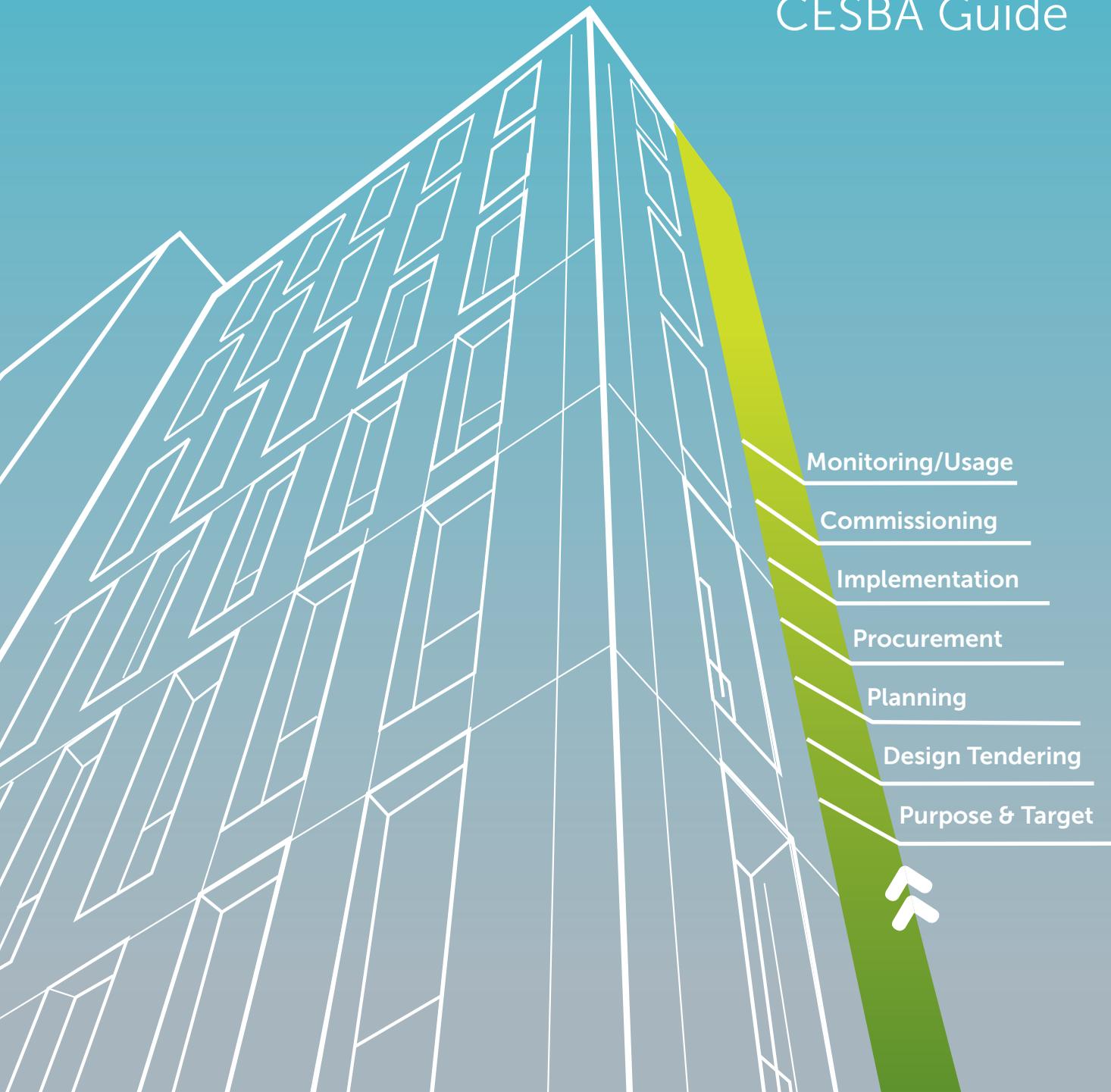


CESBA – a Collective Initiative for a New Culture of Built Environment in Europe.

CESBA Guide



CESBA Guide Preface

The CESBA Guide is a joint result of the CEC5 project entitled 'Demonstration of energy efficiency and utilisation of renewable energy sources through public buildings' co-financed under the CENTRAL EUROPE Programme and the CABEE project entitled 'Capitalizing Alpine Building Evaluation Experience' co-financed under the Alpine Space Programme.¹ Since both the projects share the aim of promoting sustainable building solutions, the mutual co-operation has triggered an extensive engagement of bodies, associations, networks and institutes as to the content of this Guide. A wider expert input facilitates the dissemination of this common result not only throughout the Central Europe area but also across the Alpine region area. One major step forward for the works on this Guide was the common CESBA Sprint Workshop held in Vorarlberg in October 2013. It was hosted by the CABEE project with the expert contribution of CEC5. In the joint CESBA Sprint Workshop, the up-to-then results from both the projects were discussed among 100 experts in six thematic sessions.

The key target of the CESBA initiative, which is described in this Guide, is to develop a common assessment framework in order to improve the quality and usability of current certification labels.

The idea toward a better sustainability, improvement of the building standard practices and creation of shared-knowledge networks has been implemented in many projects before, such as: ENERBUILD, IRH-med, OPENHOUSE, SuPerBuildings, to name a few. Yet it was within the CEC5 and CABEE partnership that this common framework has been finally given structure to and has been launched under the name of CESBA (Common European Sustainable Building Assessment).

The CESBA Guide is a start for a European discussion and advocacy of its use. It is a living document, which will be continuously enhanced and adapted to the changing conditions as the network of experts and projects working on it will grow. This CESBA Guide will fill the gap in knowledge and understanding, not just for scientists, experts and political decision-makers, but also for the citizens who will be involved in the work towards quality at all levels, including the places where they work and live. All the ongoing results will be continuously published on the CESBA Wiki (www.cesba.eu²) which serves as the CESBA knowledge hub. CESBA wiki is the reference point for CESBA newcomers and experts where all the model assessments carried out in the project together with the study books are available for perusal and comments.³

The European Union goal to reduce the CO₂ emissions is a common obligation. As we join forces, devoting our knowledge and time to finding new solutions and strategies together, we will get faster to our common objective. The aims are so ambitious that it is impossible to reach all the planned results solely within a pre-set 3-year-long period of a project implementation. Hence the CESBA initiative with a wide panel of experts and simultaneously running projects was established and it will be promoted further.

¹ Due to similar project contents and to the use of synergies in the CEC5 and CABEE projects, partners decided to work on the CESBA Guide as one common result. In CABEE the Guide fulfils the task of an 'Alpine-wide Guideline' (action 4.1) and in CEC5 it is defined as 'The Label Handbook' (action 2.4. Creation of a Common Label and Quality Certificate). The Guide was also designed and published by the City of Bydgoszcz within the CEC5 project.

² www.cesba.eu developed in the CABEE project as a common know-how exchange platform

³ The model assessments of the public buildings were carried out in the CEC5 project together with the development of the study books.

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CESBA harmonised indicators

Service Training Certification

Purpose&Target
Design Tendering

Planning

Procurement

Implementantion

Commissioning

Monitoring/Usage



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1 Executive Summary

CESBA is a collective European bottom-up initiative that provides knowledge on harmonised built environment assessment.

Buildings play a central role in our societies, providing places to live, work and enjoy leisure time. They are the core of our urban environment, impacting the social, economic and ecological aspects of our lives: our health, comfort and safety. The construction sector impacts both the economy and our natural environment. Therefore, the building sector is a cornerstone of the EU climate protection program and has an important role to play in the achievement of the Europe2020 strategy towards a resource-efficient Europe.

1.1 CESBA Introduction

In this strategic context, several studies carried out by EU funded research projects (CABEE, CEC5, Enerbuild, IRH-MED, OPENHOUSE, SuPerBuildings or ViSiBLE) showed that dozens of different building assessment systems have been implemented in Europe at international, national and regional levels. These systems differ in methods, frameworks, physical and temporal boundaries, issues considered, number of criteria, priorities and so on and so forth. This lack of conformity makes the comparison of results impossible, which brings up the issue of creating a harmonisation process at the European level.

Therefore the first objective is to create a common approach to building assessment in order to ensure the effectiveness of certification labels. This will serve as a tool to improve the building standard practice toward a better sustainability.

A sustainable building culture is not defined merely by the value of quality indicators. Its other significant processes are certification, training and assisting services along the whole building life cycle. However, the plethora and mismatch of building regulations at the EU and national levels leads to considerable administrative burden, confusion among the actors and to a very fragmented sustainable construction market. A new building culture integrates not only experts but also all stakeholders ranging from users to politicians, from big companies to single family house owners.

This leads to the second objective: to establish a mass-movement toward near-zero emission buildings in Europe.

The CESBA (Common European Sustainable Building Assessment) initiative aims at achieving these two objectives. Launched with the involvement of more than 30 public and private European organizations from Austria, France, Italy, Spain, Czech Republic, Germany, Hungary, Poland, Slovenia, Slovakia, Switzerland and the UK, CESBA is more than the assessment of sustainable buildings; CESBA is a process towards new building and neighbourhood standards in Europe.

The CESBA initiative started in 2011 as a non-profit, bottom-up process by stakeholders closely linked to the public sector (European regions and cities). Meanwhile it got attention from many organizations, including the European Commission (DG Environment). Among the several EU projects that address understanding, definition and implementation of sustainable building assessment, the aforementioned projects support CESBA and promote a common platform.

The Guide at hand is the first result of the CESBA initiative that was achieved through the activities carried out in eight EU projects. It is a guideline proposing the first set of common European key performance indicators, a reference assessment method and the European signature concept. The CESBA Guide discusses the core indicators required to measure various qualities of a building or neighbourhood. All aspects along the building cycle are addressed here: from planning to construction, from tendering to monitoring. Furthermore, it integrates the certification processes, and the need for training and communication. Incremental sustainability may add construction complexity, all stakeholders along the value chain – including builders, administrations and users – need tools to evaluate both environmental and construction complexity, and they need a clear understanding of building rating systems. A CESBA Wiki platform has been also implemented to keep all the CESBA information at hand and to increase the dissemination of CESBA outcomes.

This Guide is going to be presented to the EU Commission in Brussels.

1.2 CESBA – Common European Sustainable Building Assessment

The development and implementation of new standards require synergic actions and initiatives. Current building assessment tools have variable elements – ranging in structure, assessment methodology, identified impacts and using different scoring methodologies. As Europe is a mélange of regional building cultures, European buildings standards must consider regional needs and conditions. The lack of uniformity makes the comparison of results difficult - harmonisation is a necessary next step.

Furthermore, the current building assessment tools are not user-friendly enough, and they do not cover all phases in the life cycle of buildings to be used at the beginning of the process for the design of buildings.

The integration and participation of the civil society is essential, using the bottom-up approach to generate a common and mass-oriented, open-source, building assessment guideline. The system of analysis that describes the sustainable quality of a building must be transparent and clearly understandable to the general public.

CESBA incorporates and combines the following aspects of the future-oriented building culture:



The CEC5 demonstration building in Bydgoszcz, Poland: RES Demonstration Centre.

1. Indicators to measure the quality of the building processes and the achieved quality standards. These indicators are consolidated in the present framework, aligned with the work carried out by CEN/TC 350 and European projects like ENERBUILD, IRH-Med, SuPerBuildings, OPENHOUSE, CABEE, CEC5.

2. Integration of all aspects throughout the Building Life Cycle (service, training and certification process), by purpose and target setting, design tendering, planning, procurement, implementation, commissioning, monitoring and usage.

3. Exchange with society and its institutions. CESBA is an open and transparent bottom-up approach, based on agreed technical and thematic standards as well as formal standards for logo, wording, publications and the continuous improvement and communication processes.

1.3 CESBA Users

The CESBA initiative and this Guide are targeted at a community of people and organizations who share a concern and passion for the promotion of sustainable buildings.

CESBA and this Guide aim at a wide range of users including:

- End-users of buildings
- Architects and designers of buildings and their surroundings
- Construction-related SMEs and workers
- Builders and developers of existing and new buildings
- Regional and national legislative bodies and policy-makers
- Public administration at regional and national level dealing with incentive systems and technical aspects of sustainable buildings
- Energy institutes and energy providers
- Universities and research institutions
- Sustainable building experts

The users will incorporate the CESBA expert knowledge and Open-Source tools into their work. In order to promote the local usage within different countries, the relevant parts of the Guide will be translated into the respective local languages.

The perspective of the end-user is integrated in CESBA through detailed studies of the user behaviour in sustainable buildings. Furthermore, CESBA promotes awareness of the users' impact on the performance of sustainable buildings.

1.4 CESBA Vision and Mission Statement



CESBA Vision:

A Europe where a high quality living in a sustainable built environment is the common standard practice.

CESBA Mission:

To facilitate the diffusion and adoption of sustainable built environment principles among all the stakeholders of the building sector through the use of harmonised assessment systems in the whole life cycle of the built environment. CESBA is a meeting point between top-down and bottom-up approach. CESBA is a framework for the preservation of local and regional autonomy.

1.5 CESBA Final Agreement 2013

CESBA – a Collective Initiative for a New Culture of Built Environment in Europe.

Together we enhance the quality of life by supporting the development of sustainable built environment.

CESBA is in line with EU initiatives and adopts and promotes national and European processes and standards at building and settlement levels.

CESBA is a bottom-up initiative, which supports the definition of qualities for the whole building Life Cycle.

CESBA's mass approach and open source method reinforces local and regional accepted standards throughout the different macro regions.

CESBA puts the human being in its centre and is in dialogue with society. On regional and local levels, CESBA focuses on its implementation. On inter-regional level CESBA focuses on the integration of the CESBA approach with the EU-institutions and EU-processes.

CESBA offers harmonisation among building regulations at EU and national levels leading to considerable simplification within administration procedures and creating a common understanding among the actors.

CESBA researches and offers principles to assess building and built environment qualities.

CESBA offers a set of key indicators and reference criteria which help to compare different building standards. The usability of current assessment processes will be improved by developing a common framework.

CESBA encourages the building users to participate and take on responsibility for the used buildings.

CESBA fosters common European education and training standards on key issues of the new building and built environment culture.

CESBA is a non-profit initiative without financial interests.

CESBA is online with its knowledge hub CESBA Wiki – www.cesba.eu

Join CESBA!



2 CESBA – the Added Value



2.1 CESBA Improves Quality of Life

European, national and regional regulations request assessment of buildings. CESBA fosters a mass-oriented bottom-up approach towards sustainable buildings. Authorities and stakeholders on the local level need guidance to these changing circumstances.

CESBA makes the values of a building or a neighbourhood visible and therefore improves the quality of life in a building and neighbourhood.

CESBA offers opportunities by explaining the qualities and showing the necessity of the built environment: if you don't build a house in accordance with particular standards, you will have an "old house" in 2019/2021.

