



How to harmonize building assessment at European level?

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Abstract: *This paper tackles the need for a harmonization of building and neighborhood assessment in Europe and presents CESBA as an ideal approach towards harmonization. When it comes to the sustainability of our built environment, buildings play a crucial role. Buildings ensure our quality of life, they are important for the economy, and greatly contribute to overall resource use. The European Union has set ambitious goals regarding the performance of buildings, for example the target for all new buildings being nearly-zero-emission buildings (NZEBS) by 2020. The actions already done by the member states are not sufficient for reaching those goals, although many successes have been recorded, such as the establishment of building assessment systems. But the current mismatch of those assessment systems further complicate the progress towards a sustainable built environment. A number of EU- projects have realized this problem and founded CESBA (Common European Sustainable Building Assessment) as a collective initiative towards a harmonization of building and neighborhood assessment in Europe. Since its emergence, CESBA is gaining great attention.*

Four hypotheses discussed in this paper prove that CESBA is the ideal way towards assessment harmonization. The first thesis states that the variety of building assessment systems lead to a challenging situation since they produce hindrances for end users of assessment systems. The second thesis deals with the urgent need for a harmonization process. The relevant success factors for harmonization are a common agreement on core indicators, an adequate presentation of assessment results, and a broad support of the harmonization process by building assessment systems, and the coordination of the harmonization process with administrations at local, national and EU levels.

The third thesis proves that CESBA is the ideal framework towards harmonization. This is due to its goals and principles, its holistic approach, its indicators, and its spirit. However, the fourth thesis finds that CESBA can only be successful if harmonized assessment systems play a distinctive role in steering European building and neighborhood qualities. With assessment harmonization, achieving EU goals is facilitated, regional development is promoted,



a circular economy is fostered, and a harmonization allows for the integration of regional systems in the European framework.

Hence, a Europe-wide harmonization by CESBA can greatly contribute to the sustainability of our built environment. CESBA offers a common ground to spread knowledge on sustainable building. CESBA is open for anybody who wants to contribute.

Keywords: Building assessment systems, harmonization, CESBA, EU framework, European projects, sustainable buildings and neighborhoods

Introduction

Buildings play a central role in our society, providing places to live, work and spend leisure time. In OECD countries, people spend around 90% of their life inside buildings, which makes them highly important for ensuring our quality of life (1). The SME-dominated construction sector is of great importance for the European economy: 10% of the total GDB of the EU is generated in this sector and it provides work for about 20 Million people within the EU (2). Besides their social meaning and their significance for economic growth within the EU, buildings are responsible for a high share of overall resource use in Europe. „42% of our final energy consumption, about 35% of our greenhouse gas emissions, more than 50% of all extracted materials and 30% of our water consumption” are generated in buildings and in the construction sector (3). A different way of construction and usage of buildings could greatly contribute to the sustainability of the built environment in Europe.

The European Union has understood this problem and has set ambitious goals regarding the resource efficiency and energy performance of buildings. The construction sector has become a cornerstone of the EU climate protection program and plays a decisive role when it comes to achieving the goal of a 20% greenhouse gas emission reduction by the year 2020 from 1990 levels (4). Thus, the EU released a series of political and legislative initiatives in order to reduce the environmental impact of buildings by improving their overall energy performance, such as the Energy Performance of Buildings Directive (EPBD) (2010/31/EU) (5). These initiatives should also have positive effects on businesses in the construction sector and the overall quality of life. Thus, a report published by the European Commission in 2013 finds that if member states do not take decisive action, the EU will fall short of its goal of Nearly-Zero-Energy Building (NZEB) becoming the norm for all new buildings in the EU by the end of 2020 (6).

Many successes towards a higher sustainability have been recorded in the construction sector over the past few years, including social, economic and environmental improvements. But the gap with achieving EU goals remains and will require substantial changes in the way we think about buildings. What is needed today is a holistic view on buildings, taking into consideration the three pillars of sustainability, their surrounding environment, all steps of the



building life cycle and grey energy. A broad adoption of substantial changes would not only help to achieve EU objectives regarding resource efficiency and climate protection but would also lead to social and economic opportunities.

Within this framework, building assessment systems are a fundamental tool for making the built environment more sustainable. Building assessment systems are tools that support the implementation of regional strategies towards sustainable building. Many regional, national and transnational building assessment systems have been established in Europe in the recent years. These systems differ in many aspects (7). This leads to a „*lack of conformity*” within those assessment systems which “*makes the comparison of results impossible*” (8).

A number of transnational EU-funded projects (ENERBUILD, IRH-med, OpenHouse, SuperBuildings) working on building assessments have recognized this issue and in 2011, they exchanged their experiences and concluded that there is a clear need for a harmonisation of sustainable building across Europe. During a meeting in Budapest, the term CESBA was first defined. CESBA stands for *Common European Sustainable Building Assessment* and is a collective initiative towards harmonised, holistic building and neighbourhood assessment systems in Europe. Quickly, this new European initiative gained great attention: During the 1st CESBA conference in Brussels in October 2012, support was offered by the DG Environment. One year later, at the 1st CESBA SPRINT Workshop in Hochhäderich, Austria, over 100 people from 11 different European countries met in order to develop the CESBA initiative and elaborate the CESBA guide (9). The 2nd CESBA SPRINT Workshop in Turin, Italy, in July 2014, attracted 90 people from again 11 different countries and together, they further developed CESBA, integrating new aspects such as the capitalization on European projects (10).

