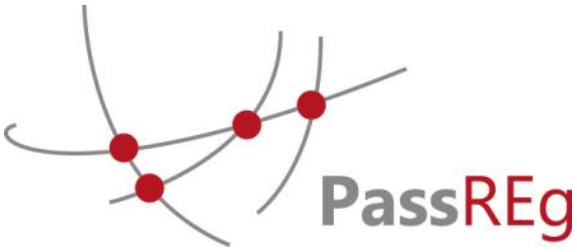
Co-funded by the Intelligent Energy Europe Programme of the European Union



IEE PassREg

PASSIVE HOUSE REGIONS WITH RENEWABLE ENERGY

Success Model

Municipality of Cesena - Italy

Designed for use by aspiring regions involved in PassREg project

Version 1.0 / 20.12.2012 / 21.01.2013

Structure Developed by EnEffect

CONTENT

INTRODUCTION

Within the European PassREg project, the Succes Model explained in this document aims to identify the policies currently applied in Italy and in the Municipality of Cesena concerning energy saving, energy efficiency and nearly zero energy buildings (NZEB) (Baseline), with the results achieved up to now. In addition, it will identify proposals for future tools and the steps necessary to achieve the objectives set by the Municipality of Cesena by 2020 and regulations introduced for new buildings (Success model).

The draft of this document involved Administration's politicians and technical advisers from the Municipality of Cesena, in order to assess practices and achievements at municipal level and as well as for the definition of future policy intentions to enhance NZEB.

This document was prepared by Energie per la Città S.p.a on behalf of the Municipality of Cesena.
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1
ENERGY AND BUILDING POLICY

1.1 National framework

B a s e l i n e

2010/31/EU European Directive dated 19th May 2010 on energy performance in the construction industry, introduces the definition of "Near Zero Energy Buildings", leaving each Member State free to identify the essential steps for their implementation and diffusion in order to achieve fixed efficiency objectives.
Italy, as any other State, had to absorb the Directive in its national law within 9th July 2012, setting up and applying minimal energy performance's standard to new and existing buildings and ensuring buildings' energy performance certification, to guarantee that every new construction within 2021 shall be "Near Zero Energy Buildings".
The adoption was achieved with one year delay, assuming the nature of urgency because of a procedure for infringement against Italy: the 3rd August 2013, Law No. 90 was published on Gazzetta Ufficiale, becoming effective the day after and converting No.63 Legislative Decree of 4th June 2013, "bringing urgent disposals for the implementation of the 2010/31/UE Parliament and Council's EU Directive dated 19th May 2010, on energy performance in the construction industry for the definition of infringement's procedures started by the European Commission (....)" that evolved the 19th August 2005's Administrative Order No. 192.
The Decree provides for the settlement of an Action Plan by 30th June 2014, addressing to the enhancement of "Near Zero Energy Buildings" and, within it, to the identification of primary energy consumption's indicators (kWh/m2 per year) and limits to respect in order to join this category, as well as policies and financial procedures expected to promote NZEB.
In addition, starting from the 31st December 2018, new buildings being property or occupied by Public Administrations must be Near Zero Energy Buildings, whereas from the 1st January 2021, this feature will be apply to any new construction.
The Decree also mentions duties regarding buildings' energy certification that must be supplied in case of selling, leasing, free transfer and for new or subjected to important restoration buildings, so that citizens can consider and compare different buildings and choose on the basis of buildings' global energy performance, energy efficiency class, heating or cooling consumptions and on other useful information on the expected building's operation.
Despite any unique definition of "Near Zero Energy Building", there are in Italy some energy efficient and passive buildings; also targeting the requirements introduced by the Decree, it is essential for Public Administrations to define a strategy on how to operate in order to achieve these objectives, now.

Looking backwards to the Italian legislation on energy issues, 1991's Law No.10, on how to carry out the National Energy Plan referring to the rational use of energy, energy saving and the development of renewable energy sources, put at the time Italy in advance to the other countries, as the law called for a number of measures addressed to energy saving never provided by any other national legislation before. Among these actions, the obligation for Regions and autonomous Provinces to redact Regional and Provincial Energy Plans

connected to the use of energy sources. Moreover, Law No.10 stated a series of rules to contain building's energy consumption, forcing to design and build every public and private buildings in a way to minimize consumptions of thermal and electric energy and imposing to Public Administrations to satisfy their properties' energy requirements with renewable or assimilated energy sources and to commit to buildings' energy certification.

Regarding buildings' energy performance, 2005's Legislative Decree 192/05, adopted the European Directive 2002/91/CE on building's energy performance. The core of this Decree is the definition of criteria, conditions and procedures to improve buildings' energy performance in order to enhance the development and integration of renewable energies and to support the national goal of minimizing greenhouse gas emissions, as foreseen by Kyoto Protocol, and the regulation of a method to estimate buildings' energy performance during design and certification phases and the implementation of related minimum requisitions.
The Decree regulates many essential aspects connected to the national energy policy and looks for the achievement of important goals as saving energy and greenhouse gas emissions.

Particularly, the 16th December 2002's European Directive 2002/91/CE includes four main elements:
- a common methodology to estimate buildings' integrated energy efficiency;
- minimum energy performance's requirements for new and existing buildings subjected to massive renovation;
- certification systems for new and existing buildings and energy performance certificates and other relevant information's exposure in public buildings. Certificates must be not older than five years;
- boilers and centralized air conditioning systems' periodic inspections and evaluation heating systems with boilers older than 15 years.

President of the Republic's Decree no. 59 of 2nd April 2009 enabled article 4, section 1 of 192/2005's Executive Decree, that empowered one or more Minister of Economic Development's Decrees to define an estimate approach for energy performance and renewable energies use's requirements.
The 28th December 2012's Ministerial Decree, on the support of thermal energy production from renewable sources and little intervention of energy efficiency, introduced an incentive program that awards those subjects excluded from other incentive systems, public administrations above all, with a grant that could be equal to 40% of costs incurred, depending on the intervention. This Decree introduces a subsidy that might be essential for those public administrations forced to stop the realization of energy efficiency interventions in their own properties because of unbearable costs.

Success Model

The main national document on energy policy, defining objectives and priorities, is the National Energy Strategy (SEN), approved by Ministerial Decree in March 2013 and oriented to reduce energy costs, to supersede energy dependence on foreigners' countries and to ease the sustainable economic growth thanks to the development of an energy sector. Since 20 years passed after the last National Energy Strategy, this planning document was intensely expected.

As stated on the Ministry of Economic Growth's web-site (http://www.sviluppoeconomico.gov.it), actions suggested in the energy strategy - within two different deadlines – 2020 and 2050 – represent energy no more as an economic factor of disadvantaging competition and burdening Italian family's budget, aiming at establishing a road map that allows to enhance environmental standard and to strength the security of supply, thanks to considerable investments.

The implementation of the suggested strategy will permit a step-by-step but significant system's evolution and to cross "20-20-20" European goals, with the following results expected by 2020:

- significant energy costs' reduction and progressive accordance to wholesale prices at European level;
- exceeding all 2020's European environmental goals. These include: greenhouse gas emission's reduction of 21% compared to 2005 (EU goal: 18%), primary consumptions' reduction of 24% compared to performance inertial (EU goal: 20%) and the achievement of 19-20% renewable energy effect related to gross final consumptions (EU goal: 17%). Particularly, renewable energies are expected to become the main electricity sector's source together with natural gas with an incidence of 35-38%;
- more security, bigger system's flexibility and less dependency. Dependency from other countries is expected to decrease from 84% to 67% ;
- Positive impact on economic growth thanks to investments both on green and white economy (renewable and energy efficiency) in traditional sectors (electricity and gas networks, storages, hydrocarbons development). These are private investments, partially supported by incentives and with a considerable impact on the system's competitiveness and sustainability.

To achieve this goals the strategy will be articulated in seven different priorities with specific, existing or on going, effective measures. The following measures concerns energy efficiency and near zero energy buildings:

- the promotion of Energy Efficiency, ideal tool to pursue all those goals above mentioned;
- the promotion of a competitive gas market, integrated with Europe and with prices aligned to it;
- sustainable development of renewable energies, for which the aim is to exceed European goals ('20-20-20'), containing at the same time bills expenditures;
- development of an electricity market fully integrated with the European one, effective, with competitive prices and with a step-by-step integration of renewable production;
- Support to research and technological development activities, functional to enhance energy efficiency, renewable energies and sustainable use of fossil fuels.

Among the interventions in order to achieve these goals, there are: to enhance the ESCo model; to strength controls and fines within laws, to introduce financial relief to promote researches and technological innovation, to raise consumers' awareness on energy efficiency issues, to reinforce compensation's mechanisms and specific guarantee funds.

Italy put the promotion of energy efficiency among its national energy policy's priorities, associating to this the pursuing of energy supply's security, energy costs saving for enterprises and citizen and the promotion of innovative and green technological chains, also in relation to the reduction of climate-change emissions.

1.2 Regional framework of Emilia Romagna Region

B a s e l i n e

Referring to the entry into force of Law No.90/2013, that modified the Legislative Decree 192/2005 to adopt the European Directive 2010/31/UE, the Region Emilia-Romagna, which Cesena is part of, stated that, concerning energy certification procedures, new disposals do not currently call for immediate and significant changes.

Particularly regarding the introduction of the energy performance certificate, the Region Emilia-Romagna, with the Council Resolution 1366/2011, provided for the real and effective equivalence between the two definitions "Energy Certification" and "Energy Performance Certificate", consistently with the EU Directive 2010/31/UE. Therefore, the document registered in the regional energy certification system as "Energy Certification" corresponds to the "Energy Performance Certificate" required by Law 90/2013.
Council Resolution 1366/2011 adjusts Resolution 156/2008's attachments on buildings' energy certification, introducing the duty of determining the energy performance's index for winter air-conditioning, hot water production and building's envelope summer cooling for both new buildings and those under renovation. The Resolution also sets up new standard to cover thermal and electric consumptions with renewable sources and the obligation to underline the energy performance index and the building's EU Energy Label attested by the energy certificate in any buy and sell announcements.

The Legislative Assembly Resolution No.156 dated 4th March 2008, address and coordinate energy performance requirements and energy certification procedures; it aims at supporting energy saving, smart energy use, enhancement and integration of renewable sources to foster Kyoto Protocols' goals in terms of reductions of greenhouse gas emission.
The document follows what stated by Legislative Decrees 192/05 and 311/06, particularly regulating:
- the implementation of energy performance and installed energy systems' minimum requirements and the estimation of building's energy performance in its planning phase;
- energy certification with attention to the estimate procedure, evaluation of buildings and systems' energy performance, certificate release and accreditation of qualified technician;
- employment and maintenance of thermal systems.
During the planning phase, the law envisages the same tests imposed by national law following the same building categories definitions and intervention; however, compared to national law, it defines stricter energy performance's minimum requirements for buildings and systems.
Law 156/08 also calls for the validation system of those people appointed to validate buildings' energy performance, who will manage validation procedures, verifying

requirements on behalf of the body auditing, testing validation's activities through spot checks and third parties and, possibly, even creditors' training.
The Resolution clearly defines creditors' requisitions underlining that these "must guarantee independence and neutrality through the absence of conflicts of interests in relation to buildings and systems' property, project planning, construction, employment and administration".
Finally, we must also stress Regional Resolution 156/08's commitment towards citizens awareness in terms of buildings' energy efficiency and measures to support and ease the reduction of energy and climate-change greenhouse gas' consumptions within the Region.

