Proposal/Contract no.: FP6-503186

DEMOHOUSE

Design and Management Options for improving the energy performance of Housing

SPECIFIC TARGETED RESEARCH OR INNOVATION PROJECT

Thematic Priority 6

Deliverable 14

Report on assessment of environmental, economical and social impacts concerning the reference project involving the whole life cycle

Due date of deliverable: October 18th, 2006

Actual submission date: December 13th, 2007

Start date of project: October 18th, 2004 Duration: 4 years

Fundación Labein

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Executive Summary

The EU supported project DEMOHOUSE aims at demonstrating the potential of energy saving and environmental improvement in the renovation of residential buildings. In order to achieve this goal different buildings in different European countries (Denmark, Austria, Greece, Spain and Hungary) are being renovating under sustainable criteria.

This document compiles the information and calculations of the standard renovation practices (*Reference building*), and assesses the performance of a typical building renovation intervention. The results involve evaluations and calculations in terms of energy consumption, sustainability performance and socio-economic aspects.

The document presents the particularities of the different countries involved in the project (Denmark, Austria, Greece, Spain and Hungary) concerning all these subjects, providing a wide vision on barriers and constrictions for building renovation activities all over Europe. In addition, the main goal of Deliverable 14 is to carry out an analysis of the current situation on standard practice for building renovation.

In general, national normative on sustainable/energy performance building renovation is not very developed and implemented at the time when the reference buildings were renovated (close to the beginning of the project in 2004), which provides a good idea about the usual practices during the last years; and therefore a knowledge about the potential energy savings in the current existing buildings.

In most of the cases the measures carried out during the renovations are oriented towards technical improvements of the building at a low or medium level, and in most cases main barriers identified in the renovation process were not overcome such as proper insulation and air tightness in Spanish renovations (except in the Hungarian building, although some of the measures are not common practices as explained before). Furthermore, in many cases renovation are only oriented to individual solutions (e.g. thermal enhancement of façades) instead of performing integral activities, for instance using the same infrastructure for several issues (scaffoldings, transport, legal authorizations, etc.).

In most of the reference buildings the social issues are not especially addressed. Involvement of tenants/occupants is really low and agreement processes become an important barrier to be solved since many different people may be involved (income, age, social groups, etc.). In renovation cases where the owners or occupants are involved in the intervention are usually related to buildings with damages or under bad conditions. Alternatively the renovation can be facilitated by the administrative bodies connected to local policies on buildings preservation or only in charge of good conditions supervision. However, at present times it is not common to find building renovations where the driving force comes from a more sustainable or more economical (energy savings, water savings, electricity production, etc.) performance. Therefore, as described in the documents related to WP3 of the project connected to general social issues, a social awareness is required in building renovations which include more demanding sustainable criteria.

Conclusions

The description and analysis of reference buildings showed many similarities in typical practices in building renovation throughout Europe, despite some particularities in each country. Moreover, Demohouse reference buildings differ in age (built from 1900 to 1976, and new buildings), differ in number of dwellings (from 5 to approximately 100), differ in climatic conditions (from Nordic to Continental and Mediterranean), and differ in social schemes, etc.

In general, national normative on sustainable/energy performance building renovation was not very developed and implemented at the start of renovations. In most of the cases measures carried out during the renovations are oriented to technical improvements of the building at a low or medium level. The main barriers identified in the renovation process were not overcome (except in the Hungarian building). Furthermore, in many cases renovation were only oriented to individual solutions (e.g. thermal enhancement of façades) instead of performing more integrated

activities, for example using the same infrastructure for several operations (scaffoldings, transport, legal authorizations, etc.).

Recommendations / Lessons learned

In connection with conclusions from Deliverable 1 (*State of the art*) and Deliverable 2 (*Evaluations of reference buildings*), this document captures the practical barriers when planning a building renovation and the consequences of poor/low quality actions in terms of environmental, economical and social relevance. This report does not really provide recommendations for future renovation, but it demonstrates the necessity of carrying out better practices in future activities. Deliverable 16 (*Report on assessment of environmental, economical and social impacts concerning the pilot project involving the whole life cycle*) will respond to this need and it will provide figures about the potential improvement in building renovation for the different European countries and subsequently recommendations to make extensive that kind of practices.