Identification of stakeholders and their needs:

Stakeholders	Needs
<ul style="list-style-type: none">• Politicians• Citizens• Administrative staff• Technicians	<ul style="list-style-type: none">• Quality of life• Comfort, healthy environment• Economical reputation• Technical support

CESBA answers to those needs by:

- **Promoting sustainable building culture**
- **Measuring/evaluating quality of life**
- **Making value visible**

CESBA's services include assistance with:

- **Organisation & coordination**
- **Support structures for municipalities**
- **Information & communication channels (a dialogue with society, arguments, spirit, vision/mission, added value)**
- **Training & technical support**
- **Knowledge base (WIKI)**

2.2 CESBA is a Strategy Made of Bricks

CESBA is a territorial approach, presenting the most important issues to be addressed in a region. CESBA is a strategy made of bricks: if a brick is missing in a regional strategy, CESBA offers inspiration for filling the gap. CESBA shows that an assistance service is essential to help those who are least equipped, indicating the possible shape of the service, with examples of existing services in different regions, offering them the means and opportunity to contact the responsible for the existing services.

CESBA is a strategic framework which contains a template for a region-adaptable tool for planning, procurement, evaluation, etc. of public buildings.

CESBA uses an online platform, a wiki, as a source of knowledge which can be consulted and used to get materials and information on all themes, steps and services of CESBA. Everybody can participate in feeding this Wiki with his or her own experiences: www.cesba.eu

CESBA is an initiative that has a European soul since its inception – thus using CESBA implies participating in a European movement, sharing a vision, a strategy and objectives towards sustainable buildings with other European territories.

CESBA also wants to be an interlocutor with European institutions, to be the voice of the regions on sustainable buildings, and specifically, a partner in discussions with DG Environment. Being a part of CESBA means to take position at the European level to influence institutions.

CESBA helps small municipalities to access the EU-financing instruments.

2.3 CESBA Initiative Has a History

During the ENERBUILD project, partners found a great amount of sustainable building assessment systems on their territory and agreed that users and stakeholders felt disoriented. This profusion of systems was the starting point of an international conference held in Lyon in February 2011, entitled “From Europe to territories: what possible convergence?”. That way the question of convergence was put on the table.

Soon, different European projects emerged, all sharing the same diagnosis and working on the same subject. All of these projects have developed, compared, harmonized and explored various building assessment tools.

The idea of promoting a framework on assessment buildings emerged during the Energy World Café in Lyon in June 2012. To reach this goal, representatives of the EU projects were contacted to share experience and work together. First results were debated during a common meeting in Brussels, and based on the work of the French representatives, who had met several times during this period. A general framework and different concepts were accepted. The common vision was born and a statement was released in July 2012.

The first CESBA conference was organized on 10th October 2012 in Brussels in order to share this vision, to disseminate the results and to start the work with the EU commission. The wiki website was launched simultaneously.

After starting this idea, several institutions reached out, interested in knowing more about the initiative. Partners began to present CESBA on various occasions:

- Workshop within the framework of the CEC5 project: first definition of the term ‘CESBA’, 12–13.06.2012, Budapest, Hungary;
- Towards a Common European Framework for Sustainable Building Assessment (CESBA), 10.10.2012, Brussels, Belgium;
- Turning Strategies into a Programme – Alpine Space 2014–2020, Successful actions for the Alpine Space, selected projects, 21.02.2013, Milano, Italy;
- CENTRAL EUROPE Programme Annual Conference 2013, 15–16.05.2013, Padua, Italy, Presentation at the Monitoring Committee Meeting of the CENTRAL EUROPE Programme⁴ on 17.05.2013;
- Final Conference of the ENERGYCITY Project, 27–28.06.2013, Brussels, Belgium, CEC5 project presentation and presentation of the CESBA⁵;
- Concluding Meeting of the 21st OSCE Economic and Environmental Forum on “Increasing stability and security: Improving the environmental footprint of energy-related activities in the OSCE region”, 11–13.09.2013, Prague, the Czech Republic
- SB13 Graz, Sustainable Building Conference 2013, 25–28.09.2013, Graz, Austria, Poster presentation of CESBA⁶;
- CESBA Sprint-Workshop with international participation (actors from 11 European countries) and 6 thematic sessions⁷, 21–23.09.2013, Vorarlberg, Austria.

⁴ <http://www.central2013.eu/news-events-publications/events/event-detail/articles//central-europe-programme-annual-event-2013/>

⁵ <http://www.energycity2013.eu/pages/project/events/final-conference.php>

⁶ <http://www.sb13.org>

⁷ <http://www.cabee.eu/project-cabee-is-approved/events/CESBA-sprint-workshop>

Main steps of the overall history of CESBA process:

Date	Place	Content
16.02.2011	Lyon, France	ENERBUILD conference – different ways of ecological building assessment
19.05.2011	Barcelona, Spain	IRH-Med conference - different ways of ecological building assessment
7.06.2011	Lyon, France	ENERBUILD meeting – “New common European directive/framework on assessment of buildings” and common conference in Brussels
15.11.2011	Brussels Conference, Belgium	Exchange among the projects: ENERBUILD, OPENHOUSE, SuPerBuildings, IRH-MED
07.2011/ 04.2012	Meetings in Lyon/Paris, France	Exchanges between French representatives of ENERBUILD, IRH-MED, SuPerBuildings, OPENHOUSE. Proposition of the universal framework and concept of signature
23.05.2012	Meeting in Turin, Italy	Draft on CESBA Content
12–13.6.2012	Meeting in Budapest, Hungary	First definition of “CESBA” term
	Preparation of Statement and Conference	
10.10.2012	Brussels 1st CESBA-Conference, Belgium	Decision on core set of Indicators. Support offered by DG Environment
23–24.01.2013	Meeting in Udine, Italy	Preparation of Workshop in Hochhäderich, Austria
31.01.2013	Meeting in Selva di Cadore, Italy	Preparation of Workshop in Hochhäderich, Austria
11–12.06.2013	Meeting in Alessandria, Italy	Preparation of Workshop in Hochhäderich, Austria
25–27.06.2013	Meeting in Bydgoszcz, Poland	Preparation of Workshop in Hochhäderich, Austria
21–23.10.2013	Vorarlberg, 2nd CESBA-Conference	CESBA Sprint Workshop in Hochhäderich, Austria
22–023.01.2014	Portorož, Slovenia 5th Steering Committee Meeting of the CEC5 Project	CESBA Guide Discussion about dissemination

2.4 CESBA Invites all Stakeholders

As a mass-oriented approach CESBA wants to include as many partners as possible. Therefore CESBA is free of charge, and uses a language which is understandable to non-experts and non-English native speakers. All users have to agree to apply the Creative Commons license (see Chapter 6.5).

The only requirement is to study the documents thoroughly. CESBA offers contacts to experts who can help to apply the tools and materials offered.

2.5 CESBA is an Opportunity for Regional Development

CESBA is an opportunity for regional development thanks to the interaction between existing sectorial policies, funding bodies and institutions. New opportunities will arise to reduce regional frictions and therefore to encourage innovative developments for the built environment. The complex requirements for sustainable buildings foster cooperation among the stakeholders, while the CESBA approach creates a good opportunity to set up new policies along the CESBA principles.

The implementation of a holistic common certification procedure for ecological public buildings should take into account the materials used in the construction process. This approach can create a unique opportunity for regional development. In cases where the transportation impact is relevant, such as in the factors considered by the Life Cycle Assessment (LCA) approach, sourcing local products yields environmental benefits. This could also encourage the planners and constructors to use local products and it would lead to an increase in local employment.

The potential market for the construction industry can be understood considering the amount of existing buildings that need energy efficiency improvements. The following table summarizes the chronological classification of buildings in three different classes according to the BPIE survey:⁸

- Old: typically representing buildings up to 1960,
- Modern: typically representing buildings from 1960 to 1990,
- Recent: typically representing buildings from 1991 to 2010.

	South Europe	North and West Europe	Central and East Europe
Buildings pre-1960	37%	42%	35%
Buildings 1961–1990	49%	39%	48%
Buildings 1991–2010	14%	19%	17%

Source: BPIE. Europe's building under the microscope. A country-by-country review of the energy performance of buildings, 2011.

In the residential sector, the age of a building is often strongly linked to the level of energy used, especially for the majority of buildings that have not undergone renovation procedures to improve energy performance.

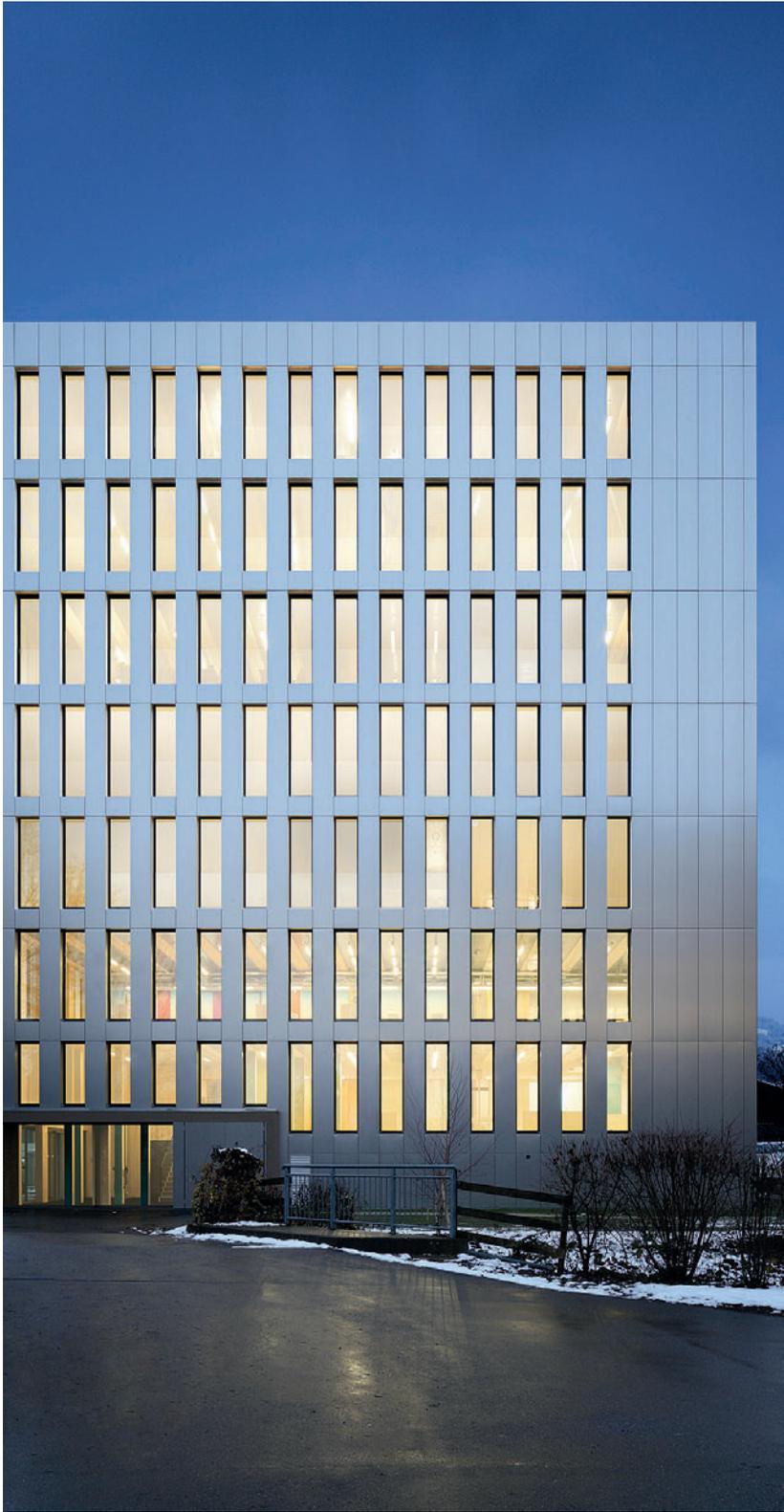
One third of the European residential building stock was built before 1960, and almost 84% of buildings are over 20 years old. Therefore there is a great energy saving potential in upgrading building envelopes and building systems to modern standards.

In each country/region the assessment of building and neighbourhood performance is different. The various differences appear in:

- levels/ambitions for the building/neighbourhood performance,
- overseeing organisations,
- assessment methodologies,
- tendering products and procedures,
- costs structures,
- and more.

CESBA gives guidelines to harmonize the assessment approaches through principles, methods, performance issues and indicators.

⁸ BPIE. Buildings Performance Institute Europe. Europe's building under the microscope. A country-by-country review of the energy performance of buildings. 2011. ISBN: 9789491143014.



The CEC5 demonstration building in Dornbirn, Austria: LCT ONE.

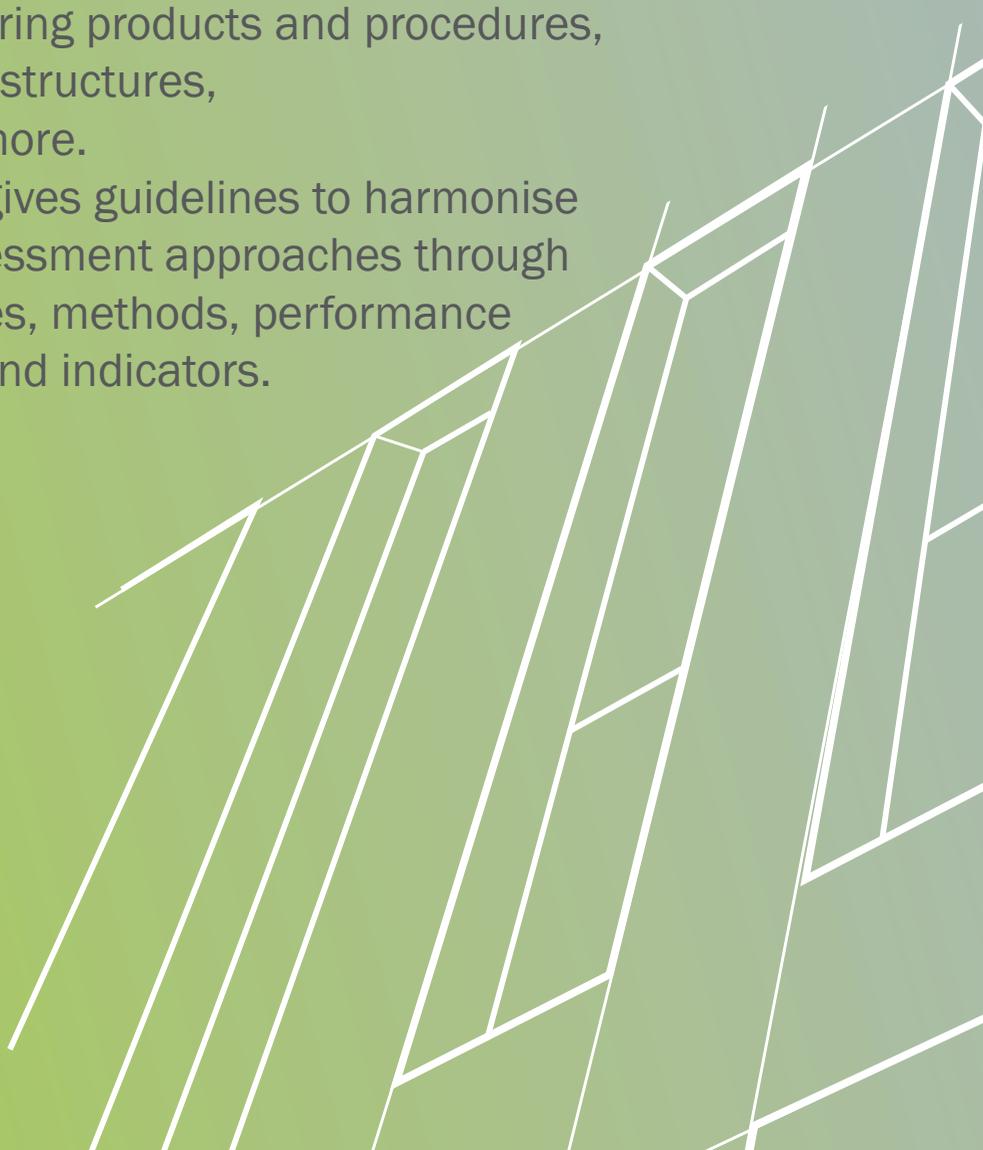


3 CESBA – Assessment for Buildings and Neighbourhoods

In each country/region the assessment of building and neighbourhood performance is different. The various differences appear in:

- levels/ambitions for the building /neighbourhood performance,
- overseeing organisations,
- assessment methodologies,
- tendering products and procedures,
- costs structures,
- and more.