Lastly, let's remember Regional Law 26/04 of 23rd December 2004, putting Emilia-Romagna as a front-runner Region concerning energy, anticipating national law in absorbing the EU Directive 2002/91/CE and calling for grants in favour of green architecture and new standard and limits in terms of energy rendering of buildings which shall be recognized by single local construction's Regulations, energy validation of public buildings, provinces and municipalities' obligation to plan new steam systems' networks through cogeneration for new buildings.
One more aspect to consider concerns provinces' duty to develop a program to promote energy saving and rational energy use, enhancing renewable sources, organized development of systems and networks of provincial interest also through the adaption and re-qualification of existing systems.

Emilia-Romagna Regional Energy Plan (Per)stands from Law No.26 of 2004, ratified in November 2007, whose keynotes are: smart energy use, energy saving, development of renewable sources, redevelopment of the electric system, new industries' technologies, buildings' energy validation, spread of energy management services. The Plan defines several objectives to save energy in different fields (residential sector's contribution of a third, transports' 40% and industry's 25%) and provides a first 3 years regional allocation of 90 million euro (2008 to 2010).
Tools to intervene to the realization of this Plan concern mainly the redaction of new law on buildings' energy rendering with stricter standard compared to the past, as well as a system of bonus to ease intervention of energy rationalization and to promote advanced training and information services.

1.3 Political will at local level and tools for energy efficiency in buildings

B a s e l i n e

The Administration of the Municipality of Cesena always showed a will to accompany its agenda to that taken by the other European Union member States, with regard to the fight against climate change occurred in the last decades and the development of environmental sustainability connected to energy production.
The confrontation with Dr. Montalti, Councillor for Environmental Sustainability, European Projects and Energy Policies, raises the centrality of issues related to saving energy in buildings in Cesena Administration's agenda that in 2007 modified the Construction Regulation to introduce a Regulation on the development of buildings with low energy consumption through the use of eco-friendly materials.

For this reason, the Municipality of Cesena joined the "Covenant of Mayors", a European action that involves local and regional authorities working to raise energy efficiency and spread the use of renewable energy sources in their lands, taking the responsibility to reduce by 2020 carbon dioxide emissions 20% less than in 1990. SEAP (the Action Plan for Sustainable Energy) was born in this context, a key document underlining processes, schedules and tasks in order to achieve 2020's goals.
SEAP is part of a bigger vision, expressed by the Administration in the Municipal Energy Plan (PEC) and ratified on April 2011, in order to fulfil its commitments.
The draft of PEC required a direct confrontation with private and public stakeholders interested in the process of definition of local energy policies and with economic, social and civic representatives through thematic forum; this shows how strong and enduring is the political will to involve different categories of people to achieve the ultimate objective of starting a politics of energy efficiency applied to buildings. The draft was followed by *Green Energy Days*, dissemination activities addressed to students and citizens, on efficiency and energy saving in public and private construction and enterprises and on energy production through renewable sources.

The Municipal Energy Plan was drafted taking into consideration some ongoing local good practices, for instance:

- electric energy's entry to the market through a convention providing for certified green energy purchase and giving the Administration the chance of fighting energy costs;
- draft of documents on rational energy use which consider the type of building and its consumptions coefficients [kWh/m^3*DD];
- analysis of rational operation of systems in municipal facilitates which results were used to set up objectives and action to manage heating systems: comfort for users, systems' security and energy saving through modernization of systems (boilers' replacement with condensation boilers, schedules and temperatures remote control system);
- school facilities electric systems renovation and replacement of existing light systems with low-power mode lights;
- installation of photovoltaic systems in scholastic facilities;
- ~~a~~doption of a municipal Regulation on green building with voluntary adoption to promote high-energy performance buildings.

In particular, the document to promote eco-friendly construction, attached to the Municipality of Cesena's Building Regulation (Attachment D), ratified from the Municipal Council the 24th November 2005 and updated in 2007, was born as a legislative tool to promote the use of technologies and designs able to guarantee high-quality energy performance for building within the territory of Cesena.
In fact, it finds and defines, requirements, recommendations and suggestions on energy performance, systems' efficiency, employment of renewable energy sources, and requisitions promoted by reducing secondary urbanization' costs and buildability index's peaks.
The documents highlights the following objectives: enhancement of the envelope's energy performance, enhancement of thermal systems efficiency, enhancement of electric systems shared by facilities with more than one housing units, production of electric energy through renewable sources, enhancement of summer and winter comfort, employment of eco-friendly materials, reduction of indoor pollutant, reduction of exposition to electromagnetic fields. When these goals are achieved, the Regulation provides for the following bonus:
1a) of economic kind, through the reduction of infrastructure costs to a maximum of 40%;

1b) of construction kind, consisting of the deduction of perimeter walls with a thickness equal of superior to 40 cm;
1c) of infrastructure kind, raising low-density areas' buildability index.

As underlined during a confrontation with Doctor, Engineer Alessandro Delpiano, Municipality of Cesena's Executive Director of Urban Planning Sector, from 2005 to 2009 Attachment D represented, *de facto*, the only effective pro-active tool concerning renewable energy sources applied to construction.
Since 2009, the year Cesena's regional energy Regulation (DAL Region Emilia-Romagna 156/2008) came into force, energy performance' requirements included into Attachment D, started corresponding to law. Therefore, bonus mechanisms are not working since January 1st January 2009 and, currently, there is no bonus available. Bonus above mentioned will be employed only for those facilities presented within 31st December 2008 and fitting the bonus categories at the time, whereas there will be no bonus for all facilities in the remaining territory. In fact, most of the facilities of new construction in Cesena fit the EU energy label B, far away from so-called "passive house" requisitions.
During the years, DAL 156/2008 had several adjustments which spread and raised the level of performance: in particular from 2012 the DGR 1366 of September 26th 2011 includes summer cooling among the standard for building's energy evaluation, besides a mandatory minimum of renewable energy sources to employ equal to 35% within 2014 and up to 50% within 2015 using, not only photovoltaic, but also other renewable sources.
Currently, within the territory of Cesena, there's the provision for the realization of a passive house fitting the next Regulation on green building, addressed in the processing area AT3 03/08 in Case Finali, that is the building presented as Beacon Project for the European Project PassREG.

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Councillor Montalti explained that "in the Municipal Energy Plan there are provisions to push forward to reach the objectives arranged; it is operating only since two years, so this is just the beginning". Planning tools for next years will have a key role to directly operate, but in order to push further the diffusion of this type of buildings, the Administration will work to set a good example and to raise citizenship's awareness through dissemination and confrontation with it. On the portal "Cesena Dialoga" (http://www.cesenadialoga.it/) it is possible to find both a survey about the current situation, a necessary tool to set the strategy for the Municipal Structural Plan, a document that sum up the Municipality's strategic vision by 2030 and particularly ten municipal structural plan's strategic points. Infrastructure tools will consider both requirements and bonus to promote the fulfilment and spread of near zero energy buildings as it is essential to reward who commits to realize and address to high performance buildings, but it is also very important to set landmarks that are expected by the Italian and regional law anyway.

The Municipal Energy Plan sets a series of interventions able merge the Municipality's objectives for 2020, among which the energy redevelopment of 18% of residential surface (about 630.000 square meters), from energy label E to C and the construction of new buildings A and B's energy label. These measures will require quite important investments. By the way, there is a restructuring rate of the municipality's real estate. Therefore, additional costs respect to a renovation with any improvements of the building's energy performance, could be partly and more easily supported by government's incentives.

PEC also assumed a revision of the Municipal Building Regulation for new buildings, which is a real goal, in a way that will be illustrated below, and the creation of an Energy help-desk to inform citizens on possible energy renovation interventions costs and possible bonus connected to these.
The surface to redevelop and the energy class of the building will be the standard and the object of monitoring. The validation will inspect the whole surface of building already redeveloped, thus monitoring planning permissions for those renovation plans submitted by private citizens to the Municipality and, eventually, monitoring tax deduction requests. Moreover, inquires will include the evaluation of new facilities' surface for each building realized in the last year.
Possible obstacles or constraints could be the decrease of incentives for this kind of intervention, which could lead to an interruption of the interventions.

It is essential to focus on a series of dissemination campaigns to point out evident energy and economic saving compared to traditional structures.

Among the interventions identified in PEC to reach 2020's goals, there's a bigger production of energy through renewable sources, also connected to buildings' redevelopment. The realization of co-generation systems, for instance, also linked to district-heating systems, the employment of biomass deriving from waste in co-generation systems, the realization of photovoltaic solar systems and thermal solar on residential, industrial and commercial roofing, energy purchase from renewable sources to replace electric energy purchase from tradition sources to afford the reductions provided by the Covenant of Mayors.

The local Administration recently illustrated to the city ten strategic policies to back up the future urban planning; among these policies for energy renovation of public and private building heritage, there are bonuses for energy renewal and for seismic safety. As Urban Planning Sector's Director, Eng. Delpiano, stated "most of the facilities in Cesena, especially those built in the last fifty years, need impressive interventions for their energy redevelopment and seismic safety. The Local Structural Plan will support a new urban renewal discipline able to ease and promote the recover and, in some cases, the reconstruction of existing both public and private buildings".
Going ahead with the analysis, Delpiano marks that "choosing the 2000's Local Strategic Plan, with too high building indexes in the existing framework of residential completion, turned into an ineffective and often harmful policy. For this reason and to avoid the spread of this kind of situations which are altering the existing urban balance creating a clash, their reduction is not to be excluded. Particularly important will be the realization of an urban discipline with building indexes coherent with the existing urban fabric, which could be boost only after static and energy improvements' interventions.
The commitment submitted by Local Administration in this direction is oriented to identify awards addressed to people who will choose a way to build following excellent levels on seismic and energy matters; to consider the choice to realize a passive house as the object of these incentives is not impossible. The same policies, rules and performance standard which will turn this principle into an effective action will find place into the Local Structural Plan and the Building Code (RUE), which local Administration ratified as a part of its mandate plan".

These objectives are reiterated also by Councillor Montalti, according to which "through the PSC, the City will strive to include forms of reward in order to build nearly zero energy

buildings and to redevelop the existing one, which is the real challenge for the future: in fact, most of the territory developed before the '70s and, in addition to being poorly performing from the energy point of view, it also shows seismic safety problems. For this reason, the Municipality of Cesena also considers very important the comparisons with front-runners European countries, to take advantage from others' experiences and best practices, hence the signing of the Covenant of Mayors and the participation in numerous European projects, in order to exploit all the available channels to confront. Moreover, the Administration commits to the awareness-raising of schools of all types and citizenship through activities, meetings, energy - days and other initiatives".

