

LEED OR BREEAM FOR COMMERCIAL DEVELOPMENT? DECISION FROM POINT OF VIEW OF AN OWNER OF A PROJECT

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Summary

LEED and BREEAM are most used frameworks for environmental certification of buildings. This paper discusses differences of these frameworks from investor's point of view. The comparison has been done for schemes for new buildings certification.

Although a purpose of the frameworks is the same, there are many important differences in terms of organization, process and accessibility of different levels of certification.

Keywords: Building certification, LEED, BREEAM

1 General information

BREEAM and LEED are two leading global frameworks for environmental certification of buildings. They are widely used for assessment and certification of both new and existing buildings. Certified buildings with higher levels of rating are seen as a good investment because their prices are usually higher than average, 11–25 % in USA and 16–26 % in non-US countries according to different sources.

BREEAM (Building Research Establishment Environmental Assessment Method) was first launched in 1990 and has more than 200,000 certified buildings and over 1,000,000 registrations. Most of certifications are in United Kingdom where BREEAM is used as a national tool for many types of buildings – the list of specific schemes includes office buildings, family houses, schools, and many other types including even specific scheme for prisons. There is also a specific scheme for urban projects. Outside of UK, the list of schemes is limited. A certification authority for BREEAM is BRE (Building Research Establishment) based in Watford, UK.

LEED (Leadership in Energy and Environmental Design) was launched ten years after BREEAM. The number of certified commercial buildings is over 15,000 at this moment, and there are a very high number of non-commercial certifications. LEED in USA can certify any type of building and there is a specific scheme for urban planning. Outside USA, the LEED is not used for family homes and urban planning; the other schemes are globally applicable. A certification authority is GBCI (Green Building Certification Institute) in Washington. LEED is more often used in Czech Republic.

2 Differences from the investor's point of view

2.1 Applicability of the frameworks in Czech Republic

BREEAM can be used as BREEAM International or BREEAM Bespoke in CR. The first option can be used for three specific options only: office, retail or industrial buildings. In case of complex buildings one of above mentioned schemes is selected by a main purpose of the building. For the other buildings, there is a special option of BREEAM Bespoke. This scheme allows to make "a tailor made" solution for any type of building. This specific solution must be based on existing schemes and agreed with BRE. Obviously, the Bespoke scheme application is very time consuming and more costly than "on shelf" solutions. This is a reason why standard solutions for offices, retail and industry are most common.

LEED is applicable internationally to any building except residential ones up to 3 floors. This means that any building (except small residential) can be assessed and certified within the standard scheme.

2.2 Scopes of the frameworks

Both LEED and BREEAM cover more fields than simple energy efficiency. This issue makes about one fifth in total score.

LEED assess five main areas and two additives. The main areas are Site, Water, Energy and Atmosphere, Materials and Internal Environment Quality. The supplementary areas are Regional Priorities and Innovation in Design.

BREEAM has following chapters: Management, Health and Wellbeing, Energy, Transport, Water, Materials, Waste, Land use and Ecology, Pollution and Innovation.

The assessed areas of both frameworks overlap; every framework has its "extras" but the core principles are very similar.

2.3 Organization of a project

LEED is very straightforward: The criteria are sorted out into groups and every criterion (credit) is defined by credit language. Thanks to this arrangement, it is easy to make pre-assessment for a specific project and to plan strategies to achieve a score necessary for some level of certification. The role of LEED professional is to organize common work of a project team and to administrate the process. The LEED professional is on the side of an owner of a project. The administration is based in the on-line communication with the certification body via standardized forms. Any non standard situation or a question of project team is solved or answered via on-line system of communication.

In the case of BREEAM, the organization is quite different. There is a mediator between a project team and certification body – a BREEAM Assessor. This person is specially trained and accredited by BRE and his or her role is to assess the facts delivered by project team, comment them and in formalized structure pass them to BRE. The certification body checks the Assessors conclusions and if they are incorrect, returns them back to the Assessor. If BRE finds more non-complying conclusions, the Assessor can be suspended. Due to these reasons the Assessor cannot be on the side of an owner of the project, he must be absolutely independent. The project team must hire a consultant beside of Assessor to make the project compliant to assessment. The BREEAM projects are not as clear as LEED ones are because of weighting of criteria assessed. The pre-assessment is feasible with specific tools open for accredited Assessors only. In comparison with LEED,

the non-standard situations or credit interpretation questions are easily to handle; BRE is open to communication via phone or e-mail.

