



## CIB NEWS ARTICLE

International Council for Research and Innovation  
in Building and Construction

Providing a global network for international exchange and cooperation in research and innovation in building and construction, in support of an improved building process and of improved performance of the built environment.



Smart-ECO  
Sustainable Smart  
Eco-Buildings in the EU

Sixth Framework Programme  
Priority 6.1.3.1.2.1  
ECO-Buildings



March 2008

## First Project Report

by

Dr. Ing. Wolfram Trinius and Prof. Christer Sjöström

Smart-ECO is a Strategic Support Action (SSA) conducted under the EU's 6th framework program and administrated by DG TREN (Directorate General on Transport and Energy). The project focuses on the uptake of efficient technological and non-technological innovations that will enable the building and construction sector to meet the requirement for Sustainable Building. Started on 15<sup>th</sup> October 2007, the project is conducted over a time period of 30 months, structured into seven work-packages, and carried out by twelve project partners and coordinated by BMG (Centre for Built Environment, University of Gävle, Sweden).

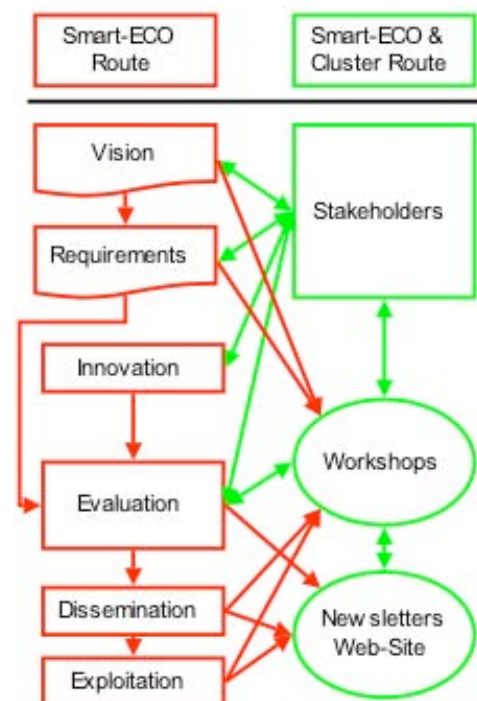
Smart-ECO project partners are: BMG, Sweden; CSTB, France; Tallinn University of Technology, Estonia; Servitec, Italy; TNO, The Netherlands; SINTEF Byggforsk, Norway; Fachhochschule Südwestfalen / Soest, Germany; Politecnico di Milano, Italy; Endoenergy Systems Ltd, UK; Hywel Davies Consultancy, UK; Mace Ltd, UK and CIB.

### Project Vision

Addressing innovative solutions and their contribution to sustainable Eco-buildings precludes clarification on what is meant with "innovative solutions", as well as it necessitates that a vision on sustainable building for a medium time horizon is being defined. In relation to that vision, clearly expressible requirements need to be identified to serve as reference points in the assessment of the innovative solutions considered.

As the project aims to generate results that are relevant to the building and construction sector, it is from the outset a core concern that the vision, the requirements and the innovative solutions are

perceived as relevant to the market. To ensure this relevance, the project creates and applies a stakeholder group that consists of more than 100 stakeholders representing the construction sector in its broadest constitution. The involvement and support from the stakeholder group is essential to the project, as the route towards a more sustainable built environment can not be described in realistic terms without involving those who we aim to convince and who need to embrace the goals and to take up the proposed route.





Involvement and transparency are general principles of sustainability in building construction according to ISO FDIS 15392. Aiming to establish a route to smart sustainable eco-buildings, the general principles bear relevance also on project level.

## Project Goal

The current state of the art and the vision of a more sustainable built environment sets the frame for the appreciation of the long term effectiveness of Eco-buildings and innovative technologies, especially renewable energy systems. Together, the vision and relevant EC policies will serve as a reference framework for the analysis of life performance aspects of innovative technologies applied to realise more energy efficient and more sustainable buildings.

Smart-ECO aims to evaluate technical and non-technical innovations relative to their contribution to a vision for sustainable building. Such innovation will only be successful if the potential to implement and apply the new solutions will be sufficiently promising.

Consequently, combining these criteria, the project will deem any innovation to have promising potential if it satisfies the following:

- it contributes to the development that is in-line with the vision for sustainable building
- it fulfils the desired performance requirements that arise from such a vision
- it is perceived as being feasible by a wide range of stakeholders.

A vision is usually a rather descriptive and qualitative presentation of the overall ambition. However, specific, measurable requirements and metrics (or "indicators") are needed to quantify progress towards successful development of movement towards realising specific goals in the vision. The potential of technical and non-technical innovations to contribute to such developments can then be discussed and assessed against the requirements.

## Sustainability in Building Construction

During the past years, ISO has addressed sustainability issues related to building construction under TC59/SC17. CIB has been strongly involved in the preparation of the standardization efforts, namely through CIB establishing the "Agenda 21 for Sustainable Construction" and the corresponding agenda for sustainable construction in developing countries.

