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ECO-BUILDINGS

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"Stand alone Vision Executive summary"

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SMART-ECO is a 30-month specific support action funded by the EC DG TREN (Directorate-General on Transport and Energy) to create an all-inclusive community of stakeholders for eco-buildings by bringing together experienced organizations that span a full range of views. SMART-ECO will invite this community to focus on the evaluation of innovation (technical and non-technical) to support what a smart eco building will be in 2030.

General principles

The objective of the vision document is to provide a consensual vision of what should constitute sustainable SMART-ECO buildings in the period 2010-2030, considering the current starting point in the EU. Requirements supported by the vision will allow a potential identification of the innovations.

Methodology

The vision has been built up from various starting points to identify the macro-issues the building sector may provide answers to. The vision has been presented, modified and validated by the stakeholders. More details about the methodology can be found in the full "Vision document".

Application field

The vision must be timeless to ensure that it remains relevant over time and in different European cultures. Whereas the vision must be unique, the detailed requirements depend on the building and its context and the approach will differ according to the location age, type and function of the building.

Expected results

This vision, shared by the different stakeholders, is the basis of the innovation evaluation. Each proposed technology or process innovation is evaluated against the requirements derived from the vision, in order to identify their potential to meet the detailed requirements.

A Smart Sustainable Eco (SSE) Building will:

1. Apply the general principles of sustainability;
2. Result from the involvement of all interested parties and be designed to meet its occupants' needs individually and collectively;
3. Be completely integrated into the relevant local building, town-planning or environmental-planning schemes and infrastructure;
4. Be designed or refurbished from a Life Cycle perspective;
5. Have its environmental impact minimized over the estimated or remaining service life;
6. Deliver economic value over time ;
7. Provide social and cultural value over time and for all;
8. Be healthy, comfortable, safe and accessible for all ;
9. Be designed or refurbished to be user-friendly, simple and cost effective in operation, with measurable technical and environmental performances over time;
10. Be designed or refurbished to be adaptable throughout its service life, with an end-of-life strategy;

To obtain a Smart Sustainable Eco 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, 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 Eco-building 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 Eco-building 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.

Requirements, derived from this vision, will illustrate in full detail the meaning of each part of the vision.