Activity 4(c):
Compost quality correlation model
SUMMARY

This report was developed within the framework of the European co-funded LIFE-Environment program ATHENS BIOWASTE entitled "Integrated Management of Biowaste in Greece - The case study of Athens". The project aims at the first large scale pilot application of biowaste source separation in selected areas of the Municipalities of Athens and Kifissia and at their subsequent processing at the Mechanical Recycling and Composting plant (EMAK) of the Association of Municipalities in the Attica Region – Solid Waste Management (EDSNA) for the production of high quality compost.

This report is part of the 4th Action of the "ATHENS BIOWASTE" project entitled "Composting of collected biowaste & analysis of the finished product". More specifically, the report includes Activity 4 (c) which is related to the development and presentation of a tool for composting operators for monitoring aerobic biological treatment of biowaste. The aim of the corresponding activity is to develop a simplified model that would facilitate composting operators on the evaluation of the aerobic treatment performance of sorted biowaste throughout the processing time.

For the implementation of this activity the critical parameters that strongly influence and regulate the composting performance were selected namely temperature levels, moisture content and oxygen availability of the substrate. Then equations for each parameter describing the impact to the composting process were developed. Based on these equations, the individual and combined effect of temperature, moisture and oxygen values of the substrate is quantified at every stage of the composting process for which primary data is available. Considering that composting process operates efficiently within a specific range for each of the aforementioned factors, any deviation from the optimal values can be identified, whereas appropriate corrective actions can be taken for improving the biological degradation process.

Finally, the application of the developed tool is presented through a composting case study showing the steps followed for the evaluation and monitoring of the process using the suggested tool.