



***Sustainable construction  
in France  
- the HQE<sup>®</sup> programme -***

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**The environment and sustainable development have become major issues in the construction sector, specially in the building sector, in France and in the world.**

***Numerous initiatives launched around the world since the 1990s***

BREEAM in Great Britain,  
LEED in the USA,  
MINERGIE in Switzerland,  
PASSIVHAUS in Germany,  
HK BEAM in Hong Kong,  
CASBEE in Japan,  
TOTAL QUALITY in Austria, ...



Numerous initiatives have been launched around the world since the 90s to take the construction environment into account.

The following list is not exhaustive:

- BREEAM in Great Britain, *Building Research Establishment Environmental Assessment Method*
- LEED in the USA, *Leader Energy Environment Design*
- MINERGIE in Switzerland,
- PASSIVHAUS in Germany,
- HK Beam in Hong Kong,
- CASBEE in Japan, *Comprehensive Assessment System for Building Environmental Efficiency*,
- TOTAL QUALITY in Austria,
- etc.

These many initiatives follow different paths according to the specific characteristics of individual countries. They illustrate an international willingness to adopt a sustainable development approach in the construction sector.

# The HQE<sup>®</sup> programme

**This approach is called “the HQE<sup>®</sup> programme” in France.  
(HQE as “High Environmental Quality”).**

### **Basic facts :**

In France, the building sector

- consumes **50 %** of natural resources  
**40 %** of energy  
**16 %** of water usage
  - emits more than **25 %** of the CO<sub>2</sub> produced
  - generates more than **48 Mt** of waste **per year**
- => It has a major impact on the quality of our environment.



Here are some basic facts to justify this approach.

In France, the building sector consumes almost 50% of natural resources, 40% of energy and 16% of water usage.

It emits more than a quarter of the CO<sub>2</sub> produced.

Each year, it generates almost 48 million tonnes of waste (construction, refurbishment and demolition).

These basic facts are significant.

The building sector has a major impact on the quality of the environment.

In this context, the objective of the HQE<sup>®</sup> programme is to seek the best environmental assessment of a building over its whole life.

## ***HQE®*, a multi-criteria programme**

A methodology to assist those involved in construction or refurbishment to choose construction technologies and solutions to assure the environmental quality of the project.

The HQE® programme comprises 2 elements:

- 1. The environmental management system**
- 2. The environmental quality of the building**



### **HQE® is a multi-criteria programme**

**Many players are involved in the construction or refurbishment of a building: for example, developers, project managers, contractors, etc.**

**The HQE® programme provides a methodology to assist these players in choosing construction technologies and solutions to assure the environmental quality of the project.**

**The HQE® programme includes two elements:**

- 1) the environmental management system,**
- 2) the environmental quality of the building.**

## **1. *The environmental management system***

- **defines environmental objectives.**
- **defines the means of organising the project in order to reach these objectives.**



**The environmental management system allows the developer to define environmental objectives and the means of organising the project in order to reach these objectives.**

**Most of the time, to define these objectives and these means, the developer is helped by specialists in environmental construction and in the HQE® programme.**

## **2. The environmental quality of the building**

### **2.1. Mastering the building's impacts on the external environment**

#### **- Eco-construction**

1. Harmonious relationship of the building with its immediate environment
2. Holistic choice of construction processes and products
3. Low-nuisance construction site

#### **- Eco-management**

4. Energy management
5. Water management
6. Use-generated waste management
7. Management of upkeep and maintenance

### **2.2. Creating a suitable internal environment**

#### **- Comfort**

8. Hygrothermal comfort
9. Acoustic comfort
10. Visual comfort
11. Olfactory comfort

#### **- Health**

12. Health-related quality of interior areas
13. Health-related air quality
14. Health-related water quality



**Second element: The environmental quality of the building includes 2 principal impact categories, each comprising 7 targets:**

**Number 1: The building's impacts on the external environment**

**Number 2: The building's impacts on the internal environment.**

**Number 1 involves overall themes, divided into two categories:**

- **eco-construction (resource management, site nuisance, etc.),**
- **and eco-management (energy and water consumption, upkeep, etc.).**

**Number 2 centres**

- **on comfort aspects (acoustic, hygrothermal, etc.),**
- **and health for the user (air and water quality, etc.).**

**An important point, the HQE targets are interdependent. The challenge for the developer or the project manager is therefore to clearly identify their links, in order to prioritise them according to the programme characteristics (location, use, surroundings, etc.).**

## **2.1. Mastering the building's impacts on the external environments**

### **Eco-construction**

1. Harmonious relationship of the building with its immediate environment
2. Holistic choice of construction processes and products
3. Low-nuisance construction site