2.4 Ways of proofs

LEED is based on principles of trust and common sense. Most proofs are done by signatures of project team members under statements about compliance of a project with general requirements. Many requirements are defined in general only and their specific technical details are put into hands of the project team, because LEED believes in common engineer's sense. On the other hand, about 7 % of certified projects are physically checked and any fraud would be punished.

Proofs in BREEAM are done according to very detailed rules. An Assessor must go thru documentation with "sharp pencil" and must not make any assumptions. The documentation must contain all the information needed.

The example of an alternative transport support can be good for an explanation:

LEED wants to have specific number of cycle racks and showers related to number of building users. The requirements are safety of racks and maximal distance of showers from the entrance of the building (the showers need not be necessary in the planned building). The aim of this credit is to give people chance to come by bicycle, park it safely and have a place to change dress and take a shower.

BREEAM describes the cycling facilities in deep details. The complying cycle racks must be under shelter, lighted, must be made of metal and safely connected with ground. The changing facility must consist of changing room of a specific area, equipped with hooks on the wall and a bench, and lockers defined by minimum dimensions. The facilities must comply with gender issues. If the design documentation does not contain for example information about hooks on the wall the credit cannot be awarded.

2.5 Codes and standards

In terms of codes and standards, BREEAM is more customized than LEED. BREEAM allows using local standards if they are listed in the checklist A10 which is used for this purpose and updated continuously. If the local standard is not listed there, then the UK standard must be used.

LEED is based on ASHRAE standards. Any project must comply with specific parts of ASHRAE 90.1 and others. Most of these requirements are similar to the requirements of Czech technical standards but every single requirement must be checked and more stringent approach must be used. A big gift was given to European teams from GBCI last summer when the EN standards for HVAC design were allowed as an alternative compliance path. Now, the HVAC design is much easier. Very similar situation is in credits concerning low emitting floor materials in the chapter of internal environment quality where LEED recently accepts some alternative ways of testing. The limits of volatile organic compound in materials were described according to US standards of testing before this change. Some European materials were tested by another procedures and LEED did not accept these tests. Today, the European testing methods are accepted as well.

2.6 Language barrier

There is a widely spread disinformation about a necessity of English version of full design documentation for LEED and BREEAM.

LEED needs some drawings with comments and descriptions in English, some manuals and reports must be produced in English. The rest of information is transferred via normalized forms. There is no need to translate full documentation. Metric units are allowed to be used as an alternative to US unit system.

BREEAM needs reports produced by Assessor in English. The rest of documentation can be sent in original language (for a special fee).

2.7 Financial issues

Lower levels of certification are accessible in both LEED and BREEAM similarly. The investors are rather willing to accept higher ambitions in LEED because the credits are often expressed in terms of money. For example, the energy efficiency is compared with a baseline in financial units. It is logical to decrease the consumption on the field of most expensive energy (electricity) and the project owner sees the rational reason to go this way. BREEAM speaks to investor in terms of CO₂ and primary energy. Most investors do not understand such a language.

Expenses for a process of certification are similar. The fee paid to GBCI is easy to calculate according to gross floor area of the project. The fee paid to BRE is much lower but there is another fee paid to an Assessor.

Soft costs are usually higher for LEED because of extended demands to design team.

Investment costs are as higher as higher level of certification is targeted. BREEAM could be probably more costly in the highest level than LEED but it is not easy to generalize because of specifics of every project.

3 Conclusions

LEED is more common in Czech Republic as a tool for new buildings certifications. It is more straightforward and more predictable. The main negatives are requirements concerning material certifications and (for beginners) some US standards.

BREEAM is more bureaucratic and only an Assessor has full insight into rating system. Possibility to send documentation produced according to local standards in local language is an advantage. Some requirements are in contrary to economic sense of projects.

References

- [1] USGBC: *LEED Reference Guide for Green Building Design and Construction*, 2009.
- [2] USGBC: *LEED 2009 for Core and Shell Development, Global Alternative Compliance Paths Redline*, 2012.
- [3] BRE: *BREEAM Europe Commercial International Buildings, Technical Manual SD5066A*, 2009.