Another important milestone in the political settlement of Cesena should aim at the creation of Social Housing Association (ERS), characterized by very low running costs as the Administration identifies public areas to be made available to manufacturers through a call with granting surface rights and the assignment of ownership. The convenience comes from resetting areas' cost, from the increase in volume and, sometimes, from the reduction of financial charges and urbanization.
The importance of these achievements is that segments of the population addressed by this construction industry not only have difficult access to a good house, but it also often struggle to support the usual management costs that "traditional" buildings carries for energy consumption; in such a way, it is inevitable that these social housing should therefore contain all the technological solutions aimed at energy saving and efficiency, managing to significantly low the same housing' management costs.

Among the Administration's strategic objectives on local management contained in the planning document "Cesena's strategic vision for 2030" stands out, from the urban point of view, point no.2: " The oversupply of real estate areas created a dual conflict for present and future generations: sharp reduction of agricultural and natural land and virtual shutdown of the construction industry. For these two basic reasons, Cesena will carry out policies of radical reduction of land consumption: stopping any further urban pressure in rural areas, halving areas of the existing Local Strategic Plan not yet implemented, only launching regeneration policies and urban regeneration in new PSC , in favor of a compact city where are services and public transport. This will be the founding choice for a new vision of community, which, on the one hand knows how to preserve its natural and agricultural heritage and, on the other hand, allows launching a new economics of development towards a future of hospitality and welfare for today and tomorrow's citizens".

These planning choices shall lead to a double benefit in terms of reduction of greenhouse gas emissions and energy regeneration widespread: on the one hand, more agricultural land will remain available, resulting in the reduction of environmental pressures related to the urbanization of natural soils; on the other, slowing the development of new building areas, the interventions will focus on existing building. In this way, it will be inevitable to channel the building activity primarily into redevelopment and regeneration of built heritage from the past and often obsolete and inappropriate in relation to their seismic safety and energy.

The reduction of land consumption aforesaid shall also strive to bring people into the city centre, reversing the trend consolidated in recent years that has seen substantial parts of Cesena's population expelled from the confines of the urbanized area and almost incentive to improperly occupy the campaign, both with residences not related to the conduct of agricultural funds and with real manufacturing production activities. This turnaround will

have two positive energy / environmental effects: first, the reduction car trips for working, family needs and leisure time, with obvious benefits in terms of reducing air pollution by hydrocarbons; moreover, a growing number of private and public services (schools, care centers and personal services) will be easily and safely reached on foot or by bike again. In both cases it will be pursue the goal to reduce greenhouse gases arising from the current way of understanding the territory.

As for the timing to implement these political programs, by 2016 the new PSC, in which the issue of upgrading energy efficiency of both existing and under construction buildings with low energy consumption is central, should be approved. Finally, the City is already moving in order to let new public buildings meet the standards of energy-efficiency, so to apply the legislation that came into effect in August 2013, thus anticipating the obligations set for new buildings from 2019.

2
ECONOMICS AND FINANCE

The Municipality of Cesena is partner of the European Project CitInES, which has, as its objective, the development of an ICT tool to support urban planning: this will allow to simulate and to evaluate interventions planned to achieve the objectives set for 2020 in terms of energy performance and costs. The tool will also allow to consider, when planning, possible alternatives on energy sources and distribution systems, in order to optimise the energy strategy of large and productive urban complexes.
Optimising urban energy investments is a fundamental challenge for the reduction of pollutant emissions; however, the definition of a sustainable, reliable and affordable energy strategy, requires to simulate the entire energy chain (consumption, transportation, distribution, storage, production) with different types of energy (electricity, gas, heat, wind, waste, etc. .) and to assess the environmental and financial impacts of the various long-term scenarios (fuel prices, consumption scenarios, etc. .).
Thanks to this tool, that will be created at the end of the project, the Municipality of Cesena will be able to monitor the current situation and to progress with the actions implemented to achieve the objectives of SEAP and to have a technical support to the decision path, being able to simulate scenarios to 2020.

2.1 Economic objectives and indicators

B a s e l i n e

Currently, several parameters related to energy efficiency of local buildings are monitored; in the future, monitoring will be easier thanks to the software produced by CitInES.

Concerning **public buildings**, the main indexes monitored at least twice a year are:

- Energy self-sufficiency: total annual consumption of electricity in municipal buildings (kWh) / Annual Electricity produced from photovoltaic (kWh);
- Power annually installed for photovoltaic systems (kW);
- Natural gas annual consumption (m^3);
- Electric annual consumption among the Municipality of Cesena's users (kWh) and public buildings;
- Public buildings' annual consumption of electricity produced by photovoltaic systems installed (kWh);
- Annual consumption of buildings connected to the heating network (No. 2 public buildings) (kWh);
- Annual emissions of CO2 saved by interventions (photovoltaic systems installation, reducing the consumption of electricity and natural gas ....);
- Coefficient of consumption for heating and domestic hot water: mc gas consumed * PCI (9.59 kWh/m^3) / volume building (m^3) * day degrees;
- Thermal Index (heating and domestic hot water): mc gas * PCI (9.59 kWh /m^3)/ building's volume (m^3);
- Electric Index (electricity) (kWh consumed by the building - kWh produced by the PV) / building's volume (cubic meters);

- Energy Index: thermal index + electric index = [mc gas * PCI (9.59 kWh/m^3) / building's volume (m^3)] + kWh of electric energy consumed / (0.46 * m^3 building (electric efficiency of the national reference)];
- Number and total area (m^2) of solar thermal panels annually installed on public buildings;

Moreover, data related to energy consumption for all municipal buildings are yearly registered (automotive fuels, heating fuel, electricity and district heating).

As for non-public buildings, the City begun to collect data from suppliers and partners, HERA and ENEL above all, by creating a database with the available data, such as those related to consumption, the technical ones and those regarding local renewable energy potential, such as:

Consumption:
- Consumption per consumer zone (MWh) in final and primary energy;
- Consumption per consumer type (MWh/m^2) in final and primary;
- Consumption normalized to GDP : final energy use (MWh) (all energy carriers) divided by Gross Domestic Product (M€)

Production:
- Production per producer type (MWh)(annual, per energy produced);
- Capacity per producer type (MW);
- Average electricity and heat origin decomposition (%) (% of annual electricity bought form the network, %of electricity produced locally by each type of producer)
- Peak (consumption) electricity and heat origin decomposition (%) (% of peak power provided by electricity bought from the network, % of peak power produced by each type of local producer)
- Share of renewable energy from local sources in final and primary energy use (for electricity and thermal uses)

Emissions:
- CO2 emissions due to consumption per consumer zone per capita (t/capita) (direct and indirect)
- CO2 emission due to production per consumer zone (t)
- Indirect CO2 emissions generated from grid energy supply (t)

Energy bill:
- Energy bill per consumer type (€/m^2) and energy carrier (electricity, gas, heat)
- Average energy bill per consumer zone (€/m^2) and energy carrier (electricity, gas, heat)

Investments:
- Annualised investments that have been undertaken to reach this state of the energy system (€)

- ROI: Project net savings divided by investments costs

Success Model

With regard to the indexes that in the future, thanks to the tool created by CitInES, the Municipality of Cesena would monitor, the Local Energy Plan developed an evaluation methodology based on the following indexes to measure the value of the proposed interventions:

- Energy efficiency: the amount of primary energy savings / total primary energy consumed by the Municipality of Cesena in the referring scenario (TOE)
- Renewability: amount of primary energy from renewable sources produced / total primary energy consumed by the Municipality of Cesena (TOE)
- Reduction of emissions: reduced CO2 emissions / total emissions produced by the Municipality of Cesena (the index reflects the Covenant of Mayors' purpose) (measured in tonnes of CO2)
- Energy density: the amount of primary energy produced or saved / area required to achieve the goal (measured in TEP / sqm)
- Cogeneration and district heating: annual production (MWh thermal and electric products)
- Energy development of new and existing buildings:
    - square meters subject of energy development and energy class
    - square meters of new buildings realized under class A and B;
- Biomass: thermal and electric energy produced by burning biomass waste (MWh thermal and electric products)
- Dedicated biomass: thermal and electric energy produced by burning biomass dedicated to co-generation (MWh thermal and electric products)
- Solar PV: power peak of PV systems installed at local level every year (kWp)
- Solar thermal: number of systems made and power peak declared (number and kWp)
- Household appliances' energy saving: electricity savings through appliances energy class improvements (by the energy plan we would like to monitor electricity consumptions in residential and commercial sectors - MWh)
- Industrial supply chain: the renewal of the industrial production line to achieve greater energy efficiency (by the energy plan we would like to monitor electricity consumption in the industrial sector - MWh)

Another indicator that shall be monitored is the number of buildings and / or of certificates in A or higher energy class, namely of buildings with lower energy consumption. Currently, Emilia-Romagna makes the data available dividing the number of certified buildings according to energy class and type of building. For example, looking at energy performance certificates issued by the Province of Forlì-Cesena (which Cesena is part of) in the year 2013, the situation is as follows (figures referring only to the Municipality of Cesena are not available):

Class	Total cert.	Residential buildings	Offices	Health facilities	Cultural activities	Commercial activities	Sport act.	Schools	Prod. act.
A+	**52**	**52**	0	0	0	0	0	0	0
A	405	367	17	0	0	9	0	2	10
B	1784	1508	154	3	3	70	3	3	40
C	3223	2689	236	6	11	183	1	6	91
D	3586	3062	216	10	35	152	7	20	84
E	2855	2396	181	10	22	122	8	35	81
F	2429	2085	107	4	35	97	9	39	53
G	5639	5202	88	3	52	137	34	40	83

The current and mandatory legislation at regional level, where Cesena falls, provides the following classification:

Class	Residential Buildings [kWh/(m2*year)]	Other buildings [kWh/(m3*year)]
A+	EPtot<25	undefined
A	25≤EPtot<40	EPtot<8
B	40≤EPtot<60	8≤EPtot<16
C	60≤EPtot<90	16≤EPtot<30
D	90≤EPtot<130	30≤EPtot<44
E	130≤EPtot<170	44≤EPtot<60
F	170≤EPtot<210	60≤EPtot<80
G	EPtot≥210	EPtot≥80

where EP stands for the building's energy performance index, that represents energy needs for heating and domestic hot water's production. EP values are calculated according to UNI / TS 11300.

It will be necessary to implement a methodology to know the details of the municipality's buildings involving, for example, public and private sectors, to monitor changes in the number of buildings with low energy consumption and to assess whether the policies undertaken to promote compliance with these buildings are in practical use.

As a comparison with the Municipality of Cesena's Urban Sector revealed, the City Council recently illustrated the city's 10 strategies as future planning instruments (PSC-POC-RUE). Among the various actions, on the issue of defining public and private building's energy efficiency, stands the recognition of rewards for those who choose to build pursuing high levels of excellence in the seismic and energy field; so, it is realistic to think that the decision to build passive houses should be the subject of such incentives, as expected already in 2008 with the building regulation to promote sustainable construction.
The exact mode, rules, performance metrics by which this principle will become a concrete action at local level, will be located within the PSC (Local Structural Plan and RUE (Urban Building Regulation), whose drafting is also committed to the level of the Administration political program.

2.2 Economic levers

B a s e l i n e

Since years, the Italian system already provides for diversified systems to support the production of electricity from renewable sources and for buildings' energy improvements and energy savings.

