



Guideline on the databases and web-tool

D6.14 of WP6 from Entranze Project

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ENTRANZE Project

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Project consortium:

	EEG	Energy Economics Group Institute of Power Systems and Energy Economics Vienna University of Technology
	NCRC	National Consumer Research Centre
	Fraunhofer	Fraunhofer Society for the advancement of applied research
	CENER	National Renewable Energy Centre
	eERG	end use Efficiency Research Group, Politecnico di Milano
	Oeko	Öko-Institut
	SOFENA	Sofia Energy Agency
	BPIE	Buildings Performance Institute Europe
	Enerdata	Enerdata
	SEVEn	SEVEn, The Energy Efficiency Center

The ENTRANZE project

The objective of the ENTRANZE project is to actively support policy making by providing the required data, analysis and guidelines to achieve a fast and strong penetration of nZEB and RES-H/C within the existing national building stocks. The project intends to connect building experts from European research and academia to national decision makers and key stakeholders with a view to build ambitious, but reality proof, policies and roadmaps.

The core part of the project is the dialogue with policy makers and experts and will focus on nine countries, covering >60% of the EU-27 building stock. Data, scenarios and recommendations will also be provided for EU-27 (+ Croatia and Serbia).

This report provides a guideline on the Entranze databases and web-tool resulting from D2.1 and D2.3.

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Content

The ENTRANZE project	3
Content	4
List of figures.....	5
List of tables	5
Executive Summary	6
1. Methodology	7
2. Presentation of the data-mapper	7
2.1 How to use this interface	8
2.2 Scope of database and main menu	10
2.3 Exports and sources.....	11

List of figures

<i>Fig. 1: Steps to create the online database</i>	7
<i>Fig. 2: print screen of the data-mapper</i>	9
<i>Fig. 3: print screen of the sources</i>	12
<i>Fig. 4: Example of indicator excel export</i>	13

List of tables

<i>Tab. 1: List of references/sources by country used in the datamapper</i>	14
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Executive Summary

This report provides a guideline on the Entranze databases and web-tool resulting from D2.1 and D2.3.

1. Methodology

The presentation of the quantitative results in an interactive online tool is the main outcome from several deliverables, i.e. D2.1, D2.2 and D2.7. The methodology is described with the planning of activity in figure 1. The development and the methodology used to create the Excel database are inserted in section A.

