

1. METHOD
2. DESCRIPTION

Green Building Challenge

A hierarchical system of assessment criteria for buildings, developed for the purposes of selecting and analysing buildings for the Green Building Challenge '98 conference. Three basic versions exist: multiunit residential buildings, office buildings and schools.

The system comprises of six sections and 19 categories of assessment:

- Resource consumption
 - Energy
 - Land
 - Water
 - Materials
- Environmental loadings
 - Airborne emissions
 - Solid waste
 - Liquid waste
 - Other loadings
- Quality of indoor environment
 - Air quality
 - Thermal quality
 - Visual quality
 - Noise and acoustics
 - Controllability of systems
- Longevity
 - Adaptability
 - Maintenance of performance
- Process
 - Design and construction process
 - Building operations planning
- Contextual factors.
 - Contextual factors
 - Loadings on immediate surroundings

Under these general headings a total of 100-150 individual assessment criteria are implemented.

3. CASE STUDIES

The method has been tested on in total 34 buildings in 14 different countries. Each participating country has modified the base system to suit their specific situation.

A full review of the case studies has been presented in the GBC'98 conference and will be available on CD ROM during the course of autumn 1998 by CANMET Energy Technology Center in Canada.

4. FOCUS OF EVALUATION

Evaluation focuses on assessing the environmental quality of buildings during design or after completion.

5. SPATIAL LEVEL

Primary spatial unit of assessment is the building, to some extent including the site. Some criteria refer to the public transport system and other services of the surrounding community, however also these are taken into account from the viewpoint of the individual building.

6. TYPE OF DATA USED

Quantitative: energy, water, land use, materials use, emissions, waste and sewage, some aspects of indoor environment, contextual factors, loadings on immediate surroundings (=adjacent properties)

Qualitative: most aspects of indoor environment, design issues related to longevity, design and construction process, building operations planning

7. EXPERTISE USED	Actual use of the assessment method relies on drawing extensive expertise from each of the 19 categories (see above).
8. END USERS	<p>The most obvious applications for the GBC framework system are the following:</p> <ul style="list-style-type: none"> • from the market point of view the system could serve as a basis for an environmental labelling/certification system for buildings; • the structure could be developed to a systematic approach for performance targeting for buildings used by construction clients in the early stages of building projects, and for subsequently monitoring compliance with the targets; • the assessment framework outline gives a good starting point also for producing targeted design guidelines for sustainable construction.
9. COMMENTS	<p>Strengths:</p> <ul style="list-style-type: none"> • A holistic approach to building performance assessment, both in terms of issues covered and in terms of implementing the "assessment chain" from input data to individual assessment issues to final results. • General framework with national/regional adaptations, which gives the system more flexibility. <p>Weaknesses;</p> <ul style="list-style-type: none"> • A large number of criteria requiring a lot of work to be worked through. • Even though the system as such is hierarchical it can in its present form only be used on the lowest level of the hierarchy, i.e. when all detailed data of the building is available. • Assessment principles for many of the individual criteria are subjective. • Sensitivity analysis has shown that assessment results are extremely sensitive to changes in the weighting system. <p>Opportunities:</p> <ul style="list-style-type: none"> • A relatively good consensus between 14 countries and thus a good basis for further international developments. • For many countries involved GBC has provided a good platform for national discussions, thus stimulating development within countries. <p>Threats:</p> <ul style="list-style-type: none"> • Countries or institutions perceive GBC as a competitor for national assessment schemes, and not as a platform for development.
10. SOURCE	Conference Proceedings. Green Building Challenge '98. An International Conference on the Performance Assessment of Buildings. October 26-28, 1998, Vancouver, Canada. Natural Resources Canada, Ottawa, Canada, 1998.
11. REVIEWER	Ilari Aho (Motiva, Finland) Task group: Procurement Protocol
12. DATE OF REVIEW.	11/11/1998