The overall goal of CESBA is to pursue a holistic, common approach towards European sustainable building assessment systems using harmonised indicators. CESBA strives for a broad adoption of harmonised building assessments and user-friendly incentive systems, regulations and laws in Europe (11).

CESBA takes all steps of the building life-cycle into consideration, from target setting, the design stage, planning, and implementation to commissioning, monitoring and usage. CESBA is more than the harmonised assessment of sustainable buildings; it is also a process towards new building and neighbourhood standards in Europe. CESBA aims at supporting stakeholders via processes like training material, service packages and certifications. The actors of CESBA are aware that a single, common building assessment system would not be feasible due to regional differences; therefore need for regional contextualization is one of the nine principles of CESBA. (12).

The following paper uses the young CESBA initiative to show an innovative approach for how to harmonise building assessment at European level. Four distinctive hypotheses are discussed in order to prove that CESBA is a promising way towards a harmonisation of sustainable building and neighbourhood assessment in Europe and thus towards the achieve-



ments of EU goals and towards a higher sustainability of the built environment. First, the challenges faced by the current variety of building assessment systems in Europe are described. The second thesis deals with the need for a harmonisation process and its key success factors. The third thesis highlights the relevance of the CESBA initiative as such for implementing a Europe-wide harmonisation of building assessment systems. Finally, the last argument explains why harmonised assessment systems should play a distinctive role in steering European building qualities. This paper ends with a summary and a final conclusion.

The variety of building and neighbourhood assessment systems in Europe lead to a challenging situation.

Dozens of different building assessment systems are being used in Europe at international, national and regional levels. A study within the European research project OpenHouse identified more than 60 different building assessment systems for Europe on national level only (13). Building assessment systems are tools „for the evaluation and certification of buildings“(14). These systems differ in methods, frameworks, physical and temporal boundaries, issues considered, number of criteria, priorities, and so on and so forth. Their lack of compliance makes the comparison of results nearly impossible, limits their application and lead to barriers and unnecessary high standards for end users of such building assessment systems. Getting along with all these systems is a great challenge for end users of building assessment systems, e.g. architects and builders. There is no “*established comparability between the different schemes*“and this leads to “*uncertainty and complexity for businesses*“(15).

Several studies conducted within transnational projects co-funded by the European Union reveal this lack of conformity. Two example studies are presented in this paper in order to prove the statement above: A study within the project ENERBUILD, and the work done within in the project SuPerBuildings.

ENERBUILD. One project that approached the problem of diverse building assessment systems was the Alpine Space Program project ENERBUILD which lasted from 2009 to 2012. One central goal of the ENERBUILD project was to create the ENERBUILD tool as a common system for assessing the environmental performance of buildings in the Alpine Space, dedicated to public policy makers. For achieving this goal, a broad knowledge about the existing building assessment systems was necessary (16). Thus, the ENERBUILD partners conducted a study on the „*Transnational comparison of instruments according to ecological evaluation of public buildings*“. In this study, eight environmental labels applied in the Alpine space, were compared. The environmental labels or building assessment systems analysed showed differences in many aspects, such as physical and time boundaries, and building uses (17). Graphic 1 shows the differences in the proportions of the three aspects of sustainability among the eight building assessment systems. The graphic indicates that a holistic approach is often not followed, since especially economic criteria are often missing. Thus, it has to be mentioned that the “*three components of sustainability are often interrelated and the indica-*



tors often have consequences on more than one issue“(18), therefore the allocation of criteria to the pillars of sustainability could have been made differently, too. Graphic 2 demonstrates the high discrepancies in terms of the overall number of criteria which once more indicates the not very helpful differences between building assessment systems.

A lack of holism could also be proved by looking at the time boundaries of building assessment systems. All analysed systems do not consider the usage stage and two of them do not observe the building performance during the pre-design stage (19).

Overall, the findings of this study identified *„the absence of a common approach and the impossibility to compare the assessment results produced by the different tools“*. The study derives that due to the challenges caused by this absence of a common approach, *„[c]ommon public policies and common market actions would need a common reference certification“*. The ENERBUILD study deduces the first steps necessary towards a harmonisation of such building assessment systems, such as the definition of common principles and common core indicators (20).

SuPerBuildings. The SuPerBuildings project was a project of the research-focused Seventh Framework (FP7) programme that lasted from 2010 to 2012. One key objective of this project on *„Sustainability and Performance assessment and Benchmarking of Buildings“* was to develop common sustainability indicators and evaluation methods for building assessments in Europe (21). Therefore, the project partners reviewed eleven building evaluation tools that partly overlap with the environmental labels that were analysed in ENERBUILD (table 1).

The goal of the SuPerBuildings analysis in work package 2 was to find out the need for harmonisation regarding the applied indicators, and the current situation in terms of a common understanding of performance levels for benchmarking, aggregation and weighting methods (22). By this analysis, the SuPerBuildings partners aimed at drawing conclusions regarding indicators that *„may need some harmonisation“*(23).