The standardization work, including the standards addressing Service Life Planning (ISO 15686), brought together with results of numerous research projects, like for instance the CIB led PeBBu network on Performance Based Building, forms reference points to the Smart-ECO project.

In order to rapidly bring the reader to the very heart of ISO FDIS 15392:2008 "Sustainability in Building Construction – General Principles", its core statements are repeated here:

- Sustainable Buildings provide the required performance with minimum adverse environmental impact, while encouraging improvements in economic, social and cultural aspects at local, regional and global levels.
- The objectives to apply sustainable development to the building and construction sector are:
  - improvement of the construction sector and the built environment
  - reduction of adverse impacts while improving value, where impacts as well as value may be judged against any combination of the three primary aspects of sustainability
  - stimulation of a pro-active approach
  - stimulation of innovation
  - decoupling of economic growth from increasing adverse impacts on the environment and / or society
  - reconciliation of contradictory interests or requirements arising from short-term and long-term planning or decision-making
- The principles applied to reach the objectives are:
  - continual improvement
  - equity
  - global thinking and local action
  - holistic approach
  - involvement of interested parties
  - long-term consideration
  - precaution and risk
  - responsibility
  - transparency

Rather similar to the concept of Eco-efficiency, where the provided value is set in relation to the caused environmental impact, sustainability is expressed on the basis of the technical performance and the functionality provided by the considered product.

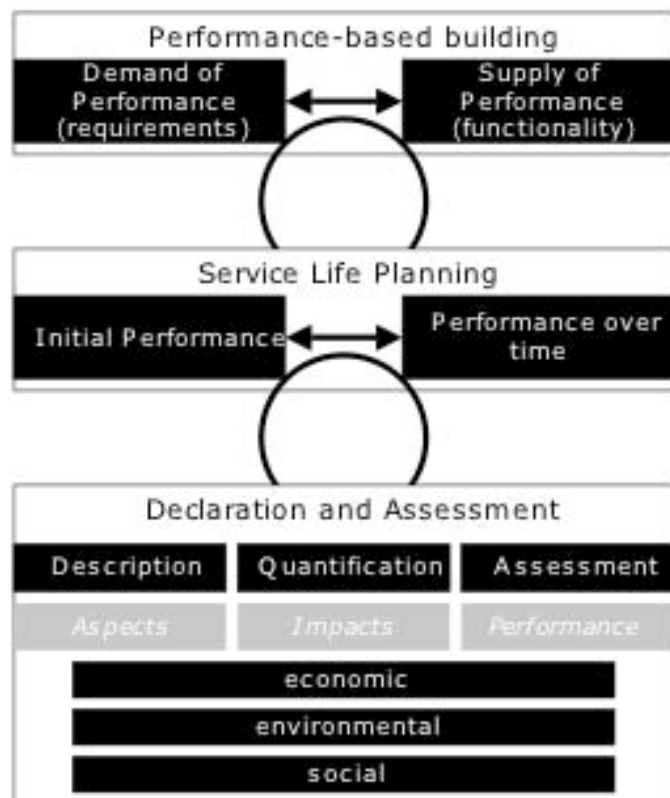
Consequently, the elements that need to be considered when addressing sustainability of products and services are:

- (technical) performance and functionality
- economic aspects
- environmental aspects
- social aspects

## Project Approach and Cluster

Smart-ECO bases its approach on the methodologies that emerged through numerous R&D as well as standardization activities. The methodological link from performance based building through service life planning and sustainability in building construction,

which serves as one of the backbones of the project can be illustrated as this:



The aim is to evaluate the contribution that innovative solutions, applied in buildings, can make towards a more sustainable built environment, where the vision and the derived requirements represent the assessment parameters. The functional performance of the buildings is a further given reference point. According to the above presented, a new solution can only be perceived as being better if both the required service/value is provided and the associated adverse impacts at the same time are lower than for other solutions. In-line with the program within which Smart-ECO is conducted, innovative solutions have a strong focus on, but are not restricted to, renewable energy supply systems applied to buildings.

CIB plays a significant role through its abilities to provide a highly relevant contact network, to have direct access to thematic experience through its working groups and activities, and functions as a channel for dissemination of results, as much as CIB provides a forum for discussion through its international conferences and events.

Smart-ECO is conducted in a project cluster, including the projects:

- ECO-BUILD, a specific support action for the advancement and the implementation of the Eco-Building concept

- INTECO BUILD, focussing the promotion of integration of renewable energy, energy management and advanced building concept in intelligent ecological buildings
- PHDC, focussing the promotion and dissemination of passive and hybrid down-draught cooling in buildings

ECO-BUILD addresses policies, drivers, incentives and regulation, and we expect that especially this project and Smart-ECO have many commonalities and complement each other to an extent that the expected cumulative outcome, anchored with a wide panel of stakeholders, succeeds to both set an agenda and to indicate the means needed to develop accordingly.

### Contact Info



Centre for Built Environment  
University of Gävle  
Wolfram Trinius,  
[wolfram.trinius@hig.se](mailto:wolfram.trinius@hig.se)  
Christer Sjöström,  
[christer.sjostrom@hig.se](mailto:christer.sjostrom@hig.se)

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