"ENERGY EFFICIENT BUILDINGS" ÇAĞRISI KAPSAMINDA YER ALAN KONU BAŞLIKLARI

Topic EeB.ENERGY.2010.8.1-2: Demonstration of Energy Efficiency through Retrofitting of Buildings

***Content/scope**:*

Demonstrate in the building sector, high energy efficient innovative **retrofitting** Technologies and measures for low energy performing buildings, the typology of which is representative for large geographical areas in Europe.

The project(s) shall use innovation in technology, design, planning, operation or systems integration with a strong preference for residential buildings and address socio economic issues.

While the project(s) could contain a single building or a number of buildings, located in one or more countries, effort and budget should be balanced amongst participants from at least three Member States/Associated Countries.

Retrofitting should be as cost effective as possible. The return to investment for the energy saving measures should be calculated and presented and should be reasonable under current market standards.

Detailed information should be provided on the building(s) existing envelope and its current energy use and the energy efficiency measures to be applied should also be described extensively. The gross floor area of the building(s) should be specified together with the targeted annual energy use per m2 (kWh/m²/year, broken down by space heating, cooling, domestic hot water heating, lighting, etc)

In addition to the technical measures to be undertaken, additional accompanying measures affecting the future operation of the building (e.g. behavioural changes, post occupancy evaluation) should also be clearly addressed.

The energy use should achieve at least the national limit values for new buildings according to the applicable legislation based on the Energy Performance of Buildings Directive (for 2010).

A holistic approach is expected in the measures to be taken and all elements and systems of the building that could contribute to its becoming more energy efficient should be envisaged.

The space heat use (kWh/m²/year) should be reduced by about 75%.

The project(s) should have a high potential of replication contributing to large scale market deployment before 2020; a dissemination and market deployment programme should be included in the proposal.

The detailed metering/monitoring programme should last at least for one year, however, longer term commitment and programmes of the building operators (e.g. in continuous monitoring and/or guarantees of performance to the tenants) would give an added value to the proposal.

Funding scheme: Collaborative Project.

Expected impact:

- Large scale market deployment in retrofitting of buildings before 2020
- Accelerate the retrofitting uptake of low efficient building stock.
- Offer cost effective highly energy efficient retrofitting practices.
- Accelerate the market uptake of the most innovative ICT tools for efficient buildings management
- Create best practice examples for the construction sector based on innovation and competitiveness, with benefits for the citizens and the environment.
- Contribute to raise the performance standards and regulations on European, national
- and local level, in the construction industry and building sector, through the best practice examples.

Additional information:

- In addition to the detailed description of the buildings and the measures to be taken, it is strongly suggested for participants to complete and include in the proposals the Building Energy

Specification Tables (BEST) summarising this information for every type of building proposed. The template for the BEST table can be downloaded from the following web address: ftp://ftp.cordis.europa.eu/pub/fp7/docs/wp/cooperation/energy/e_best_2010_en.xls

- Successful proposals will be asked to follow a common monitoring data structure, using a common methodology, in order to feed the relevant Commission data bases (e.g. CONCERTO data base).
- The form of grant applied in area 8.1.2. 'Energy efficiency in Buildings' is based on additional energy efficiency measures in buildings. The grant will be composed of a combination of:
  - the typical reimbursement of eligible costs, and
  - flat rate financing determined on the basis of scale of unit costs only for the demonstration part of the buildings.
- The scale of unit cost of Community financial contribution is fixed to EUR 100 /m² eligible costs and thus EUR 50 /m² Community contribution.
- The eligible cost per building used in the projects are fixed costs.
- The total of Community financial contribution based on scale of unit costs may not exceed EUR 6 million for one demonstration site.
- The evaluation of the proposals will also take into account the degree of excellence and innovation of the technology used and the most cost effective practices
- (euros/efficiency gain; euros/CO2 reduction, kWh/m²/year saved). For this reason, the above figures should be indicated in the proposal.
- Up to four (4) projects will be supported.

***Open in call*:** FP7-2010-NMP-ENV-ENERGY-ICT-EeB

Objective EeB.ICT.2010.10-2: ICT for energy-efficient buildings and spaces of public Use

Targeted outcomes:

a) Integrated ICT-based management and intelligent control systems governing all ergyefficient sub-systems, such as solid state lighting, heat exchange or air treatment, deployed in spaces of public use. These control systems should interoperate with other ICT-based sub-systems which may be in place to ensure security, safety and comfort.

The system may cover both the inside of buildings as well as the exterior and surrounding space. Examples of such spaces include: a motorway service area, a football stadium with its surrounding parking space, a university campus or a shopping mall.

In addition to systems integration, proposals should include a substantial validation phase focussing on the operation of the building(s) and surrounding space. During this phase, proposals should record evidence and draw lessons on the benefits and total cost of operation for use by those planning to deploy and finance such systems. Proposals should also consider any relevant contributions to/from standardisation and regulation measures, as well as guidelines for future procurement schemes.

b) European “ICT for Energy-efficient Buildings" Forum: One coordination action should bring together all relevant stakeholders to identify and review the needs in terms of research and systems integration. Its tasks should include editing and up-dating the REEB research Roadmap*36*, the organisation of expert hearings, and dissemination and FP7 Cooperation Work Programme: Information and Communication Technologies networking events. The Forum should also aim at contributing to standardisation and regulation.

Expected impact:

- Contribution to the opening of a market for ICT-based customized solutions integrating numerous products from different vendors and offering services from design of integrated systems to the operation and maintenance phases.
- Establishment of a collaboration framework between the ICT and buildings and construction sectors aimed at exploiting opportunities for the development of ICT-based systems in compliance with the Energy Performance of Buildings Directive.
- Radical reduction of energy consumption and CO2 emissions, in line with the policy framework for facilitating the transition to an energy-efficient, low-carbon economy through ICT.