Particularly, economic tools working to promote buildings' energy efficiency are as follows:

- **Certificati Verdi** *("Green Certificates")*: securities issued by GSE (Agency for Energy Services) at a rate proportional to the energy produced with a system powered by renewable sources and operating by 31 December 2012. Each Green Certificate certifies conventionally the production of 1 MWh of renewable energy and can be traded or sold by producers to subjects obliged to produce an amount of electricity from renewable sources in a specific market, thus getting an economic return;

- **Tariffa Onnicomprensiva** *("All-Inclusive Rate")*: it is the incentive mechanism alternative to the Green Certificates, reserved to qualified systems IAFR (powered by renewable sources), with an average annual capacity not exceeding 1 MW or 0.2 MW for wind-power installations. It 'a support system based on the delivery of a fixed rate, which includes both the incentive and the compensation for electricity fed into the grid, the value of which depends on the type of source used;

- **Conto Energia** *("Energy Sum"*): it is a support system that ensures a constant compensation of the electricity produced from solar photovoltaic systems connected to the grid and solar thermal, for a fixed period (20 years for photovoltaic installations, 25 years for the thermodynamic solar ones) through a rate for all the energy produced by the systems. This incentive system was introduced in Italy in 2005, with the Ministerial Decree dating 28th July 2005 (First Energy Sum) and it is currently regulated by the Ministerial Decree of 5th July 2012 (Fifth Energy Sum).
  The rate is in addition to the sale's income or value, through on site exchange or self-consumption and the energy produced varies depending on the size and degree of the system's architectural integration. The scheme rewards renewable productions done independently from the electricity produced;

- **Ministerial Decree of 6th July 2012**: The Ministerial Decree dated 6th July 2012 establishes new ways to encourage the production of electricity from system fed by renewable energy sources other than solar PV, with a power not exceeding 1 kW.
  The Decree states that incentives are recognized on the production of net electricity supplied to the grid by the system. Therefore, self-consumed electricity has no access to incentives. Access to incentives established by Ministerial Decree 6 July 2012 is alternative to the on-site exchange mechanisms in place and to dedicated withdrawal;

- **Titoli di Efficienza Energetica o Certificati Bianchi** *("Energy Efficiency Certificates" or "White Certificates")***:** negotiable securities that certify the achievement of energy savings in final use of energy through interventions and projects to increase energy efficiency. This system of white certificates was introduced into the Italian law by Ministerial Decrees on the 20th July 2004 and provides distributors of electricity and

natural gas to reach annually certain quantities of primary energy savings, expressed in equivalent tonnes of oil saved (TEP).

A certificate is the same of saving a ton of equivalent oil (TEP); companies distributing electricity and gas can carry out its obligation implementing energy efficiency projects entitling white certificates or acquiring TEE by others on the market of Securities Energy Efficiency organized by GME;

- **Conto Termico** *("Thermal Sum")*: The publication of the Ministerial Decree on 28th December 2012 called "Thermal Sum", gave effect to a support system for the promotion of small-scale interventions to increase energy efficiency and the production of thermal energy from renewable sources.

  Interventions to incentive refer both to existing buildings envelope's efficiency (insulation of walls and roofs, replacement of windows and solar screens installation) and the replacement of existing systems for winter heating systems with higher efficiency (condensing boilers) and replacement or, in some cases, new installation of power systems using renewable sources (heat pumps, boilers, biomass stoves and fireplaces, solar thermal systems also combined with solar cooling technology).

  The new decree introduces also specific incentives for energy diagnosis and energy certification if combined to the intervention above mentioned and in certain conditions. The incentive is a contribution to the expenses carried out and it is paid with annual rates for a variable duration (between 2 and 5 years) as a function of the interventions realized.

  The real news of this tool is the chance for Public Administrations to direct access to intervention on their properties. In fact, the Decree funds a yearly expense to a total amount of 200 million euro for interventions realized by Public Administration and of 700 million euro for interventions realized by private users;

- **Tax deductions for energy improvements**: costs incurred from June 6th 2013 (date of entry into force of legislative Decree 63/2013) to the 31st December 2013 for energy renewal of existing buildings are entitled to a tax deduction of 65% during the individual income tax return. From the 1st January 2014, the deduction will be 36%, which is what normally provided for building restorations. Reduction concerns, for instance, the expenses carried out for:

  - energy development on existing buildings which obtain a limit value of annual primary energy demand for winter heating by at least 20% lower than the established limit values;
  - interventions on existing buildings, premises or existing residential units, regarding opaque vertical structures, horizontal opaque structures (roof and floor) and windows including frames. The condition to advantage the benefit is to meet the requirements of thermal transmittance U, expressed in W/m2K, set as limit;
  - the installation of solar panels for hot water production;
  - replacement of winter heating systems with condensing boilers systems and the simultaneous development of the distribution system.

- **Tax deductions for building's renovations**: Who incurs expenses for building's renovations can deduct personal income tax of 36%. For expenditures incurred from 26th June 2012 to 31st December 2013 (Legislative Decree 63/2013), the income tax deduction rises to 50%. In particular, tax deduction concerns expenditures incurred

to perform extraordinary maintenance, restoration and preservation works and building renovations for individual apartments and blocks.

Current incentive systems proved to be able to sustain a steady growth in the industry, ensuring, in spite of frequent changes in the regulatory framework, sufficient predictability in terms of investments return and facilitating the eligibility of works. The manufacturers of technological solutions for the construction industry (insulation materials, heat recovery systems, etc.) are closely following these incentive instruments, they bring knowledge to final customers and offer them advice for the completion of the necessary papers.
The incentives described represent a consolidated national energy system, to address with necessary adaptations, for the next period, as an element of continuity important to achieve the Community new objectives.
For example, the instrument of tax deductions, introduced by the National Finance Act 2007, proved to be particularly effective for some applications. After about five years of implementation, it is currently on going the evaluation of results in terms of macro-economic effects, as well as the actual burden for the state, in order to verify the possible continuity and reshaping in ever more effective forms.
Regarding, for example, the distribution of energy redevelopment interventions of existing buildings in the Municipality of Cesena who benefited from the tax deduction of 55%, the Technical Unit for Energy Efficiency - Energy Services Sector ENEA (National Agency for New Technologies, energy and sustainable Economic Development) provided the following data: from 2007 to 2008, requests to access tax deductions for energy efficiency measures increased by about 370 total and incentives granted raised to more than doubled. This trend indicates a very positive response from the people of Cesena to the need to apply energy conservation in buildings, and reap the economic benefits granted at state level to contain the costs of measures to increase efficiency.

Success Model

Regarding the economic aspects of the new building policy, both national and local, actions to suggest in the future could be:
- development of incentives for companies that develop high-efficiency technologies;
- revision of tax deduction's instrument with increase of tax-deductible expenses for intervention classes of varying complexity and size, more careful calibration of the deductible expenditure maximum and review of the number of years to take benefit of the deduction;
- better definition of some renewable product's tax regime;
- different rewards for those who decide to build a low-energy consumption building even before the obligation in 2018, for new and 2020's public buildings, for all the other NZEB like, for instance, the chance to take advantage of a bigger part of tax deduction for some expenditure.

2.3 Forms of funding

B a s e l i n e

The main funds addressed to buildings' energy efficiency are those of third-party financing and energy performance contracts signed with the Energy Service Company (ESCo).
The energy performance contract (Energy Performance Contract, or EPC), regulated in Italy by Legislative Decree no. 115/2008, is a contract by which one "supplier" party (ESCO) is obliged to the completion - with its funds or with third parties financial resources – of a set of integrated interventions aimed at developing and improving the efficiency of an energy system (system or building) owned by another person (the beneficiary) who receives a reduction of energy consumption of those buildings object of the intervention.
In this case, then, it is the ESCo to anticipate the costs of investments needed; otherwise, it assumes the obligation to find the financial resources from a third parties (usually, banks), at no cost to the interventions' beneficiary, and it is remunerated on the basis of actual results acquires by the client through the implementation and modernization of technology, systems and structures.
Therefore, EPC is normally carried out using the mechanism of the Third Party Financing (TPF), through the provision by a third of the economic resources needed to develop the project.
The benefits of third-party financing are remarkable for those who decide to take action: you get an immediate reduction in energy expenditure without making any financial investment, you can use economic resources to other projects; maintaining investment opportunities without changing the financial situation, getting a replacement of machinery with more performance, obtaining its ownership by the end of the contract.

Also the Region Emilia - Romagna provides funding for energy efficiency and energy savings: for example, in July 2013 the terms to access the Emilia Romagna's Energy Fund were reopened. This is a rotary fund subsidized financing that facilitates investment address to energy efficiency, production of energy from renewable sources and construction of technological systems which reduce energy consumption from traditional sources. The Fund operates by granting low-interest loans to small and medium-sized enterprises (SMEs) having their productive location in Emilia-Romagna for investments aimed at reducing energy consumption from traditional sources, production of innovative equipment and systems for the reduction of energy consumption by traditional sources and for energy from renewable sources' production.

Finally, it is important to stress that many banks and lenders offer loans at subsidized rates for the installation of systems for the production of energy from renewable sources and buildings' energy redevelopment.
It should also be noted that in some cases Regions may enter into agreements with local banks to provide loans at zero interest rate.

Often, the funding in its various shapes, is the only chance for citizens and businesses to invest in measures to improve energy performance, so it will be increasingly necessary to strengthen the dissemination of specialized tools for these interventions, such as ESCOs and financing both at national and local level (through, for example, the collaboration between

the City and individual private companies). In addition, new financial and specialized instruments for the promotion of nearly zero energy buildings should be provided.

Success Model

In this sense, local administration, as emerged from the interview with the Municipality of Cesena Urban Planning Director, has a very important objective address to the poorest segments of the population, which is the creation of Social Housing (ERS) characterized by very low running costs: population groups this building aim at, in fact, not only have difficulty in accessing an home, but it also often struggle to support the usual management costs that "traditional" buildings entail for energy consumption. Therefore, it is inevitable that these social housing should contain all the technological solutions aimed at energy saving and efficiency, allowing them to significantly decrease the dwelling's running costs.
Social Housings are different from private dwellings in their relation with the rental strategy's nature and objectives: if the rent of private rentals is determined on the basis of the supply and demand's law, the allocation and determination of a social housing's rent cannot be separated from the evaluation of the main social factors. The public sector support in favour of the social housing may take the form of security loans, grants for interests' payment on loans, guarantees or tax deductions. The support can be granted both by the state and local authorities and can be issued in favour of the tenant or the promoter, both with reference to new buildings and maintenance of existing buildings.
Again, the comparison with the Urban Sector of the Municipality of Cesena, shows that the first case of experimental urban settlement in terms of energy is represented by the District "Novello". This urban district has recently been recently approved and, once realized, it will be fully implemented with the regional energy requirements of the regulations in force in Cesena (Emilia Romagna DAL 156/2008). Moreover, "Novello" presents an urban plants that protects the so-called "right to sun": all accommodation, in fact, are oriented South, to take advantage of free solar gains in the winter season; moreover, buildings have heights increasing from South to North to avoid shadows cast by a building to another. The presence of green roofs on many of the buildings included in the project, optimize the microclimate of the settlement.

