France GBC

INTERNATIONAL ENVIRONMENTAL CERTIFICATIONS FOR THE DESIGN AND CONSTRUCTION OF NON-RESIDENTIAL BUILDINGS

THE POSITIONING OF HQE CERTIFICATION RELATIVE TO BREEAM AND LEED

June, 2015

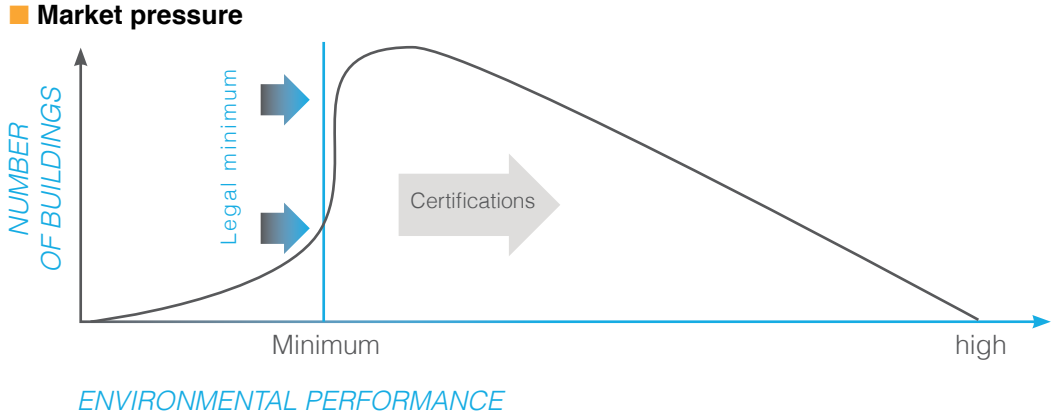
CONTENTS

FOREWORD: THE REASON FOR THIS PUBLICATION

Today, everyone shares the sense of urgency surrounding ecological issues. The increased scarcity of non-renewable resources, demographic pressure and the reality of climate change[1] require us to re-examine how we operate in all sectors of the economy.

At a global level over the last 15 years or so, the construction sector - a major emitter of greenhouse gases - has seen the emergence of tools that aim to accelerate changes in construction practices, namely environmental certifications. Three of the certification systems developed stand out: BREEAM, HQE and LEED[2].

These certifications have enabled profound shifts in how buildings are designed and constructed, in their respective geographical area and beyond, through mechanisms to showcase environmental and energy performances that go beyond current regulations (see diagram below).



[1] IPCC press release dated 4/11/14: "Conclusion of the Fifth Assessment Report: Climate change threatens irreversible and dangerous impacts, but options exist to limit its effects."
[2] See also DGNB (Germany), Living Building Challenge (USA), CASBEE (Japan), Green Star (Australia), Estidama (United Arab Emirates), etc.
N.B.: by convention, the symbols © and ® have been removed from the document to aid reading. However, BREEAM, HQE and LEED are commercial brands.

As such, the certification systems increasingly adapt to local content to make it easier to apply them in different climates and territories. In addition, numerous technical articles that compare certification systems all too often restrict themselves to a simple comparative analysis of certification costs[3], without really highlighting the added value of one system or another in the design process and the resulting environmental performance. The European real estate industry was one of the first to see the development of multi-certified projects and the application of different certifications for a single country, as is the case in France, Germany and Italy in particular.

The purpose of this publication is therefore to provide ways to compare the latest versions of these systems[4], objectivity being a key concern, and based on this feedback. The main characteristics of the certifications are therefore presented, along with their main differences, with the aim of improving professionals' knowledge of these systems and facilitating any necessary choices.

FRANCE GBC has published this study in collaboration with ALTO Ingénierie, a company that specialises in the energy and environmental performance of buildings and territories.

About ALTO Ingénierie

ALTO Ingénierie is an independent consulting firm founded in 1991 and employing a workforce of 80 divided among three branches: Bussy-St-Martin in the Paris region (head office), Lyon and Bordeaux, along with two subsidiaries, ALTO STEP in Bordeaux and $ALTO_2$ in Canada (Montreal).

Committed to environmental quality in the construction industry for 20 years, ALTO Ingénierie cross-functionally integrates this aspect into all of its assignments, engaging all of its skills through:
- A broader approach to engineering that encompasses sustainable development
- Decision-making tools to foster projects at an advanced level of environmental performance
- The use of digital simulation tools

Fields of activity:
- Buildings and Urban Planning and Development
- In France and internationally
- Prime Contracting & Project Ownership Support

ALTO Ingénierie has a large portfolio of sustainable building projects:
- 200 HQE projects
- 62 BREEAM projects
- 4 LEED projects

[3] Any detailed analysis of costs should be carried out on the basis of an equivalent scope for the three certifications, i.e. certification costs, costs for environmental consulting (management and technical) and costs for specific studies. A detailed analysis of these costs is outside the remit of this publication.
[4] BREEAM: BREEAM International 2013 - HQE: HQE 2013 Non-Residential, updated in October 2014
LEED: LEED Green Building Design + Construction V4

Tour First
Offices, 88 262 m², France
Certified HQE and LEED
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1 INTERNATIONAL ENVIRONMENTAL CERTIFICATIONS

