a) by testing insulation materials to boost EE in public historic buildings

Partners in charge: Bologna (IT)

Partners involved: Quedlinburg (DE), CETA (IT), CERE (AU)

Description: The objective of this pilot investment is to apply innovative building, especially insulation materials, new fixtures on the walls, ceiling and roofs of historic public buildings. The pilot is conducted on the historic building of the Municipality of Bologna: "Sala degli stemmi" (“Hall of Arms”), a wing of Palazzo d'Accursio which has suffered from serious degradations due to intemperate whether conditions involving poor EE of the building. The site hosts frescoed ceilings & walls and antique window-frames which has faced strong degradation due to rain water infiltration. The measures identified by the pre-feasibility study are:

- replacement of roofs in order to allow a waterproof insulation and well-ventilated ceiling
- Thermo-conditioned insulated windows and frames with sun protected glasses made of mixed material with special attention to the "conservation" aspects.

Aim:

- Testing new, innovative building materials & refurbishments, feasible alternatives for the improvement of EE in historic buildings.
- Shaping attitude of decision-makers towards the use of innovative materials for protected monuments.
- Feed the transnational feasibility study and the transnational strategic toolkit on examples of measures to be adopted.
- Help in estimating investments in energy retrofit measures for historic buildings.
- Identify possible interventions and their costs to support local government’s planning process and action plans for energy retrofit measures

Timeline: Oct 2011 - Apr 2013

Budget: 69 000,00 €

Related documents » Outputs of the GovernEE Project (table):
- 4.1.2 PP6 Survey on existing EU models for improving energy efficency in historic buildings (Pilot 2a & b)
- 4.1.4 PP5 Preparation of action plan and timlelines for pilot implementation (4.3 EE in heating historic buildings)
- 4.1.9 PP5 Pre-feasibility study of local ptentials (developed by P5 Bologna) regarding improving energ efficiency in historc buildings, based on findings of EU survey
- PP5 Efficient use of renewable energy sources in heating historic buildings – testing new insulation materials in Bologna

b) by testing photovoltaic panels to boost EE in public historic buildings

Partners in charge: Quedlinburg (DE)

Partners involved: Bologna (IT), CETA (IT), CERE (AU)

Description: The investment consists in the installation of specific photovoltaic panels on the roof of classified historic buildings protected by the UNESCO World Heritage. The Municipality of Quedlinburg has been testing new type of photo voltaic panels able to be adapted to the colour of the surrounding rooftops with lower degree of reflection, leaving the site in undisturbed conditions with regard to the conservation rules.

Aim:

- Permitting the development and installation of RES materials in historic sites, to be adapted to different surfaces in a transnational context
- Shape know-how concerning EE & RES measures adaptable to historic buildings.

Timeline: **Oct 2011 - Nov 2012**

Budget: 71 000,00 €

Pilot evaluation:

Both pilots in Bologna and in Quedlinburg, have highlighted difficulties in dealing with the protection of cultural and historical values and a need to improve EE measures to reduce current and future expenditures related to energy consumption.

Some technologies are too invasive for conservation concerns; others are suitable, but often too expensive or do not reach the expected EE level. The lack of properly defined legal framework allows countries to ignore the related measures included in EU di-rectives. Furthermore, cultural heritage offices or authorities often reject renovation projects due to the lack of guidelines on energy related measures and interventions on historical buildings.

In the case of the Quedlinburg (Germany) pilot, solar energy panels had to be installed in a hidden/nearly invisible way on the roof of a listed historic building. This project showcases the bilateral discussion process between the municipality and the built heritage protection authorities.

In this pilot the specific requirement to cover the entire roof area with tailor-made modules resulted in higher expenses. However a closer cooperation with the local conservation agency is likely to result in more suitable and cost-effective solutions.

It is expected that obtaining a permission to install photovoltaic (PV) panels on listed buildings and in historic city centres will be a case by case decision in the future. Generally speaking, authorities responsible for the protection of the built heritage are mostly willing to permit PV solutions if those are in line with current street- or front views and the historic landscapes.

The development of further innovative PV technologies is in process (tiles, foils etc.). As the public acceptance of RES solutions shows an expansively increasing tendency more and more legal requirements favour the implementation of such green technologi-es. Furthermore authorities are also moving towards new PV solutions involving possible investors and companies.

As a result of the pilot, the nearly invisible PV solution applied is available for technical adaptation to similar sites. Efficient, design-oriented products and module integration know-how are also available. This pilot demonstrated that power-generating PV modules can be considered as one of the most comprehensive ways to implement RES solutions even in the case of listed buildings.

Related documents » Outputs of the GovernEE Project (table):
- 4.1.4 PP2 Preparation of action plan and timlelines for pilot implementation (4.3 EE in heating historic buildings)
- 4.1.8 PP2 Pre-feasibility study of local potentials regarding improving energy efficiency in historic buildings, based on findings of EU survey
- PP2 Efficient use of renewable energy sources in heating historic buildings – testing almost invisible photovoltaic panels