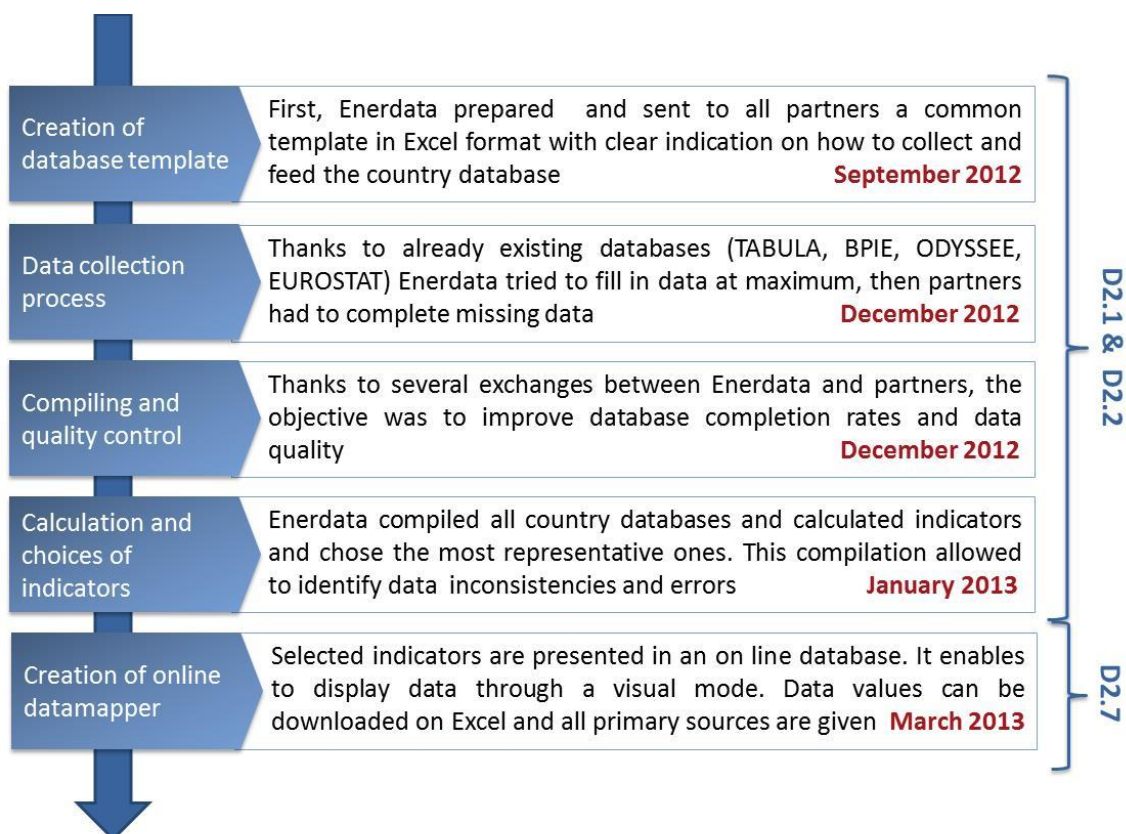


Fig. 1: Steps to create the online database

Source: Enerdata

2. Presentation of the data-mapper

The interactive data mapping tool is accessible via the Entranze website (www.entranze.eu). It contains an in-depth presentation of the structure of buildings and related energy systems in EU-27 (+Croatia and Serbia); some trends are given as to the dynamics of some technologies.

The data-mapper is composed of five main sections, each composed of several indicators (25 indicators in total):

- All buildings
- Residential buildings
- Non-residential buildings
- Heating/AC systems
- Energy use

Information is displayed in different ways:

- A map displays the values of the indicator for each country; by clicking on a country it is possible to show more detail values for that country related to the indicator;
- A bar chart below the map provides additional detail for the indicator;
- A table showing the country ranking displayed on the right side of the map.

2.1 How to use this interface

In the menu list, on the left side of the data-mapper (see figure 2), there is a button to help users on “how to use this interface”. The following elements are written:

Navigate through data series on the top left column

Select/click data series of your choice: maps and graphs are automatically displayed

On the map, click on a country to display more detailed data

To download/export map and graph data series, click on the Excel logo

A country ranking is displayed for each selected data series in a column on the right side of the map

A number of definitions are also available in the building definition section or in tooltips.

