Green Building Rating Systems

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Introduction

Buildings

- Use energy
- Use water
- Use raw materials
- Generate waste
- Emit atmospheric emissions

Goal \Rightarrow Moderating the impact of a building on the natural environment

\Rightarrow Creation of green Building standards, certification and rating systems

Result \Rightarrow Sustainable design
Sustainable Design

- Optimize Site Potential
- Optimize Energy use
  
includes using renewable resources
  reduces usage of non-renewable resources

- Protect and Conservation of water
- Optimize Building Space and material use (green product)
- Enhance indoor environmental quality (IEQ)
- Impacts the environment minimally (minimal waste)
- Connects people with natural environment
Green Product

- Appeared before Building rating systems origins
- After concerns for
  A. product toxicity
  B. impact on children’s health
  C. indoor environmental quality
  D. Global warming
  E. Resource depletion

- No universal definition but have to offer environmental benefits and adhere to certain standards, no product can be 100 percent “green”
- 600 green product certifications in the world (ex. Green seal, FSL, USDA, etc.)
Green Building Rating Systems

- to help guide, demonstrate, and document efforts to deliver sustainable, high-performance buildings
- Vary in their approach around the world
- Focus can be slightly different (Performance based, prescriptive approach, etc.)

A building does not have to be certified to be sustainable and well-built
Green Building Rating System

Reason?

- Can be a valuable educational and marketing tool
- Provide an encouragement for clients, owners, designers, and users to develop and promote highly sustainable construction practices

Which type?

- Depends on the project (size, budget, location, etc.)

Benefits?

- Saving up to 97% reduction of energy, carbon, water and waste
British (BREEAM)

Building Research Establishment Environmental Assessment Method

- The first Rating System, appearing in 1990
- Uses UK policies, adjusted to UK culture; follows European+UK legislations
- Has been spreaded around the world
- 110 808 certified units in 2008
- Offices, retail, education, ecohomes, prisons, healthcare, bespoke multi-residential...

Allows comparison and benchmarking of different buildings, independently audited, can assess any building with the Bespoke version
Categories valued:

- Management
- Health and well-being
- Energy
- Transport
- Water
- Materials
- Waste
- Land use and ecology
- Pollution

Ratings: Pass / good / very good / excellent / outstanding
American (LEED)

- 1998
- Leadership in Energy and Environmental Design create:
  - healthy
  - highly efficient green buildings
  - cost-saving

- all building types: new construction, existing building, commercial, interior, shell & core, school…
- different phases: site, design, construction, operations in mandatory
- sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environment quality, innovation in design
- globally recognized symbol of sustainability achievement
Project earned credits in different categories and get a certification level

Categories:  - building design + construction
    - interior design + construction
    - building operation + maintenance
    - neighborhood development
    - homes

Certifications:  - certificated
    - silver
    - gold
    - platinium
German (DGNB system)

- 2007
- Non-profit, non-governmental organization
- Flexible rating system
- 50 criteria (from sections ecology, economy, socio-cultural, technology, site, etc.)
- can be awarded in bronze, silver and gold and platinum
- measures the total performance of a building or urban district
- measures the entire lifecycle of the building
- gives as much importance to the economical aspect of sustainable design as it does to ecological criteria
### Comparison

<table>
<thead>
<tr>
<th>BREEAM®</th>
<th>LEED</th>
<th>DGNB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Creation</strong>: 1990</td>
<td><strong>Creation</strong>: 1998</td>
<td><strong>Creation</strong>: 2007</td>
</tr>
<tr>
<td><strong>Used all around the world</strong></td>
<td><strong>Not used that much in Europe</strong></td>
<td><strong>Used all around the world</strong></td>
</tr>
<tr>
<td><strong>Adapted to European culture</strong></td>
<td><strong>Adapted to the American system</strong></td>
<td><strong>Adapted to every country specific differences</strong></td>
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Comparison

The three certifications have similar environmental headings, but with variations on the ones put forward.

Some are more adapted to a certain system.

Every certification has its own value.