3
KEY ACTORS

3.1 Departments of regional and local administration

B a s e l i n e

As said before, the Municipality of Cesena has always been very active with the achievement of objectives identified by the Energy Plan and the Covenant of Mayors and more generally related to saving and improving energy efficiency. In particular, the town Council has the task of promoting regeneration initiatives realizing them also on municipal buildings. The objectives that the Municipality of Cesena undertook assume a strong synergy between administration and private entities of the territory to meet the goals of emission reductions by 2020.
Therefore, it is essential to consult trade associations for the purpose of cross-monitoring public and private actions carried at local level, due within the SEAP methodology to ensure a measurement that is consistent with the objectives and compliance with the mix of techniques chosen to achieve them.
Generally, new public buildings' projects in Cesena always include the possibility for applying agencies to suggest improvements on the building's envelope and energy system; these improvements affect the final evaluation and the tender's award.

In recent years, with regard to the redevelopment of buildings in the area, the Municipality of Cesena played a crucial role: it promoted the redevelopment among citizens, either through information campaigns, meetings and initiatives aimed at raising awareness, realized demonstration on public or municipal buildings (energy efficiency measures of many municipal schools), released info about costs, incentives and regulations, introduced municipal instruments to promote energy efficiency in new buildings.

In January 2011 the Municipality of Cesena also founded the Society "Energie per la Città S.p.a." as the City's "operational arm" on issues relating to energy efficiency and, as stated by Councillor for Environmental Sustainability, European projects and energy policies Dr. Lia Montalti, in order to:

- deal with conservation, enhancement and management of the heritage and territory of Cesena, for the purposes of environmental protection and energy saving;
- carry out activities and maintenance services for public buildings' systems; redevelopment aiming at increasing the performance; design, supervision, technical and administrative activities aimed at extending or creating new works; support to the identification of actions, interventions and procedures for the rational use of energy;
- design, build and manage systems powered by renewable energy sources (RES) and develop interventions and activities to support policies aimed at optimizing energy consumption;
- promote and disseminate technologies for the production of energy from renewable energy sources and to realize other services for the rational use of energy and energy-saving.

Thanks to this Company, the Municipality of Cesena was directly involved in the implementation of energy efficiency in buildings of its own property, especially many local schools.

Other municipal sectors directly involved in the creation and implementation of building's energy efficiency are:

- the Environment and Territory Conservation's, directly involved in drafting and developing SEAP and in its application, through Energie per la Città S.p.a., to set up a structural effort to conserve energy by identifying the environmental and economic energy needs of the community and choosing the criteria by which to direct their efforts;
- Urban Planning's, committed to the realization of urban plans and to future policies connected to NZEB, for which it already illustrated the strategies oriented to future urban planning (PSC-POC-RUE). Among these, reward forms address to who will decide to build following seismic and energy high-quality standard.
- Productive and Residential Development's, dealing with permissions and information, realising authorisations and certificate for residential and productive issue.

Success Model

To achieve the objectives determined, SEAP provides for the commitment and collaboration among the following actors inside the Council, each with a specific task assigned:

- an executive committee, to report the Mayor about the state of art and working as a channel between him and the other stakeholders, modulating, when necessary, objectives related to expectations;
- a "direction", to collect citizenship and trade associations' opinions and able to take into consideration public opinion related to actions and interventions planned;
- a municipal energy manager, dealing with the allocation of resources by the project, coordinate the activities and goals' achievement;
- an operative team to collect, analyse and organize data for project's activities and to realize the expected issuances;
- experts within municipal sectors, accounting on technologies, giving technical and practical support to the operational team and elaborating solution for the project.

Moreover, in order to disseminate issues related to low-energy buildings, energy saving and energy production from renewable sources, it will be appropriate to create an energy "info-point", where citizens can ask consultancy on buildings' energy efficiency intervention and public incentives forms.
It will be also useful to put into practise principles related to NZEB to public buildings, starting from now, anticipating, in this way, the year 2018.

3.2 Other stakeholders

B a s e l i n e

Concerning external stakeholders, there is no real and effective collaboration to develop and implement policies in this field. Because there are no national and local rules to absorb the European Directive 2010/31, any systemic and continuative relations has been set up.
Anyway, at local level, there are some design studios already committed to realize NZEB and citizens who choose to live in this kind of building. Citizens, in fact, have a key role in the development of NZEB, as they're the first beneficiaries; therefore, they should be informed and engaged in a better way and the municipality of Cesena shall keep on promoting events address to the citizenship, as it did so far.

S u c c e s s M o d e l

To reach the objectives set up by SEAP and by national laws, it is necessary to involve other stakeholders in future municipal policies:

- regional and national energy agencies (Region Emilia-Romagna's energy sector ENEA etc..), assisting the Administration in law enforcement, providing tools and consultancy on services and technology;
- trade associations: channels between the local authority and trade unions for the dissemination and implementation of issues related to NZEB;
- ESCos, both private and public which, through contracts for energy efficiency and/or financing interventions, achieve buildings' energy efficiency, which will have to get closer and closer to the attainment of NZEB standard;
- educational institutions, especially schools that, through meeting with experts, will have to educate new generations to save energy;
- universities and research centres, involved in new techniques and technologies' research for energy efficiency saving;
- local media, to promote initiatives on energy efficiency and report citizenship's commitment.

In fact, as emerged from the interview with Councillor Montalti, "Definitively, the cooperation between local administration, educational institutions and trade associations is necessary, also between them and institutions address to decide on building regulations and urban planning, such as the Region Emilia - Romagna, which is one of the few Italian regions where the legislation is in line with European targets. This is essential, especially in Italy, where regulations change continuously. "

4

CAPACITY FOR PLANNING, DESIGN AND CONSTRUCTION

4.1 Training of local authorities

Baseline

Currently, in Cesena's local administration, there is no sector able to fully apply the principles of NZEB in a sustainable development plan. This is mainly due to the fact that the transposition of Directive 2010/31/EU into the Italian law occurred only in August 2013 and, still, there are no guidelines defining the requirements for the classification of a near-zero energy building. However, some sectors, such as Urban Design, are already developing the integration of these buildings in urban planning, as explained in the paragraphs before.
However, at the moment, there is no real development of residential settlements in the Municipality of Cesena following passive house principles; there are buildings which, although not certified by the Passive House Institute, have been designed and constructed by referring to passive houses' characteristics.
Currently, at local level, there are specialists who attended a training course on NZEB themes and passive house's basic criteria are not considered as determinants to approve projects for new construction or existing buildings and neighbourhoods' renovation. However, to get the issuance of a building's eligibility, the certificate of the building's annual energy consumption is mandatory.

The municipality of Cesena started few years ago to intervene on the redevelop of public buildings and the use of renewable energy sources, illustrated on chap. 6; these are all interventions directly promoted by the local administration or, on behalf of the municipality, by the agency Energie per la Città s.p.a. who joins the planning and realization phases, constantly monitors these buildings' consumptions and energy index to esteem benefits deriving from the interventions.
The Municipality of Cesena didn't make any attested passive house, but there are already new schools that will be designed and constructed in order to meet nearly zero-energy buildings' standard (high insulation, controlled mechanical ventilation with heat recovery, etc..; once again, we point out that these standard have not been defined by Italian Law), so as to fulfil the obligations set in advance by the end of 2018, the requirements of nearly zero energy buildings.

Success Model

Considering the strong interest showed by the local Administration and the objectives submitted for 2020, it will be necessary to involve internal specialists in a training path aiming at raising the awareness on passive house and NZEB's key principles and their implementation into local future policies, so that each sector would be able to put these policies into practise at its best.

To do this, it would be important to plan training courses also ran by external specialized agencies and to disseminate informative and complete materials to every municipal sector involved in these issues.
Moreover, as Councillor to Environmental Sustainability, European Projects and Energy Policies, Dr. Montalti, underlined in the interview that after the experience with PassREg, local administration will have to take the example from the exchange with front-runner regions to understand which abilities with planning, designing and constructing are mandatory in order to implement future policies and which sectors should be involved in this process. The Municipality created the agency Energie per la Città s.p.a. as a structure to collect energy issues and work as a right-hand for those thematic and to spread the themes to other municipal sectors in charge. (Urban Planning, Public Works, Public and Private Construction).

Hence, in the agenda for developing a regional success model there should be the provision for first steps and necessary training, as without an appropriate acknowledge of its basic principles there cannot be any effective and aware implementation of the success model, from any stakeholders.

4.2 Training of designers and builders

B a s e l i n e

At national level, there are private companies born with the aim of promoting the concept of passive house in Italy and in countries with Mediterranean climate, reconciling the Central Europe standard with hot climates. Some are officially accredited as certifying bodies by the Passivhaus Institut and can release the original certification PHI that proves the quality of the building.
There are also training courses organized for those people who wants to become Passivhaus engineers and / or certifiers consultants and European level courses developed by the Passivhaus Institut in Darmstadt, which provide all the information to pass the final exam that allows you to be credited; almost all of these courses, however, are organized outside the region Emilia-Romagna.
Concerning the region Emilia Romagna, on 24th May 2013, a basic passive house course, in particular on issues related to the definition of passive house, energy performance, examples of existing buildings, European legislation and implementation costs, was held in Parma, at the Faculty of Engineering. The course is an example of collaboration between Parma's Department of Urban Planning and Public Works and the company TBZ of Bolzano (Building Physics Center).
Still, no courses or exams of this kind are organized in Cesena and the number of participants at other regions' course is not available.
However, some designers from Cesena who did not receive any specialized training in this field, are able to apply passive house's principles in buildings' design even though, at the moment, there are no specialists in the province of Forlì-Cesena certified as passive house designers by the Passive House Institute (there are four in the Region-Emilia Romagna): hence, they're skilled designers even if not certified.
Chapter 6 will introduce some local low- energy buildings' characteristics which, even if not certified by the Passivhaus Institute, they're inspired by "passive house" standard.

Success Model

In order to easily adopt NZEB basic principles and to respect the current legislation, it is important to appoint local designers and construction companies experts with complete informative tools as guidelines in planning and realizing high performance buildings, without waiting to be too close to deadlines for the implementation of rules.
This training path would not necessarily be organized and run inside the municipal territory, but the municipality of Cesena should promote those running in Emilia-Romagna or other regions, in order to acquire qualified and certified experts at local level and to achieve its goals thanks to a qualified team.

Training courses should vary respect to the category they address; for instance, they could be divided into three big categories:
- designers and consultants : they should be trained on passivhaus criteria from the technical point of view, concerning the envelope in all its component and about plant designs, to gain acknowledge both on the characteristics required for this kind of building and the methodology behind its design and realization, so to be fully confident with any single estimation. They should be also trained on the use of skilled software to calculate the energy statement and thermal characteristics of the buildings' elements;
- contractors and construction workers: they should be trained on these building's constructive principles, with particular attention to the laying of materials, accurate isolation of thermal bridges (especially in correspondence of frames), characteristics of air tightness and all the methodologies a the implementation basis;
- local Administration personnel: they should be informed on regulation working on the energy field and on ways to adopt them; they should be also trained on the importance of these low-energy buildings at political level, especially in the view of 2020's objectives achievement, and on comforts, quality and safety of passive buildings.