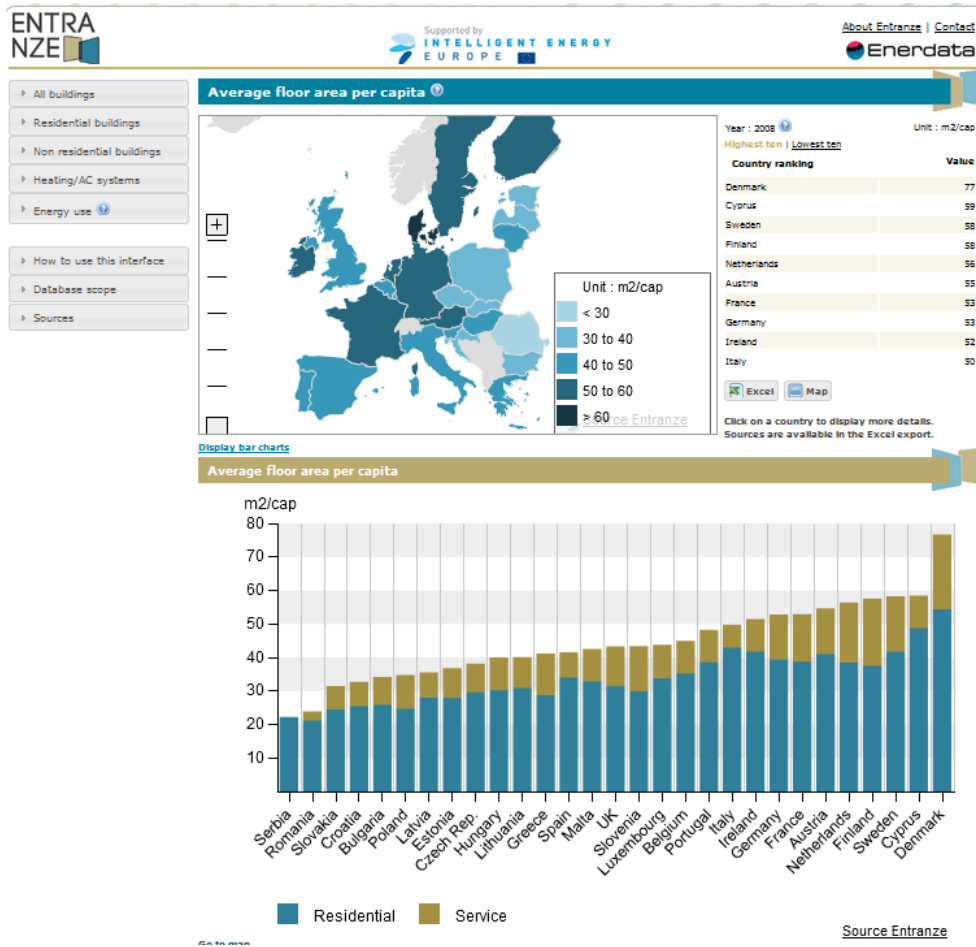


Fig. 2: print screen of the data-mapper

Source: Enerdata

2.2 Scope of database and main menu

The data-mapper is composed of five main sections, each composed of several sub-sector indicators (25 indicators in total)¹:

1. All buildings:
 - a. Floor area per capita
2. Residential buildings:
 - a. Floor areas according to dwellings construction date
 - b. Dynamics of new buildings (since 2000)
 - c. U-values on floor, wall, ceiling, and window (including dynamics according to construction date)
 - d. Main characteristics of multifamily dwellings: stock, floor area and average number of dwellings per building
 - e. Main characteristic of single-family dwellings: stock and average floor area
 - f. Ownership and tenure (given by type of dwellings multi/single family dwellings)
 - g. Ownership and tenure among low income households
 - h. Ownership & tenure for occupant older than 65 years
3. Non-residential buildings:
 - a. Floor areas by service sub-sector
 - b. Dynamics of new buildings (since 2000)
 - c. Share of private and public offices in total service floor areas
 - d. Share of wholesale and trade in total service floor areas
4. Heating/AC systems
 - a. Heating structure by type of heating (individual/collective/central heating etc.)
 - b. Heating structure by type of energy (electricity, gas, coal, etc.)
 - c. Share of dwellings with gas systems (penetration of condensing boilers)
 - d. Share of dwellings with biomass systems (penetration of pellet, chip and log boilers)
 - e. Share of dwellings with electric systems (penetration of heat pumps)
 - f. Share of dwellings with air conditioning
5. Energy use
 - a. Total unit consumption per m² in buildings (at normal climate, given by type of fuel)

¹ Users can navigate through data series on the top left column, and then select/click data series of their choice: maps and graphs are automatically displayed.

- b. Total unit consumption per m² in residential (at normal climate, given by type of fuel)
- c. Space heating unit consumption per dwelling (at normal climate, given by type of fuel)
- d. Share of space heating in total residential consumption
- e. Share of water heating in total residential consumption
- f. Total unit consumption per m² in non-residential (at normal climate, given by type of fuel)

Besides in the left column a button explicit the “database scope” that provides the following information:

Buildings refer here to two main categories of buildings: residential and non-residential buildings.

Residential buildings are further divided into single family dwellings (“single/two-family houses) and multifamily dwellings (apartments).

In residential buildings, only permanently occupied dwellings are considered (vacant dwellings and summer houses excluded).

Non-residential buildings refer to buildings in the service sector and include several categories (office buildings, hospitals, schools and universities, hotels and restaurants, buildings in wholesale and retail trade).