1. General information

Main information concerning the three most common international certifications

	BREEAM	HQE	LEED
GUIDANCE INFORMATION			
Body	BRE[5]	Cerway[6]	USGBC[7]
Founded	1990	2013	1993
Launch of the international scheme	2008	2012	2012[8]
Accreditation of professionals	BREEAM International Assessor BREEAM AP BREEAM In Use Assessor	HQE Construction Certification Referent[9] HQE Operations Certification Advisor	LEED AP BD+C LEED AP O+M
Language of the scheme and guide	English	English and French	English
FUNCTIONING			
Functioning of requirements	Prerequisites depending on the levels of certification + Credits with associated points	Prerequisites + Points-based performance level: Performing and High Performing	Prerequisites + Credits with associated points
Certification levels	Pass - Good - Very good - Excellent - Outstanding	Pass - Good - Very good Excellent - Exceptional	Certified - Silver - Gold - Platinum
QUALITATIVE ASPECTS			
Defining features	Highly prescriptive aspects Flexibility in the choice of concerns	Management system Non-prescriptive aspect	Widely recognised internationally
Coverage of the three components of sustainable development	++	++	++
Freedom in choice of concerns	+++	++	++
Assurance of overall quality	++	+++	+++

At a global level, LEED is the most widely used, with around 51,700 projects[10].
At a European level, HQE dominates the market by surface area, with around 59 million m² certified (primarily in France), ahead of BREEAM and DGNB[11], although BREEAM is the most common certification in many countries.

[5] British Research Establishment: http://www.bre.co.uk/
[6] HQE certification: http://www.behqe.com/
[7] USGBC: http://www.usgbc.org/
[8] The scheme with the international adaptations was released in 2012. However, LEED had already been used outside the US for several years, including specific schemes for Canada and Italy.
[9] Directory of HQE certification Referents: http://www.behqe.com/trainings-and-professionals/referentsdirectory
[10] USGBC: http://www.usgbc.org/articles/infographic-leed-world
[11] Sustainable Building Alliance, data from certification bodies dated 21/11/2014: http://www.sballiance.org/our-work/news/overview-of-breeam-hqe-dgnb-certified-buildings-in-m%C2%B2/

2. Items

Environmental items addressed in the three certifications

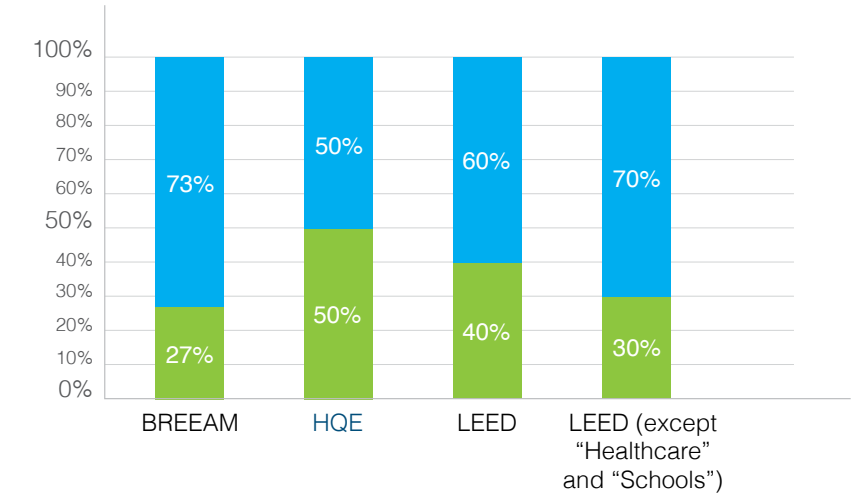
BREEAM	HQE		LEED
ENVIRONMENTAL PROJECT MANAGEMENT			
Management[12] (Man)	Global management system		Integrative process[13]
ENVIRONMENTAL PERFORMANCE OF THE BUILDING			
Energy (Ene) + Pollution (Pol)	ENERGY	Energy	Energy and Atmosphere (EA)
Land Use and Ecology (LE) + Pollution (Pol) + Transport (Tra)	ENVIRONMENT	Site	Location and Transportation (LT) + Sustainable Sites (SS)
Materials (Mat)		Components	Material and Resources (MR)
Management (Man) + Waste (Wst)		Worksite	Material and Resources (MR) + Sustainable Sites (SS)
Water (We)		Water	Water Efficiency (WE)
Waste (Wst)		Waste	Material and Resources (MR)
X		Upkeep - Maintenance	X
Health and Wellbeing (Hea)	COMFORT	Hygrothermal	Indoor Environmental Quality (EQ)
		Acoustic	
		Visual	
		Olfactory	
Health and Wellbeing (limité)	HEALTH	Quality of spaces	X
Health and Wellbeing (limité)		Air quality	Indoor Environmental Quality (EQ)
Health and Wellbeing (Hea)		Health quality of water	X
Innovation[14]	Recognition of principles of equivalence[15]		Innovation (IN)[16]
X	X		Regional Priority[17]

