Output factsheet: Tools

Version 1

Project index number and acronym	CE906 BOOSTEE-CE
Lead partner	Fondazione Bruno Kessler (FBK)
Output number and title	O.T1.1 – Transnational methodology to collect energy information and their visualization using 3D models
Responsible partner (PP name and number)	FBK-PP1, EZVD-PP2, EUWT-PP12
Project website	http://www.interreg-central.eu/Content.Node/BOOSTEE-CE.html
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Summary description of the key features of the tool (developed and/or implemented)

The output presents a pipeline realized to allow end-users to collect, access and visualize energy data through 3D building models generated from existing geodata. The pipeline is a transnational methodology based on ICT and geospatial tools able to give access to heterogeneous information in the field of building energy management and efficiency. Such methodology could be the receipt to implement similar approaches and could be easily replicated with other data on other pilot action areas. Transnational methodology to collect energy information (photovoltaic solar maps, thermal data, energy certificates, etc.) and visualize it using 3D building models relies on geospatial data (e.g. building footprints, orthophotos, etc.) which need to be available at specific resolutions. The methodology displays the collected data on the web using open framework. It is based on the following steps:
- collection of available (geo)data, ideally stored in geodatabases;
- collection / generation of 3D building geometries;
- collection of non-spatial data and building attributes;
- link of 3D geometries to heterogenous non-spatial data/attributes;
- use a web-based 3D viewer able to display raster, vector, textual information.

The developed methodology, implemented in the project viewer OnePlace (specifically in its module 3DEMS) will allow users to interactively navigate a map or 3D building models of a pilot location, select a building of interest and retrieve energy and other cadastral/building information, including non-spatial data. Query functions over the same area will be also possible in order to visualize aggregation results and allow better analyses, simulations, etc. The project platform and its modules are developed in a way that they will be extendable and replicable also with other data and over other municipalities.

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

The methodology has been applied in the project 8 pilot areas:

- Emilia-Romagna Region (Italy – NUTS region ITH5), with a focus on the city of Bologna;
- Judenburg (Austria - NUTS region AT22);
- Zlin (Czech Republic - NUTS region CZ07), with a focus on Kromeriz and Holesov municipalities;
- Tolna (Hungary - NUTS region HU23);
- Plonsk (Poland - NUTS region PL12);
- Koprivnica (Croatia - NUTS region HR04);
- Velenje (Slovenia - NUTS region SI01);
- the CZ-PL cross-border region (Poland - NUTS region PL51 and Czech Republic - NUTS CZ05), with a focus on Zacler and Lubawka municipalities.

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

The offered methodology, implemented to achieve results displayed in the project platform OnePlace, will offer policy/energy administrators and citizens the possibility to better display and access energy-related information, help the realization, implementation and monitoring of Sustainable Energy Action Plan (SEAP) at city level as well as the transition towards low-carbon/smart cities. So far the deep access to energy audit or photovoltaic (PV) maps is mainly available for public buildings, but the project methodology could be easily replicated to any other building in the city.

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

The developed methodology relies on specific input geodata (e.g. 3D building models) and energy-related information, ideally stored in geodatabases. Therefore, given the availability of such contents, the tool can be easily replicated by other stakeholders. The architecture of the project platform used to visualize 3D buildings and energy information relies on open frameworks (e.g. Cesium) in order to make it as transferable as possible. Such framework could change in the future without affecting the long-term sustainability of the proposed methodology.

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

In general, ICT tools in the field of Energy Efficiency rely very much on the availability and proper use data and visualization / analysis tools. The developed transnational methodology to collect energy information and visualize it using 3D models relies on the availability of geospatial data, such as building footprints, building attributes, LiDAR terrain models, 3D building models, etc. Such data, in particular for small size municipalities, could be missing or out-of-date. Moreover 3D visualization tools are often seen as something esthetically nice but not really useful for policy makers and energy planners. Therefore a proper communication and dissemination strategy should be realized to clearly show the usefulness of such tools.
During the development of the methodology, the transnational cooperation among partners helped to understand how geospatial data are treated, offered and shared in the various countries and to acquire knowledge about data integration, harmonization and storage in different repositories.

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

The developed methodology is summarized in deliverable D.T1.4.1 and the linked deliverables D.T1.3.1, D.T1.2.2 and D.T1.1.2.
The outcomes of the methodology will be soon available online in the project web viewer named OnePlace (https://oneplace.max.si/), in particular in its module called 3DEMS (described in deliverable D.T2.2.1).
In the annex, we report pictures of the project platform OnePlace under development (fig. 1), the schema to create geospatial databases (fig. 2) and the generated 3D building models for two municipalities (Bologna, Italy - fig. 3 and Velenje, Slovenia - fig. 4)