2.3 Exports and sources

A particular attention was done to assign for each series a corresponding primary source. In the data-mapper, sources are available at two levels:

- **In the tool tips** (left column), a button entitle “source” open a text box that list sources:
 - At European level: ODYSSEE, BPIE, TABULA EUROSTAT and UEPC
 - At country level: for each country primary sources are listed (see figure 3 and exhaustive list of source in table 1)
- **In the exports (right column, below the country ranking)**, a button entitle “Excel” open a excel file corresponding to the selected indicator. For each country, in column B, there is the source (see as example figure 4)

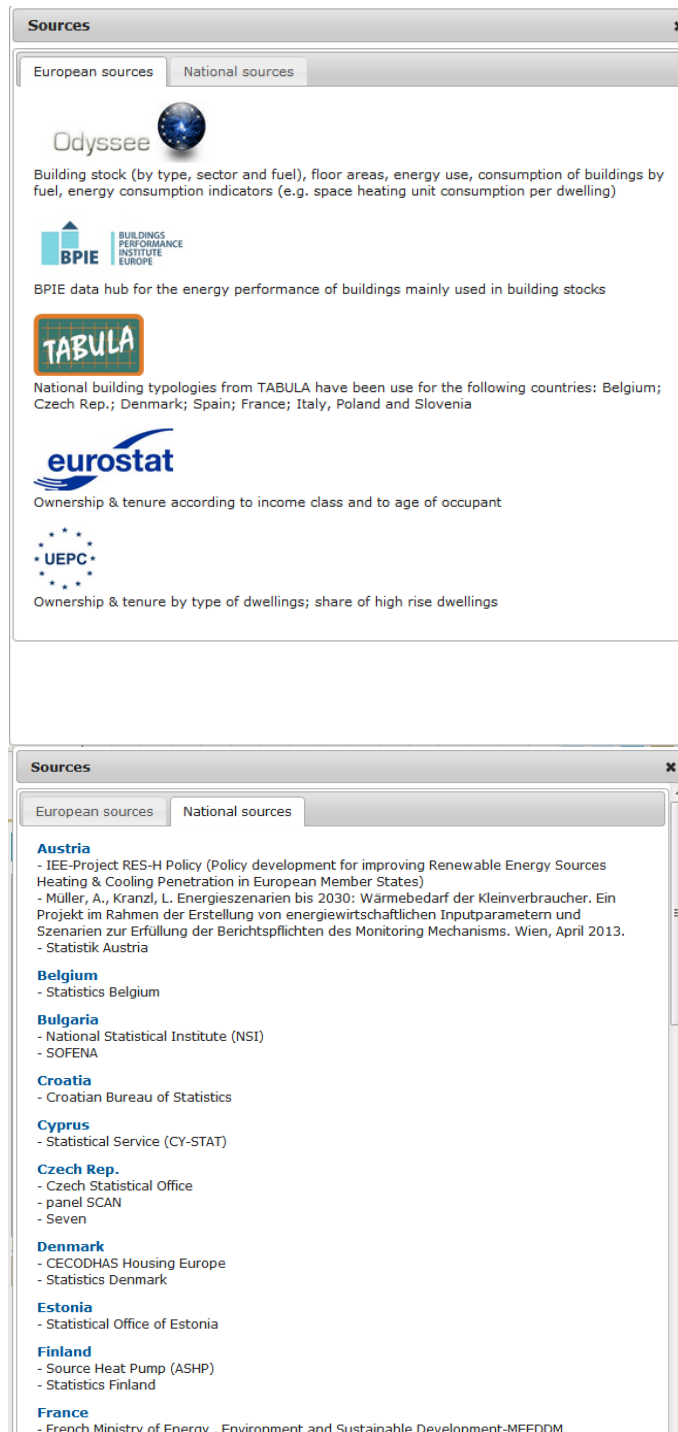


Fig. 3: print screen of the sources

Source: Enerdata

Breakdown of building floor areas by sector				
	Source	Unit	Residential	Service
Austria	RES-H, BPIE	1000 m2	341435.73	114320.42
Belgium	BPIE	1000 m2	379328.01	104772.00
Bulgaria	BPIE	1000 m2	197248.00	63843.00
Cyprus	BPIE	1000 m2	38890.41	7762.00
Czech Rep.	BPIE	1000 m2	309567.78	88739.00
Denmark	BPIE	1000 m2	297591.00	122498.00
Estonia	BPIE	1000 m2	37365.85	12018.00
Finland	BPIE	1000 m2	199920.00	107121.00
France	BPIE	1000 m2	2479538.19	907375.00
Germany	IWU, ODYSSEE	1000 m2	3229720.85	1104257.19
Greece	BPIE, RES-H	1000 m2	322617.01	139982.00
Hungary	BPIE	1000 m2	303308.40	98752.00
Ireland	BPIE	1000 m2	184622.53	43183.00
Italy	BPIE	1000 m2	2576906.30	415901.00
Latvia	BPIE	1000 m2	61071.25	16578.00
Lithuania	BPIE	1000 m2	104033.44	31150.73
Luxembourg	BPIE	1000 m2	16340.00	4852.00
Malta	BPIE	1000 m2	13532.46	3991.00
Netherlands	BPIE, RES-H	1000 m2	630761.19	294821.00
Poland	BPIE, TABULA	1000 m2	942119.00	385382.00
Portugal	BPIE	1000 m2	410110.43	102818.00
Romania	BPIE	1000 m2	456444.00	59339.00
Slovakia	BPIE	1000 m2	132673.73	38151.00
Slovenia	BPIE	1000 m2	60797.98	27523.00
Spain	BPIE	1000 m2	1567973.18	350000.00
Sweden	ODYSSEE	1000 m2	386477.00	152500.00
UK	BPIE, RES-H	1000 m2	1924489.42	736101.00
Serbia		1000 m2	163755.39	n.a.
Croatia	ODYSSEE	1000 m2	112784.00	32200.00


Source : 

Fig. 4: Example of indicator excel export

Source: Enerdata

Tab. 1: List of references/sources by country used in the datamapper

Country	References and sources
Austria	Müller, A., Kranzl, L. <i>Energieszenarien bis 2030: Wärmebedarf der Kleinverbraucher. Ein Projekt im Rahmen der Erstellung von energiewirtschaftlichen Inputparametern und Szenarien zur Erfüllung der Berichtspflichten des Monitoring Mechanisms.</i> Wien, April 2013.