Then, to evaluate the real subscription to these courses and their effectiveness, a useful tool could be that of setting up a regular monitoring by identifying some significant indexes, such as the number of certificates issued after passing the final exams compared to the number of participants, the annual number of participants and the number of passive buildings designed and / or built by professionals trained to detect the alignment with the City's objectives and requirements.
The construction of Cesena's success model will also rely on the formation of experts to address in order to create and disseminate low energy buildings in the local urban settlement. Therefore, the Roadmap, at its initial stages, shall provide these necessary moments for the construction of design and construction skills.

4.3 Other measures for education and training

Baseline

In February 2010, the Municipality of Cesena opened the participatory process aimed at achieving the Municipal Energy Plan with the implementation of the Green Energy Days, as a disseminative moment addressed to students and citizens on looming challenges for a sustainable development model.

Moreover, again in 2010, three forums focused on the following topics:

- energy efficiency and energy saving in public and private buildings;

- energy efficiency and energy savings in companies;

- energy production by renewable sources.

Trade associations, politicians, local agencies, cultural associations, freelancers and citizens took part to these forums.
Other initiatives were gradually held by the Municipality of Cesena, as:

- **"Agrofer" fair** - March 2011: intervention on economic sustainability and the strategic nature of photovoltaic systems;
- **Forum Public Administration 2011**: introduction on facility management in House Providing companies within the Public Administration;
- **Energy Education Day 2011**: presentation of activities and projects related to public buildings' redevelopment by Energie per la Città ;
- **2012**: presentation of a project on the redevelopment of school buildings which would become exportable models to apply at European level. Cesena participates to this project with a primary school;
- **Energy Education Day** - held in March 2012, in collaboration with ENEA and FIRE: training day dedicated to energy efficiency and Renewable Energy Sources applied within companies and on the importance of training Energy Managers and experts in energy management;
- **"Agrofer" fair -** March 2013: on this occasion the Municipality of Cesena presented the project PassREG and explored passive house standard, setting them at the local community level;
- **"Train the trainer" course** - March 2013: organized as part of the training provided by the project PassREG and held by Eng. Susanne Theumer from Passive House Institute in Darmstadt, the course aimed at professionals interested in training themselves potential Passive House on-site workers.

S u c c e s s M o d e l

Council's commitment is also addressed to awareness-raising activities addressed to schools, through meetings and educational projects on topics related to energy conservation and renewable energy.
Surely, the collaboration between the public administration and training institutions is necessary, in order to raise awareness on these issues among future consumers. For this purpose, the Municipality of Cesena provided a forthcoming project, as it will be also discussed in chapter 7, with:
- Workshops with 16 middle school classes in Cesena;
- three study visits at Energie per la Città s.p.a with students and other schools' representatives;
- 12 evening meetings with the city's districts;
- organization and implementation of three public events, with installations, games for children and families and presentation of the documents produced by the classes involved. The first two will be held between January and February 2014 whereas the third one between March and April 2014, within the "Energy Days".

5
MARKET FOR PASSIVE BUILDINGS

B a s e l i n e

In a real estate market in trouble and, for this reason, more and more competitive as the one of today's Italy, buildings quality of construction and attention to the reduction in energy consumption are distinctive and decisive elements affecting buyers decisions, especially if we consider that, on the one hand, regulations require compliance with certain limits connected to energy consumption of buildings and, on the other hand, opportunities offered by public bodies (cutting infrastructure costs, increase of the building volume, etc.) push citizens to move towards sustainable energy projects.
Therefore, it becomes increasingly important the application, made mandatory for new buildings and for those leased or sold, of the energy certification, the main instrument through which it is possible to know the building performance and to create a "land register" to quantifies the distribution of buildings for each class and type, even if criteria for a passive house evaluation with respect to the national-regional energy certification are very different.
Concerning the Province of Forlì - Cesena, today energy class A + 's buildings are still few compared to the total certified, and this is why it is even more difficult to estimate the difference of market value for a building fitting an energy class or another (on equal terms) or a building subjected to energy redevelopment. In fact, the estimation should consider the economic reflection of a building's energy performance on its market value, but today still there is no available database of data and experience fitting this purpose.

Although there are no precise estimates about the influence of buildings' energy performance on market value, it can be expected that they, certified by the certificates, shall have a great influence, mainly because they will provide information on characteristics, expenses and managing expectations and on the value of the property, which could have an added value in the high energy performance; energy efficiency could thus become the tool to protect the value of a property investment.
By making this data transparent, operators should assign a higher value in terms of price to more efficient buildings, thus stimulating (as with other fiscal instruments) the construction of new buildings with high energy performances and measures to improve existing ones. Several studies carried out abroad confirm the existence of a price premium of around 3% in favour of buildings fitting higher energy classes.
Together with the energy certification in line with national and regional systems, there are voluntary certification of buildings' energy standard (such as CasaClima certification, an agency settled in Italy, in the province of Bolzano, and Itaca), which have become popular over the years in the international arena. The objective of these certifications is to encourage owners and developers to reduce emissions, making costs more transparent and giving useful information to buyers and tenants, as well as ensure the construction of buildings constructed with environmentally friendly materials and eco-friendly plants.
These systems, each of which has its own brand, present criteria for assessing buildings' energy performance (which, in some cases, spread to the whole sustainability) and different certification processes. While the market will determine the spread of these procedures, it is necessary that the institutions promote a correct understanding of their characteristics and the significance of the energy labels issued.

The main obstacles to the market development of passive buildings are the lack of a law transposing the European Directive until a few months ago and, still today, clarification on the application of it and definition of near zero energy buildings are missing. Also, due to the limited diffusion of the issues related to passive buildings, customers lack of awareness; they are suspicious about the quality of the construction's execution and they think such building require a more expensive initial investment, without considering the benefits in terms of comfort, safety and energy savings for the entire life of the property.
In addition, real estate market and buyers didn't perceived yet that efficient buildings have repercussions not only on heating's demand, but also on the electric's for summer cooling and, therefore, on comfort in the hottest season.
Normally, passive houses do not require substantive and significant investments more than traditional homes. But who wants to build a passive house should carefully monitor the planning and implementation phases from the beginning. Larger insulation thicknesses when used with appropriate construction technologies have no significant effect on the construction's cost, but only on the cost of single products.
Furthermore, there are already several examples of passive houses built at construction costs comparable to more traditional new construction; though in some cases the costs should be lower, this may be due to specific passive houses elements, whose prices are still, of course, exceeding lower performance ones.
In addition, these elements have to bear costs of research, development and industrialization. But a large part of the extra construction costs are recovered through substantial energy savings in running costs, not to mention the significant advantages from the high level of interior's comfort, the building's durability of and its intrinsic value and evaluation in time.

In fact, following the investment, tenants benefit of the high level of comfort achieved through comfortable temperature and indoor climate, air quality and a low energy requirement, which implies low costs and a reduced dependence on fuel prices' increase.
For investors, however, the main advantage is to own an energy-efficient and attractive building, that would easily turning into a high demand for rental or sale and in tenants' satisfaction, starting from the early stages.

Several parameters can be used to assess the profitability of conventional investments such as cost of acquisition, management, changes in profit, and so on. Investments in energy efficiency, however, can only be compared with the energy demand of similar situation without any efficiency measures. Unlike other energy saving investments, benefits of a sustainable use of energy cannot all be financially quantified or valued, for example improving comfort and the easier use of it.
Everything comes clear when additional costs for energy saving are allocated to the energy saved over the life cycle: the resulting cost of a kWh of energy saved can then be compared to the alternative cost of future energy supply.

Success Model
A strategy to impressively show to potential customers the advantages of living in a house with high energy efficiency are witnesses of those people who already live in such a building, to tell their experiences to potential buyers. Witnesses should be introduced during the meetings schedule, to disseminate themes about these buildings and submitted at the

Municipality of Cesena's communication strategy. They should be also put in the website or disseminated by advertising material.

To increase passive house and the market development of its elements, local Administration should act at different stages:

- political, through actions already scheduled to be introduced in PSC concerning the recognition of incentives forms for those who choose to build pursuing high levels of excellence in the energy and seismic field;
- economic and financial, promoting, through the "energy info-point," knowledge of incentive forms at national and local level and driving, according to these awards, people to choose feasible interventions to improve their house's energy performance. In addition, in order to help investors, another key point will be the realization of social housing characterized by very low running costs, especially aimed at the less well-off segment of the population. Finally, collaboration between public and private companies (such as ESCOs) must be taken into consideration, for the implementation of actions funded by third parties;
- technical, spreading the issues related to passive buildings through an info-point,("*Sportello Energia*"), conferences, forums and specific courses for designers and builders, where to learn the main market's techniques and technologies and to promote their implementation;
- dissemination, pointing out the importance of buildings' modernization from energy and ecology's point of view, as well as passive houses' increased health and comfort, trying to increase the confidence with these buildings and to overcome customers' scepticism.

These actions will contribute to increase interest and stimulate the construction industry to build and promote high-efficiency buildings, making existing real estate more energy efficient. Moreover, even the industry will see a market growth providing high-performance products such as thermal insulation systems, high performance windows, systems powered by renewable energy sources, controlled ventilation, as well as services of design and implementation of all the associated tasks.

6
SUCCESSFUL PRACTICES

B a s e l i n e

This chapter will introduce examples of low energy buildings existing at local level. Still, there is no passive house certified by the Passive House Institute but there are buildings for which designers or owners provided information on energy performance's characteristics comparable to the standard required for this type of construction.

Concerning building realized by private investors, it is possible to point out:

- a residential building in Montiano, on the hills of Cesena, having heating EI (energy efficiency index) of 11 kWh/m2 and cooling EI equal to 4 kWh/m2;
- a residential building in Forlì, having heating EI equal to 13 kWh/m2 year and IL cooling equal to 7 kWh/m2;
- a residential building in San Mauro Pascoli: its technic characteristics and design are illustrated in the blog http://casapassiva.wordpress.com/: the blog asserts the presence of a central vacuum cleaning system, a photovoltaic system of 9,2 kW, a solar thermal system covering over 70% of the energy requirement, heat pump water's heating and cooling - geothermal probe water power of 8 kW and green roof to increase thermal insulation and due to aesthetic choice;

To know the number of buildings actually existing in the municipality which proved to be low energy consumption after monitoring or through certification, in November 2012, on the occasion of the "Passive House Days 2012", the municipality launched a voluntary census on "passive buildings" in Cesena, to map them and to create a local network of experts aimed to promote them. The census meant to map existing, under construction or at design stage passive buildings in the province of Forlì-Cesena and it was on a voluntary basis. Only two designers responded to the census, signalling the following buildings at design stage:

- Residential building-social housing in Cesena that, according to the designer, meets the following requirements:
  Energy requirement for heating = 12 kWh/m^2 per year; needs for cooling = 13 kWh/m^2 per year; air tightness n50 <0.6 volumes / h; primary energy demand = 95 kWh/m^2 per year;
- Private residence located in Cesena that, according to the designer, meets the following requirements:
  Energy requirement for heating = 9 kWh/m^2 per year; needs for cooling = 11 kWh/m^2 per year; tightness n50 <0.6 volumes / h; primary energy demand = 90 kWh/m^2anno;

Regarding low energy consumption buildings committed by the Municipality of Cesena, a nursery school in Martorano (Cesena) is currently under construction (the end of work is expected shortly), which was designed to fit in the energy class a (EP <8 kWh / m^3 * year): the building's envelope is insulated, with system of controlled mechanical ventilation with

heat recovery, design criteria enhanced free solar gains (school premises facing south and solar greenhouses), solar photovoltaic and solar thermal systems.

