Tool Factsheet
For more information: www.cityloops.eu
Twitter: @CircularCityEU
Join the conversation: #CityLoops

Construction & Demolition Waste Flow Optimisation Tool
CDW

Description

This software tool for municipalities can be used to model possible scenarios for CDW management considering location and size of 'Clean Points', transport and collection routes. Factors such as type, origin and volume of the material; CO_2 emissions and loading of the waste trucks; and distance travelled are optimised to plan in a way that minimises negative environmental impact and maximises logistic efficiency of the collection and handling of construction and demolition waste from small producers (such as households and small construction companies) by the municipality. Data-driven planning decisions can support proper use of the Clean Points and thus avoid illegal dumping of CDW.

Keywords:

- #Handling CDW
- #Data analysis
- #Decision making; #Planning

Complementary tools:

- City Simulation Platform, Awareness campaign on CDW

Target user:

- Local governments (e.g. waste managers, city planners)

Format:

- Software tool for city of Seville with interface for use by public servants and users (citizens and small CDW generators) – in Spanish
- Report documenting process, aimed at detailing and sharing the method for use by others – in English

Development

For the back-end part of the application, the data analysis and machine learning were powered by Python libraries. Communication between data sources was managed with Python when needed. The use of Django as a framework helped to improve the performance of the applications developed with other popular web frameworks. The initial developments were provided to the managers for testing in containers or virtual machines to facilitate direct deployment in any computer. A GitHub repository has been created with a clean Django project to serve as template to implement the initial features of the software tool.

The data used is sourced from: socio-economic data from available statistic reports on the website of the municipality, municipal waste collection data from LIPSAM and open-access geospatial data.

Tool Factsheet
For more information: www.cityloops.eu
Twitter: @CircularCityEU
Join the conversation: #CityLoops

IDENER developed the tool with inputs from the CityLoops Seville cluster: LIPASAM, EMASESA and the municipality of Seville.

Barriers:

A challenge encountered is the availability of data in the required format, and lack of historic socio-economic data. Regarding the data format, this was overcome by: (1) changing the format manually or (2) asking for collaboration from local partners; the lack of data is not immidiately resolveable, so the tool and the data analysis methodology had to be adapted to the available data.

Deployment

In **Seville**, this tool will be used by city authorities to better understand and optimise management of construction and demolition waste – including scenario planning for location of additional Clean Points in the future. Citizens and small CDW generators can use the online tool to locate the best Clean Point to deposit their waste.

Replication

Other cities could use the technical report on the software tool developed in order to replicate the tool taking into account local specifications and data. The software tool is unique to Seville since the data analysis and Backend use local data of the city. Therefore, potential replicators would need to develop their own version. The methodology used will be identified in the report so that each city can develop different functionalities at their convenience.

IDENER advises that those looking to replicate the approach select the functionalities of the tool taking into account the municipal requirements and available data.

Developed by

IDENER & Municipality of Seville, Spain
Contact: Santiago Rodriguez, santiago.rodriguez@idener.es

Tool Factsheet
For more information: www.cityloops.eu
Twitter: @CircularCityEU
Join the conversation: #CityLoops