CESBA gives guidelines to harmonise the assessment approaches through principles, methods, performance issues and indicators.



3.1 Aims and Principles

3.1.1 The User First!

CESBA focuses on the people who use buildings. On average people spend 90% of their lives inside buildings. The aim is to design, build and operate the buildings in order to meet the users' requirements and needs, providing an improved comfort, and an ecological and economical construction and operation.

- The users are the main actors in a building. The awareness for their rights and responsibilities builds the base for win-win situations. Obtaining the users' participation and support is crucial to achieving the highest quality of use and energy-efficient building operation.
- The monitoring of building performance indicators guarantees a sufficient check of the building's function ability and comfort provided to users. The indicators used to communicate performance to the end-users have to be target-oriented and easily understandable.
- The revolutionary approach of CESBA is the change of the perspective. By putting the user at the centre of the initiative, the purpose becomes to design, construct, operate and maintain buildings to meet the functional and comfort requirements of users.



3.1.2 Sustainability

The assessment covers all aspects of sustainability: environmental, economic and social ones. The assessment is integrated in the regional law systems.

3.1.3 Regional Contextualization

Building assessment systems must be contextualized with the region where they are applied, in order to reflect the local specific priorities, cultures, habits and construction practices. This means using local units of measure, adopting national/regional standards and regulations, giving due consideration to the local climate, and accounting for availability of natural resources and cultural aspects of design.

At local level it is fundamental to set the relative importance of environmental, social, economic, legal and political issues. Each criterion included in the assessment tool should be assigned a relative weight and a reference benchmark (minimum acceptable performance level) adequate to the local conditions.

The value of rating results diminishes when systems are used in contexts outside their origin.

3.1.4 Comparability

The performance results shall be comparable thanks to points/targets. Additionally, national tools shall be translated into one language. For better comparison, the inputs in the assessment shall be defined, and not the outputs.

3.1.5 Mass-oriented

Building rating systems can play a key role in moving the built environment towards a better sustainability. To reach this objective they have to be widely adopted by the different stakeholders of the building sector: architects, designers, public organisations, construction companies, investors, etc. Only a mass oriented approach allows reaching this objective.

Mass oriented means that the objective of the certification is to reach 100% of constructions. A mass oriented assessment system has to fulfil some key requirements:

- simple to use
- affordable (cost and time)
- contextualized (use of local standards)
- open source.

3.1.6 Simple to Use

A mass-oriented building assessment system has to find a right balance between the simplicity to use and the scientific/technical value. The assessment must be precise, not simplified, clear and visible. A system requiring complicated calculations or the availability of data that are not easy to find would request too much time and effort (costs) to be widely used. Simplicity helps the dissemination of assessment systems among the stakeholders.

Effective training courses can be implemented to improve the skills of professionals in building assessment. Certification can be done in round tables with the stakeholders in place, Life Cycle-step by Life Cycle-step certification.

3.1.7 Open Source

Using an open source approach allows CESBA to be appropriate as to its context by paying special consideration to the environmental, ethical, cultural, social, political and economic aspects of the community it is intended for. Consequently, this approach allows for regional adaptations in the guidance system.

The open source approach allows CESBA to be a low-cost alternative to more expensive and proprietary alternatives of sustainable building assessments. The open source way also provides for low entry barriers for users and supporters of CESBA.

CESBA is able to continuously integrate collective community wisdom. The transnational open source approach offers new ways of knowledge transfer and networking, enhanced through the participation and cooperation of EU-funded projects. It allows capitalizing experiences, processes, tools, etc. developed by finished and on-going EU-funded projects.

The open source approach fosters a bottom-up initiative for the standardisation and harmonisation of sustainable building assessments. The knowledge and results generated by CESBA can be used to support incentive systems, regulations and laws on a regional, national and European levels.

The CESBA know-how is web-based and it is publicly available on wiki. The calculation for the harmonised assessment will be based on Excel instead of a black box, with fixed parts and regional adjustable parts.

3.1.8 Co-creation

CESBA is developed by several people and organisations from various European regions, with experts providing input by contributing as Wiki editors. The knowledge base and further areas of content development are discussed and agreed during common and open CESBA sprint workshops. All necessary support software, databases and tools will be jointly developed.

3.1.9 Transparency

The public should have access to the performance results especially for public buildings, while keeping in mind privacy rules. The visualisation of the results must be clear and offer guidance for further understanding.

The assessment should follow a previously detailed guideline, with a step by step check of all indicators. An external certification body carries out the final control.

The simplicity and transparency procedures (guideline, external independent control) guarantee the best possible quality of the assessment.



The CEC5 demonstration building in Dornbirn, Austria: LCT ONE.

3.2 Assessment Methods

Building assessment tools are basically multi-criteria analysis methods. Their goal is to assign a concise score to a building's overall performance starting from a set of criteria (assessment entries) that deal with environmental, social and economic issues. The score is computed combining the value of indicators through a normalization and aggregation process.

The assessment procedure is articulated in three main steps:

- **characterization: building performances are quantified through indicators with regard to each criterion;**
- **normalization: indicator values are dimensioned and rescaled in a score;**
- **aggregation: normalized scores are combined to produce a final concise score.**

3.2.1 Indicators and Characterization Phase

An indicator is a methodology which allows to characterize (not necessarily in numerical terms) the building performance with respect to the corresponding criterion. If the indicator represents a physical quantity it has a numerical value. For instance, a criterion on "Non-renewable primary energy consumption" could be associated to an indicator "kWh/m² per year" that has a numerical value.

An indicator can also have a qualitative nature based on scenarios. Characterization is performed by assigning a numerical value or scenario to each indicator. Usually the characterization is carried out by applying a specific calculation procedure.

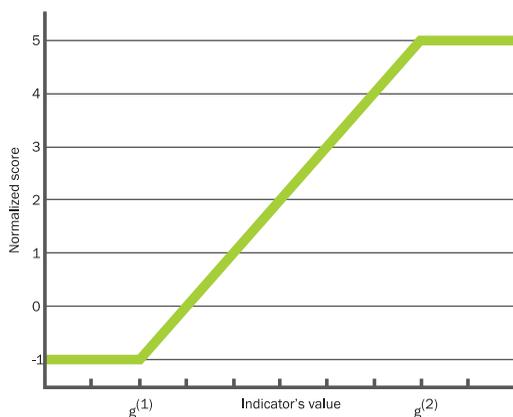
3.2.2 Normalization Procedures

Due to the diverse nature of criteria, indicator values are characterized by different units of measure (i.e. %, Kg, kWh, etc.) and different orders of magnitude. For this reason the indicators have to be dimensioned and rescaled before the aggregation phase.

Normalization consists basically in attributing a score to the value or scenario assigned to the indicator. Two main approaches are possible:

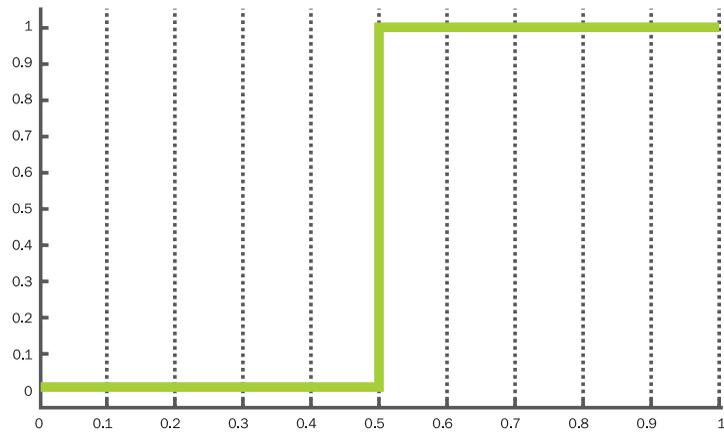
- use of linear performance scales,
- use of performance thresholds.

In the case of linear scales the indicator values are normalized in a specific interval. The better the performance, the higher the normalized score. The normalization functions have upper and lower values. A linear scale awards any improvement of the performance level in the specific interval.



Normalization: linear scale

In the case of thresholds, a specific score is assigned only if the indicator's value is above or under a fixed target number. One or more thresholds can be applied to an indicator.



Normalization: single threshold

3.2.3 Aggregation Procedure

At the end of the normalization step, the data is structured in a set composed by the normalized scores associated with each criterion. Two main approaches are possible to aggregate the scores:

- simple sum,
- weighted sum.

In the case of the simple sum, the normalized scores are just summed to define the total score. The weight of a criterion depends on the number of points associated to it. For example, in a hypothetical assessment tool the criterion "Primary energy consumption" gives 10 points and the criterion "Potable water consumption" gives 5 points. In this case "Primary energy consumption" weighs twice as "Potable water consumption".

The simple sum aggregation method is usually associated with a normalization procedure based on performance thresholds. In the case of the weighted sum aggregation method, a weight (usually expressed in percentage) is given to each criterion. The total score is then calculated as the sum of the weighted scores of all criteria (weight time score).

The weighted sum aggregation method is usually linked to a normalization procedure based on linear performance scales.

3.2.4 Communication, Process Management and Innovation

The results of assessments (environmental, social and economic performance) have to be organised and made available the way they can be understood and interpreted in a transparent and systematic way.

3.2.5 Functional Equivalent of the Building

The results of assessment of buildings at any life cycle stage have to be compared only on the basis of their functional equivalency. The functional equivalent of a building should be referred to (based on EN 15643-1):

- required functions: type and use,
- area/volume,
- pattern of use (e.g. occupancy),
- location of the building,
- required service life.

3.3 Key Performance Indicators

3.3.1 Building Scale

Key performance indicators (KPI) intend to be a European common base for building sustainability assessment. Their adoption by the regional/national assessment systems will facilitate the communication between stakeholders and the comparability of performance results. KPI will also support and facilitate the development of future assessment schemes.

3.3.1.1 Building Scale: Indicators for Europe

The KPI at the European level have to be adopted by all the building assessment systems as they address the main issues of sustainable building:

- Non-renewable primary energy
- Primary renewable energy use
- CO₂ emissions
- Indoor air quality
- Thermal comfort
- Building Life Cycle cost
- Reused/recycled materials
- Water consumption
- Solid waste
- User involvement
- Monitoring/optimization of operation

The reference Life Cycle stages to be taken into account when evaluating the KPIs are:

KPI (Key Performance Indicators)	Before use stage		Use stage	End of life stage	
	Product stage	Construction stage		Deconstruction	Disposal stage
Non-renewable primary energy					
Primary renewable energy use					
CO ₂ emissions					
Indoor air quality					
Thermal comfort					
Building Life Cycle cost					
Reused/recycled materials					
Water consumption					
Solid waste					
User involvement					
Monitoring/optimization of operation					

3.3.1.2 Building Scale: Indicators for European Macro Regions

Beside the KPI for building assessment systems at European level, some KPI have to be included depending on the macro regions (Alpine, Mediterranean, Central Europe, North Europe, etc.).

All macro regions:

- Local materials
- Quality of the design and development of the building and site (urban environment and landscape integration)

Mediterranean space:

- Water for irrigation

Mediterranean and Alpine space:

- Depletion of habitats
- Biodiversity

3.3.2 Neighbourhood Scale

Key performance indicators (KPI) intend to be a European common base for neighbourhood sustainability assessment. Their adoption by the regional/national assessment systems will facilitate the communication between stakeholders and the comparability of performance results. KPI will also support and facilitate the development of future assessment schemes.

The KPI at European level have to be adopted by all the assessment systems at neighbourhood scale and they address the main issues of sustainable building:

- Process and planning quality
- Participation and management of neighbourhood
- Total primary energy and renewable primary energy
- Exploitation of local resources: wind, biomass, sunlight
- Water management
- Social and functional diversity
- Access to public transport
- Connection to existing infrastructure
- Life Cycle cost
- Cost development of buildings/neighbourhood



Municipality Center with Fire Station in Lorüns, Vorarlberg Austria.

3.4 Reference Performance Indicators

3.4.1 Building Scale

The following lists of indicators have to be taken as a reference in the development of the specific regional assessment tools. The indicators are organised by issues: site, process quality and the three aspects of sustainability, i.e. environmental quality, social quality, and economic quality. The number of indicators to be included in a specific assessment tool depends on its scope. The selection has to guarantee the CESBA assessment principles.

3.4.1.1 Location, Territory and Site

- Ecological quality of site
- Risks at the site
- Circumstances at the site
- Options for transportation
- Access to amenities
- Access to public transport
- Protection or restoration of habitat on the site
- Adjacent infrastructures and services
- Construction site impact
- Bicycle parking facilities

3.4.1.2 Process Quality

- Decision making and determination of goals
- Integrated planning
- Planning support for energetic optimization
- Stakeholder involvement
- User involvement
- Evidence of sustainability during bid invitation and awarding
- Quality of the executing contractors/pre-qualification
- Quality assurance of construction execution
- Sourcing of materials and services

3.4.1.3 Environmental Quality

- Energy and emissions
 - Non-renewable primary energy
 - Primary renewable energy use
 - Specific cooling demand
 - Specific heating demand
 - Use of non-renewable primary energy (process energy)
 - Use of renewable primary energy (process energy)
 - Global Warming Potential (GWP)
- Water
 - Management of wastewater
 - Water consumption
- Waste
 - Solid waste
 - Hazardous waste to disposal



- Materials
 - Use of recycled materials
 - Risks from materials
 - Refurbishing and replacement of components
 - Deconstruction, recycling and dismantling potential
- Quality of service
 - Monitoring/optimization of operation
 - Cleaning and maintenance

3.4.1.4 Social Quality

- Accessibility
- Health and Comfort
 - Indoor air quality
 - Thermal comfort
 - Visual comfort
 - Acoustic comfort
 - Daylight use
- Adaptability
- Impact on the neighbourhood
- Quality of the design and urban development of the building and site
- Aesthetics
- Emotional attraction

3.4.1.5 Economic Quality

The reference indicators concerning economic aspects are:

- Building Life Cycle cost
- Economic efficiency
- Construction cost
- Stability of value

3.4.2 Neighbourhood Scale

The following lists of indicators have to be taken as a reference in the development of the specific regional assessment tools. The indicators are organised by issues: environmental quality, social quality, economic quality and process quality. The number of indicators to be included in a specific assessment tool depends on its scope. The selection has to guarantee the CESBA assessment principles.