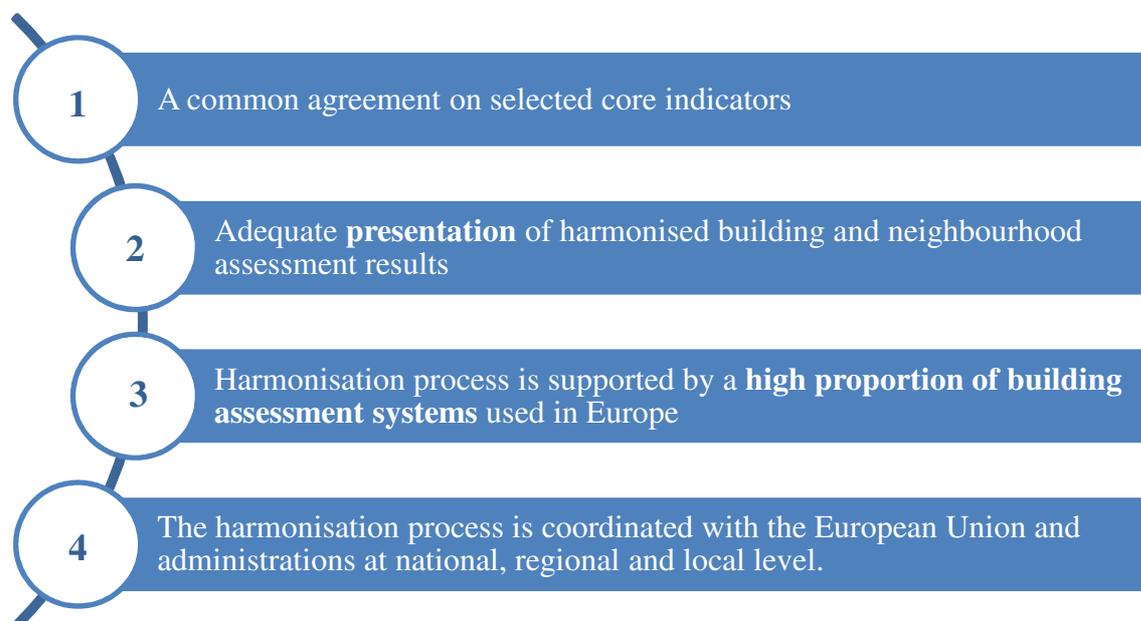
The analysis was based on information provided by the SuPerBuildings partners about their national building assessment systems. The study revealed a need for harmonisation due to different indicators and assessment methodologies. Like in the ENERBUILD study, the findings show that a holistic approach is often not followed by the building assessment systems since there is a lack of observing social and economic indicators. Especially aesthetic indicators are often missing in building assessment systems, although they are a highly important social criterion. The SuPerBuildings analysis also identifies a need for a harmonised development of performance levels and benchmarking criteria since currently it is nearly impossible for users of building assessment systems to keep an overview on all the different calculation methods (24).

The results of the ENERBUILD study and the SuPerBuildings analyses verify the initial statement that the lack of conformity of building assessment systems in Europe currently leads to great challenges for end users of such assessment systems. A holistic approach con-

sidering the whole life-cycle of a building and all aspects of sustainability is often not pursued. Especially aesthetic aspects are often not considered at all although the aesthetic performance of a building greatly contributes to its social quality. The discrepancies between building assessment systems and their high standards lead to inefficient hindrances for end users of assessment systems, for example architects, designers of buildings, construction-related SMEs, builders and public administration. These challenges bring up the issue of launching a harmonisation process for building and neighbourhood assessment systems at European level.

A harmonisation process is urgently needed and the relevant success factors have to be fulfilled.

The findings of the ENERBUILD study, the SuPerBuildings analysis and several other surveys conducted in EU-funded projects and beyond reveal that for increasing the sustainability of buildings and neighbourhoods and for achieving the ambitious EU goals, a harmonisation process is urgently needed. This need for harmonisation has further been recognized by the European Commission, as for example stated in the *Communication on resource efficiency opportunities in the building sector* that has been launched in July 2014 (25). An effective harmonisation requires the identification of the most relevant success factors. The following success factors for harmonisation are proposed:



Before explaining the four success factors for harmonisation, it is reasoned why a harmonisation of sustainable building and neighbourhood assessment systems in Europe is so urgently needed. Beyond the proliferation and confusion due to a high number of incomparable, differ-



ent building assessment systems, there are two other distinctive aspects that illuminate the strong need for harmonisation:

European institutions and international initiatives have already put great effort in actions towards harmonisation, but these efforts usually lack a holistic approach. First, these standardization activities give evidence for a „*will for harmonisation*“ (26) Standardization activities at world level is, for example, ISO TC59/SC 17, which aims at a standardization in the field of building and civil engineering (27). Another example at European level is CEN TC350 which has been established by the DG Enterprise in order to provide a method for the „*development of voluntary horizontal standardised methods for the assessment of the sustainability aspects of new and existing construction works and for standards for the environmental product declaration*“ (28). Different from other harmonisation approaches, CEN TC350 aims at taking social aspects into stronger consideration (29). Other recent initiatives towards harmonisation have been the EU project LenSE, the Sustainable Buildings Alliance (SBA) and the sustainable buildings and climate initiative UNEP SBCI (30). These harmonisation activities are to be welcomed, but they often lack a holistic approach which is needed for a Europe-wide harmonised assessment of the sustainability of buildings and their neighbourhoods. The mentioned initiatives often do observe economic and social aspects but none of them are taking the surrounding infrastructure – the neighbourhood of a building – into consideration (31). More, the proposed indicators often are not simple to verify, because based on complicated calculations and demanding not easy to access information.