	Austrian National Statistics Institute
	IEE-Project RES-H Policy (Policy development for improving Renewable Energy Sources Heating & Cooling Penetration in European Member States)
Belgium	Statistics Belgium
Bulgaria	National Statistical Institute (NSI)
	SOFENA
Croatia	Croatian Bureau of Statistics
Cyprus	Statistical Service (CY-STAT)
Denmark	CECODHAS Housing Europe
	Statistics Denmark
Estonia	Statistical Office of Estonia
Spain	National Statistics Institute (INE)
	Ministry of Public Works
	Ministry of Public Works
Finland	Source Heat Pump (ASHP)
	Statistics Finland
France	INSEE- French National Statistics Institute
	French Ministry of Energy , Environment and Sustainable Development-MEEDDM
Greece	Hellenic Statistical Authority (El.Stat)
	IEE-Project RES-H Policy (Policy development for improving Renewable Energy Sources Heating & Cooling Penetration in European Member States)
United King-	IEE-Project RES-H Policy (Policy development for improving Renew-

dom	able Energy Sources Heating & Cooling Penetration in European Member States)
Hungary	Hungarian Central Statistical Office (KSH)
Ireland	Central Statistics Office Ireland (CSO)
	Sustainable Energy Authority of Ireland (SEAI)
Italy	Italian National agency for new technologies, Energy and sustainable economic (ENEA)
	National Institute for Statistics (ISTAT)
Latvia	Central Statistical Bureau of Latvia
Lithuania	State Enterprise Centre of Registers
	Statistics Lithuania
	IEE-Project RES-H Policy (Policy development for improving Renewable Energy Sources Heating & Cooling Penetration in European Member States)
Luxembourg	EEAP
	Biermayr, P., Cremer, C., Faber, T., Kranzl, L., Ragwitz, M., Resch, G., Toro, F., 2007. Bestimmung der Potenziale und Ausarbeitung von Strategien zur verstärkten Nutzung von erneuerbaren Energien in Luxemburg. Endbericht im Auftrag des Ministeriums für Energie.
	National statistical institute (STATEC)
Malta	Misiukaite
	National Statistics Office (NSO)
The Netherlands	Statistic Netherlands (CBS)
	IEE-Project RES-H Policy (Policy development for improving Renewable Energy Sources Heating & Cooling Penetration in European Member States)
Poland	Central Statistics Offices
Portugal	National Statistics Institute (INE)
Czech Republic	Czech Statistical Office
	panel SCAN
	Seven

