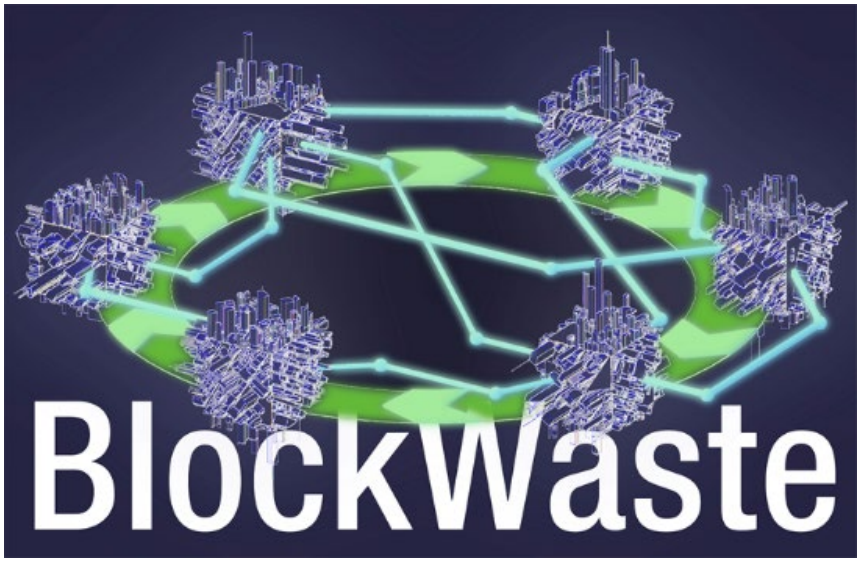
O3.A1 Production of the database for the E-Learning Tool



ΙΔΡΥΜΑ ΚΡΑΤΙΚΩΝ ΥΠΟΤΡΟΦΙΩΝ IKY

Co-funded by the Erasmus+ Programme of the European Union

Output factsheet:

Funding Programme	Erasmus+ Programme of the European Union
Funding NA	EL01 Greek State Scholarship's Foundation (IKY)
Project full title	Innovative training based on Blockchain technology applied to waste management - BLOCKWASTE
Field	KA2 - Cooperation for innovation and the exchange of good practices KA203 - Strategic Partnerships for higher education
Project Number	2020-1-EL01-KA203-079154
Project Duration	24 months
Project Start Date	01-10-2020
Project End Date:	30-09-2022

Output details:

Output title: O3: E-Learning tool based-on Blockchain-MSW focused on Circular Economy

Task Title: A1. Production of the database for the E-Learning Tool.

Output leader: STICHTING SAXION

Task leader: NTUA and TALTECH

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Document Control

Document version	Version	Amendment
V0.1	31/03/2021	Final Version – 29/04/2021

Contents

List of abbreviations

Abbreviation	Definition
MSW	Municipal solid waste
EU-27	European Union of 27 countries
SMEs	Small and medium enterprises
IT	Information technology
GDP	Gross Domestic Product

Executive summary

This document accompanies the deliverable of the IO3/A1 "Production of the database for the E-Learning Tool". The database contains information about the municipal solid waste generated and treated in EU-27 and other European countries, over the past two decades. More specifically, the database provides information about the MSW quantities generated, treated, landfilled, recovered and recycled. In addition, it includes MSW-related socioeconomic data, price developments of recycled waste (i.e. glass, paper and plastics) based on Foreign Trade Statistics and typical MSW compositions. The data in the database come mainly from Eurostat and secondarily from other sources (scientific and gray literature).

The aim of database is to resort to information obtained from real life and compiled from previous research, giving the “Interactive BlockWASTE Tool” a dose of realism.

1 Introduction

1.1 Brief project description

The BlockWASTE project aims to address the interoperability between waste management and blockchain technology and promote its proper treatment through educational training, so that the data collected will be shared within a safe environment, where there is no room for uncertainty and mistrust between all parties involved. For this purpose, the objectives of BlockWASTE project are as follows:

- To conduct research on solid waste generated in cities and how it is managed, so that it can be used to create an information base of good practices, in order to reintroduce waste into the value chain, promoting the idea of Intelligent Circular Cities.
- To identify the benefits of the Blockchain Technology within the municipal waste management (MSW) process.
- To create a study plan that allows the training of teachers and professionals of organizations and companies of the sector, in the overlap of the fields of Waste Management, Circular Economy and Blockchain Technology.
- To develop an interactive tool based on Blockchain Technology, which will make it possible to put into practice the management of data obtained from urban waste, thus visualizing the way in which the data is implemented in the Blockchain and enabling users to evaluate different forms of management

BlockWASTE aims to implement transnationally new educational contents with the goal of training its students in the partner countries and providing them with the necessary basic skills that allow them to act professionally as future workers in the sector, adding digital competences required by companies that are embracing the process of digital transformation. In this sense, the project is addressed to:

- Enterprises and SMEs, IT professionals, urbanisms and waste management professionals.
- Universities (professors, students and researchers).
- Public bodies
- The project includes four Intellectual Outputs as follows:
- O1. Learning materials for interdisciplinary Blockchain-MSW
- O2. European common curriculum on MSW applying Blockchain technologies to Circular Economy strategies
- O3. E-Learning tool based-on Blockchain-MSW focused on Circular Economy
- O4. BlockWASTE Open Educational Resource (OER)

1.2 Objectives and methodological approach

This document accompanies the deliverable of the IO3/A1 "Production of the database for the E-Learning Tool". The database contains information about the municipal solid waste generated and treated in EU-27 and other European countries, over the past two decades. More specifically, the database provides information about the MSW quantities generated, treated, landfilled, recovered and recycled. In addition, it includes MSW-related socioeconomic data, price developments of recycled waste (i.e. glass, paper and plastics) based on Foreign Trade Statistics and typical MSW compositions. The aim of database is to

resort to information obtained from real life and compiled from previous research, giving the "Interactive BlockWASTE Tool" a dose of realism.

In order to develop the database, data from Eurostat and from other sources (scientific and grey literature) we retrieved (a list of the sources used, is provided in Annex I of this report). The database was developed in the form of an Excel file in order to be easily downloaded, shared, used and updated (e.g. the user may add quite easily a new column if Eurostat releases new data).

2 Contents and description of the database

The database provides data from 2000 till 2021 (where available) and contains, in total, 24 different sheets, with the following information:

1. Average population - total
2. At risk of poverty rate (cut-off point: 50% of median equivalised income)
3. Chain linked volumes (2010), million euro
4. Chain linked volumes (2010), euro per capita
5. Pollution taxes paid by households
6. Resource taxes paid by households
7. Waste generated in kg per capita
8. Waste generated in thousand tonnes
9. Waste treatment in kg per capita
10. Waste treatment in thousand tonnes
11. Disposal - incineration (D10) and recovery - energy recovery (R1) in kg per capita
12. Disposal - incineration (D10) and recovery - energy recovery (R1) in thousand tonnes
13. Disposal - landfill and other (D1-D7, D12) in kg per capita
14. Disposal - landfill and other (D1-D7, D12) in thousdand tonnes
15. Disposal - incineration (D10) in kg per capita
16. Disposal - incineration (D10) in thousand tonnes
17. Recovery - energy recovery (R1) in kg per capita
18. Recovery - energy recovery (R1) in thousand tonnes
19. Recycling - material in kg per capita
20. Recycling - material in thousand tonnes
21. Recycling - composting and digestion in kg per capita
22. Recycling - composting and digestion in thousand tonnes
23. Price developments of recyclates waste EU-27 based on Foreign Trade Statistics
24. MSW composition

This information on socioeconomic conditions and waste generation and management has been retrieved, as mentioned, by Eurostat and more specifically from the following databases:

- Population change - Demographic balance and crude rates at national level [DEMO_GIND__custom_2736769]
- At-risk-of-poverty rate by poverty threshold, age and sex - EU-SILC and ECHP surveys [ILC_LI02__custom_2741589]
- GDP and main components (output, expenditure and income) [NAMA_10_GDP__custom_2736684]
- Real GDP per capita [SDG_08_10]
- Environmental taxes by economic activity (NACE Rev. 2) [ENV_AC_TAXIND2__custom_2736952]
- Municipal waste by waste management operations [ENV_WASMUN__custom_2736560]

The “Price developments of recyclates waste EU-27 based on Foreign Trade Statistics” comes from the “Waste-related indicators - Material prices for recyclates” of Eurostat’s indicators. Finally, the composition of waste comes from various sources of the scientific and grey literature.

Annex I: Sources of the database

Eurostat sources:

https://ec.europa.eu/eurostat/databrowser/view/DEMO_GIND__custom_2736769/default/table

https://ec.europa.eu/eurostat/databrowser/view/ILC_LI02__custom_2741589/default/table

https://ec.europa.eu/eurostat/databrowser/view/NAMA_10_GDP__custom_2736684/default/table

https://ec.europa.eu/eurostat/databrowser/view/SDG_08_10/default/table

https://ec.europa.eu/eurostat/databrowser/view/ENV_AC_TAXIND2__custom_2736952/default/table

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https://ec.europa.eu/eurostat/databrowser/view/ENV_WASMUN__custom_2736560/default/table

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https://ec.europa.eu/eurostat/databrowser/view/ENV_WASMUN__custom_2736560/default/table

https://ec.europa.eu/eurostat/web/waste/data/indicators

Other sources (scientific and grey literature):

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