[12] BREEAM contains a specific section called “Management”, which addresses various aspects: project management, deployment, minimal environmental disturbance worksite and stakeholder engagement.
[13] This credit requires, from the beginning of the design process, the identification and creation of synergies between the various project stakeholders regarding the construction choices and the technical systems.
[14] BREEAM innovation credits concern “exemplary performance” (i.e. the achievement of performance thresholds higher than those stated in the credits) and “approved innovations”, which involve a specific assessment procedure (more difficult to assess).
[15] HQE example principle of equivalence: http://www.behqe.com
[16] LEED innovation credits provide three options: exemplary performance (equivalent to BREEAM functioning), pilot credits (these are credits currently undergoing testing that are provided online for assessment: http://www.usgbc.org/pilotcredits) and recognition of the presence of a LEED AP on a project team.
[17] The regional priority credits of LEED certification give additional points if certain credits targeted in the project are in line with those defined as priority in the geographical region of the project.

Overall, the three certifications have similar environmental "items", although there are variations in those highlighted. The graph below indicates the division of requirements between respect for the planet and respect for people[18]:

- Planet: requirements targeting the preservation of natural resources and limiting environmental impacts
- People: requirements targeting the comfort and health of users

Orientation of requirements for the different certifications



In the case of BREEAM and LEED, themes linked to the respect for the environment are predominant.
HQE certification has the most number of targets concerning individuals. The "Comfort" and "Health" related themes are the most developed in this scheme.

3. Calculation of performance levels

A. BREEAM

BREEAM certification gives points for the various credits. This number of points is then weighted by item[19] and gives a BREEAM level of certification, which is based on the overall score obtained (expressed as a percentage).

Equivalence scores / levels / stars

BREEAM Score	BREEAM level	Equivalent number of stars
≥ 30 %	« Pass »	1
≥ 45 %	« Good »	2
≥ 55 %	« Very Good »	3
≥ 70 %	« Excellent »	4
≥ 85 %	« Outstanding »	5

This BREEAM score then gives a level of certification, which is also associated with a number of stars. See the example below:

Performance display

[18] See also CSTB training delivered by Catherine Parant, Architecte: HQETM, LEED, BREEAM, DGNB: schemes comparison
[19] BREEAM weighting: Management 12%, Health and wellbeing 15%, Energy 19%, Transport 8%, Water 6%, Materials 12.5%, Waste 7.5%, Land Use and ecology 10%, Pollution 10% and Innovation 10%. One point scored in the Energy item is therefore worth twice as much in the overall score as one point scored in the Pollution item.

B. HQE

there are three possible performance levels for the 14 environmental targets previously presented:

- Prerequisite
- Performing
- High Performing

The Prerequisite level is obtained when all of the minimum requirements for a target are met, while the Performing and High Performing levels are obtained based on a percentage of points given per target, which allows for significant flexibility in the choice of concerns.

For example, for the target 4 «Energy», it is necessary to obtain more than 30% of points for the «Performing» level and 50% of points for the «High Performing» level:

Example of assessment target

TARGET 4	ASSESSMENT
PR	Compliance with PREREQUISITES
PERFORMING	Compliance with PREREQUISITES **AND** ≥ 30% of APPLICABLES points Including 5 POINTS for requirement 4.2.1
HIGH PERFORMING	Compliance with PREREQUISITES **AND** ≥ 50% of APPLICABLES points Including 5 POINTS for requirement 4.2.1

An aggregate of the levels of the various targets is then used to calculate the number of stars for the four environmental themes, as shown below:

Performance display

Based on the total number of stars obtained, an overall HQE level is then given according to the scale below:

Equivalence stars / level

Number of stars	HQE level
1	« Pass »
2	« Good »
3	« Very Good »
4	« Excellent »
5	« Exceptional »

C. LEED

LEED gives points for the various targeted credits

These points are then added together to obtain the LEED level of certification based on the scale below:

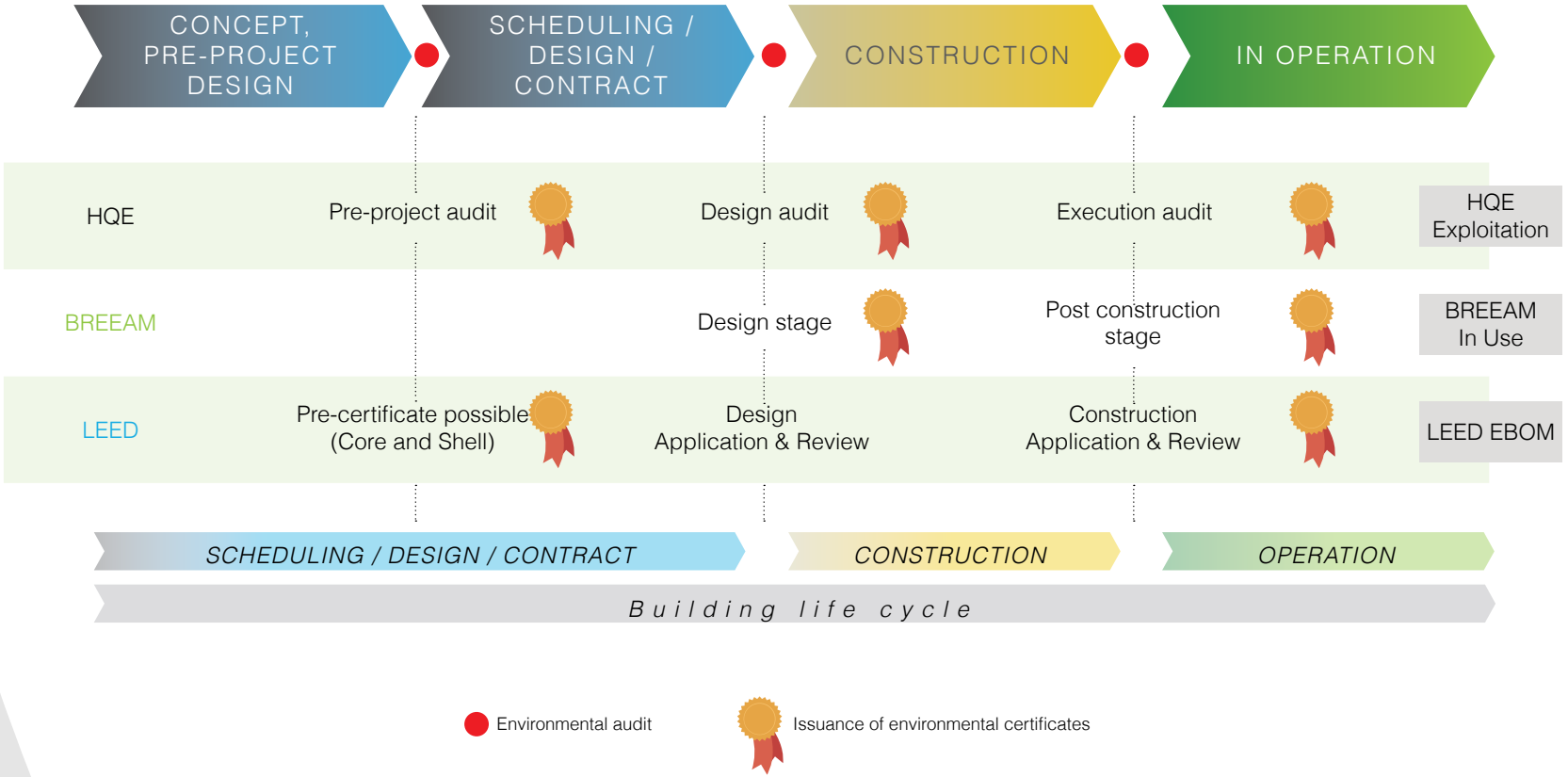
- Certified: 40-49 points
- Silver: 50-59 points
- Gold: 60-79 points
- Platinum: 80 points and over

Performance display

4. Audits and document reviews

A. AUDITS SCHEDULE:

The diagram below shows the phasing of audits based on the "classic" conduct of a design and construction project.
(Also see our additions on the following page)



B. CONDUCT OF AUDITS

The three certifications have very different approaches to the process of preparing evidence and its review, which has a significant influence on the project team's perception of the environmental certification process.

■ **BREEAM certification** for construction is based on the production of two evidence reports by the "BREEAM assessor":

- A report in the design phase called "BREEAM Design Stage"
- A report in the production phase called "BREEAM Post-construction Stage"

These two reports are comprised of written justifications per credit, along with the evidence references attached to the report (plans and specifications, diagrams, design calculations). It is up to the BREEAM assessor to state whether the evidence provided is sufficient for the credit to be approved. The report must clearly refer to these items of evidence in keeping with a classification that is as clear as possible in order to facilitate the review. This report is then sent to the BRE for a review of the credits by sampling. In the event of variances, a report is sent by the BRE to the BREEAM assessor to request additional information (technical clarifications, supporting documentation, etc.).

The report for the production phase must be accompanied by an assessor inspection report that provides photographic documentation of the sustainability measures put in place as part of the project. As such, although the BREEAM assessor cannot be considered a "third-party" agent in the same way as an HQE auditor, this nevertheless allows the BRE to obtain accurate information on the status of the production process.

■ **In the case of HQE certification,** the scheme uses on-site audits attended by the architect, the contractor and the other team members (mechanical engineering, electrical engineering, acoustician). The conduct of the HQE audit is based on an analysis of the HQE assessment table, which can be prepared by the HQE certification Référent. During the review process, the HQE auditor (a third party mandated by Cerway) analyses the quality of the supporting presented documentation and may request any additional technical information from the present team. The advantages of an on-site audit are as follows:

- Instructional and human aspect of the technical dialogue between the parties
- "Visible" aspect of the certification validation process
- Limited risk of technical misunderstandings thanks to "live" technical dialogue

For the post-construction audit, the HQE auditor inspects the building and analyses the documentation collected during construction.

■ **In the case of LEED certification,** a report is prepared containing evidence per credit and is sent via the dedicated platform LEED Online. Calculation tables are also included in these forms. The review is then carried out by the CaGBC/GBCI through subcontracting to specially accredited companies. In addition, because credits are separated into so-called "design" and "construction" credits, only certain credits are exhaustively documented following the audit phase. The whole of the certification process is led by the "LEED coordinator", who is specially assigned to this subject.