3.4.2.1 Environmental Quality

- Preservation of land and soil
- Preservation of the built environment
- Occupancy of surface
- Urban integration
- Climate change of city quarter
- Effects on other city quarters
- Risk for local environment, protection of soil
- Other effects on global environment
- Permeability of land
- Intensity of water treatment

- Management of wastewater
- Accessibility to waste sorting facilities
- OI3 index (building materials and construction)
- Deconstruction, dismantling, and recycling potential
- Exploitation of local resources: wind, biomass, sunlight
- Energetically optimized urban structure
- Primary energy for heating
- Intensity of greenhouse gas emissions per capita
- Primary energy for cooling
- Primary energy for public lighting
- Electric energy optimization through Virtual Power System (VPS)
- Total primary energy and renewable primary energy

3.4.2.2 Social Quality

- Adjacent infrastructures and services
- Collective facilities and outsourcing of services
- Historic resource preservation and adaptive reuse
- Flexibility of usage
- Connection to existing infrastructure
- Efficiency of infrastructure
- Availability of green spaces
- Housing and jobs proximity
- Contiguity of bicycle and car routes
- Safety of pedestrian spaces
- Accessibility of pedestrian spaces
- Infrastructure for individual sustainable mobility
- Barrier-free spaces
- Access to public transport
- Local production of food
- Thermal comfort of outdoor areas in summer
- Quality of external spaces
- Prevention of noise
- Air quality monitoring
- Light pollution
- Social and functional diversity
- Socio-cultural structure of neighbourhood
- Objective/subjective safety
- Access to broadband communication network

3.4.2.3 Economic Quality

- Life Cycle cost
- Planning and development costs
- Appropriate investment costs
- Affordability of housing property/rental
- Stability of value

3.4.2.4 Process Quality

- Process and planning quality
- Participation
- Communication and information management
- Integrated planning process
- Construction site, construction process
- Synergy management

Before use stage					Use stage				End of life stage				
Design stage	Product stage			Construction stage						Disposal stage			
Architectural design	Raw material process	Transport	Manufacturing	Transport	Construction process	Operation of building incorporated services	Operation of non-building incorporated appliances	Maintenance, repair and refurbishment	Transport	Deconstruction	Transport	Recycling, reuse and energy recovering	Waste disposal

3.5 CESBA Generic Tool

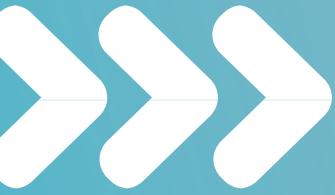
CESBA provides a generic tool based on the key performance indicators and reference performance indicators.

The CESBA generic tool can be used in one of the three following ways:

- as a **guideline** for the harmonization of existing assessment tools (see Chapter 5 on Building Assessment Harmonisation),
- as a **research tool** for exercise and research projects which goes beyond regional standards for exchange and comparison,
- as a **starting tool** with low entry barriers for regions without existing assessment tools.

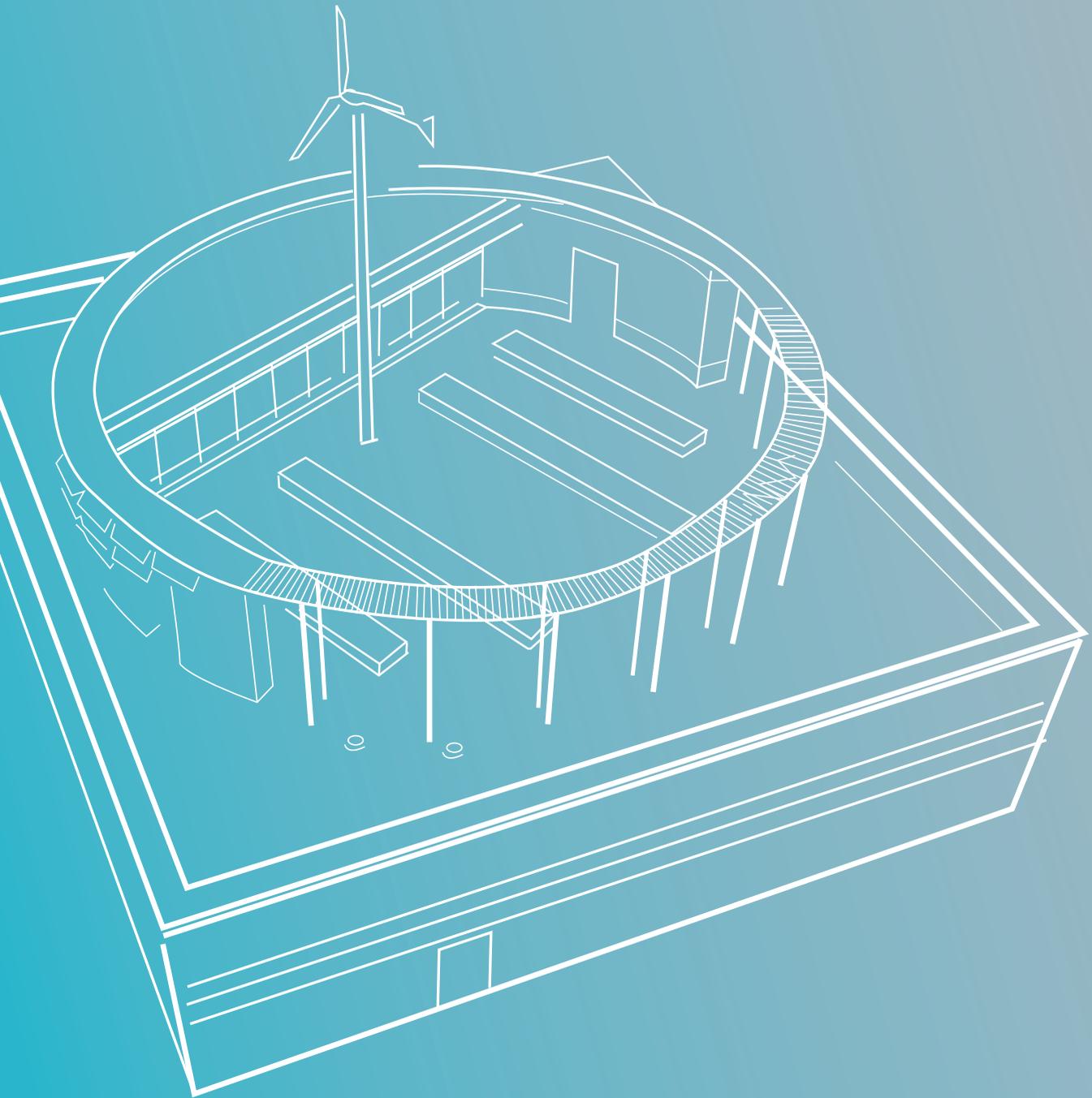
The CESBA generic tool is described in study books, which are supplements to the CESBA Guide⁹.

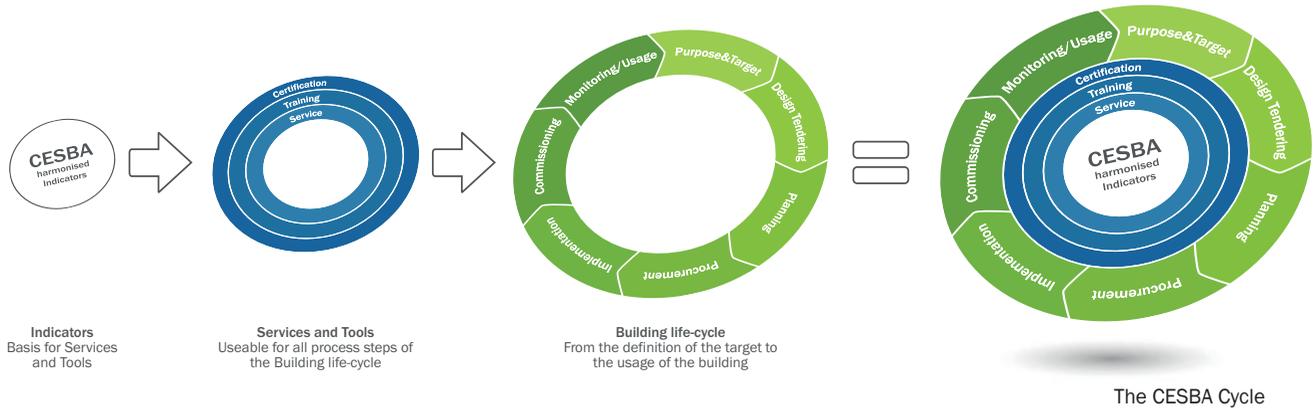
⁹ http://wiki.cesba.eu/wiki/CESBA_training_material#Studybooks



4 The CESBA Cycle

The core of CESBA Cycle are the harmonised key performance indicators (KPI) for buildings.





4.1 CESBA Harmonised Indicators

All stakeholders move together in a specific direction. CESBA helps to define the endpoint and to measure the success in achieving the targets. The indicators play a key role in fulfilling the various aspects of the CESBA Cycle. The operative and effective use of the indicators has to be supported by Services, Training and Certification. Establishing clear targets also facilitates the dialogue with the society.

4.2 Services for Key Actors

Whoever wants to conduct a sustainable construction project needs support. Here come in the CESBA service packages for helping municipalities. By using the service packages, stakeholders can get support during the whole Building Life Cycle (see Chapter 4.5).

4.2.1 Module 0 – Impulse Conversation in the Community

In a non-binding and free discussion, the service packages are introduced on:

- Advantages, opportunities and cost of sustainable construction in general
- Content, opportunities, requirements, costs of the service packages
- Best practice examples
- Implementation options for the specific project

A specific offer for service shall be developed on the basis of the discussion.

4.2.2 Module 1 – Planning: Developing an Ecological Program Together

Representatives of the community, architects and technical planners together define environmental and energy objectives for the project.

Additional services shall be offered upon request:

- Preparation and assistance in the architecture competition,
- Support and assistance in the tendering of planning services.

4.2.3 Module 2 – Planning & Tendering

Architectural designs and technical plans are optimized on sustainability criteria together with the owners and the planners. A material concept will be developed as a basis for the invitations to tender. This concept contains proposals for the construction, materials and building technology. The receiving offers are checked as to the priorly defined objectives.

The following additional services shall be offered upon request:

- Ecological audit and support for tenders regarding the choice of materials,
- Accompaniment of offer openings,
- Support for public procurement, e.g. to provide standardized introduction and forms, support for opening bids and formal examination.

4.2.4 Module 3 – Test & Construction Work

Immediately after placing the order, the builders are informed about the ecological requirements. All builders receive a product declaration list. Based on this list, all building materials and chemicals used at the construction site are declared. The factually used materials are counter-checked against the product declaration list on the building site.

4.2.5 Module 4 – Success Control

Building users or external experts on quality assurance will be trained at the construction site on various measurements such as: indoor air quality, air tightness, room acoustics and thermography. In addition, a product check-up on the construction takes place. This training includes the quality control during the building usage.

The user himself can check if he/she received what was initially ordered. This module can be used as a measurement tool for subsidy and grant programs and procedures.

4.3 Training

The training for CESBA is given by well-qualified, CESBA accredited trainers.

The training follows the specifications of EQF (European Qualification Framework), EC-VET (European Credit system for Vocational Education and Training) and with ISO/IEC 17024.

The content for CESBA training covers the whole building life cycle. The content and the depth of teaching will be adapted for the different target groups:

- Public (Users, Owners, Education, Teachers, Students, Journalists, Industry/Manufacturers)
- Decision Makers (Politicians, Public administration, Investors, Banks, Interested groups)
- Experts (Planners, Trainers, Builders)

The methods used focus on:

- **Distance learning,**
- **Best practices (open source),**
- **Seminars, excursion, lectures.**

The training is offered by existing local and regional training providers. They will follow the guidelines offered by CESBA which are publicly available on the CESBA Wiki. Most of the training material is open-source and will be available on the CESBA Wiki as well. It is essential to adapt the adequate register depending which target group is addressed.

4.4 Certification

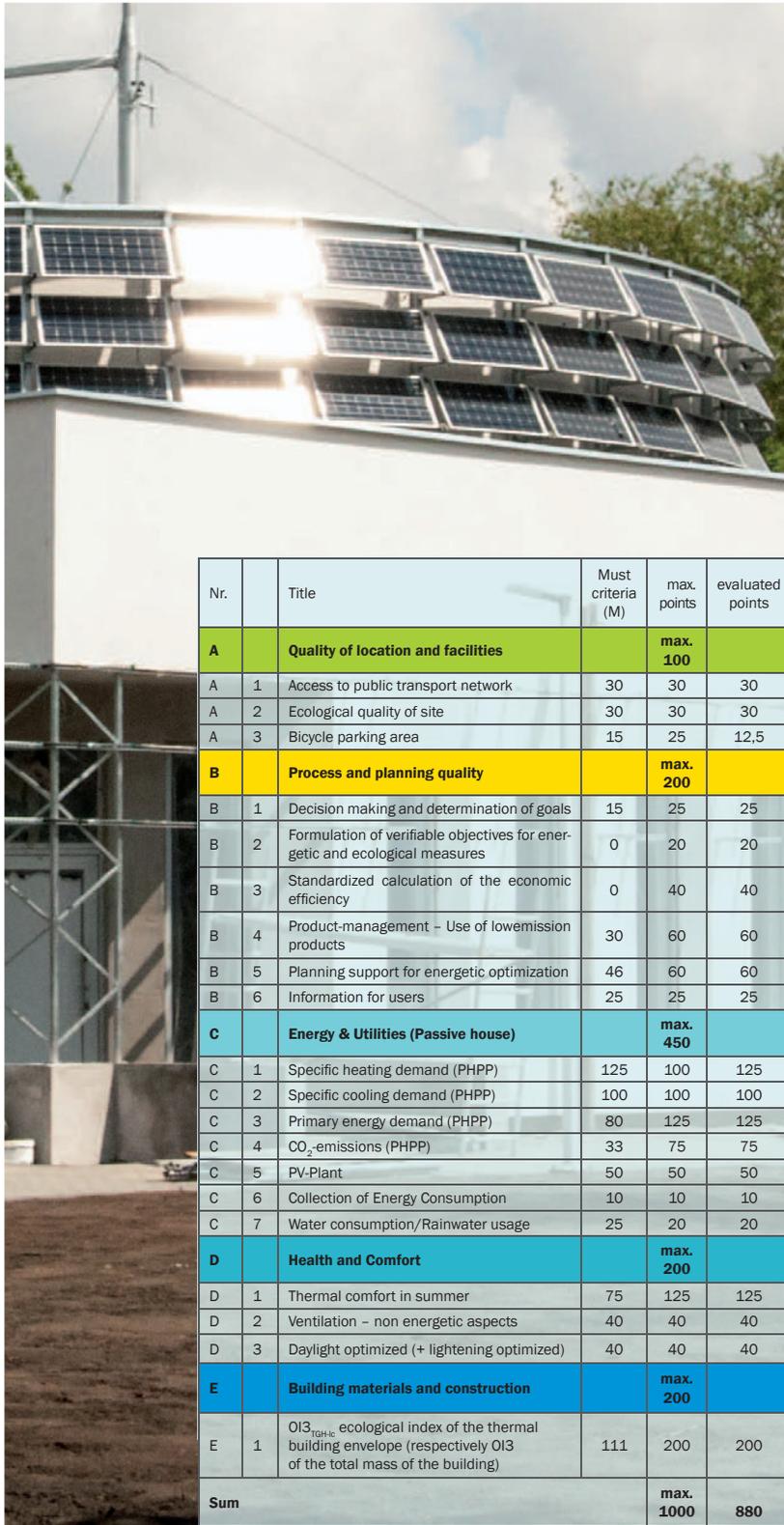
The term certification is of Latin origin and means “to make something secure”. A certification is a method that ensures that a building meet certain criteria. These criteria are measured by indicators which describe the overall performance of the building. The certification that is carried out by a third party validates the performance through an independent review. The third party is not involved in the creation of the building and may have a different background.