Moreover, in the year 2013, it is expected the redevelopment of an existing primary School, on which the Municipality of Cesena intervened by insulating all envelopes from the outside, replacing all windows with double glazing window frames (previously there were single glass), realizing a mechanical controlled ventilation system and installing a monitoring system that allows, by remote control, the optimization of heating adjustment (reducing gas consumption) and the improvement of thermal comfort within premises.
This project is aimed at achieving high level energy performance (reducing 75% of heating consumption) and environmental factors, developing citizens' awareness on energy saving, through a good practice example.
Actions to achieve this renewal have been realized with a management team that allowed us not to stop teaching, providing, at the end of the work, education about the use of new equipment, information on interventions, environmental education and activities to raise students' awareness on energy savings and a better use of the available resources.

Success Model

The Participation to the Project PassREG highlighted the need to accelerate the creation of nearly zero energy buildings, to align with the obligations imposed by the European Directive. In this direction, and aiming at creating successful examples to be used as a model by citizens, the Municipality of Cesena is currently studying and designing a new high performance building, through the technical supervision of Energie per la Città s.p.a., inspired by NZEB and passive buildings principles underlying.
Particularly, the enlargement of a nursery school for which we analysed various technological and constructive solutions to meet the standards imposed or recommended for the building's envelope, windows, heating and cooling and controlled mechanical ventilation with heat recovery.
Through the creation of this building so that it meets requirements for passive buildings in terms of structures' performance, winter energy demand and global primary energy demand for heating, cooling, ventilation and lighting, Cesena intends to implement its success model to put into practice what the lesson learned for the future with the project PassREG.
At the same time, the City hopes that this intervention would have a significant impact on design and construction's practice and that it would be the know-how basis for those who, within Public Administration, will be identified and trained to specialist on these issues.

SEAP's (Sustainable Energy Action Plan) development process for other eight municipalities bordering Cesena (the preparation of the SEAP will be entrusted to Energie per la Città s.p.a., in-house company of the Municipality of Cesena, appointed to develop "low and renewable energy " projects) will allow Energie per la Città s.p.a to propose action plans for NZEB integration, to achieve the Directive 20-20-20's objectives by 2020.

7
PUBLICITY AND PUBLIC SUPPORT

7.1 Municipality of Cesena's communication strategy

B a s e l i n e

People interviewed as part of the administrative structures of the Municipality of Cesena proved to be highly motivated to follow a policy of information to involve stakeholders within the local community in order to put NZEB standards into practice at design and construction stage. In this direction, a communications strategy has already been defined, in order to address different groups with low energy consumption buildings' issues, which can be summarized with the charter below.
The identification of target groups allowed defining ways to involve each of them, communication strategy's purpose, goals and objectives addressed to them. For example, among the actors to be involved we can list:

- Local Authorities directly involved in the implementation of PassREg, through their active participation in local energy forum on the development and approval of local models and through their contribution to the identification of possible projects and interventions. They also will have to implement the communication strategy;
- Designers, craftsmen, builders, contractors, etc.. they will be involved in projects' development and case studies. They will also participate to the training and they will be incorporated into the priorities described in chap. 6 about the "Capacity building strategy". Involving local authorities, they will help with models implementation and with the development of appropriate solutions in relation to their competences;
- Trade associations, housing associations, environmental organizations, etc.. They will be involved in the discussion of models and in regional events to raise awareness, in order to improve knowledge and tools to support the construction industry with the improvement of buildings' performance following PassREg's concepts.

The identification of target groups allowed to develop a communication strategy aimed at creating PassREg actors involved with different tools and methods according to their specific skills. Particularly each of these groups was addressed by a tailored information leaflet, including the following information and available on the site www.passreg.eu:

- Construction companies and construction sites' operators: "The Passivhaus certification for who's working in construction site helps to reassure customers about the contractor's suitable level of knowledge and experience to construct a building according to Passive House standard. It also provides an useful mean for companies wishing to differentiate themselves in the market. PassREg offers to professionals the opportunity to learn from pilot projects in their regions through support teams. These groups, led by an experienced professional involved in that particular project, will allow participants to follow the different steps of the

building's design and construction and to obtain a detailed knowledge of necessary integrated design aspects to construct a Passive House. A high technical ability and the attention to details are necessary requirements to successfully achieve Passive House's objectives. Therefore, workforce is a major contribution to the realization of low energy consumption buildings. With the new design and technical criteria developed to achieve stricter and stricter environmental standard, manufacturers with specific skills and experts able to apply them in the construction site will be more and more required";

- Politicians and local authorities: "The project PassREg has a great relevance for policy-makers and all those responsible for the development of energy efficiency standard and incentives to the construction industry at regional, national and EU level. For this reason, it is important both to identify an 'optimal cost' solution that takes into account the building's overall operating cost and to create a system able to support the industry by making it capable of achieving the result wished. PassREg is based on the experiences of regions which successfully achieved ambitious objectives addressing to a low power design integrated by renewable sources, to identify factors leading to this success. Learning from these regions will enable to share methods in line with European targets for the dissemination of nearly zero energy buildings, making them replicable across Europe";

- Architects and engineers: "As key members within the design team, architects and engineers are responsible for ensuring that the most serious environmental targets during construction are achieved, to meet European directives. PassREg provides designers with successful European case studies through the website www.passreg.eu and Passive House's database (www.passivehouse - database.org). The project also provides training opportunities throughout Europe for those who wish to acquire skills to become proficient in these design methods. This will be particularly useful in those areas where, currently, there is it a limited knowledge and lack of experience with "Low Energy" design strategies, but you can see some interest in these issues.
  Disseminating European partners' experience, the project compares and contrasts a range of approaches and design strategies in order to set more appropriate guidelines to their use in different situations and climates".

- Real estate and housing associations: "Building co-operatives are in general important partners dealing with a considerable number of new buildings and with the responsibility of ensuring that existing buildings are restored according to the latest standards. Also, they have a social responsibility to protect the most vulnerable citizens from the risk of spending more than 10% of their earnings in energy costs. Passive House's reduced maintenance expenditures, compared with those of a traditional building, may be useful to give greater financial security to the family, especially in the long term, given the inevitable increase of energy expenditures. To prove that Passive House is actually a tool to achieve or redevelop energy-efficient buildings, the project aims to popularize PassREg potential financing instruments for real estate agents and private owners";

- Sponsors: passive buildings represent a sensible investment because "it is well known that Passive House buildings have low running costs and, consequently, CO_2

emissions are very low. Therefore, an ethical investment can allow the owner to differentiate inside the real estate market, particularly among owners with corporate social responsibility and obligation to environmental criteria. This kind of high energy efficiency building, allows preventing possible legislation requiring improvements in existing buildings. Therefore, Passive House aim to maintain their long-term rental value, leading these buildings to be attractive to renters due to their reduced running costs. Streamlined monthly bills, in turn, reduce the risk of insolvency of payment that is an additional benefit to sponsors. Furthermore, the high level of thermal comfort and indoor air quality of Passive House enhances its market value.

- Manufacturers: "The spread throughout Europe of the Passive House model as a tool for construction of nearly zero energy buildings will inevitably lead to a bigger demand for suitable materials. Passive House standards require high levels of the thermal performance of the building's system and highly efficient service facilities. Yet, many materials needed are not widespread in the traditional sector, but these must be available at an acceptable cost, in order to allow the construction of nearly zero energy buildings at affordable prices. The Passive House model is flexible enough to meet the full range of construction techniques and design, while offering cutting-edge environmental performance for various uses and sizes buildings. Therefore, there is a great potential for building components' manufacturers to adapt and differentiate their offerings and to have solid opportunities for expansion into new markets. The best building components pay in return during their life cycle, as they reduce energy costs and they increase the quality of interior comfort. The need for these products offers to European producers profitable opportunities, together with the chance to take part in the energy shift.
  Raising designers and clients' awareness, as well as exchanging knowledge among experts, will be key issues for the production of building elements. Manufacturers can take advantage of the events organized by PassREg, including the international exhibition of Passive House elements and the wide variety of local events in partner regions. PassREg also supports manufacturers of building elements to obtain the Passive House Institute certification. This will lead to a greater availability of certified products in the wider European market by offering more opportunities and more visibility for those manufacturers whose materials show high levels of quality in line with Passive House criteria";

- Citizenship: "PassREg offers the opportunity to visit Passive House buildings, to compare on local experience and to engage with stakeholders through workshops and international study visits. The results of the most important projects are disseminated online and made public through events such as the International Passive House Conference, Passive House Days and other regional events. PassREg project also aims to raise public awareness about the availability of elements that will be essential in the creation of nearly zero energy buildings".

S u c c e s s M o d e l

To implement this complex communication strategy, the Municipality of Cesena may use external consultants to carry out the planned activities and the monitoring of the strategy's implementation, which could be played with periodic reports directly generated by involving

target groups to provide a feedback. Through this, it will be possible to change the communication strategy in order to make it more effective depending on stakeholders' expectations.

7.2 Communication Plan

B a s e l i n e

As explained in the training and education chapter, since the beginning, the development of the Municipality of Cesena's Local Energy Plan (PEC) focused on the participation of a broadest possible range of actors, through the creation of teams, workshops, discussion forums and debates open to businesses, citizens, political parties and various industry associations.
Such discussion was made effective by the online forum on "Cesenadialoga" website (http://www.cesenadialoga.it/), where people can update on the Municipality of Cesena's daily activities and on the action taken; through the section "Carta bianca", it is possible to propose project ideas, discuss and verify the status of the propositions during meeting days on the City's strategic vision for 2030.

In the comparison stage of PEC drafting, the city's Administration placed itself in a position to listen to proposals connected to issues like energy efficiency and energy saving in public and private construction, in enterprises and the production of energy from renewable sources; to achieve citizens' involvement and raise awareness about the new communication channel, three different forum were carried out:
First forum: Efficiency and energy saving in the construction field (26th March 2010);
Second forum: Efficiency and energy saving in enterprises-(31st March 2010);
Third forum: Energy production through renewable sources (6th April 2010)

In addition, through the online forum on "Cesenadialoga", citizens, businesses and associations had the chance to sign in and stay up to date on the dates of the meetings, learn about new ways of thinking, be informed on indexes and Local Energy Plan's steps and to download materials relating to the Energy Management. Hence, this tool made possible to be updated on the City environmental and energy policies, to intervene and directly participate to it.
The effectiveness of the Local Energy Plan is closely linked to the multiplicity of collaboration between public and private entities in concretely defining different actions. Hence, the importance of generating, together with such persons, a network to share actions planned and perspectives. The process of consultation, participation, negotiation and decision-making is coordinated by the Public Administration, which seeks to include the different actors involved in those choices. Many of the guidelines, activities and advertising are voluntary and, in this case, economic and social stakeholders, residents and associations, contribute to the creation of urban policies.