#### **1 Harmonious relationship of the building with its immediate environment**

- *Use of opportunities afforded by the neighbouring area.*
- *Management of the plot's advantages and disadvantages.*
- *Organisation of the plot to create a pleasant living environment.*
- *Reduction of risks of nuisances between the building, its neighbouring area and its site.*

#### **2 Holistic choice of construction processes and products**

- *Adaptability and durability of buildings*
- *Choice of construction processes*
- *Choice of construction products*

#### **3 Low nuisance construction site**

- *Selective sorting of site waste for reclamation and recycling.*
- *Construction site noise reduction.*
- *Reduction of pollution of the plot and the neighbouring area.*

## **2.1. Mastering the building's impacts on the external environments**

### **Eco-management**

4. Energy management
5. Water management
6. Operational waste management
7. Management of upkeep and maintenance



#### **4 Energy management**

- *Reduction in energy demand and energy needs.*
- *Increased recourse to NRE (New and Renewable Energy) sources.*
- *Improvement of energy equipment efficiency.*

#### **5 Water management**

- *Drinking water management*
- *Ensuring treatment of waste water*
- *Assistance with rainwater management and recycling.*

#### **6 Operational waste management**

- *Design of operational waste facilities from the first rough layouts of the building.*
- *Selective sorting of operational waste.*

#### **7 Management of upkeep and maintenance**

- *Anticipation and consideration of maintenance requirements.*
- *Setting up effective technical and maintenance management processes.*
- *Mastery of environmental effects of maintenance processes.*

## 2.2. Creating a suitable internal environment

### Comfort

8. Hygrothermal comfort

9. Acoustic comfort

10. Visual comfort

11. Olfactory comfort



#### **8 Hygrothermal comfort**

- *Mastery of hygrothermal comfort conditions.*
- *Uniformity of hygrothermal environment.*
- *Hygrothermal zoning according to use.*

#### **9 Acoustic comfort**

- *Acoustic correction.*
- *Sound insulation.*
- *Reduction of impact and equipment noise.*
- *Acoustic zoning according to use.*

#### **10 Visual comfort**

- *Good visual relationship with the exterior.*
- *Optimal natural lighting in terms of comfort and energy consumption.*
- *Good artificial lighting to supplement natural lighting.*

#### **11 Olfactory comfort**

- *Reduction of sources of unpleasant odours.*
- *Ventilation enabling the extraction of unpleasant odours.*

## 2.2. Creating a suitable internal environment

### Health

12. Health-related quality of interior areas

13. Health-related air-quality

14. Health-related water-quality



#### **12 Health-related quality of interior areas**

- *Creation of satisfactory characteristics for the interior environment.*
- *Creation of optimal hygiene conditions.*
- *Facilitation of cleaning and removal of operational waste.*
- *Creation of facilities for the disabled.*

#### **13 Health-related air quality**

- *Management of risks of pollution by construction products.*
- *Management of risks of pollution by equipment.*
- *Management of risks of pollution resulting from maintenance or improvement works.*
- *Management of risks of polluted fresh air.*
- *Ventilation to ensure satisfactory air quality.*

#### **14 Health-related water quality**

- *Protection of the drinking water supply network and conservation of drinking water quality in buildings.*
- *Possible improvement of drinking water quality.*
- *Possible treatment of used non-drinking water.*
- *Management of risks related to non-drinking water network.*

***The HQE® programme comprises operations:***

- **In all sectors:** public and private
- **For all types of facilities:**
  - Service sector: offices, swimming pools, cultural, sports, educational, hospitals...
  - Housing,
  - Warehouses and industrial buildings...



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  - **Service sector:** offices, swimming pools, cultural, sports, educational facilities, hospitals...
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  - **Warehouses and industrial buildings...**

***The HQE® programme includes certification since 2005:***

- by **CSTB** in the service sector  
[www.cstb.fr](http://www.cstb.fr)
- by **Qualitel** in the residential sector  
[www.qualitel.org](http://www.qualitel.org)

[www.assohqe.org](http://www.assohqe.org)



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- by **CSTB** in the service sector,
- by **Qualitel** in the residential sector.

***At last, HQE is an association with a web site:***

**[www.assohqe.org](http://www.assohqe.org)**

CSTB / Scientific and Technical Centre for Building



**For further information, I invite you to read OTUA's publication entitled "Haute qualité environnementale – l'acier pour une construction responsable" ("High Environmental Quality – Steel for responsible construction").**

**This booklet, presently published in French, describes steel solutions for the 14 targets of the HQE® programme.**

**THANK YOU**  
**FOR YOUR ATTENTION**

**Thank you for your attention!**