2 SCHEME COMPARISON ELEMENTS

1. Adaptations to the local normative context

The way in which local regulations are recognised is a key challenge in the development of international certification systems.

BREEAM: to date, BREEAM is the only certification that has introduced a systematic procedure for validating the standards used for each project. This procedure therefore facilitates the work of the design team. These standards are provided in the form of an Excel file containing one tab per country, which lists the various standards and best practice guides that can be used for each of the credits. The language of the scheme therefore refers to «national best practices», as in the example below:

HQE: the HQE scheme recognises European and international standards (in particular the ISO and ASHRAE standards). Generally speaking, the language used by the HQE scheme places a major emphasis on local regulations, making it easier to apply. If necessary, the recognition of a specific local characteristic can be approved by a principle of equivalency (shared by Cerway in an openly accessible database), to be submitted to the certification body. In addition, because the certification is not very prescriptive, application standards are a less sensitive subject than for BREEAM. See the requirement example below:

LEED: the recognition of local regulations by the USGBC is a recent phenomenon and has long been a hurdle for LEED projects outside the US. However, there has been a desire for major adaptations since 2012 for LEED V3, the aim being to facilitate the certification process. These adaptations were presented during 2012 in the form of an addendum to the LEED V3 standard called: "LEED Reference Guide for Green Building Design and Construction, with Global Alternative Compliance Path." These adaptations have been integrated into the latest version of the LEED standard (Version 4).

Example of a BREEAM requirement

Daylighting
Up to two credits (non residential buildings) and up to four credits (residential buildings)

2. EITHER
   a. The provision of daylight has been designed in compliance with the national best practice daylighting guide (see Table-9 for distribution of credits and Compliance notes for information regarding national best practice standards) OR
   b. Relevant building areas meet good practice daylighting criteria as outlined for average daylight factor in Table-9 AND uniformity in Table-10 OR
   c. Relevant building areas meet the daylight illuminance recommendantions in Table-11

Example of a HQE requirement

10.1 Concept, Pre-project design

OFFICE SPACE

Assessment criterion	points
10.1.1. Have access to daylight in sensitive spaces Percentage of spaces (weighted by surface area) with access to daylight (spaces with direct or indirect access to light): Access to daylight in all spaces	*PR*

Example of a LEED requirement

Requirements

NC, CS, SCHOOLS, RETAIL, DATA CENTERS, WAREHOUSES & DISTRIBUTION CENTERS, HOSPITALITY
Meet the requirements for both ventilation and monitoring.

Ventilation

Mechanically Ventilated Spaces

Option 1. ASHRAE Standard 62.1-2010
For mechanically ventilated spaces (and for mixed-mode systems when the mechanical ventilation is activated), determine the minimum outdoor air intake flow for mechanical ventilation systems using the ventilation rate procedure from ASHRAE Standard 62.1-2010 or a local equivalent, whichever is more stringent.

Meet the minimum requirements of ASHRAE Standard 62.1-2010, Section 4-7, Ventilation for Acceptable Indoor Air Quality (with errata), or a local equivalent, whichever is more stringent.

Option 2. CEN Standards EN 15251-2007 and EN 13779-2007
Projects outside the U.S. may instead meet the minimum outdoor air intake requirements of Annex B of Comité

2. Construction standards

A. DISCUSSION OF THE CERTIFICATION PREREQUISITES

Prerequisites are the minimum requirements that need to be met in order for a project to claim environmental certification. As such, the prerequisites are heavily indicative of the attention paid by the certification body to the minimum performances expected of a certified building.

The three certifications HQE, BREEAM and LEED operate differently as far as prerequisites are concerned:

Prerequisites

BREEAM	HQE	LEED
Prerequisites heavily dependent on levels of certification[20]	Prerequisites independent of levels of certification and building typologies (barring a few exceptions)	Prerequisites independent of levels of certification and sometimes dependent on building typology

The LEED and HQE certifications have six similar prerequisites concerning the following themes:
- Management of worksite waste
- Minimal energy performance
- Water-saving equipment
- Creation of waste premises
- Introduction of energy meters
- Minimum air change rates

In addition, the BREEAM and LEED certifications have extra prerequisites compared with HQE:
- The commissioning of systems (LEED)
- The prohibition of asbestos (BREEAM) and heavy restrictions on passive smoking (LEED)
- The installation of at least one water meter (BREEAM and LEED)
- The minimal environmental disturbance worksite (LEED)
- A requirement regarding the choice of electronic ballast for light fixtures (BREEAM)

Moreover, the HQE certification is different due to the introduction of requirements concerning comfort and health, whereas BREEAM and LEED certifications have fewer requirements, for example:
- Sanitation
- Thermal comfort
- Acoustic comfort
- Access to daylight and access to views
- Health quality of spaces and water (targets 12 and 14)

[20] Note that for BREEAM certification, the majority of prerequisites are linked to the level of certification. For example, the creation of optimised waste premises for recycling is only required from the “Excellent” level, which is not very constrictive.