The output of the review is a certificate, issued by a certification body, which can be private, public or public and private. It is the manager of the certification system that issues the certificate and validates the technical documentation. The output of the certification process is a label, which can be used to access public incentives or to qualify the building better on the market.

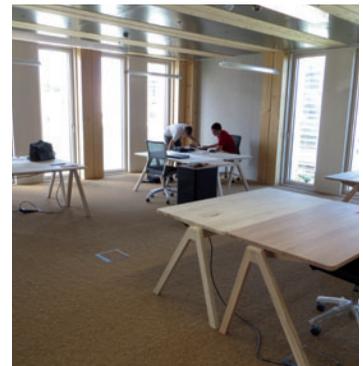
The range of costs of commercial systems is quite broad, mostly depending on the size and the usage of the building. The cost can be contained when the assessment system is strongly linked to the national/regional regulations and technical standards.

The certification can focus on different phases along the CESBA Cycle (in particular during the design, construction and the use stage) or certify the building in the whole CESBA cycle at once.

CESBA does not certify the built environment. Nevertheless CESBA supports low-cost, mass-oriented public certification schemes and it will provide minimum requirements to ensure the quality of certification processes.



Left: Bydgoszcz RES Centre and the CESBA evaluation card.



Right: The CEC5 demonstration building in Dornbirn, Austria: LCT ONE.

4.5 Building Life Cycle

A building is the source of local, regional and global impacts. These impacts start from the beginning of the Life Cycle of the buildings (from the design, the sourcing of the materials, etc.) and its end with the deconstruction or demolition phase. Building assessment systems have to take into account the whole Life Cycle of the building.



For each project the cycle starts with the purpose/target phase. In practice, this phase is not an absolute beginning: the target is defined by experiences from previous usage of buildings and experiences in other phases. Therefore, the cycle is closed.

The three main Life Cycle stages of the building defined in EN 15643-1 and SBA Documents are subdivided into further parts. The CESBA Building Life Cycle (pictured on the right) looks different, but can be mapped closely to the CEN-defined stages.

The CESBA Building Life Cycle can be subdivided into seven stages. The first three stages, i.e. Purpose and Target, Design Tendering and Planning can be allocated to the Design stage of the EN 15643-1 Building Life Cycle. The Procurement stage matches the Product stage defined by CEN and the CESBA Implementation stage maps to the Construction stage. The Use stage in the EN 15643-1 scheme begins with the CESBA cycle Commissioning stage. The section Monitoring and Usage as the last stage of the CESBA Building Life Cycle refers both to the Use stage and the End of life stage of the Building Life Cycle set up by CEN.

The grouping of the Use and the End of life stage together in the CESBA Usage and Monitoring stage depends on the fact that, when the original purpose of usage does not apply anymore, the building needs the definition of a new purpose or target (stage one of the CESBA Building Life Cycle). It has to be decided if a deconstruction is necessary or if a conversion is possible, and with this new target and purpose for the building, another Life Cycle begins.

The next sections describe the seven Life Cycle stages in detail.

4.5.1 Purpose and Target

The first stage is to define the targets of the building project. It is important to include aspects of sustainability from the very beginning. Therefore, raising awareness on sustainable building among all involved actors and the public is essential. Administrative staff, technical experts, political decision makers and other stakeholders have to be informed of conventional methods and the advantages of sustainable procedures. Therefore, an active promotion of the term 'sustainability' has to take place. CESBA will contribute to this promotion.

At the first stage of the Building Life Cycle, it is often not decided yet if a new building is to be constructed or if it is better to refurbish an existing building. Here it is important to weigh the different aspects of sustainability: a new building may need less energy and provide more comfort, while the amount of materials and the construction process itself highly influence the energy balance. Sometimes, a refurbishment can turn out to be more sustainable.

Furthermore, the planned investment volume has to be predefined and an appropriate financing model has to be chosen. In many states of the EU, ecological constructions are subsidized and it is important to remove those subsidies from the calculation.

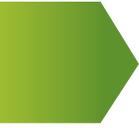
For new buildings often an adequate location has to be chosen. Here, the sustainability of the neighbourhood plays a key role: is there access to public transport and basic infrastructure? Is the supply of renewable energies secured? Does the location have negative effects on nature and biodiversity? Is the walking and cycling access guaranteed?

At the end of this Life Cycle stage, the actors have successfully defined the targets of the project and the project can be tendered.



4.5.2 Design Tendering

It is important to clearly define the goals of sustainability for the participating architects within the call for a public tender. Only with a detailed predefinition of the framework conditions, all submitted concepts will be sustainable. The criteria should not constrain the creativity of the architects; otherwise the risk is to overlook innovative, creative or visionary concepts. The main goal of an architectural competition is to find the best solution for a special project, while following national and regional standards. In order to choose the best concept, the jury should consist of experts on sustainable building culture.



4.5.3 Planning

Planning a building project in detail is a crucial factor for the sustainability in the subsequent Life Cycle stages. Especially the usage stage and measurements at the end of the Life Cycle are often neglected during the planning process. Increasing demands on buildings along with minimising the planning period due to the costs concerns often lead to defects in planning. This often implies non-reversible failings in the completed building.

Many parties are involved in the planning stage: public decision makers, administrative staff, building engineers, architects, technical planners, energy experts and others. These parties should meet regularly during the planning stage and exchange their views in detail. Thus, they can minimize defects during construction and usage. Each strategy should be discussed to consider its positive and negative effects. By comparing different drafts, final construction and operation costs can be substantially reduced during the planning stage. This leads to a higher overall feasibility of the building. Moreover, actors can decide on an appropriate certification system in common. For refurbishment projects, measures that increase the sustainability of the building should be taken into account, to be carried out during the refurbishment process. The better and more detailed the planning of a project, the less can go wrong in the end.



4.5.4 Procurement

The impact of many conventional building materials on the environment and the well-being of people is often negative: for example, producing one ton of steel consumes more energy than one household needs in a year. Even natural building materials like marble often harm the environment because they have to be exploited and they are transported over a long distance from the stone quarry to the construction site. Dangerous volatile components like formaldehyde can have a negative effect on health of builders and end users. Yet, these problems are typical of common materials.

It is therefore important to make a consistent sustainable choice of building materials. Sustainable building materials have a long lifetime and consist of renewable resources that are managed sustainably; their production requires less energy and it is located at a shorter distance, reducing the journey to the construction site. Furthermore, they are not hazardous and can be recycled at the end of the Building Life Cycle. Timber, clay, wool, hemp and flax are examples of sustainable material that are not inferior to conventional materials.

During the procurement stage, builders and subcontractors have to be informed on the sustainability of different building materials and on alternatives to conventional building materials. Possible information channels are: product declarations, internet platforms, information events and seminars.



4.5.5 Implementation

Even if all sustainability aspects have been complied with ideally within the first four stages of the Building Life Cycle, unexpected problems may occur at the construction site. These problems often cannot be foreseen during the planning stage. At the construction site, many different craftsmen who do not know each other and speak different languages work side by side. Time pressure is high and last minute issues can destroy any sustainable planning. The construction site itself also has had effects on the environment and the quality of life: it damages soil, ground water and the air quality, producing waste that has to be disposed. Noise and dirt lead to great discomfort for people that work, live or use the area around the construction site.

At a sustainable construction site, the goal is to face all these problems. By using pre-fabricated components, the construction period can be distinctly shortened which leads to cost reduction. Sustainable building materials do not have bad effects either on people working at the construction site or on the environment. The waste produced during the construction process has to be minimized as much as possible. By conducting measurements and controls during the building process, both the use of hazardous contaminants and any incorrect assembly of components can be recognized in an early stage and corrected. The most important aspect for a successful implementation stage is to provide the construction site staff with clear and comprehensive information about the goals of sustainability and their main influence factors. As soon as a building is in operation, solving any construction defects is either impossible or highly expensive.

4.5.6 Commissioning

As soon as a building project is closed, planners, building engineers, architects and craftsmen leave the construction site. They hand the building over to a facility management and users who have not been involved in the prior planning and construction process at all. Therefore, both facility managers and users have to be informed extensively about how to use the building adequately. If the handover and commission process does not run smoothly, a low satisfaction level of the users is bound to occur. This leads to a decreasing general acceptance of a sustainable building culture. The commission process can last more than a year, taking into account the various challenges that occur with different seasons. The requirements for winter operation are totally different from the tasks facility managers have in summer. During this process, the facility management has to be introduced to the correct operation of the facilities. Within this stage, measurements on the achievement of goals are also conducted (e.g. air quality measurements). The building users need instructions, too, and if comfort losses occur, they need contact persons. The facilities should match the needs of the users and individual adjustments should be possible.

A successful commissioning stage can lower operational costs by 20% and increase the comfort level of the users – and therefore their quality of life – significantly. This has a positive effect on the acceptance and image of a sustainable building culture in general.

4.5.7 Usage and Monitoring

When the commissioning is closed, the last stage of the Building Life Cycle begins: the usage stage. Nowhere else can sustainability criteria influence the point balance of the Life Cycle as much as during this stage. The four aspects are especially relevant here: the user behaviour, monitoring activities, changing framework conditions and the transition to a new Life Cycle.

User behaviour can greatly differ from predicted figures. Within the ENERBUILD project, it has been found out that the designated winter indoor temperature for passive houses of 20°C is often perceived as being too cold. Also, calculations on electricity consumption or cleaning and maintenance costs in advance have been proven to be difficult. Users often forget or omit to undertake actions for saving energy, sometimes due to convenience reasons. Providing adequate incentives leads to correct user behaviour. Systems have to be robust and easy to use.

Generally, it is more effective to give the target values (e.g. indoor temperature) a margin over the expected actual consumption, since the achieved saving leads to a sense of achievement for the users. A consistent communication between users, facility management and administrator has to be secured. Constant monitoring allows controlling environmental effects and operational costs and ensuring user comfort. Furthermore, the monitoring results demonstrate the advantages of sustainable buildings and increase the acceptance for a sustainable building culture.

Within the neighbourhood of a building, external framework conditions can change at any time. If the access to sustainable mobility gets worse, the supply of renewable energy disappears or public service access worsens, solutions have to be found fast. Often, second-best-options can be determined in advance during the planning process.

Sometime in the future, the original purpose of a building will not apply anymore. Even nowadays, there are many administrative, residential and office buildings that are vacant. In this situation, there are two possible options: the building is either demolished or repurposed. A conversion is usually more sustainable than demolition as the materials of the reused building carry an embedded energy which would get lost if the building is taken down. When the building is renovated, further measurements to improve the sustainability of the buildings can take place. Ideally, a sustainable building is constructed to make every conversion possible with little effort.

At the end of this stage, with the definition of a new goal a new Life Cycle starts. For a sustainable building, this Life Cycle is sustainable in any aspect, for example the building is economically feasible, enhances the quality of life and does not have negative effects on the environment.

4.6 Dialogue with the Society

As a mass-oriented open-source initiative, CESBA directly interacts with the European civil society. The CESBA vision of a Europe where a high quality living in a sustainable built environment is the common standard practice can only be realized if sustainable constructed public buildings have a spill-over-effect on the society. It has been mentioned that awareness-raising, the creation of acceptance and image promotion are essential for making the CESBA initiative visible to the society.

But it is not only about communicating CESBA to the society. Rather, the interference between CESBA and the society is mutual, since on the one hand, citizens of Europe influence CESBA by expressing their needs, values and perceptions on a sustainable building culture, and these needs can then be transferred up to the national and European institutions by CESBA. On the other hand, CESBA influences the society by explaining and discussing national and European objectives and laws regarding sustainable high quality building to all relevant stakeholders including users. CESBA also influences the society by supporting the achievement and acceptance of EU policy targets. Thus, CESBA establishes a connection between institutions that deal with the built environment and the society. CESBA also offers step-by-step strategies to fulfil the objective of high sustainable building standards.

The CESBA Wiki is the main platform for facilitating the dialogue with the society. It allows the society for an active and direct contribution to the further development of CESBA. This corresponds to the bottom-up-approach of CESBA (see also Chapter 5.1).

By participating in the public debate, the CESBA initiative contributes to an objective and constructive discussion on the promotion of sustainable buildings. The dialogue with society promotes the diffusion of knowledge, the exchange of ideas, and it focuses on the outreach made at the local, regional, national and European levels. The dialogue allows the CESBA promoters to exchange different arguments and foster an understanding of the wishes and concerns of the many stakeholders. Only with this knowledge can the CESBA initiative be relevant to stakeholders and respond adequately to new developments in the field of NZEBs and sustainable buildings assessment.

CESBA promotes a dialogue with the community and involves local people in the development of sustainable built environment through techniques like, for instance the SPRINT method.

