



## CIB NEWS ARTICLE

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in Building and Construction

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Smart-ECO  
Sustainable Smart  
Eco-Buildings in the EU

Sixth Framework Programme  
Priority 6.1.3.1.2.1  
ECO-Buildings



November 2009

### Programmes

## Fourth Project Report – the Final Vision

*Smart-ECO is an EU funded 2.5 year programme in which CIB is one of the programme partners. It focuses on the uptake of innovations that enable building and construction sector to meet the requirements of Sustainable Development. This report from the Smart-ECO programme is about the Smart-ECO Vision that is a final outcome of a consensus based process designed to define what sustainable buildings are.*

*Smart-ECO is part of a cluster named "ecobuildings" that includes three such EU funded projects and that was first reported on in a CIB News Article ([here](#)).*

### Sustainability Now Defined

After a lengthy consultative process the first all-embracing and authoritative statement of how sustainable building should be defined, has now been produced as a valuable outcome of the Smart-ECO Vision project.

Work on the Smart-ECO Vision project began in December 2008. Since then an international group of experts has gradually developed a series of statements about which they, and a cross-section of building sector stakeholders they consulted, reached agreement.

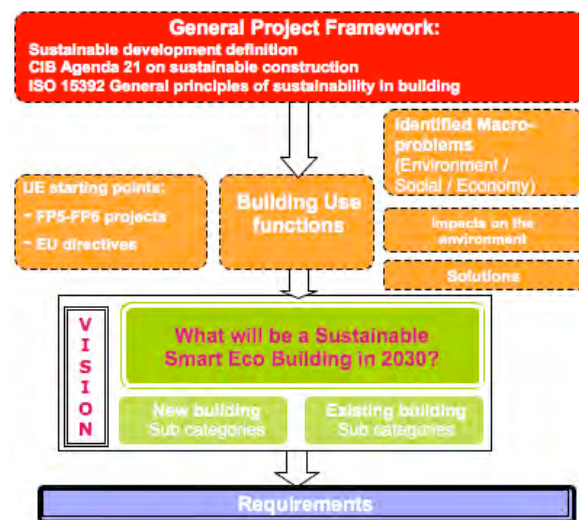
The result is a definition of sustainable building that is consensus-based and founded on sound scientific principles.

### Background

In the first CIB News Article about the Vision ([here](#)) in December 2008, it was explained that a sustainable, smart eco-building (SSE-building) results from the practical application, at all phases of the project, of the

nine general principles of sustainability set out on ISO 15392. These general principles need to be applied all along the decision making process (planning, design, construction, operation, renovation, end of life), and more specifically in project planning phases associated with the building life cycle.

The article went on to propose that an SSE-building is a new or renovated building designed as an answer to the needs expressed by the owner and/or future user, for fulfilling its main use functions.



### Use functions

The use functions of a building were described in terms of CIB W052 Procurement Systems 1995 as being to:

- provide space
- provide an indoor climate
- guarantee safety and security

- allow the use of goods and tools
- allow the control of nearby relationships
- take advantage of the site without damaging it
- bring meaning (semiology)

The article then went on to propose a vision of an SSE-building, established on the basis of what was described as a consensual scenario hypothesis for 5 influencing factors, which it said were:

- Fuel and raw materials cost perspective
- demography
- climatic changes
- public awareness
- political strength.

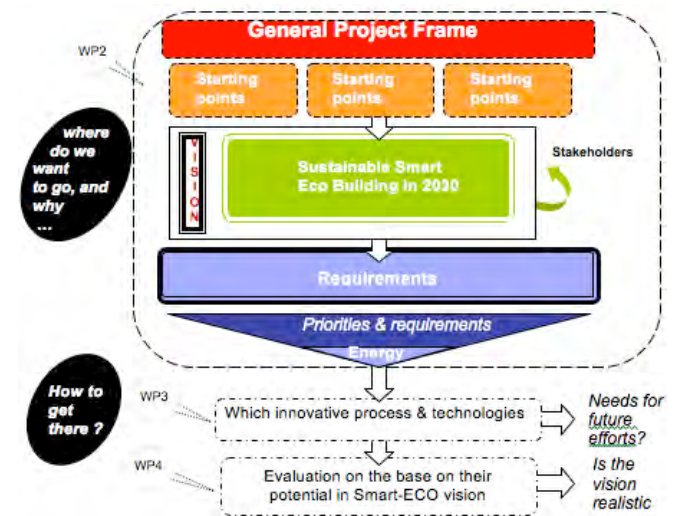
The article invited readers to provide their comments on this tentative vision, using a questionnaire provided for the purpose. That invitation was in keeping with the idea that the final version of the vision should be as much as possible a product of consensus.