Several countries in Europe do not have a building assessment system yet and those countries would highly benefit from a common harmonisation process. According to a study conducted in the OpenHouse project, more than 60 building assessment systems have been implemented in Europe. Though, there are still twelve countries without any building assessment system (image 1) (32). A Europe-wide harmonised building assessment would enable those countries to introduce sustainable building assessment with low investment costs and make their building performances comparable to other buildings in Europe.

These two arguments justify the urgent need for building and neighbourhood assessment harmonisation in Europe. The following indicates and describes the relevant success factors for harmonisation.

Success factor 1: Common agreement on selected core indicators. Most EU-funded projects, standardization frameworks or other initiatives towards a harmonisation of building assessment have developed a set of common core criteria in order to evaluate the environmental performance of buildings. The European Commission states that „*a common framework of core indicators [...] should [...] be established*“. (33).

These plans of the European Commission give evidence for the high relevance of common indicators for a successful harmonisation process. Examples for approaches towards common



core criteria are the ENERBUILD tool of the project ENERBUILD, the OpenHouse assessment methodology, or the Housing Sustainability Assessment (HSA) tool of the IRH Med project (34, 35, and 36). During the 1st CESBA SPRINT Workshop in October 2013 in Hochhäderich, one workshop group commonly developed a set of core indicators that consider the whole building life cycle, all aspects of sustainability and both the building and the neighbourhood scale (graphic 3). These “Key Performance Indicators” (KPI) are one important key factor towards harmonisation. With its KPI, CESBA is well positioned to be one of the main civil society interlocutors for the EU’s plan of developing a framework of indicators for assessing the environmental, social, and economic performance of buildings.

Success factor 2: An adequate presentation of harmonised building and neighbourhood assessment results is ensured. Transparency is a key principle of many harmonisation and standardisation approaches (37). But a harmonised and holistic building assessment result can only be transparent if it is visualized and presented in a understandable way and, at the same time, does not retain important information. According to the CESBA Guide, it *„has to find a right balance between the simplicity to use and the scientific/technical value“*(38).

A possibility for an adequate visualisation of harmonised building and neighbourhood assessment results is the building signature, represented by a **radar chart**. A radar chart is a useful way to display diverse observations with a certain number of variables (39). In the case of a building assessment harmonised by CESBA, the variables are the Key Performance Indicators and the observations are the CESBA standard for sustainability, the standard of a certain label or region and the performance of a specific building (graphic 4).

The CESBA actors decided upon using radar charts since it is a suitable instrument to visualize harmonised assessment results in a simple way without neglecting the scientific and technical value of the assessment. This contributes to an adequate presentation of building assessments that are harmonised by CESBA. If the compliance of a building assessment with the CESBA requirements is positive, CESBA grants the use of the CESBA stamp “Assessment harmonised with CESBA”.

Success factor 3: The harmonisation process is supported by a high proportion of building assessment systems used in Europe. One central goal of the CESBA initiative is that building assessments that are harmonised by CESBA reach a high number of new and refurbished constructions in Europe (40). The existing building assessment systems shall, according to the CESBA philosophy, persist, and adopt the CESBA Key Performance Indicators. Therefore, CESBA does not want to be in competition with existing building assessment systems but wants to complement them and to bring them together with similar systems.

Currently, buildings in Europe are assessed by more than 60 different systems that actually evaluate only a fractional amount of the buildings in Europe. For example, since 1990, a number of 200,000 buildings worldwide have been certified by BREEAM which calls itself



the “world’s leading design and assessment method for sustainable buildings“. (41) This seems to be a high number, but considering the total number of buildings in Europe, only about 1% of them are certified by any private building assessment system (42).

But this might change: The Energy Performance of Building Directive (EPBD) as main legislative instrument of the EU when it comes to sustainable building, states that by 2020, all new or refurbished buildings need to have nearly-zero energy standards (NZEB). It is up to the member countries to define the minimum requirements for this NZEB standard (43). For guaranteeing this standard, those buildings have to be assessed by any building assessment system. Therefore, the number of buildings evaluated by one of the many assessment systems in Europe could increase by a great amount in the near future. It is obvious that although the definition of NZEBs is up to the member countries, a common framework using Key Performance Indicators and harmonised assessment methods would make the implementation of the NZEB goal much easier.

Thus, the more building assessment systems adopt the CESBA Key Performance Indicators, the more buildings will be reached by a Europe-wide comparable assessment harmonised by CESBA in the coming years. Being harmonised by CESBA will also improve the quality of those building assessment systems that currently do not follow a holistic approach including all pillars of sustainability, a consideration of the whole building life cycle and an observation of the surroundings of the respective building.