Although these requirements are not necessarily difficult to meet (for example, in the case of acoustics in HQE, the project owner is asked to define its objectives and abide by them), they establish a beneficial minimum process of consideration concerning the quality of spaces, something absent in BREEAM and LEED.
Lastly, BREEAM certification is less demanding and imposes very few minimum thresholds on projects to claim certification. Once more, it is sometimes this characteristic that guides certain projects towards BREEAM certification (in BREEAM a building can be certified “Very Good” with very limited work on energy performance for example, which is not possible with HQE or LEED).

In conclusion:
There are significant similarities between LEED and HQE prerequisites, notably concerning energy performance and ventilation rates. HQE has additional prerequisites concerning comfort and health: access to light and views, and health aspects.
Meanwhile, BREEAM certification is less demanding about the integration of prerequisites, most of which only come into play from the “Excellent” level.

B. DISCUSSION ABOUT CERTIFICATION CREDITS

The three certifications have relatively different approaches to environmental issues. However, the tables below attempt to present and compare a few environmental aspects.[21]

Transportation:

	BREEAM	HQE	LEED
Clean vehicles	3% of parking spaces for electric vehicles (including ecological electricity supply)	10% of parking spaces for electric vehicles	3% to 5% of parking spaces reserved for “clean vehicles”[22]
Number of parking spaces	If possible 1 space per 3 users (or fewer)	Qualitative approach to sharing with other buildings	Quantitative approach
Public transport	Calculation of a transport index using a special tool	Number of routes less than 200/600 m from the entrance + frequency	Number of daily services less than 400/800 m

The three certifications place a special emphasis on environmentally-friendly modes of transport and public transport; a limitation on the number of parking spaces for private vehicles is also an objective that the three systems share.

[21] The indication “yes” in the tables means that the certification recognises this type of measure. Nevertheless, its inclusion is not necessarily mandatory.
[22] The definition of “clean vehicles” includes electric, hybrid and efficient vehicles in the sense of the ACEEE (American Council for an Energy Efficient Economy) classification, with a minimum score of 45.

Materials/Equipment:

	BREEAM	HQE	LEED
Reuse of a part of an existing building	Indirect recognition	Indirect recognition	Yes
Environmental impact/overall cost	Analysis of overall cost according to ISO 15686-5 LCA study recognised	Environmental impact study by product family, according to DEP[23]	Environmental impact study of the complete building, data in compliance with ISO 14044
Disassembly capability for recycling of materials at end of life	No	Yes	No
Health impact	Choice of low-emission materials/low TVOC and formaldehyde content + Measurement of air quality upon delivery and compliance with thresholds		
Responsible source	Environmental policy (ISO 14001, FSC)	FSC wood	Specific credit

The LEED and HQE certifications recognise the life-cycle analysis, while BREEAM opts for an overall cost approach (such as LCC). Note that the three certifications have similar approaches to limiting interior pollutants.

Energy:

	BREEAM	HQE	LEED
Budget work	Indirect recognition	Technical note on the justification of bioclimatic principles to be provided	Indirect recognition
Limitation of power consumption	Yes		
Use of renewable energies	Yes		
Energy monitoring during operation	Yes	No	Yes
Verification method	Local regulatory calculation if exists or ASHRAE 90.1 :2010	Local regulatory calculation if exists[24] or ASHRAE 90.1 :2010	ASHRAE 90.1 :2010
Minimum level	From the “Excellent” level	Prerequisite: minimum 10% improvement	Prerequisite: minimum 5% improvement[25]

The three certifications recognise the use of an energy calculation according to the ASHRAE standard or a local equivalent.

[23] “Déclaration Environnementale de Produit” (Environmental Product Declaration): these indicators of the environmental impact of the construction products used in the project must be established in accordance with the EN 15804 standard or a compatible equivalent standard. The compatible equivalent standard must be a national or international standard that must at least stem from the ISO 21930 standard (environmental declaration of building products).
[24] Recognition of the local regulatory calculation in HQE certification is possible depending on the power consumption items taken into account.
[25] 5% for new constructions and 3% for major renovations

■ Maintenance of the building and equipment:

	BREEAM	HQE	LEED
Access to the building	No	Accessibility study	No
Access to finishing, protection elements	Protection of spaces sensitive to traffic	Ease of upkeep Adaptable	No
Technical rooms	No	Easy to access	No
Technical equipment	No	Easy to access Adaptable	No
Ductwork	No	Easy to access Adaptable	No
Monitoring/Metering	Yes		
Comfort control	Yes		
Deployment	Yes		

The issue of the accessibility and maintenance of a building and its technical equipment is a strength of the HQE scheme, which addresses these issues in such a way as to enable more sustainable operation of a building and more potential for adapting to changes in its uses over time.

C. ENVIRONMENTAL PROJECT MANAGEMENT

The BREEAM and LEED certifications are beginning to integrate project management requirements, while HQE certification views this environmental management component as a key condition in the success of a sustainable project by fostering an integrated design process.

The table below presents the documents that comprise the environmental management system of HQE certification and draws a parallel with the similar BREEAM and LEED credits.

