



CERtuS Project

Cost Efficient Options and Financing Mechanisms for nearly Zero Energy Renovation of existing Building Stock

energy efficiency

energy efficiency

clean energy

renewable energy

energy consumption

PROJECT DESCRIPTION

The European Directive 2010/31/EU (EPBD) introduced the concept of "nearly zero-energy building" (nZEB), an abbreviation that indicates a building with very high energy efficiency. The low amount of energy required by this type of buildings should be covered for the most part by energy produced from renewable sources, including energy produced on site or nearby. The 20/20/20 objective has for some time been pushing all member states of the European Union to favor actions aimed at improving the energy efficiency of new and existing buildings. The public sector has difficulties in fully complying with the requirements of the directive due to the large funds requested. Some of the restoration/ recovery/ renovation of public buildings, in fact, are demanding due to the high capital required to create nearly zero-energy buildings and some interventions have long return on investment.



OBJECTIVES

Certus is a European project that involved Municipalities, energy service companies and financial institutions of Europe, specifically those of the southern Mediterranean, with the aim of facilitating the application of the European directives which encourage the transformation of public buildings into nearly zero-energy buildings. With the CERtuS project, some types of energy services and financing mechanisms have been defined able to better adapt to both the peculiarities of building projects and the specific needs of municipal administrations. To do this CERtuS has developed **twelve nZEB restoration/ recovery/ renovation projects** for public buildings located in four municipalities in Italy, Greece, Portugal and Spain, accompanied by a detailed technical and economic evaluation.

Often the energy performance of existing buildings can be improved at much lower expenses compared to the investments required to demolish and rebuild the building. However, applying the concept of nZEB in existing buildings can be complicated by the fact that the performance of the building is linked to many factors such as the characteristics of the building envelope, heating/ air conditioning systems, automation systems, use of the building and behavior of users, type of building, climatic conditions, management and maintenance.

In this context, the initiatives aimed at transforming buildings into nZEB can hardly be attractive for energy service companies (ESCOs), also in consideration of the current economic and financial situation which sees the majority of small ESCOs with limited availability of capital. The main objective of CERtuS was to **help stakeholders to gain confidence in these investments, to stimulate the growth of this particular sector of energy services and to provide indications on the relevant aspects to be evaluated in order to structure a sustainable energy efficiency project**, which can result attractive also for the market.

PROJECT PHASES



As part of the CERTuS project, the types of energy service contracts and the most suitable financing mechanisms have been defined, starting from the identified energy efficiency measures, which can be easily adapted both to the peculiarities of building projects and to the specific needs of the municipalities

In order to facilitate the dissemination of the project results and their replication in other municipalities, a lot of informative material has been produced, such as guidelines, maxi-brochures, various leaflets and training material. In addition, conferences, educational seminars and other online seminars have also been implemented to further enhance the skills of the Municipalities' staffs.

As part of the CERTuS project, tools and methodologies have been developed to facilitate the decision-making process of the economic and financial evaluation of the restoration/ recovery/ renovation projects and specifically:

- a [Methodological guide for economic evaluation and a tool for rapid evaluation and optimization of funding sources for investments](#);
- a **risk analysis methodology** that supports the decision-making process for the selection of cooperation models with ESCOs.

Further achievements of the project were:

- a **70% reduction in primary energy consumption** (arriving very close to the 75% -80% target value), due to the application of the developed methodologies;
- fulfilment, by 8 of the 12 pilot buildings, of the **50% - 90% target for renewable energy use**;
- pilot interventions, resulted economically viable, with a **15 year return on investment**;
- CERTuS has optimized investments and shown that the defined objectives can be achieved with an average cost of € 117,4 / m² compared to the initially envisaged € 1.400 / m².
- CERTuS has contributed to a better knowledge and understanding of the current barriers and difficulties that the participating countries have to face when proposing effective schemes for nZEB renovations.
- CERTuS has contributed to defining for each participating municipality the prevailing economic, legal and policy conditions, relevant for the financing of energy efficiency improvement projects. The state of the art of the energy improvement experiences of the project partner municipalities was investigated to detect the difficulties to be overcome and identify opportunities tailored to the specific local conditions.
- development of a **tool (called CERTuS SE2T)** to support the municipalities or other owners in estimating their buildings' costs and the costs necessary for energy improvements in order to reconvert buildings in nZEB. Having information of the most appropriate form of financing is crucial for administrations in order to choose the investors or the type of financing mechanism, as well as to evaluate financial sustainability. The tool is useful in the preliminary planning phases and to have useful and reliable information on the return period of the project investments.
- implementation of min. three-days training sessions for the municipal technicians in each participating country, and also for technicians of non participating countries, with the aim of ensuring the action's sustainability, as well as preparing and replicating nZEB projects.

PROJECT RESULTS

The following support and guidance material have been drafted within the project:

- [Report presenting the 12 nZEB renovation schemes](#) fully documented with technical and economic assessments: it presents in detail the 12 nZEB renovation schemes and all the technical aspects of the renovation options for each building of the involved municipalities, including documentation on the work done in Messina "[The Italian Renovation Schemes](#)";
- [Report describing the risks, difficulties and limits, outlined by the stakeholders regarding energy recovery of the three buildings of the Municipality of Messina](#);
- [Catalogs of materials, equipment and technologies relevant to all municipal buildings, which summarize the analysis of materials, equipments and possible solutions considered in the project](#);
- [Economic evaluation report](#) that defines a common economic evaluation methodology for energy improvement schemes in order to check their sustainability;
- [Regulation upgrading proposal to facilitate nZEB renewal interventions](#);
- [Analysis of the current conditions for Messina/ Alimos /Coimbra /Errenteria](#);
- [Report on the examples of existing performance contracts and energy service models](#);
- [Report on the energy service options suitable for each Municipality](#);
- [Report on the financing mechanisms suitable for each municipality](#), which identifies, analyzes and classifies the financing schemes for retrofitting aimed to improve the energy efficiency of public building;



- [Guide on detailed technical options and financial schemes for Municipalities;](#)
- [Maxi information brochure on the project and its activities.](#)



Acronym
CERTuS

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IEE/13/906/SI2.675068

Reference Programme
[INTELLIGENT ENERGY EUROPE \(IEE\)](#)

Beneficiary Coordinator
ENEA- Casaccia Research Centre

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EU contribution
1.223.385,00

Call Year
2013

Start Year
2014

End Year
2016

Beneficiary headquarters

Via Anguillarese, 301
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Italy

Region
Sicilia

Description

Italia:

- Messina

Spagna:

- Alimos
- Coimbra
- Errenteria