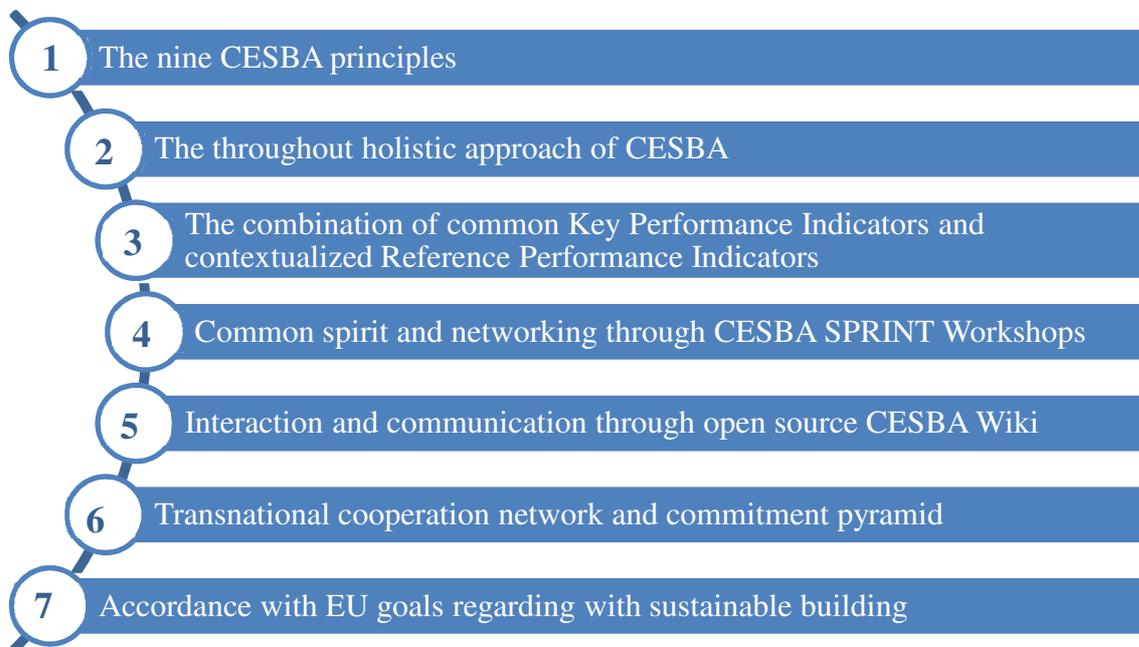
For those EU countries that currently do not have an assessment system, the CESBA generic tool would help them to develop local assessment systems to increase the performance of their buildings and thus to reach the EU goals regarding NZEB. Hence, an adoption by many building assessment systems is a key factor for harmonisation of building assessments in Europe.

Success factor 4: The harmonisation process is coordinated with the European Union and administrations at national, regional and local level. A broad adoption of building and neighbourhood assessment harmonised by CESBA will only work if the initiative goes along with EU goals, national objectives and regional circumstances. When it comes to sustainable building, there are plenty of actors, laws, rules and regulations at local, regional, national and European level (44). A study conducted within the Alpine Space Program project ViSiBLE revealed that there are at least 68 different institutions dealing with the assessment of the sustainability of public buildings in the four countries of Germany, Austria, Italy, and France alone (45). Bringing actors from different levels together and providing a platform for harmonisation is a central objective of CESBA. This also goes along with the EU principle of subsidiarity which states that the European Union should only take action if it is able to act more effectively than national or regional levels (46). Since it promotes the interaction of stakeholders on different levels, CESBA is a meeting point between top-down- and bottom-up-approach.

The CESBA initiative offers an appropriate framework for the harmonisation process.

The CESBA initiative has already been introduced in this paper. Due to the realization of the challenges caused by the high number of diverse building assessment systems in Europe and the plethora and mismatch of building regulations, laws and rules on local, regional, national and EU levels, a harmonisation process seems to be highly necessary. The CESBA actors, involved in different, topic-related EU-funded projects, recognized this problem and founded the CESBA initiative. Since the year 2012, the CESBA initiative for developing a Common European Sustainable Building Assessment aims at providing the most suitable framework to realise a successful, effective and commonly accepted harmonisation process.

Which aspects make the CESBA initiative so suitable for harmonising sustainable building and neighbourhood assessment approaches in Europe? There are seven distinctive factors:



1. The nine CESBA principles.

Nearly all harmonisation and standardisation approaches discussed above have fixed several principles. For example, ISO TC59 SC17 follows nine principles like the *continual improvement* of the standard, a *holistic approach*, the *involvement of interested parties* and *transparency* (47). The CESBA initiative has also set itself nine principles (graphic 5), which partly overlap with the ISO TC59 SC17 principles. Overlapping principles are the contextualization, the holistic approach, and the principle of transparency. The elementary difference between the CESBA principles and the ISO TC59 SC17 principles is that CESBA has a strong focus on the individuals, the users of buildings, and their role within the European harmonisation process. This gets obvious when you look at the CESBA principles *Open Source*, *Simple to use*, *Mass-oriented*, and especially *the user first*. This user-oriented approach is strength of the CESBA initiative. CESBA focuses at improving the quality of life of building users. It secures the acceptance of the CESBA initiative among the whole European society. Since



CESBA is in continuous dialogue with the European society, this initiative is most appropriate to implement a bottom-up Europe-wide harmonisation process towards sustainable building and neighbourhood assessment.

2. The holistic approach of CESBA

It has been mentioned that the urgent need for harmonisation is strongly connected with a lack of holism among many building assessment systems and standardization approaches. Therefore, CESBA strives for a holistic approach. For the CESBA actors, holism encompasses several aspects. First, all steps of the CESBA building life cycle are taken into consideration (figure 7). Second, CESBA incorporates all three pillars of sustainability in a balanced way, which means social, economic, and environmental aspects. Third, CESBA does both assess the performance of the buildings as such and the performance of the surrounding neighbourhood. Finally, CESBA is an initiative towards harmonised building and neighbourhood assessment that does not only offer indicators and benchmarking methods, but also practical tools and processes that support their implementation. These processes can be distinguished in the areas of services, trainings, and certifications. As meeting point between top-down and bottom-up approach, CESBA is in permanent dialogue with the European society. The CESBA cycle (image 2) conveys this holistic approach of the CESBA initiative in an illustrative way. Since no other standardization or harmonisation approach is as comprehensive and holistic as CESBA, the CESBA initiative is the most appropriate framework for the harmonisation process.