■ Documentation

MANAGEMENT DOCUMENTS required by HQE			BREEAM	LEED
APPLICANT'S COMMITMENT				
Analysis of the site	Used to establish the environmental profile based on the attributes and constraints of the plot and the surrounding area (target ranking according to stakes)		No	Yes SS Credit 1: Site Assessment
Collection of stakeholder needs	Collection of the needs and expectations of all parties potentially involved in the construction and operation		*Man 04 Stakeholder participation*	No
Collection of regulatory and other requirements	The applicant must create or delegate creation of an inventory of the legislative and regulatory requirements applicable to the operation		*Send checklist of the standards used for the project*	No
Assessing investment and operationing cost	The aim is to consider the budget relative to the environmental objectives		No	Yes : Through the Integrative Design credit
Environmental performance profile	Summary of the performance targeted for the Energy, Environment, Comfort and Health themes		No	No
Commitment document	Applicant's commitment to HQE certification		No	No
IMPLEMENTATION AND OPERATION				
Assigning the tasks, responsibilities and authorities of employees involved	Used to establish everyone's role in the HQE certification process		Yes Man 01 Sustainable procurement	Yes Indirectly via the LEED Online platform
Assessing the employees involved professionals - Trainings	Used to ensure that the chosen subcontractors have sufficient references to work on a project with a significant environmental component			Yes Indirectly, ID Credit 2 recognises the presence of a LEED AP in the project
Subcontractor contracts	Used to ensure that clauses concerning the HQE process have been integrated into the subcontractor contracts		No	No

■ Documentation (continued)

MANAGEMENT DOCUMENTS required by HQE			BREEAM	LEED
PROJECT MANAGEMENT				
Results of reviews and all resulting actions	Used to verify the progress relative to planning		No	No
EPB assessment	Assessment of all requirements of the “Environmental Performance of the Building” scheme		No	No
Procedure regarding corrections and corrective actions	Procedure aimed at carrying out corrections and corrective actions when the EPB has not been achieved relative to the profile targeted		No	No
CAPITALISATION				
Project report	The purpose of the final report is to increase the relevance and effectiveness of the features put in place based on the experience actually achieved in the field		No	No
Information on the satisfaction (or dissatisfaction) of the clients and other stakeholders	Same as above		Yes Man 04 Stakeholder participation	No

Documentation (continued)

PROJECT DOCUMENTS required by HQE			BREEAM	LEED
Worksite charter or commitments for a low environmental impact	This document is intended for companies that carry out works and handle themes connected with low environmental impact worksites (management of waste, dust, water and energy consumption)		Yes Man 02 Responsible construction practices Man 03 Construction site impacts	Yes SS Prerequisite 1: Construction Activity Pollution Prevention MR Credit 5: Waste and Demolition Waste Management IEQ C3: Construction Indoor Air Quality Management Plan
Programme	The programme summarises the architectural, technical, functional and environmental objects of the operation		No	No
Provisional upkeep and maintenance plan (or Maintenance notebook)	The upkeep notice is intended for the leader and manager (or operator) of the structure to enable him/her to keep the structure in a good condition and detect foreseeable wear and deterioration.		No	Yes if early deployment
Day-to-day notebook	Intended for users to explain the building's functioning and its environmental characteristics.		Yes Man 04	No
User guide	The user guide serves to communicate eco-friendly behaviours to users		Yes Man 01 Man 04	Yes SS Credit 7: Tenant Design and construction guidelines
Maintenance booklet for the future manager	Presents the construction features and specific environmental characteristics that must be communicated to the future manager (e.g. management of water and energy, ventilation, etc.)		No	Yes if early deployment

3 FEEDBACK

The fact that the three systems BREEAM, HQE and LEED are present in Europe has naturally led certain project owners in several European countries to seek one or several certifications for their real estate developments. Below are several examples of reasons given to justify these choices:

- Seeking one or several certifications enables the building to be better positioned on a fiercely competitive market on which certifications are - justifiably - perceived as indicators of overall quality for the real-estate complex
- Seeking LEED certification in Europe is often justified on the grounds of looking for investors and/or tenants with an international standing
- Seeking HQE certification is often justified by the attention it pays to the context, urban integration and the strong presence of comfort and health themes (this is particularly the case with real estate developments whose project owner is also the building's future occupant)

Tour Majunga
Offices, 65 000 m², France,
Certified BREEAM and HQE
© Takuji Shimmura, Jean-Paul Viguier

NewTime
Offices, 18 597 m², France,
Certified BREEAM and HQE
© Alexandre SORIA, Ateliers A115 & KCAP