EeB.ENV.2010.3.2.4-1 Compatible solutions for improving the energy efficiency of historic buildings in urban areas

The objective is to develop new technologies and systems as well as compatible materials for improved energy efficiency of historic buildings while ensuring their sustainable protection and ntegration in urban areas. Proposals will target rehabilitation or adaptation of historic buildings to make them highly resource and energy efficient by improving architectural components, thermal insulation, air conditioning and ventilation, heating, lighting, and other appropriate solutions. Developments should also promote innovative methods and materials for the monitoring and control of energy consumption and of indoor climate including air pollution and possibly be applicable to cultural heritage collections located in historic buildings. Solutions for the rehabilitation and/or retrofitting of historic buildings must respect the integrity, authenticity and compatibility between the old and new materials and techniques, and be economically viable to enable a widespread application to a vast majority of urban historic buildings, whether they are or not protected by legislation. Protocols and tools for the planning and implementation of heritage rehabilitation works should be adapted to consider the specific cultural value and priorities required of heritage building interventions and to ensure their effective transferability to other historic buildings located in other urban centres or their surroundings across Europe.

A significant participation of industrial partners including SMEs is required. The participation of local authorities or agencies in charge of the rehabilitation and adaptation of ancient and historic buildings in rehabilitated urban areas is encouraged. This will be considered in the evaluation.

Funding scheme: Collaborative Project (large scale integrating project, upper financial contribution EUR 5 000 000)

Expected impact: Proposals should contribute to the European Economic Recovery Plan andlead to widespread improvement of energy saving in historic buildings, sustainable renovation of ancient infrastructure and improved living conditions within historic urban areas. Research should contribute to improved quality management of historic cities and cultural tourism, and also help implement the EU Environmental Impact Assessment Directives when applied to historic buildings25. Proposals should contribute to the EU Energy Performance of Buildings and other relevant policy regulations. Proposals will also support the Strategic Research Agenda of the European Construction Technology Platform and its Focus Area in Cultural heritage.

EeB.NMP.2010-1 New nanotechnology-based high performance insulation systems for energy efficiency

Technical content/scope: Insulating materials are used to keep the temperature constant in an enclosed space such as a house, either warmer or colder than the surroundings, and in doing so can protect the environment through the reduction of greenhouse gases. Nanotechnology offers high potential for

enhanced insulation allowing thinner coatings or fillings to prevent heat loss or gain which would not be possible with conventional materials. The research shall focus on development of nanotechnology based insulation systems for enhanced thermal and improved mechanical properties while reducing overall costs making wide-scale commercial application feasible, including the renovation of existing installations. Examples of materials systems for achieving this are aerogels/aerogel composites and nanofoams or thin nanostructured insulators based on thermally resistant (composite) nanoparticles, which can be applied directly to a surface as a film, spray or paint A further research objective is to combine the insulating effect with other functionalities, for example with photochromic, thermochromic, electrochromic for windows or flame retardant effects, self-cleaning, biocide or humidity control properties, for walls and roofs. The safety of proposed solution(s) must be ensured for the full product life cycle (production, use, disposal/recycling). Economic performance of the proposed solutions should be demonstrated by service-life costing analysis.

In order to ensure industrial relevance and impact of the research effort, the active participation of industrial partners represents an added value to the activities and this will be reflected in the evaluation.

The projects are expected to cover demonstration activities, including pilot implementations in industrial settings, and this will be reflected in the evaluation.

Funding Scheme: Collaborative projects

Expected impact: (i) Reduce the cost of nanotechnology-based insulation systems and make their wide-scale commercial application feasible (ii) reduce the heat losses and gains through the building envelope for reduced energy consumption and increased indoor comfort; (iii) for windows which are the weakest part on the energy efficiency performance, a reduction in the U/value by more than 35% is expected compared with conventional ones. For glass covered buil ding it wouldreduce the energy bill for heating by 40% and for cooling by 7%.

EeB.NMP.2010-2 New technologies for energy efficiency at district level

Technical content / scope: The construction sector can provide a significant contribution to the reduction of resources consumption and to a wider use of renewable resources. The main objective of the topic is to develop new technologies and methods to help reduce the energy consumption and environmental impact of buildings during their entire life-cycle (80% of energy consumption occurs during service-life) at district level, since this cannot be achieved only at building level.

The main focus is on new concepts, technologies, design tools and business models at district level for "intelligent buildings", able to significantly reduce or even completely meet their own energy consumption; improvement of the building energy performance (through cladding and ventilation technologies, sensors, actuators and pervasive computing systems, utilisation of embedded renewable energy sources, etc.). Developments are also required at district level addressing new and improved materials and structures to improve the indoor environment as well as resource and climate, energy consumption conversion, storage capacities and energy carriers. Deliverables include the development, integration and demonstration, if possible at district level, of decision support systems and assessment tools of the above concepts e.g. for social housing, residential buildings, offices, and public buildings such as hospitals, schools and universities, railway- and underground-stations and airports.

In order to ensure industrial relevance and impact of the research efforts, the active participation of industrial partners, including SMEs, represents an added value to the activities and this will be reflected in the evaluation.

The projects are expected to cover demonstration activities, including pilot implementations in industrial settings, and this will be reflected in the evaluation.

Funding scheme: Collaborative projects.

Expected impact: The new technologies should contribute to a reduction of 50% in energy consumption compared to the 2005 values. The benefits for applying the new technologies at district level are expected to represent a significant reduction (around 20%) of the total costs compared to existring solutions. The return on investment for these additional costs should be preferably not more than 7 years, both in the case of new construction and retrofitting.