3. The combination of common Key Performance Indicators and contextualized Reference Performance Indicators

The CESBA harmonised Key Performance Indicators have already been introduced as one of four success factors for an effective harmonisation process. The set of CESBA Key Performance Indicators is continuously being adjusted to present circumstances. Due to the holistic approach of CESBA, the initiative does not only offer a set of common Key Performance Indicators, but also a set of Reference Performance Indicators that should be taken as „*a reference in the development of the specific regional assessment tools*“ (48). The definition of such Reference Performance Indicators is due to the conviction of CESBA that each region needs its own indicators that are contextualized to local circumstances.

By the combination of common Key Performance Indicators and regionally contextualized Reference Performance Indicators, the CESBA initiative offers a unique tool for driving the European harmonisation process forward without risking regional sovereignty.

4. Common spirit and networking through CESBA SPRINT Workshops

The CESBA initiative is developed further by CESBA SPRINT Workshops. The SPRINT method is a moderation method that is highly appropriate for development processes. Actors with different backgrounds work together in an open and efficient manner. The SPRINT method makes it possible to achieve useful and approved outcomes in a very short time. During the time spent together, the participants of a SPRINT workshop get to know each other



and network, and create a common understanding for the needs and methods which are required from the different target groups (49). During a CESBA SPRINT workshop, participants can freely choose a thematic group and the results are presented to the plenary after the sessions. The SPRINT method has proven its effectiveness during the last two workshops in October 2013 and July 2014. CESBA SPRINT workshops advance the CESBA development and therefore the European harmonisation process. Everybody is welcomed to join future SPRINT Workshops and thus to contribute to the advancement of CESBA.

5. Interaction and communication through open source CESBA Wiki

The CESBA Wiki (www.cesba.eu) is the main platform of the CESBA initiative and a common output of three EU-funded projects (the Alpine Space Programme projects CABEE and ViSiBLE and the Central Europe Programme project CEC5). The CESBA actors chose a Wiki instead of a „normal“ homepage because the unique combination of interaction and communication possible on a Wiki enables a harmonisation process that is open-source, low-cost, mass-oriented and commonly developed. The CESBA Wiki serves as a transnational platform for networking and finding people and organisations for collaboration. It offers those outputs from EU-funded projects which support the application of assessments that are harmonised by CESBA. Everybody can edit the CESBA Wiki. By the collaborative work on CESBA Wiki articles, they are steadily improved and extended and as a result the CESBA initiative is further developed. The CESBA Wiki has already been established in its English version; regionally adapted versions in other languages will follow. Thus, the CESBA-Wiki is an ideal instrument to support the Europe-wide harmonisation process of CESBA.

6. Transnational cooperation network and commitment pyramid

What is the organizational background of CESBA? The levels of commitment to CESBA can be depicted using the CESBA commitment pyramid that has been developed during the 1st CESBA SPRINT Workshop in Hochhäderich, Austria, by a group of CESBA-supporting actors. The commitment pyramid (image 3) defines seven levels of commitment which are not related to official duties or hierarchical positions but show different types of relations to CESBA. For example, CESBA ambassadors „*have an interest to actively promote CESBA*“. CESBA users, however, are people „*that use elements of CESBA for their work*“ (50).

If CESBA does neither have hierarchic positions nor official representatives, how can it than be organized? CESBA is a loose initiative that, in its early stages, does not need hierarchy, official duties or a headman. This type of a loose initiative can best be expressed by the term „transnational cooperation network“ (image 4). The CESBA transnational cooperation network consists of many different organizations and persons that voluntarily and actively support the CESBA initiative. The CESBA initiative is indirectly financed by those organizations. There are the key players of CESBA that currently come from different regions of Europe (blue). Those key players are strongly interconnected and interact with other organisations and stakeholders in their regions and beyond by which means those organisations also support CESBA (grey). Those organisations, in turn, carry the CESBA initiative further to other organisations and people (green) and so on and so forth. This form of a loose coopera-



tion network enhances voluntary, eager collaboration and thus fosters creative and innovative ideas (51). Thus, depending on the situation, the CESBA initiative can either be described as a pyramid consisting of seven levels of commitment or as a transnational cooperation network.

The secretary of CESBA is NENA Network Enterprise Alps, a transnational non-profit-organisation that emerged from an EU-funded project with the aim to support construction-related SMEs throughout the Alps. As secretary of CESBA, NENA is being further developed and gathering new members, also from countries beyond the Alpine space (52).

7. Accordance with EU goals

CESBA is in accordance with EU goals in all its facets. For achieving the EU target of all new buildings constructed as NZEBs by 2020, the European Commission fosters „*approaches to [...] harmonisation of the various existing assessment methods*“ (53). CESBA is such a harmonisation approach. The European Commission invites stakeholders to discuss core indicators, and to contribute to the practical implementation of such a framework containing core indicators (54). CESBA discusses Key Performance Indicators and provides a framework for building assessment harmonisation, including an adequate presentation of assessment results, the open-source knowledge hub CESBA Wiki, a transnational cooperation network, and practical tools like trainings, services and certifications. The European Commission has noticed that existing European Directives are not designed to provide the overall life-cycle approach CESBA promotes (55). Hence, CESBA is in 100% conformity with the European Union and therefore the best approach to harmonise building assessments in Europe.

