

Project Information

Typology Approach for Building Stock Energy Assessment

The logo for the TABULA project, featuring the word "TABULA" in a white, stylized font on a dark green background with a grid pattern.

What is TABULA about?

The objective of the IEE-Project TABULA is to create a harmonised structure for European Building Typologies. Each participating country will on that basis develop a National Building Typology, that is a set of model buildings with characteristic energy related properties. The project focuses on **residential buildings**, but considerations also include non-residential buildings. Each model building will represent a certain construction period of the country and a specific building size. The key outcome of the project will be an interactive webtool that allows using the Building Typology for different applications as e. g. energy advice, portfolio assessment, assessment of the building stock of a country and comparison of the building stocks between different countries.













What is a Building Typology?

In general a Building Typology is a classification of parameters commonly found in buildings. In the TABULA project emphasis is given on the assessment and improvement of the energy performance of buildings: thus the typology concept focuses on building parameters related to the energy consumption. Each typology is well-defined by building types with specific parameters, among which the most important are:

- **Construction Period of the Building:** clustering the building stock into **"BUILDING AGE CLASSES"**
- **Building Size:** clustering the building into **"BUILDING SIZE CLASSES"** (e.g. single family houses, row houses, multi family houses, apartment blocks, etc.)

These two basic parameters mark the two axis of the Building Typology matrix. Further parameters of a building also have an influence on the energy consumption and are to be considered in the classification:

- **Type and Age of the Supply System:** The year of installation and the type of heating system are referred to as **"SUPPLY SYSTEM TYPES"** consisting a stand alone Sub-Typology, with all available classes given in detail.
- **Regional location:** The energy related building characteristics may vary from region to region. This dependence is considered by distinguishing between countries. For those countries which stretch over a wider range of climatic zones a further distinction between different regions can be made by either adding **"SPECIAL CLASSES"** or providing complete typologies for each region.

		Building Size Classes			
		Single Family Houses	Row Houses	Multi Family Houses	Apartment Blocks
Building Age Classes
	1919 - 1948				
	1949 - 1957				
	1958 - 1968				
...	

What are the elements of a Building Typology?

For each class a single building is selected which is deemed to be typical and which is used as a representative for all buildings in that class. The thermal properties of these "typical buildings" are defined in form of building datasets in combination with sub-typologies.

Building Dataset:

- general features: number of storeys, living area, etc.
- geometrical data: building volume, envelope areas, etc.
- thermal properties of the envelope: U-values (stand alone sub-typology **"BUILDING ELEMENTS"**)
- supply system features (stand alone sub-typology **"SUPPLY SYSTEMS"**)

Sub-Typologies:

- **Building Elements:** U-values for roofs, walls, windows, floors; according to construction type and year, including energy saving solutions.
- **Supply Systems:** Efficiency quantities for heat generation, storage and distribution.

The structure and features of a National Building Typology can be displayed in the following way:

- A **"Building Matrix"** providing an overview of all building types according to the classification.
- A **"Single Building Overview"** for each building type providing a survey of the thermal properties of the building (construction type and U-values of walls, roof, basement and windows, typical supply system), suitable energy saving measures for each element and for the system (e.g. insulation layer thickness, new U-values, efficient supply system) and the energy saving potentials.

How can the Building Typologies be used?

1. Utilisation in the field of energy advice

A Building Typology can be used by consultants for initial energy advice activities to provide house owners a quick overview of the energy performance of a building similar to their own. The effect of possible measures is demonstrated. Moreover the typology can be used as a set of example buildings e. g. in software comparison studies or for the evaluation of subsidy programmes.

2. Utilisation for building portfolio assessment

A Building Typology is an appropriate instrument for housing companies to assess the energy performance of their building portfolio. It offers the possibility to supply a wide range of information for individual building types and assess their importance by projection to the whole stock or to subsets of the stock.

3. Utilisation for the assessment of the residential building stock of a country

A national Building Typology can be used as a model for imaging the energy consumption of the residential building stock of a country. This requires additional information:

- frequencies of the building types and supply system types;
- frequencies of the already applied refurbishment measures;
- actual consumption of the building stock (for comparison with the calculated values).

Typology	Energy Performance	Refurbishment Measures	Energy Consumption
1.1	100.0	0.0	100.0
1.2	100.0	0.0	100.0
1.3	100.0	0.0	100.0
1.4	100.0	0.0	100.0
1.5	100.0	0.0	100.0
1.6	100.0	0.0	100.0
1.7	100.0	0.0	100.0
1.8	100.0	0.0	100.0
1.9	100.0	0.0	100.0
1.10	100.0	0.0	100.0

How can you benefit from TABULA?

Experts and Key Actors **from participating countries:**

- Use the national building typology for energy advice, portfolio assessment or calculation of energy saving potential.
- Identify the building types with the poorest energy performance.
- Estimate the energy saving potentials of different refurbishment strategies.
- Simulate and monitor the effect of specific policies and measures.
- Take part in the National Advisory Groups.
- Attend the international Workshop in early 2012 in Vienna.

Experts and Key Actors **from non-participating countries:**

- Use the TABULA building typology structure for the development of a National Building Typology of your country and apply it in the above mentioned ways.
- In the long run become a caretaker for the National Building Typology of your country and be responsible for providing and updating the respective typology data.
- Attend the international Workshop in early 2012 in Vienna.

Project Duration: June 2009 until May 2012

Coordinator: Tobias Loga, t.loga@iwu.de IWU – Institute for Housing and Environment Germany

Project-Website: www.building-typology.eu

Consortium:

IWU – Institute for Housing and Environment (DE)

NOA – National Observatory of Athens (GR)

BCEI ZRMK – Building and Civil Engineering Institute ZRMK (SI)

POLITO – Politecnico di Torino – Department of Energetics

ADEME – Agence de l'Environnement et de la Maîtrise de l'Energie (FR)

Energy Action – Energy Action Limited (IE)

VITO – Flemish Institute of Technological Research (BE)

NAPE – Narodowa Agencja Poszanowania Energii (PL)

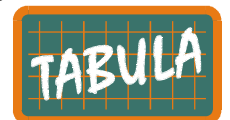
AEA – Austrian Energy Agency (AT)

SOFENA – SOFIA ENERGY AGENCY (BG)

MDH – Mälardalens university (SE)

STU-K – Structural Design (CZ)

SBI – Danish Building Research Institute (DK)



Supported by

Intelligent Energy Europe

"The sole responsibility for the content of this paper lies with the authors. It does not represent the opinion of the Community. The European Commission is not responsible for any use that may be made of the information contained therein."