing, use and final treatment or disposal of materials. By relating this life cycle to the waste hierarchy, we can see how each level of the hierarchy impacts on climate change. Waste management (WM) generates carbon dioxide (CO<sub>2</sub>) and methane (CH<sub>4</sub>), which are both GHG.



The impact of solid waste management (SWM) on the global warming equivalence of European GHG emissions comes mostly from CH<sub>4</sub> released as biodegradable wastes decay under the airless (anaerobic) conditions in landfills. According to the EC, about a third of anthropogenic emissions of CH<sub>4</sub> in the EU can be attributed to this source. In Greece, ~80% of the waste goes to landfills, thus creating a major problem in methane emissions management and control.

Combating climate change is a top priority of the EU policy. In the EU region, municipal waste management activities alone could potentially account for 18% of the 2012 Kyoto GHG reduction target set for the original 15 EU Member States.

While WM contributes relatively little to climate change (3-5% of anthropogenic GHG), the sector offers proven, practical and cost effective technologies which can contribute to GHG mitigation. When adapted and deployed according to local traditions and needs, they can help secure significant global GHG emissions savings. Solutions might include waste prevention, recycling and reuse, biological treatment with land use of products, energy recovery and engineered landfilling.

## Project results

WASTE-C-CONTROL consisted of a joint project between EPEM SA and three Greek Waste Management Authorities: the Waste Management Authority of the Region of Eastern Macedonia and Thrace (DIAAMATH), the Waste Management System of the Region of Western Macedonia (DIADYMA) and the Trans-Municipal Enterprise of Solid Waste Management of the Regional Union of Chania, Crete (DEDISA).

The project was co-financed by the EU LIFE+ 2009 Program and lasted for 36 months (10/2010 to 9/2013). The following were accomplished:

The WASTE-C-CONTROL Tool, which enables Waste Management Authorities and other stakeholders to substantially reduce GHG emissions resulting from their WM activities. The innovative aspect is the incorporation of an optimization function through which the Tool calculates optimal values for the decision variables using mathematical programming.

Assessment, monitoring, controlling and reporting activities related to different WM options and the respective GHG emissions reductions.

Dissemination, public awareness and training material on WM options and climate change mitigation.

GHG emission reductions at local (Region of Eastern Macedonia and Thrace, Region of Western Macedonia and Regional Union of Chania, Crete) and sectoral (waste management) level.

## WASTE-C-CONTROL Tool

The WASTE-C-CONTROL project aimed to reduce GHG emissions through the development of a software tool that:

Provides "decision support" for the optimization of SWM, in a "waste management zone" level, in terms of GHG emissions and financial data.

Contains extensive information (data, libraries etc) for the available solid waste treatment options.

Assists the user to "assemble" his own waste management model and to control its environmental performance according to emissions and costs.

Monitors, controls and reports GHG emissions from waste management activities and calculates the GHG footprint of the various waste management technologies.

Facilitates the design of a GHG emissions abatement plan (Local Action Plan), through the optimization of the current waste management practices.

Pareto front with efficient solutions		
1	887429.59	2240.41
2	889725.80	2232.68
3	891524.68	2224.95
4	893323.57	2217.21
5	895122.45	2209.48
6	896921.34	2201.75
7	898720.22	2194.01
8	900519.11	2186.28
9	902317.99	2178.54
10	904116.88	2170.81
11	905915.77	2163.08
12	914491.04	2155.34