Due to its principles, its holistic approach, its indicators and its spirit, the young CESBA initiative is the ideal framework for promoting the harmonisation process of building and neighbourhood assessment in Europe. The CESBA initiative is a transnational cooperation network with different levels of commitment that is co-created and commonly developed by SPRINT Workshops and the CESBA Wiki. CESBA highlights the main and most important steps towards a broad adoption of harmonised building assessments in Europe. CESBA shows how to harmonise building assessment systems at European level.

Harmonised assessment systems should play a distinctive role in steering European building and neighbourhood qualities.

The need for harmonised assessment systems has already been recognized in Europe. The young CESBA initiative indicates how this need for harmonisation can be successfully addressed. But a successful harmonisation process implies that from now on and in the future, harmonised assessment systems play a distinctive role in steering the qualities of European buildings and their neighbourhoods.

This is due to the following four reasons:



1. Harmonised assessment systems facilitate the achievement of EU goals.

It has been mentioned that EU goals regarding sustainable buildings are very ambitious. The construction sector is characterized by many different laws, rules and regulations. A vast number of administrations at local, regional, and national level need to adapt their legislative framework according to EU requirements in order to reach the ambitious EU goals regarding NZEBs in 2020. The high number of uncoordinated building assessment systems in Europe makes the achievement of EU goals difficult.

Hence, by the end of 2012, the EU was still very far from reaching its target of all new buildings being NZEB standard by 2020: In November 2012, only four EU member states could provide a national definition of the term „NZEB“ and only nine EU member states had reported their NZEB national plans to the European Commission. *„The conclusion has to be that too little progress has been made [...] towards NZEBs by 2020“* the European Commission states (56).

If the EU goals still should be achieved by 2020, harmonised building assessments like the CESBA initiative are a crucial issue. By influencing local, regional and national legislative frameworks and by harmonising existing building assessment systems, the achievement of EU NZEB goals would be significantly facilitated.

2. Harmonised assessment systems promote regional development.

The sustainable construction sector is characterized by many regional Small and Medium-sized Enterprises (SMEs). Those SMEs create many jobs and greatly contribute to the overall GDP in Europe. Thus, their competitiveness is highly important for the regional economy and therefore regional development (57). But the current proliferation of building assessment sys-



tems and building laws and regulations create export barriers and make it difficult for the SMEs to expand to other markets.

With the different requirements for sustainable buildings, we discriminate against those companies that want to export to other EU countries. This should not be the case in a common European Market. Such varying requirements can cause red tape, create unnecessary burdens and ultimately inhibit the growth of the European economy. In the interest of job security and prospering regions in Europe, the shackles of unnecessary requirements should be removed.

If building assessment systems were harmonised among EU member states, local industries could expand to other regions, transfer their know-how, and learn from other actors. Innovation and quality improvement measures would be reinforced. That's one reason why harmonised assessment systems strengthen regional SMEs and therefore regional development.

Regions with little experience and know-how on sustainable building issues benefit from the CESBA harmonisation approach due to the transnational knowledge transfer via CESBA workshops and the CESBA Wiki. This knowledge transfer is cost-free, open-source and up-to-date. By increasing their know-how on sustainable building assessment and by learning from other experiences, those regions are significantly strengthened in their development.

Harmonised assessment systems further promote regional development due to the principle of contextualization and the bottom-up-approach. Regional approaches towards sustainable building assessment differ in the certification process applied, the contextualization of criteria in the tool, and the types of stakeholders involved in the assessment process. CESBA neither wants to standardize regional strategies nor assessment systems. By harmonisation and contextualization, regional specifics are taken into consideration and regional building cultures are strengthened which again fosters the attractiveness of European regions and therefore their development. The bottom-up approach makes it possible for the European regions to build on their own strengths and to secure a broad acceptance of sustainable building measures among all regional actors. This broad acceptance is further increased by an improvement of the quality of life CESBA clearly produces.

Altogether, harmonised assessment systems greatly contribute to regional development, strengthening regional SMEs, fostering knowledge transfer and promoting contextualization and a bottom-up-approach.

3. Harmonised assessment systems foster a circular economy.

In contrast to a linear economy, where the normal life steps of a good are „take – make – consume – dispose“, a circular economy „keep[s] the added value in products for as long as possible and eliminates waste [...]. Resources [...] can be productively used again and hence create further value“ (58). This further value is expressed, for example, by the expectation of the European Commission that circular economy approaches could increase the GDP in the European Union by up to 3,9% (59).



When it comes to the need for a circular economy approach, the construction sector plays a key role. Construction and demolition waste (CDW) makes up a third of the total waste generated in the EU (60), so there is a considerable potential for action. In the construction sector, a circular economy means that a high proportion of the used building material is recyclable. High-quality, resistant building materials ensure durability. Further, buildings should be designed the way they have a long lifetime and they should be flexible so they can be adapted to new usages easily. This circular economy approach needs to be considered during the whole building life cycle, from target definition and planning to implementation, monitoring and usage (61).