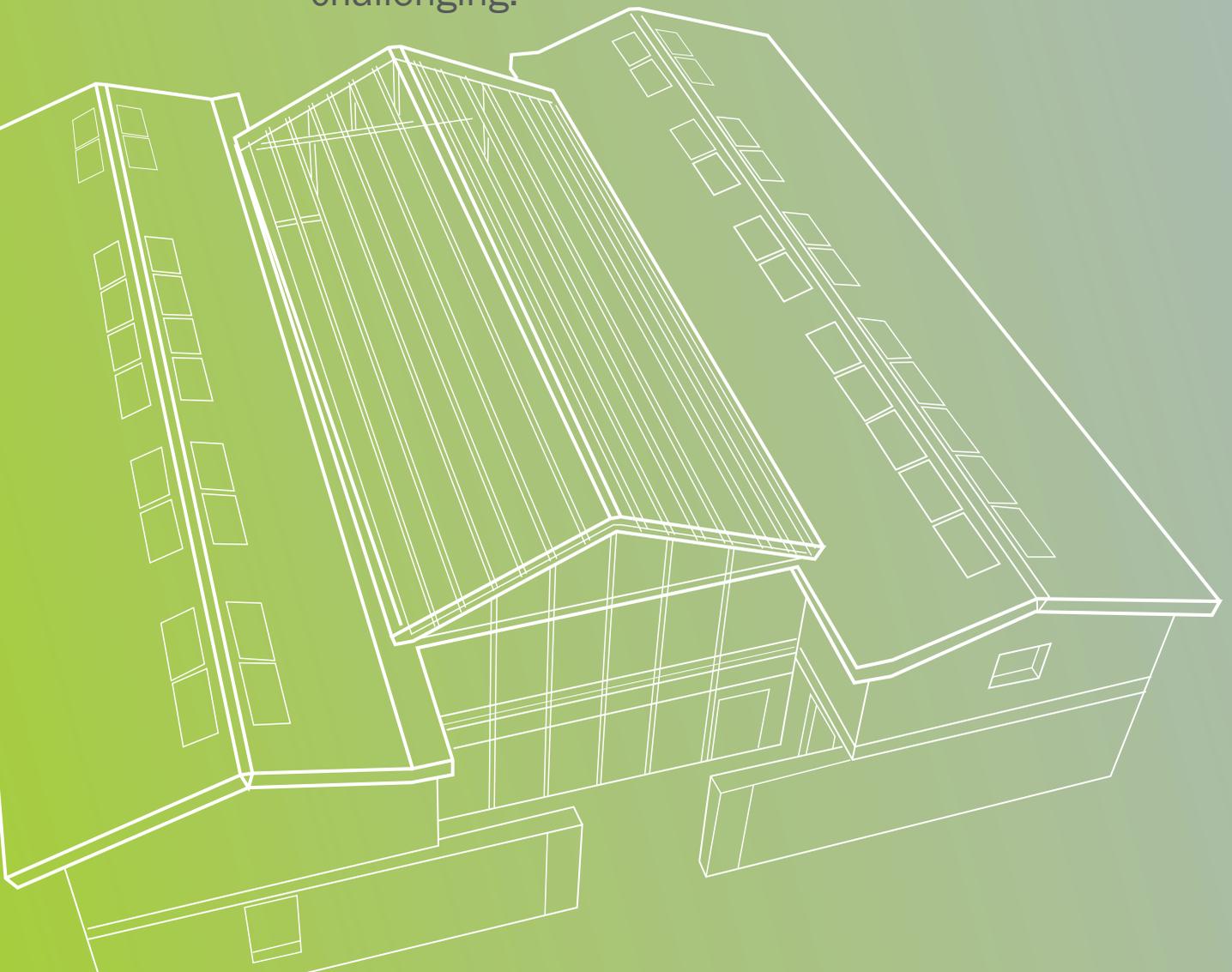


Visualisation of future Arts, Exhibition and Kids Centre (demonstration building) in Udine, Italy.



5 Building Assessment Harmonisation

In Europe, there are over 80 different building assessment tools – varying in goals, methods, contextualisation, indicators and range of application. Due to this lack of conformity, comparing results is difficult, and setting political incentives becomes challenging.



One single European assessment tool will not be an efficient solution, due to cultural, historical and climatic reasons, various regional economic backgrounds and so forth. Therefore, a harmonisation process is clearly needed at the European level in order to create a common approach to building assessment. Such an approach would strengthen the effectiveness of certification labels in moving the building standard practice toward a better sustainability. To achieve this objective the CESBA (Common European Sustainable Building Assessment) initiative was launched.

CESBA offers harmonisation in the built environment assessment at the EU, national, and regional levels, which leads to a considerable simplification within administration procedures and creates a common understanding among the actors. CESBA helps building owners, architects, administrative bodies, construction companies and others to use assessment tools and follow specific quality procedures.

Harmonising the assessment systems at the European level means, first of all, sharing common principles and aims. The CESBA principles and aims for building assessment are as follows (see also Chapter 3.1):

- The User First!
- Sustainability
- Regional Contextualization
- Comparability
- Mass-Oriented Approach
- Simple to Use Approach
- Open Source Approach
- Co-creation
- Transparency

CESBA offers a generic model with a common set of key performance indicators which shall act as the basis for all assessment tools. The generic model needs to be contextualized and further developed, while existing tools refer to CESBA and therefore harmonise them. It is the CESBA stamp that confirms the alignment with CESBA.

The real performance of a building shall be assessed and declared in a form of the Building Signature (see Chapter 5.2). The interpretation of the data will be available through the certification label.



The CEC5 demonstration building in Udine, Italy: old municipal slaughterhouse.

5.1 CESBA – the Stamp for Harmonisation

All organisations managing or owning a building assessment system can apply for the CESBA Stamp to the CESBA Steering Committee. The CESBA Steering Committee checks the compliance to the CESBA requirements for harmonised building assessment systems.

The key requirements are:

- compliance of the assessment system to the CESBA aims and principles,
- implementation of the CESBA KPIs in the assessment tool,
- integration of the Building Signature into the certificate/label issued.

When the compliance is positive, the CESBA Steering Committee grants the use of the CESBA Stamp on the basis of the CESBA regulation.



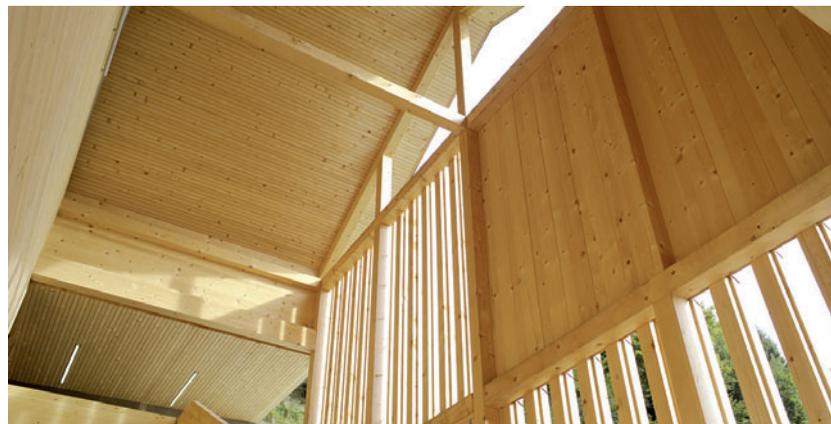
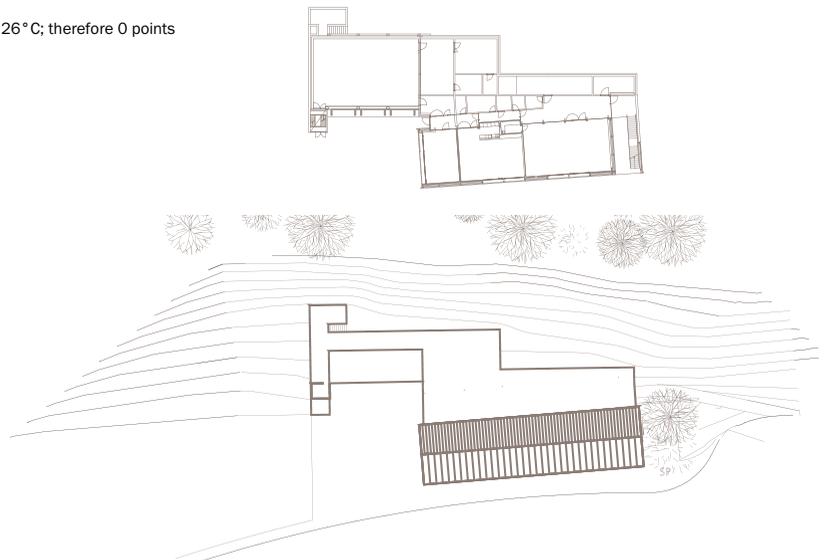
The manager/owner of the building assessment systems will receive the CESBA specific logo with the statement that reads “Assessment harmonised with CESBA” to be used on certificates, labels and communication material.

Fire Station and Kindergarten
CESBA-Tool Version 1.1 | 19. May 2010 | New Building

Nr.	Title	Must Criteria(M)	max. Points	achieved Points
A	Quality of Location and Equipment		max. 100	50
A 1	Accessibility of public transport		50	20
A 2	Ecological quality of the building site		50	30
B	Process and Planning Quality		max. 200	200
B 1	Decision-making and examination of alternatives		25	15
B 2	Definition of verifiable energetic and ecologic objectives		20	20
B 3	Simplified calculation of efficiency	M	40	35
B 4	Product management	M	60	60
	– using low-pollutant and low-emission building materials			
B 5	Energetic optimization during the planning		60	60
B 6	User information		25	25
C	Energy Demand and Supply		max. 350	264
C 1	Heating Demand PHPP	M	100	84
C 2	Cooling demand PHPP	M	100	50
C 3	Primary energy demand indicator PHPP	M	125	100
C 4	Emissions of CO2-Equivalents according to PHPP		50	30
D	Health and Comfort		max. 250	60
D 1	Thermal comfort in summer		150	0*
D 2	Comfort ventilation – hygiene and soundproofing		50	50
D 3	Sunlight supply, daylight quotient		50	10
E	Building Materials and Construction		max. 200	192
E 1	O13 _{603,62F} Ecological value of the total mass of the building		200	192
Sum			max. 1.000	766

Usage Area:	1139 m ²
Volume:	5,784 m ³
Heating demand PHPP:	15 kWh / (m ² a)
Heating demand OIB:	
Primary energy demand:	
Heating:	district heating from biomass, 32 m ² solar panels, geothermal collector
Building materials:	Solid wood elements from native forest
O13 Index	

* D1: At 25% of summer days, the internal temperature is more than 26°C; therefore 0 points



Municipality Building of Thüringerberg, Vorarlberg AUSTRIA – Combination of Fire Station, Kindergarten, Music Rehearsal and Municipality Rooms

5.2 CESBA Building Signature

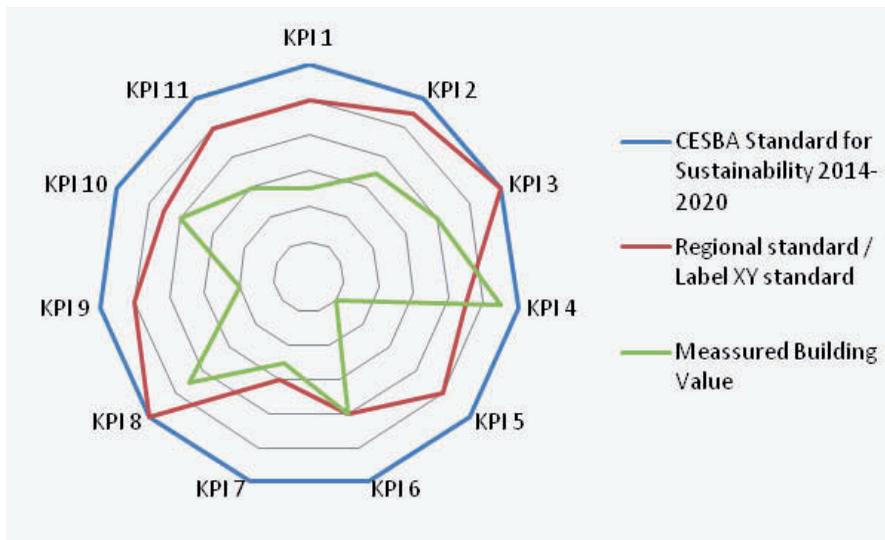
The CESBA Building Signature shows the values of the built environment based on the CESBA Key Performance Indicators (KPI).

The score produced by a rating system is valid only for the geographical area where the building is realized, as it reflects the local priorities and construction practice. Therefore, it is impossible to set common performance benchmarks between regions. To be able to compare the performance of buildings at a transnational level, it is necessary to use indicators expressed in absolute values, not scores. This is the key principle of the CESBA Building Signature.

Beyond the usual score typical of each rating system reported on the certificate, the CESBA Building Signature informs about the performance of the construction by providing the absolute values of the CESBA KPIs (kWh/m², Kg CO₂/m², m³, etc.). In this way it becomes possible to compare the performance of buildings assessed by different certification systems in different geographical areas.

In all CESBA harmonised systems, the CESBA KPIs have to be adopted and included in the certification system. This means that they will be calculated as part of the performance assessment of the building, and then, on the one hand, they will be normalized with the other criteria to produce the building's rating score, and on the other hand, they will be used in the CESBA Building Signature.

The certificates issued by the different CESBA harmonised systems will have to include a transnational section with a common format to illustrate the CESBA Building Signature: to do so, the values of the quantitative and qualitative KPIs will be listed in the common CESBA part of the building certificate issued by the specific rating system.



The results of the quantitative indicators will also be graphically represented on a radar chart (as it is shown above). The chart shows the green line of the KPI values of the building and the relationship between the KPI values and the regional standard/label standard (red line). The blue line shows the latest common Standard for Sustainability (valid from 2014–2020) agreed for the CESBA KPIs. The chart clearly shows that the closer the green line is located to the blue line, the more sustainable the building is. This aims to become a comprehensive graphical tool, used as an efficient element to assess the building sustainability and to communicate these factors to all the stakeholders in the design and construction process (owners, users, consultants, etc.).

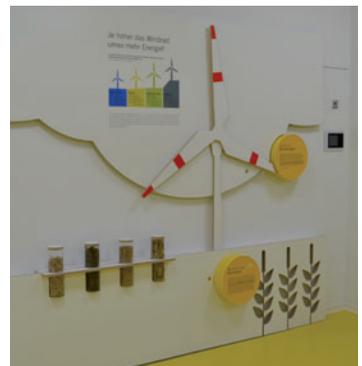
The Signature is meant to express the intrinsic building properties. Thus, no one can claim ownership of it – it is available for use by any organisation. It can therefore be considered as a basis for further development of any label by a third party, which can further enrich the CESBA approach.

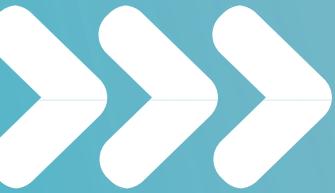


Energy Exhibition in Ludwigsburg, Germany



The CEC5 demonstration building in Ludwigsburg, Germany: primary school at Gartenstraße 14.





6 CESBA – Information and Communication

CESBA has set up a Wiki
www.cesba.eu
to gather documents,
information and to present
the CESBA approach
and methodology.



6.1 CESBA Wiki Provides Information

Currently the website is owned by the Regionalentwicklung Vorarlberg eGen, the Lead Partner of the EU-projects: ENERBUILD, CEC5, CABEE, ViSiBLE. In the future, the ownership shall be transferred to NENA network.

A Wiki is the platform that allows to keep track of the CESBA instruments and the concepts behind the initiative.

The Wiki is conceived to be the one-stop-knowledge source, encompassing the history of the CESBA development, the CESBA Cycle notions (from purpose/target, design tendering, planning, procurement, implementation, commissioning up to monitoring and usage) and the explanation of each stage via step-by-step instructional videos.

The CESBA Wiki helps to implement good governance, reduce costs and simplify the access to the contents of CESBA. It is a living document, evolving as the knowledge grows and changes, thus allowing CESBA to constantly improve and always be able to integrate new techniques, technologies and circumstances in the built environment. The Wiki is a crucial tool to facilitate collaboration and growth of CESBA.