**Final Statement of the Vision**

The latest and final statement of the vision says that to obtain a Smart Sustainable Building, it may be necessary to aim beyond most current technical regulations. In particular, Smart Sustainable Eco Buildings need to address the following key considerations:

1. Apply the general principles of sustainability [ISO 15392:2008]: these are: Continual improvement, Equity, Global thinking and Local action, Holistic approach, Involvement of interested parties, Long-term consideration, Precaution and risk, Responsibility, Transparency.
2. Result from the involvement of all interested parties and be designed to meet its occupants' needs individually and collectively. The occupants' needs must be consistent with collective social ones.
3. Be completely integrated into the relevant local building, town-planning or environmental-planning schemes and infrastructure. The building must comply with the local laws applicable to it and connect into the existing services, networks and urban or suburban fabric of its environment.
4. Be designed or refurbished from a Life Cycle perspective. The life cycle covers planning, design, construction, operation and maintenance, renovation and end of life Evaluation of performance at each phase includes taking into consideration all the other phases.
5. Have its environmental impact minimized over the estimated or remaining service life. This takes into consideration regional and global requirements, resource consumption (energy,

6. material, and water) and waste and emissions (to air, water and soil) reduction.
6. Deliver economic value over time. To assess economic value over time requires a life cycle cost approach, taking account of future costs of operation, maintenance, refurbishment and disposal.
7. Provide social and cultural value over time and for all. A Smart sustainable Ecobuilding must provide a sense of place for its occupants (permanent or occasional), and be seen as a mean of work status improvement for the workers. A SSE building should relate to the local environment and wider regional culture. Moreover, a SSE building is one of the key points for the social affordability.
8. Be healthy, comfortable, safe and accessible for all. Health criteria include indoor air quality and comfort criteria include acoustic, thermal visual and olfactory comfort. Full access allows every one, to use the facilities of the building. A Smart sustainable Ecobuilding must allow safe working conditions to the workers during the construction and the service life. "For all" means for permanent and occasional, private and professional occupants.
9. Be designed to be user-friendly, simple and cost effective in operation, with measurable technical and environmental performances over time. A manual describing the operation and maintenance of the building must be available for both operators and occupants.
10. Be designed or refurbished to be adaptable throughout the service life, with an end-of-life strategy. The building allows adaptation to changing performance and functionality requirements, in accordance with new environmental constraints, and taking into account particular regional requirements.



## Significance of the Vision

The significance of this vision cannot be overstated. At the time when sustainability in building became a common buzz-word, much used but often misunderstood and misused, it was time to take a careful look at what sustainable building really means. That is what the Smart-ECO project did, and the outcome is the first and only consensus-based authoritative definition of what the term "sustainable building" actually means. That means that its frequent use in publications from this point on could help to reduce the ambiguity and uncertainty that occurs when such a term is given different meanings by different commentators, practitioners and researchers.

## Overview Smart-ECO (and related) CIB News Articles

- [Smart-ECO Report 1 – March 2008](#)
- [Cluster Ecobuildings – Report 1 - December 2008](#)
- [Smart-ECO Report 2 \(The Vision\) – December 2008](#)
- [Smart-ECO Report 3 \(Innovation\) – April 2009](#)
- [Smart-ECO Report 4 \(The Final Vision\) November 2009](#)

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For further information on Smart-ECO please visit the designated website at [www.smart-eco.eu](http://www.smart-eco.eu)