TEMPLATE

Output factsheet: Tools

Version 2

Project index number and acronym	CE452 Dynamic Light
Lead partner	University of Applied Sciences Wismar
Output number and title	T2.1 GIS-based databases for municipalities as models to facilitate strategic planning of dynamic lighting
Responsible partner (PP name and number)	PP13 Poltegor and PP07 Bruno Kessler Foundation
Project website	http://interreg-central.eu/Content.Node/Dynamic-Light.html
Delivery date	August 2017

Summary description of the key features of the tool (developed and/or implemented)

A geographical information system (GIS) allows its users to create, organize and analyze geographical data and to create plans on the exact location of all existing components of a public lighting system. GIS-based databases for municipalities include technical information on lighting infrastructure as well in some cases photometric data. The crated tools (geodatabases) include spatial and non-spatial information about the street light infrastructure.
The involved partners were asked to collect technical information for each luminaire, coordinates of each pilot light pole and switchboards, energy data (energy consumption) as well as photometric data. The data were stored in the Excel sheet, which were used as a base to create geodatabase for each municipality. The GIS databases created for the municipalities of Rostock (DE) and Mantova (IT) were integrated into existing GIS systems - Mantova owns a system newly based on ArcGIS 10.3.1 software, while Rostock uses GIS database “sisNET”. For the other municipalities including - Cesena (IT), Čakovec (HR), Sušice (CZ) and Lwówek Śląski (PL) - coordinates of the public lighting pillars as well as attribute tables storing technical data about each luminaire in the pilot area were gathered. For the mentioned municipalities the queryable GIS databases were created by using ESRI ArcGIS and QGIS software.

NUTS region(s) where the tool has been developed and/or implemented (relevant NUTS level)

HR, CZ, DE, IT, PL

Expected impact and benefits of the tool for the concerned territories and target groups

The aim of created geodatabases was to show public authorities functionality of GIS tool with respect to storing information on street lighting system and its energy consumption, to plan retrofits to save energy and improve light quality (planning of public works and investments), to monitor the impact of the investments on street lighting system and to help local authorities to improve its knowledge of the status quo of the lighting system. To develop the fully operated the GIS database the particular target groups and stakeholders were reached: local authorities, local spatial planners, sectoral agencies and infrastructure and (public) service providers. Without the close cooperation with the Local public authorities (7), Sectorial agencies (4), Infrastructure and (public) service providers (7), collecting and development of the GIS databases would be unattainable. Moreover, this tool is of dissemination and education character so all results will be widely spread and propagate.

Sustainability of the tool and its transferability to other territories and stakeholders

Nowadays the GIS solutions are becoming ubiquitous in our society and GIS technology is also used as a method to ensure the sustainability and to show how easy is to use it technology in different countries. The elaborated tool within the Dynamic Light project will serve as transferable model of how the planning of lighting should be implemented. Anyone who deals with urban planning, electric networks and services will need different information, yet all those groups may be drawing on the same data sets. The GIS tools help planners analyze problems more quickly and thoroughly and to develop more efficient street lighting maintenance and repair project planning.

Lessons learned from the development/implementation process of the tool and added value of transnational cooperation

Before improving energy efficiency in the cities, the targets have to be set, the current state of the art in the city has to be understood. But, before that, the data collection systems need to be established to get the necessary information. As a result, a GIS database of existing lighting stock is needed. There are many cities that have no systematic control on the functioning of the lighting during the night hours. They depend only on complaints of citizens. The consortium gained new skills in gathering and management spatial data, to train and teach local authorities how to use the tool. The tool will be used also to update the technical information about street lighting infrastructure after realisation of the pilot investments.

While custom GIS technology solutions could be implemented in order to collect, manage and report data about street lighting performance and energy use, the gathered experience from closely cooperation with public authorities demonstrated that GIS tools can be and is actually used as a tool for public lighting planning. Using GIS database street light managers and as well as any spatial planners can detect conflict areas, plan retrofits according to current needs of public authorities. Countries having little experience in using the GIS tools for the

management of street lighting infrastructure will learn from the countries having more experience with implementation and using this kind of tool.
The transnational cooperation has also shown much diversity in the street lighting planning process between the Central Europe countries. The further knowledge exchange together with the guideline how to develop such tool will help to minimize the burden between the countries.
In the light of the diversity of GIS applications and platforms used by the involved municipalities, ranging from no available GIS database (e.g. Lwówek Śląski (PL), Čakovec (HR), Sušice (CZ)) to sophisticated GIS-based lighting management systems (e.g. Rostock, DE), the added value of transnational cooperation in the development of the tool lies in a benchmarking process for the use of GIS databases for public lighting planning processes. This becomes apparent from the common approach to data collection and data processing as well as in the transfer of knowledge, especially for smaller municipalities, regarding the use of geodata in public lighting planning processes. By this, the tool can serve as a guidance for European municipalities and experts in the public lighting sector to carefully plan the implementation of dynamic lighting and to invest in this innovation technology.

References to relevant deliverables and web-links
If applicable, pictures or images to be provided as annex

GIS geodatabase and spatial and non-spatial information which was collected in order to create quality database is the base to develop the successive deliverables in WP2 (D.T2.2.1 - Analysis of the lighting situations, D.T2.2.2 - Strategies for city lighting, D.T2.2.3 - Action plans for municipalities) and WP3 (D.T3.1.1 Analysis of the global lighting situation at pilot municipalities, D.T3.1.2 Selection of pilot locations & form of lighting application, D.T3.1.3 Analysis of the specific lighting situation). Results of photometric measurements and collected technical information about luminaires and switchboards stand out from the data which were used in previously mentioned deliverables in WP2 and WP3.