Users who have ideas on how to improve CESBA are encouraged to contribute to the Wiki by writing articles and by commenting existing articles by using a page's "discussion" tab to access the talk page.

If there is a topic missing on the CESBA Wiki, or any kind of information regarding the topic of the future building culture, CESBA is willing to accept suggestions to improve the existing content.

A group of editors coming from different regions all over Europe feed the Wiki. The core editors of the CESBA Wiki are the members of the CESBA working groups, acting under the supervision of the CESBA secretariat. Additionally, the CESBA Wiki welcomes new editors. In order to become a CESBA editor and contribute to its development, it is necessary to submit the CESBA support document that is available on the Wiki.

CESBA is currently available as CESBA generic tool in EU-projects in English, German, Polish, Italian, Slovenian, Slovak, Czech and Hungarian languages.

The CESBA Wiki is available in the same languages and French. It is the wish that the CESBA approach and the webpage get translated into as many European languages as possible. Therefore, another crucial way to contribute to the CESBA Wiki is by providing translations of the information published on the website into the national languages.

The CESBA Wiki is thus a crucial element of the initiative as it combines communication with interaction on sustainable building assessment and further realizes the mass-oriented, open-source and bottom-up CESBA approach since everybody can freely use, influence and develop the CESBA Wiki.



6.2 CESBA Events Invite Participation

CESBA offers events to participate in order to further develop and improve the CESBA approach and strengthen its network. All results of the CESBA events will become part of the CESBA Wiki.

- All events, except for an administrative fee, are free of charge. There are no fees for delivering new knowledge.
- Every person or institution can participate in CESBA events.
- CESBA events are announced on the CESBA Wiki.
- Every person or institution can organise events on topics of CESBA. If so, they have to apply all the rules listed in this CESBA Guide and inform the CESBA secretariat.

6.3 CESBA Wording

This chapter addresses the promotional aspects of CESBA, its logo usage and the requirements to be fulfilled in order to place the logo of CESBA on buildings, assessment papers and promotional materials.

The CESBA logo is meant to act as the positive “stamp” of a building, it is to be associated with the evaluation of the building per se and with the process of building assessment. It needs to be promoted in order to be recognized and to serve its purpose.

The CESBA Initiative aims at quality, and quality is a feature that is not seen immediately, often it gets proven with time. From the outside, we cannot see the thermal losses, the materials, the insulation. Modern and well-planned solutions and technologies used are not always obvious when entering the building without access to its technical infrastructure. Mindful of those facts, CESBA supports regional assessments that enhance the visibility of the building quality.

The CESBA mission is the continuous and visible improvement of buildings. With CESBA, the building gets an interface giving a visitor clear knowledge as to what kind of building he or she has entered. The CESBA logo is a beacon that attracts immediate attention to the building, to its quality, performance, its building facts and to the score it has received in the evaluation with the assessment tool.

6.3.1 Words We Like

The CESBA initiative has been created in order to upgrade the quality of living. The challenge is not new and it is a great one. The CESBA intervention is directed at buildings, as they are the main arenas of our lives and at the same time biggest energy consumers. Therefore, they also happen to carry the greatest potential to minimize energy use and CO₂ emissions. Whenever CESBA is communicated to the public, we will tend to use some specific wording – the words we like and the list of the preferred words to be used while promoting CESBA comprises the following:

- **CESBA vision, CESBA mission statement, CESBA initiative, CESBA unites all the criteria, mass approach,**
- **open source, simple to use, key indicators, CESBA Cycle, sustainability, smart,**
- **sustainable holistic improvement and growth, building assessment, high standard guidelines,**
- **a learning and networking resource, raising awareness in organisations to sustainability issues,**
- **building sustainable networks, drawing attention of leading authorities and communities to sustainable buildings,**
- **networking within the sustainable building industry, sharing green building expertise, low energy buildings,**
- **critical mass communication, harmonised building assessment approaches, harmonised indicators,**
- **Life Cycle cost benefits, model for green public procurement, green value, renewable energies, healthy living spaces.**

6.3.2 Words We Do Not Like

Similarly, there is the wording that does not fall under the CESBA initiative “favoured” category and that would not be found in the CESBA promotional publications, as they describe the opposite of all that CESBA initiative is striving to achieve:

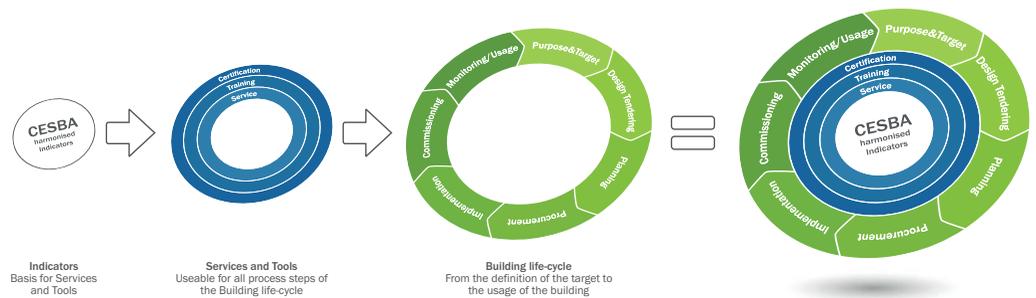
- **shortfall of skilled workers in companies, low attractiveness, limited capacity for innovation, no value chain,**
- **lack of regulatory frameworks, specific and ad-hoc approaches, bad indoor air quality, sick building syndrome.**

6.4 CESBA Graphics and Style

6.4.1 Name

CESBA stands for “Common European Sustainable Building Assessment”.

6.4.2 Cycle



The cycle reflects the different themes CESBA works on. The various cycles show the relationships between these fields of actions.

6.4.3 Logo

Using the cycle as a base, the CESBA logo is the next step. The logo shall be used by every person and institution who work in the field of CESBA according to this Guide.



6.4.4 Typeface

For continuous text the font “Franklin Gothic Book” is to be used.



FRANKLIN GOTHIC MEDIUM
Franklin Gothic Medium
franklin gothic medium

48 pkt

CESBA

24 pkt

CESBA

cesba

18 pkt

CESBA

cesba

> 10 pkt

■ C-0 M-0 Y-0 **K-50**
R-155 G-155 B-155

8 - 6 pkt

■ C-0 M-0 Y-0 **K-60**
R-134 G-134 B-134

14 - 8 pkt

FRANKLIN GOTHIC MEDIUM

Franklin Gothic Medium

franklin gothic medium

FRANKLIN GOTHIC MEDIUM

Franklin Gothic Medium

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FRANKLIN GOTHIC MEDIUM

Franklin Gothic Medium

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FRANKLIN GOTHIC MEDIUM

Franklin Gothic Medium

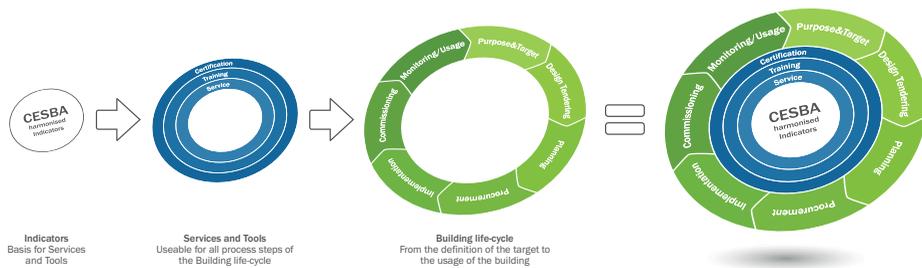
franklin gothic medium

FRANKLIN GOTHIC MEDIUM

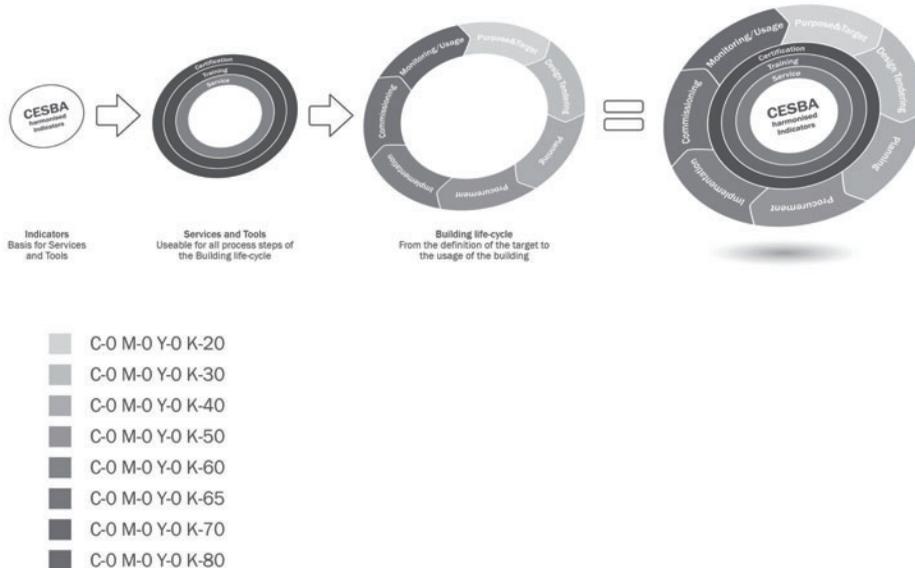
Franklin Gothic Medium

franklin gothic medium

6.4.5 Colour Palette



 C-44 M-0 Y-88 K-0	 R-165 G-200 B-63
 C-49 M-0 Y-96 K-0	 R-152 G-194 B-44
 C-54 M-2 Y-100 K-0	 R-137 G-187 B-36
 C-59 M-6 Y-100 K-0	 R-124 G-178 B-42
 C-62 M-7 Y-100 K-0	 R-113 G-174 B-45
 C-67 M-16 Y-100 K-2	 R-100 G-158 B-48
 C-70 M-19 Y-100 K-4	 R-89 G-150 B-50
 C-79 M-42 Y-14 K-2	 R-51 G-125 B-176
 C-86 M-51 Y-16 K-2	 R-31 G-108 B-162
 C-93 M-60 Y-16 K-3	 R-04 G-94 B-150
 C-54 M-44 Y-41 K-27	 R-111 G-111 B-113
 C-59 M-49 Y-49 K-42	 R-87 G-87 B-87



6.5 Creative Commons

The intellectual property policies of CESBA are regulated under the Creative Commons licenses.

CESBA is licensed under version 3.0 of the Creative Commons CC-BY license. The legal code of the license is available online under <http://creativecommons.org/licenses/by/3.0/legalcode>. The logo of this license is the following:



Under the CC-BY license users are free:

- to share – to copy, distribute and transmit the work
- to remix – to adapt the work
- to make commercial use of the work

Under the following conditions:

- Attribution – Users must attribute the work in the manner specified by the author or licensor (but not in any way that suggests that they endorse you or your use of the work).

Except where otherwise noted, all content of the CESBA Guide and the CESBA Wiki is licensed under a Creative Commons Attribution 3.0 License.



The CEC5 demonstration building in Bydgoszcz, Poland: RES Demonstration Centre.



The CEC5 demonstration building in Udine, Italy: old municipal slaughterhouse.



7 CESBA – Organisational Structure

Although CESBA is a public and open initiative and not a legal entity, it has a structure, defining its members and their tasks. The organisational structure has been determined on the basis of the scope of the CESBA members' commitment.

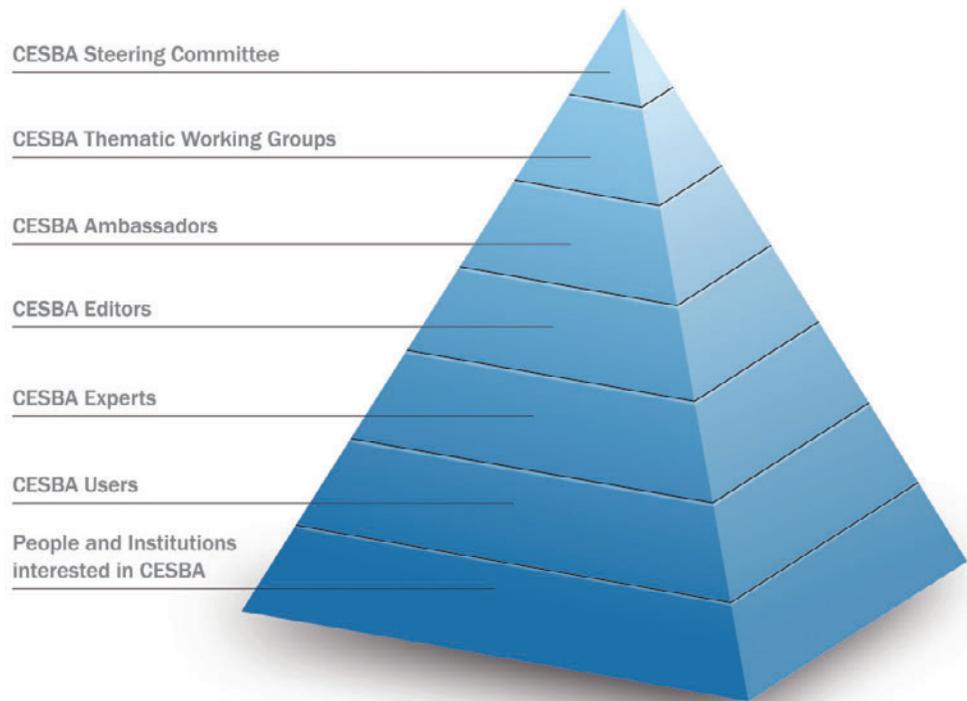


7.1 Levels in the Organisation Structure of CESBA

Levels 1 to 3 include tasks that should be carried out directly by the organisational structure. Levels 3 to 7 include tasks that can be carried out by regional and local organisations connected to European projects like CEC5 and CABEE.

7.2 Levels of Commitment to CESBA

There are various levels of commitment to CESBA, which can be expressed in a form of a pyramid:



7.2.1 CESBA Steering Committee (SC)

This committee is in charge of decision making on strategic and tactical issues. The committee should meet once a year, ideally at the occasion or in combination with other relevant events so as to make travelling easier for the participants. The SC is also in charge of fundraising and financing, and looking for CESBA contact persons and interlocutors in different fields (policy, technology, media). The SC should organise a secretariat, whose function is temporarily carried out by NENA.

7.2.2 CESBA Thematic Working Groups

The Steering Committee can convene thematic committees according to the strategic needs it identifies. Thematic working groups should be established at least for communication matters and for technical matters like the Key Performance Indicators (a scientific advisory group). The working groups should have a flexible working arrangement and communicate via E-mail and Skype. Should the need of meetings in person arise, the working group convenor should organise a meeting in combination with either project events or public events, like the Open Days in Brussels, in order to make it as time-efficient as possible.

The thematic working groups will send one representative to report to the Steering Committee during its annual meeting.

7.2.3 CESBA Ambassadors

These are CESBA experts that are named as contact persons on the CESBA Wiki. The CESBA ambassadors have an interest to actively promote CESBA, they are available to give presentations and speeches on CESBA and are willing to present CESBA at public events. They also act as local contact points for CESBA on a regional level.