Germany	Federal Statistics Office (Destatis)
	Fraunhofer Institute for Systems and Innovation Research ISI
	Institut Wohnen und Umwelt GmbH (IWU)
Romania	EuroHeat&Power
Slovakia	Green Investment Scheme
	SEVEN
	Slovak building standards
Slovenia	SI-STAT
	Slovak National statistics
Sweden	CECODHAS Housing Europe
	Sweden statistics
Serbia	National Statistics of Serbia
	Dr Slobodan Ruzic, Energy Saving Group Ltd .Belgrade, Serbia

Source: Enerdata

A Development and methodology of the Excel database

The data have been collected in Excel sheet prepared by Enerdata; in a first step, these files have been filled in by Enerdata from existing data bases (Odyssee, Tabula...); they have then been completed by the partners.

Each country Excel sheet has exactly the same structure, and each serie (in rows) has a specific unit (in columns) and a specific source (in column as well). In total there are 9 sheets, plus one sheet with the instructions²:

1. **BUILDING STOCK-1**: this sheet is one of the most important one as it summarize the main building stock characteristics, separating between residential and non-residential buildings for the year 2008³: distribution of the stock according to construction date, floor area, U-Values, type of dwellings and by type of service branches, average number of dwelling per building, height of buildings, share of high-rise dwellings, etc.
2. **BUILDING STOCK-2**: this sheet is dedicated to the dynamics of the building stock (from year 2000), i.e. annual construction for both residential and non-residential sector, and by type of dwelling or type of service branch. It asks as well for the dynamics on renovated buildings.
3. **HEATING SYSTEMS-1**: for the residential and non-residential sector, the heating systems are split by type of fuel and whenever information is available by technology (for instance stock of dwellings with condensing boilers, for the year 2008). This sheet gives as well the distribution of dwelling according to the type of heating: individual or collective central heating or room heating. For the residential sector, these data are given by type of dwellings (single and multi-family dwellings).
4. **HEATING SYSTEMS-2**: this sheet indicates the distribution of stock for the year 2008 (by type of fuel and by construction date) in case of use of the second energy carriers.
5. **HEATING SYSTEMS-3**: this sheet provides information on the dynamics from 2000, and thus the diffusion, of new equipment, such as condensing boilers, heat pumps and air conditioning.

² In this page, it was explained how to complete the database, and give some data series definition in order to get as much as possible homogenous and comparable data.

³ It has been chosen as the reference year of the database because it is the last year with enough available data that was not affected by the global crisis.

6. ENERGY USE: For each sector and for each main building end-use (i.e. space heating, water heating, lighting and air conditioning) final energy consumption is given by type of fuel for 2008. The specific consumption of space heating is also given by construction date and by type of dwellings/buildings.
7. STAKEHOLDERS: Information concerning the building stakeholder structure (owner occupied, private renter, social renter, etc.) is given by construction data and by type of dwellings. Information concerning low income households and elder households are inserted in this sheet.
8. DATA SUMMARY REPORT (only available for target countries): This sheet has been prepared by Enerdata to help partners to do automatically graphics inserted in D2.1 country report on the “challenges, dynamics and activities in the building sector and its energy demand” in the target countries.
9. FINAL EXPORT: This sheet is only used by Enerdata, it lists all the series and data code useful for the webmaster to build up the data-mapper.

The final version of each Excel country file is continuously uploaded until the end of the project. In the same time data are also updated on the data-mapper.