



## **ACADEMIC YEAR 2015 – 2016**

### **TITLE OF DIPLOMA THESIS:**

Evaluation of construction and demolition waste management through dynamic system modeling

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### **ABSTRACT**

Sustainability is increasingly important in every aspect of life, as well as the need to fulfill the growing demand for housing and infrastructure without neglecting sustainability. Currently, it is widely accepted that a huge amount of construction and demolition waste is produced every year throughout the world, as well as in Greece. This waste is a worldwide issue that concerns not only the construction management level of on-site managers but also the sustainable development of construction industry. This waste not only deplete finite resources, landfills and pollute the environment, but also is harmful to society. To address the increasingly severe problems of waste generation in the construction industry, a plethora of studies have been done to investigate the waste management and to develop tools for evaluating the performance of the waste management process. This master thesis has gathered information from various countries and regions in the world and provides examples and basic information about the current state of political and institutional, technological, and practical side of the issue. Moreover, this thesis used a system dynamics (SD) approach in order to develop a model to examine the relationship between the three aspects of performance, economic, environmental and social, that underlie the waste management practices. The model was tested using data listed in the waste produced in Greece. This study contributes to the body of waste management knowledge and provides a better understanding of how the waste management activities strongly influenced by the interactions of key variables, but is also able to provide solutions for the effective control of variables improving effectiveness of the waste management system. The results of this study can provide supportive data and theoretical basis for the CDW management decision-making.

### **KEYWORDS**

Construction and demolition wastes (CDW), Environmental economic and social impact assessment, System dynamics modeling