7.2.4 CESBA Wiki Editors

The Wiki editors are experts in a thematic field covered by CESBA and actively contribute texts and information to the CESBA Wiki www.cesba.eu. The editors have a login and password to upload and change texts in the Wiki.

7.2.5 CESBA Experts

These are people that work on thematic fields covered by CESBA. They can be contacted in order to provide technical information in their field of knowledge. They also act as local contact points for CESBA on a regional level.

7.2.6 CESBA Users

These are people (for example in the public administration) that use elements of CESBA for their work. They are not available to provide information on CESBA but are willing to be named as users.

7.2.7 People and Institutions Interested in CESBA

These are people and institutions that are interested in receiving information about CESBA but who are not (yet) actively involved in CESBA. They might be interested in receiving an electronic newsletter or get information on CESBA related public events.

Existing lobbying bodies (like FEDARENE, etc.) should be used to promote CESBA towards EU institutions.

7.3 CESBA Workshops

7.3.1 Annual Workshops

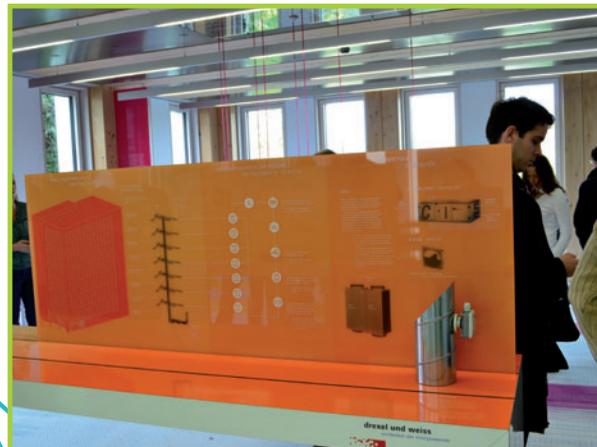
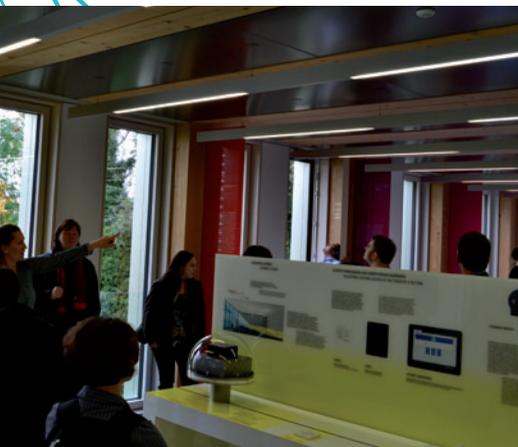
Annual workshops can be organised during the annual assembly. These annual workshops offer the chance to share results of working groups, to raise questions, to propose new topics.

7.3.2 Regional Workshops

Every region engaged in the CESBA initiative can organise regional workshops on its own initiative to promote and explain the CESBA initiative. A CESBA poster is encouraged to be displayed during the meetings.

Organisers of such meetings will need to send a gist about the meeting in order to feed CESBA website and show the interest at a regional level in this initiative. This is very important since it will give many regional/local references and will strengthen the support for CESBA during discussions with the EU institutions and networks.

The CEC5 demonstration building in Dornbirn, Austria: LCT ONE.



7.4 NENA Network/The Secretariat of the CESBA Initiative

For the starting phase of the CESBA process, it is important to have a driving force. Over the last three years NENA Network has acted as the secretariat behind the process. Therefore, this role should be extended for a limited time. The secretariat is the transnational contact point and acts as the official contact for any enquiries about CESBA, i.e. to communicate with contacts and channel requests for information to the right institutions and experts on regional levels.

The Secretariat's responsibilities include:

- preparing Steering Committee meetings,
- maintaining the CESBA website and Wiki (CESBA editors support the Wiki as well),
- defining the tasks of the working groups (communications working group, technical expert working group, etc.)

The NENA Network is a non-profit European network of actors in the development of sustainable buildings and settlements. NENA was launched during an Alpine Space Programme project, and has about 10 members and will have 30 institutional members in its final stage.

NENA offers free membership for experts who directly contribute to CESBA for the years 2013–2016. The expert membership has no further binding effects. It can be terminated at any time by an explicit e-mail or fax.

7.5 Communication to Public

The CESBA Guide addresses the promotional aspects of the CESBA tool that allow for its dissemination.

The members of the CESBA network must promote the CESBA initiative by providing information on all the aspects of CESBA, informing the CESBA members of the main sustainable buildings debates and events (and vice versa, to disseminate the CESBA initiative during events) and to add the CESBA logo to all material that is related to the CESBA goals.

The CESBA logo placement and the reference to www.cesba.eu shall be included in the e-mail footer. The use of the CESBA logo and information do not have to be limited to e-publicity only: institutional printed materials are also welcome to include the CESBA logo, considered as a valuable reference tool to declare adherence to the standards presented in this Guide.

The CESBA logo and the CESBA Cycle are designed to unify the CESBA initiative so that they present a clear and consistent image of CESBA members to the public. The consistent and widespread use of the identity material will help to ensure that CESBA is easily remembered, recognized and valued as a source of enhancement of the sustainable construction. The identity elements (logo layout and font style) are also the foundation of our image. Altering them dilutes the CESBA image and integrity. The Guide specifies the identity elements – the logo, accompanying type, rules for its use and typeface samples (see Chapter 6.4).

The CESBA initiative promotional debate is aimed at energy consultants, architects and designers, property professionals, building management and facilities managers, engineers, technicians and environmental scientists, project managers, investors, educational units, national, regional and local decision-makers and communities. There is no ceiling to the groups that CESBA should be communicated to. The cooperation is necessary with the European institutions such as:

- European Parliament
- European Commission – DG Environment and DG Energy
- Committee of Regions
- Association of Regions
- Covenant of Mayors
- CECODHAS (Social Housing)
- mFEDARENE (Lobby, NGO for Environmental issues)
- Urban Development Group
- Euro Cities

and from the experts and platforms from national, regional and local levels.

The possible channels of communications are:

- e-newsletter
- CESBA Wiki online communication
- CESBA members' participation to public debates

7.6 Partnership with EU-Projects

CESBA is interested in cooperating with EU-projects with a view to sharing the know-how on how to elaborate and develop the initiative further.

Project partners from EU-projects will:

- promote CESBA among their stakeholders and get commitments of experts, observers, SMEs, authorities on the various levels of the pyramid,
- provide content for the CESBA Wiki,
- contribute to the working groups,
- attract other networks, initiatives, projects, etc. to use CESBA as a channel for dissemination.

On project level the commitment will be different and depend on the completion status.

When interacting with finished projects, the process is as follows:

1. Identification of persons involved in projects,
2. Sending info about CESBA to the relevant actors (e.g. CEC5 20 projects, ViSiBLE 21 projects, BDM – Battements Durables Mediterranean's projects),
3. Offering the actors to make their results compatible with CESBA in Wiki,
4. Providing the material for upload by Wiki editors.

When interacting with running projects:

1. Same 1–4 as above,
2. Offering them to be CESBA ambassadors,
3. Exploring the possibility that the running project fully participates in CESBA, providing permanent editors and contributors to the CESBA Wiki.

When interacting with upcoming projects:

1. Informing all PPs from finished and running projects about the value of CESBA for their future projects,
2. Making an inquiry to all PPs who are involved in CESBA process whether they want to be a part of a platform for partner search in future projects.

7.7 Lobbying, Promotion to European Institutions

An active promotion of CESBA towards EU institution is very important. DG Environment will release a building Eco-label in the next months. An Eco-label is very important for public authorities because it is a tool to help public owners to give an energy and ecological performance in the process of the procurement. This Eco-label must not be fitted only on international certifications standards, but it also needs to respect regional needs. CESBA must be one of the interlocutors of the DG Environment in this process. The contact has already been initiated and face to face meetings are planned in 2014 in the frame of the VISIBLE project. Other DG such as DG Energy, DG Region and DG Enterprises are also to be targeted. Committees of regions should be involved in the process as well. Lobbying should be done towards such European networks as: Fedarene, Covenant of Mayors and Assembly of Regions of Europe, to name a few. These networks will be an excellent intermediary to reach out to more European regions.

7 energy efficient demonstration buildings built/rebuilt in 7 countries within the CEC5 project



LCT ONE in Dornbirn, Austria – demonstration building works in the CEC5 project coordinated by Regionalentwicklung Vorarlberg eGen.



Old municipal slaughterhouse in Udine, Italy – the demonstration building works in the CEC5 project coordinated by the Municipality of Udine.



Social Care Institution, Lidman, the Czech Republic – demonstration building works in the CEC5 project coordinated by the Vysocina Region.



RES Demonstration Centre in Bydgoszcz, Poland – the demonstration building works in the CEC5 project coordinated by the City of Bydgoszcz.



The primary school at Gartenstraße 14, Germany – the demonstration building works in the CEC5 project coordinated by the City of Ludwigsburg.



Soca Valley, Slovenia – Primary School Most na Soci, the demonstration building works in the CEC5 project coordinated by **Soča valley development centre**.



Secondary technical school in Senica city (SOS Senica), Slovakia – the demonstration building works in the CEC5 project coordinated by the Trnava Region.

About CEC5



CENTRAL EUROPE
COOPERATING FOR SUCCESS.



EUROPEAN UNION
EUROPEAN REGIONAL
DEVELOPMENT FUND

This project is implemented through the CENTRAL EUROPE Programme co-financed by the ERDF.

Project duration: 10.2011 – 12.2014
Website: www.projectcec5.eu
Programme: CENTRAL EUROPE www.central2013.eu
Priority: ENVIRONMENT 3.3 Supporting the Use of Renewable Energy Sources and Increasing Energy Efficiency
Total budget: EUR 4.466.084
Total ERDF: EUR 3.609.749

The CEC5 project concentrates on **Demonstration of energy efficiency and utilisation of renewable energy sources through public buildings**. The overall goal was to create a model for public buildings to increase the demand for zero energy buildings on a large scale. This has been achieved through development of the CESBA new building culture Initiative and the CESBA assessment generic tool. The CESBA Guide at hand walks you through the main aspects of CESBA. 7 demonstration buildings in 7 central European countries were either built or remodelled to the low-emission standards in order to demonstrate and promote energy-efficient public building practices. They show new techniques and methodologies which can be also used in the private sector. The CEC5 project allowed for cooperation with experts and other projects, like CABEE: 'Capitalizing Alpine Building Evaluation Experiences' www.cabee.eu that triggered bigger audience as to the issue of new building culture. All the CEC5 results are being published at the CESBA wiki www.cesba.eu implemented by the CABEE project and jointly filled by the projects CEC5, CABEE and VISIBLE.

CEC5-Partners

- Regionalentwicklung Vorarlberg eGen (Lead Partner), Austria, www.regio-v.at
- Czech Chamber of Architects, Prague, Czech Republic, www.cka.cc
- Energy Agency of the Zlín Region, Czech Republic, www.eazk.cz
- Vysocina Region, Czech Republic, www.kr-vysocina.cz
- City of Ludwigsburg, Germany, www.ludwigsburg.de
- Ministry of National Development, Hungary, www.nfm.gov.hu
- Municipality of Udine, Italy, www.comune.udine.it
- City of Bydgoszcz, Poland, www.bydgoszcz.pl
- Ministry for Agriculture and the Environment, Slovenia, www.arhiv.svps.gov.si
- Gradbeni intitut ZRMK, Slovenia, www.gi-zrmk.si
- Pososki razvojni center (PRC), Slovenia, www.prc.si
- Trnava Self-Governing Region, Slovakia, www.trnava-vuc.sk

About CABEE



CABEE
Capitalizing Alpine Building
Evaluation Experiences



Project duration: 07.2012 - 06.2015
Website: www.cabee.eu
Programme: Alpine Space Programme www.alpine-space.eu
Priority: Competitiveness and Attractiveness of the Alpine Space
Total budget: EUR 2.263.098
Total ERDF: EUR 1.567.949

CABEE stands for **Capitalizing Alpine Building Evaluation Experiences!** CABEE is a transnational Alpine Space project to create and implement an Alpine-wide guideline for definition, procurement, production, assessment and promotion as well as learning about new and refurbished Nearly-Zero-Emission-Buildings (NZEB) and their neighbourhoods. CABEE capitalizes wisdom from finished and ongoing EU-projects like CEC5 but also projects from the Alpine Space program. It focuses on a mass oriented approach with low entry barriers and an on-going Open-Source support via a knowledge hub www.cesba.eu.

Pilot activities are settled on public tendering, user behaviour and an eco-assessment approach towards 100%. The integration of micro smart energy grids will be explored and Furthermore, markets for NZEBs will be prepared, especially in cooperation with public authorities and SMEs. Established "Regional Operation Committees" supported by a transnational sustainable network of experts will make that possible.

CABEE-Partners

- Regionalentwicklung Vorarlberg eGen (Lead Partner), Austria, www.regio-v.at
- BAUAkademie Lehrbauhof Salzburg (BLS), Austria, www.lehrbauhof.at
- Network Enterprise Alps (NENA), Austria, www.nena-network.eu
- Rhônalpénergie-Environnement (RAEE), France, www.raee.org
- Fachhochschule Rosenheim, Germany, www.fh-rosenheim.de
- Province of Alessandria, Italy, www.provincia.alessandria.it
- EURAC Academia Europea Bolzano, Italy, www.eurac.edu
- Regione Veneto, Regional authority, Italy, www.regione.veneto.it
- Regione Piemonte, Italy, www.regione.piemonte.it
- Gradbeni intitut ZRMK, Slovenia, www.gi-zrmk.si
- Pososki razvojni center (PRC), Slovenia, www.prc.si
- Technologiezentrum Zentralschweiz (ITZ), Switzerland, www.itz.ch

Financing

Due to similar project contents and to the use of synergies in the CEC5 and CABEE projects, partners decided to work on the CESBA Guide as one common result. In CABEE the Guide fulfils the task of an 'Alpine-wide Guideline' (action 4.1) and in CEC5 it is defined as 'The Label Handbook' (action 2.4. Creation of a Common Label and Quality Certificate).

- The Guide content has been jointly elaborated by experts of the project CEC5 and CABEE based on results developed in the CESBA Sprint Workshop Sessions with participation of all partners. CABEE authors: NENA network (AT), Regione Piemonte (IT) RAEE-Rhônalpénergie-Environnement (FR); CEC5 authors: The Czech Chamber of Architects (CZ), The City of Ludwigsburg (DE). The Municipality of Udine (IT), The City of Bydgoszcz (PL), Regionalentwicklung Vorarlberg eGen (AT).
- The common know-how exchange platform www.cesba.eu was developed in the CABEE project and is open for all EU projects in this thematic field to fill with content.
- The model assessments of the public buildings were carried out in the CEC5 project together with the development of the study books.
- The design of the CESBA Guide was carried out by the City of Bydgoszcz, Poland in the CEC5 project.
- The Guide is an online product and will be printed by each partner of the respective project according the needs of promotion and dissemination material.

Publication order: The City of Bydgoszcz, Poland acting as the responsible partner for the communication and promotion of the CEC5 project.

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