Enovos
Offices, 8 140 m², Luxembourg,
Certified HQE and
targeting BREEAM
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Certified HQE
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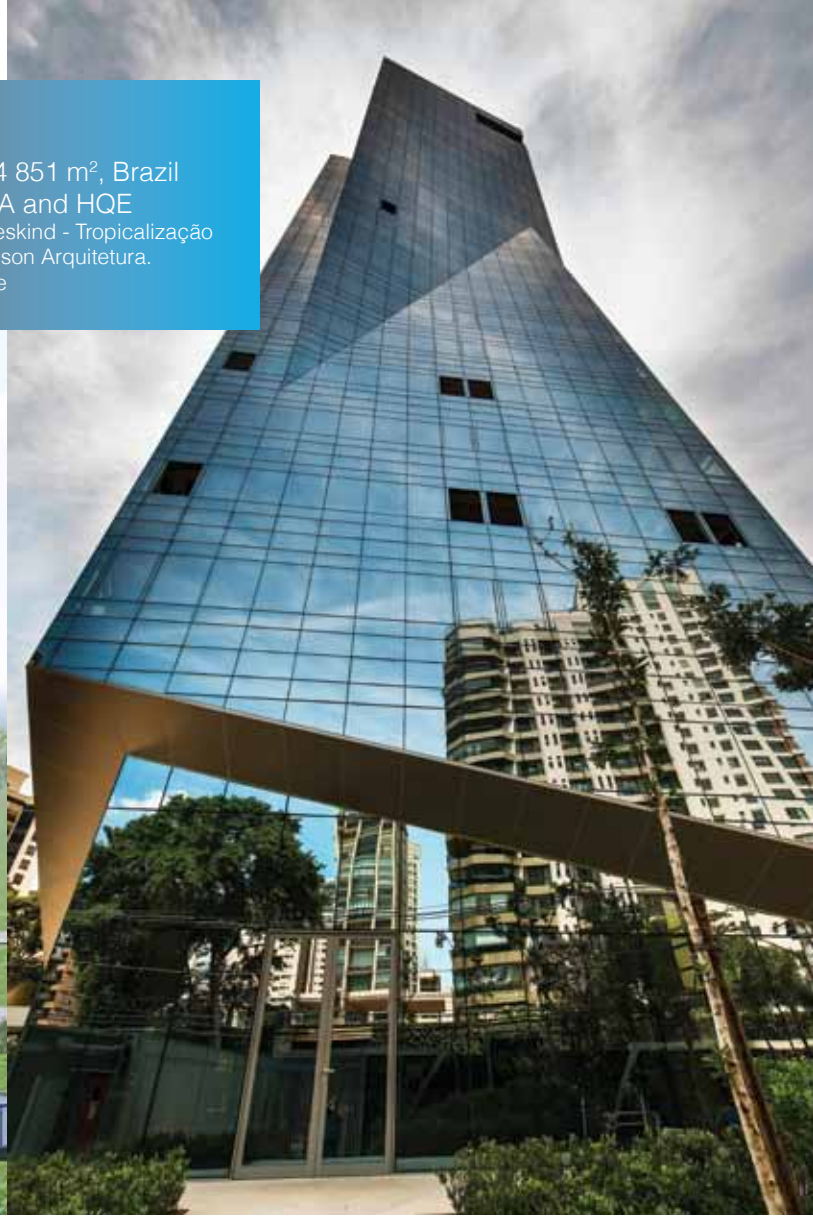

Vitra
Residential, 14 851 m², Brazil
Certified AQUA and HQE
Studio Daniel Libeskind - Tropicalização por Pablo Slemenson Arquitetura.
© Romulo Fieldine

4 SUMMARY ELEMENTS AND OUTLOOK

■ Summary of a few of the characteristics presented in this document analysing international environmental certifications

	BREEAM	HQE	LEED
Approach	Multiple-choice certification	Overall quality approach	Multiple-choice certification
Items and requirements	Very comprehensive Numerous concerns	Very comprehensive Prevalence of overall quality	Targets the essential
Characteristics	Prescriptive aspect often too pronounced Good adaptation to the local normative context Not very interactive audit process Adaptable to all types of projects, including those with lower energy objectives	Flexibility The individual is a central component of the process Very adaptable to the project's environment: heavy contextualisation Verification "in person", with an independent third party facilitating dialogue Project management integrated into the system fostering IDP[26]	Widely used internationally Preponderance of energy and materials aspects Oriented towards preparation for operation US standards very present. Tending to die out with V4

The three certification systems function very differently. However, they address similar environmental themes. Note that the BREEAM and LEED systems are placing more and more importance on the management aspect, like HQE, which has integrated this as a proprietary component of its system.

The specific characteristics of each of the schemes tend to channel them towards specific typologies. In this sense, HQE and LEED[27] can justifiably be seen as conveying a high overall quality and intended for real estate developments with a strong environmental ambition.

[26] IDP: Integrated Design Process
[27] This is particularly true for the high levels of certification: Gold and Platinum

Challenger
Offices, 68 000 m², France
Certified BREEAM, HQE and LEED
© Jean Rouit & Clémence Fiant-Saubot
SRA Architectes

About France GBC

France GBC is an association the object of which is to be a leading force at a national level, creating a dynamic that unites the Public and Private sectors in the service of the development of sustainable construction and renovation, but also to be the flag bearer of the French position abroad, and to contribute to the increasing and improving what French companies have to offer.

France GBC is the French member of the international organisation, the World Green Building Council (World GBC). In order to achieve its object, France GBC will as a priority rely on the skills, expertise and activities of its members.

Its vocation is to bring together individuals and companies, whose activities relate to the association's object, in particular public and private developers, project management, enterprises, manufacturers and trading companies, users, banks, insurers, investors, property companies, energy and environment production and services, maintenance, training, consultancy, research, evaluation and verification, associations and other bodies, which contribute to France GBC's object.

It was created at the initiative of a Founding Group made up of EFFINERGIE, HQE, QUALITEL, RESOBAT, CSTB, the AFNOR Group and IFPEB.

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