The European Union has recognized the importance of the construction sector within the circular economy concept for achieving the EU2020 targets towards a smart, sustainable and inclusive growth (62). The European Union aims at improving resource use in buildings by „*more resource efficient construction and renovation, by reducing construction waste and by recycling or re-using materials*“ (63). But although there is a general interest in higher resource efficiency in the construction sector at all levels, the existing different approaches lead to a more complex working environment for all stakeholders (64). Therefore, the European Union’s objective is to „*develop a common EU assessment framework for the environmental performance of buildings*“ (65).

For fostering a circular economy in the construction sector, a harmonisation of assessment systems and therefore the CESBA initiative is the perfect tool. CESBA brings all stakeholders together and thus enables a debate on the existing different approaches which is the basis for later harmonisation. CESBA has the objective to develop a harmonised EU assessment framework on the environmental performance of buildings that is needed for making progress towards a circular economy. The LifeCycle Tower ONE in Dornbirn, Austria, embodies the circular economy approach and is a demonstration building for the CESBA initiative (image 5). Thus, since CESBA fosters a circular economy approach, it plays a central role in steering European building qualities.

4. Harmonised assessment systems make an integration of regional adaption in the European framework possible.

The adaption to regional specifics within the European framework is of great importance since it boosts the acceptance of policies towards sustainable building and neighbourhoods all over Europe.

How can an integration of regional adaption in the European context work? This can be exemplarily demonstrated by the Austrian state of Vorarlberg. In Vorarlberg, the energy performance of buildings is already very high and the construction sector is strongly developed. Vorarlberg features the highest density of Passive Houses all over Europe (66). Within a European-wide harmonised assessment approach, Vorarlberg could act as a trendsetter for other regions within the EU, transferring its know-how and experiences. For example, there is the service package „Sustainable Building“ that provides support for all involved stakeholders



throughout the whole building life cycle (67). Through harmonised assessment approaches, this service package could be disseminated to other regions of Europe. Due to an integration of regional adaption and building assessment harmonisation, Vorarlberg could further keep its traditional and modern building cultures (e.g. „Neue Vorarlberger Bauschule“) and both retain and expand the Municipal Building Pass (KGA) for assessing the sustainability of public buildings (68, 69).

The example of Vorarlberg shows that harmonised assessment systems enable an integration of regional adaption in the European framework and therefore are of great importance when it comes to the steering of European building qualities. But this does not only apply to the region of Vorarlberg. Every region in Europe can benefit from CESBA and its efforts towards European sustainable building and neighbourhood harmonisation. All actors of the sustainable building sector are invited for participation in common future actions of CESBA.

Conclusions

The starting point of this paper is the recognition of the high relevance of building and neighbourhood assessment harmonisation in Europe. By discussing four powerful arguments, it is proved that CESBA is a promising approach for harmonising building assessment.

The first thesis states that the current proliferation of incomparable building assessment systems in Europe leads to great challenges for end-users of such assessment systems. Further, a holistic approach is often not followed. Hence, the second thesis finds that a harmonisation of building assessment systems is urgently needed. This has already been recognized by the European Commission. There are different success factors that need to be fulfilled in order to enable a harmonisation: The actors need to agree on common core indicators and find an adequate presentation of assessment results. Further, a high proportion of building assessment systems should participate in the harmonisation process. Another crucial factor is that the EU supports the on-going harmonisation process.

The third thesis proves that CESBA fulfils all success factors towards a harmonisation process and is therefore the most suitable method towards harmonising building assessment at European level. As a voluntary loose transnational cooperation network with different levels of commitment, CESBA follows a holistic approach, considering the three pillars of sustainability, the whole building life cycle and both the building and its surrounding neighbourhood. The CESBA initiative has developed common Key Performance Indicators and regards local specifics by contextualized Reference Performance Indicators. CESBA focuses on the users of buildings, and offers both CESBA SPRINT Workshops and the CESBA Wiki for fostering active stakeholder participation. CESBA is in accordance with EU policies.

The last and distinctive thesis deals with the vital role a building assessment harmonisation process like CESBA has to play in steering European building qualities. Building assessment harmonisation is essential for the EU goals regarding sustainable building which the EU is



currently a long way from achieving. Harmonised assessment systems foster regional development and a circular economy. The example of Vorarlberg shows that regional assessment systems can be integrated in the European framework. Thus, there are powerful reasons why harmonised assessment systems should play a distinctive role in controlling the performance of buildings in Europe.

The CESBA initiative offers an ideal framework for the building assessment harmonisation process. Its elements and ideas should be integrated in EU approaches towards harmonisation. CESBA shows how to harmonise holistic building assessment systems at European level. Only a Europe-wide harmonisation by an initiative like CESBA can enforce the effectiveness of certification labels in moving the building standard practice towards a better sustainability.

CESBA is open for anybody who wants to contribute. The openness CESBA promotes is necessary to find common grounds and to spread the knowledge on sustainable building. When it comes to protecting the environment and reducing energy consumption, the dissemination of knowledge cannot go fast enough. Knowledge about sustainable building must be easily accessible and it is certainly not desirable that this knowledge is kept in proprietary systems for the sake of making a profit. This is why CESBA fosters a mass-oriented, bottom-up and open-source approach.

An open process and the broadest participation are necessary to proceed towards building assessment harmonisation and therefore a more sustainable built environment in Europe. CESBA allows for such an open-source, participative approach. CESBA improves the quality of life of building users. Everybody who is concerned about the harmonisation of building and neighbourhood assessments in Europe is welcome to be a part of CESBA.

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