Other initiatives were later conducted in town, including several speeches, meetings and forums, as explained in Chapter 4, on economic and strategic redevelopment of public buildings, systems powered by renewable energy sources, the importance of training experts in Energy Management and on the implementation of "passive house" standard at local level.

Moreover, July 2013 brought to the conclusion of a series of meetings organized by the local administration in its 12 districts to discuss the guidelines for the preparation of the new Local Structural Plan.
As the site of the Municipality of Cesena reports, these meetings were characterized by a broad participation: more than 400 people attended the meetings, intervening to both general topics and specific issues related to personal locations.
Almost every participant agreed with the proposal advanced by the Municipality to reduce new buildings forecast, and to promote the redevelopment of the existing urban fabric, with a particular focus on energy improvements and seismic retrofitting.
Two meetings were dedicated on the Local Structure Plan also in the Commission Board, and discussions were held with young architects and other groups. Other meetings with the new Councils (just renovated), the Chamber of Architects, Engineers, Surveyors and Appraisers are already planned in order to address these issues.

Success Model

Energie per la Città s.p.a., with the collaboration of the Municipality of Cesena, is starting a series of events and training courses aimed at children, teachers, parents, educators and those involved in education. It also planned communication activities and awareness-raising in Cesena's primary schools and in public events addressed to citizens.

The project's main objective is to communicate what the City Council concretely realized in the last years, through the action of "Energie per la Città", on renewable energies (particularly photovoltaic) and energy saving and, in this way, to raise awareness on these issues so that they can spread further, creating a greater awareness of the importance of daily choices in this regard.

The project will be divided in the following stages:
- workshops with 16 secondary school classes in Cesena, for a total of 48 meetings (three per class) in 2014;
- three study visits at Energie per la Città s.p.a.'s office, where students can get familiar with on going and realized projects carried out in schools and public buildings;
- fulfilment of 12 evening meetings in the city's districts;
- organization and implementation of three public events with installations, games for children and families and presentation of the documents produced by the classes involved. The first two will be between January and February 2014 whereas the final one will be in March, 2014, within the Energy Days.

The project is addressed both to students and citizenship in general through public events. Therefore, communication will be tailored in order to reach groups with different age and to enhance their different potential skills. The style used to carry on the different project's phases will be oriented to the active participation of the actors involved.
The event will focus on energy efficiency, renewable energy sources and planning and designing fundamentals characterizing high performance buildings; in these occasions, witness from residents will be presented, together with fulfilled, on going or future environmental and European projects.

"Passive House Days" is another great event that will be carried out in November 2013; during these days, the citizenship will be invited to visit low energy consumption buildings in Cesena and it may also participate to the Regional Energy Forum that Energie per la Città s.p.a., on behalf of the Municipality, will organize to inform citizens about future strategies for the City's energy and environmental policy. The progress made in the project PassREg will be presented in the same context, with examples of good practice seen during the visits that will be made in Innsbruck, front-runner region, which will serve as a model for future constructions in Cesena.

Press releases on the Municipality of Cesena's website and on local newspapers will be arranged before each event; invitations will be distributed to citizenship, political authorities, designers, builders and students. It will be also distributed informational material that will give guidance on issues that will be dealt with.

Later on, the actual accession to the events and participants' reaction should be assessed through questionnaires, for instance; their result should be accessible to people interested in it, in order to adjust the strategy depending on expectations and to change the schedule.

7.3 Communication activities within the project

B a s e l i n e

Within the project PassREg different activities of dissemination and awareness raising were carried out, on issues related to low energy consumption and energy savings buildings:

- 23rd March 2013: the project "PassREg" was presented as part of "Agrofer", event dedicated to renewable energy sources and sustainable development. Principles at the basis of the spread of passive houses, "Passive House" standard and their settlement in the local community were introduced, together with positive experiences at local level and the draft of the Social Housing presented as beacon project within PassREg;

- 25th and 26th March 2013: "Train the trainer" course, held by Eng. Susanne Theumer, with the participation of more than 30 professionals interested in becoming themselves potential "passive house" operators' trainers;

- 20th -22nd June 2013: on the occasion of the EU Sustainable Energy Week 2013, the Natural Sciences Museum of Cesena inaugurated the '"Energy Point", an area where you can find educational and demonstration kits of biomass, bio-fuels, wind, solar thermal and photovoltaic, and discover the benefits of energy savings thanks to a path consisting of 30 posters. During these three days were also held workshops on renewable energy projects and visits to the Municipality of Cesena, to get familiar with the beacon project presented as part of PassREg and other on-going projects at Energie per la Città s.p.a.

Moreover, as explained in the paragraphs before, an extensive information campaign was addressed to target groups identified by the communication strategy through brochures and presentations aimed at raising awareness and to the development of issues related to buildings with low energy consumption

Success Model

The communication strategy of the Municipality of Cesena should start from these experiences and continue to organize events and initiatives, as expected. In fact, public and actors directly involved in the buildings' implementation phase demonstrated a growing interest in PassREg's issues. The strong participation to the events organized in recent years is an evidence of that.

Among the activities scheduled from 8th to 10th November 2013, there are the "Passive House Day", international days on passive buildings, when some low energy consumption buildings' owners coming from the municipal area (just a reminder: there are no buildings certified by the Passive House Institute at the moment) will, with the help of designers, open their homes to the public, to show constructive solutions adopted and making a witness of living in high performance buildings.

Within these days, it will be organized one of the Regional Forum scheduled. This will be addressed to the staff of the Municipality of Cesena and Municipalities in the territory of Cesena, designers, businesses, trade associations and citizenship.
The forum will introduce the future political strategy aimed to low energy consumption buildings, key points of the new Local Structural Plan, NZEB's basic concepts; practical examples made in Europe and Cesena will be discussed too.
The Forum will be organized with the aim to promote and accelerate the introduction and dissemination of NZEB in the area of Cesena. In the same occasion, after long preparatory activities, the Municipality of Cesena will present its Success Model and expected results from its implementation. In particular, the progress made within the project PassREg will be introduced together with the objectives involving buildings until 2020 and afterwards, and the roadmap for the implementation of the model in practice.

Moreover, in 2014, the Municipality of Cesena will organize the course "Certified Passive House Tradesperson", held by the participants of the course "Train the trainers", where local workers will be trained on constructive concepts and basic techniques underlying the concept of "passive house", in order to create a group of professionals able to work with during the implementation and construction.

8
QUALITY CONTROL

B a s e l i n e

Currently, the specific quality check of projects submitted and buildings realized is only based on the presentations released by designers and on the energy performance certificate issued by the Region Emilia Romagna's accredited technicians, unrelated to the planning and execution phases.
However, there is no real monitoring of new and redeveloped buildings' energy performance since there is no feedback between the energy performance certified by the certificate and the real building's consumption.
The introduction of energy certificates, which presentation is required at the moment of sale or leasing, is currently effective only from the real estate market point of view, as it works as an indication for buyers or tenants of the consumption in terms of energy.
It is important to emphasize that; however, the criteria for the evaluation of a passive house with respect to national and regional energy certificates are very different. In particular, we can identify the following differences:

	PASSIVE HOUSE	ENERGY CERTIFICATION
Energy consumption	consumption only for heating and overall building consumption	Consumption under continuous standard regime
Summer energy demand	Maximum limits as for winter demand	Only as a requirement. It doesn't affect the energy class classification
Condition of premises	It must be tested, as it is a requisition	Unevaluated
Quality air tightness	Evaluated with a suitable test and it should be $n_{50} \leq 0.6\ h^{-1}$	Unevaluated
Indoor air quality	Evaluated; Controlled Mechanical Ventilation with heat recovery at high efficiency is necessary.	Unevaluated
Certification's legal validity	Not recognized yet	Valid and mandatory for every sale or rental

As already stated, in 2007 the Municipality of Cesena approved the procedural guideline to promote sustainable construction annexed to the Municipality's Building Regulations ("Annex D"), which identifies and defines mandatory requirements, recommendations and volunteer actions to undertake in the field of energy performance, systems' efficiency, use of renewable energy sources, requirements and incentives trough the reductions the secondary urbanization expenditure and increases in building index.
The procedural guideline identifies goals for improving buildings' energy performance; its achievement provides for the following types of incentives:
1a) economic, with the reduction of secondary urbanization (U2) costs up to 40%;
1b) building, resulting in the deduction of perimeter walls with a thickness not exceeding 40 cm;

1c) urban, by increasing the buildability indexes of low-density areas for those who undertake to build under "Voluntary Requisitions" that might benefit from a discount of 30% on the U2 and, at the same time, designs the settlement following the "Required and Recommended Requisitions", aimed at saving energy and increasing the quality of living.

Since 2009, with the Region Emilia Romagna's legislation getting in force (Emilia Romagna156/2008 DAL), the requirements contained in Annex D came to coincide with the law's requirement and, currently, the minimum energy performance requirements that of new construction or under redevelopment buildings must comply are identified by this resolution as subsequently amended by the Regional Council Resolution 1366/2011.
This Resolution includes the obligation for buildings or units' sale and rental commercial ads, to bring in the energy performance index and the energy class attested by the certificate; moreover, among the entries for buildings' energy assessment of, summer air conditioning is also included.
It is expected a mandatory minimum of renewable energy sources use to cover a portion of the total consumption equal to 35% until 2014 and 50% by 2015 (with an increase of 10 % in case of public buildings), for domestic hot water, heating and cooling.
The project designer must include calculations and checks provided in the report attesting compliance with the requirements for buildings energy consumption and their heating systems' containment, which, according to art. 28, paragraph 1 of the Law n. 10, dated 9th January 1991, the owner of the building, or who has this title, must file with the municipal authorities appointed under provisions concerning certificates in force. Calculations and tests required to determine the building's energy performance are carried out in accordance with the UNI TS 11300 - Energy performance of buildings and it is the project designer's responsibility to verify the quality of projects and buildings.

Moreover, in order to ensure the reduction of energy consumption the following conditions should be verified:

- that thermal transmittance of opaque building facilities making up the building's envelope does not exceed standard stated;
- that thermal transmittance of windows surrounding the building does not exceed the standard identified;
- that thermal transmittance value of building facilities between neighbouring or units, as well as the opaque ones bounding to the outside spaces without heating, is less than or equal to the standard decided.

The verification of compliance with these requirements may be waived in the case the check involves energy performance indices' standards for space heating of the entire building subject to intervention, the production of domestic hot water identified under the climate zone in which the building is located and its S / V ratio (the ratio between dispersing surface and gross volume constituting the building).

Success Model

The quality check system for construction projects and existing buildings should be improved, from the point of view of the technical ecological sustainable evaluation, the transposition of the European Directive and with the Municipality of Cesena's participation to PassREg.
To do this, there should be involvement and interaction between designers, builders and Public Administration, to define methods and procedures for the implementation of the

legislation and to control the actual quality of buildings. They should be qualified experts, with specialized training and skills which would enable them to better evaluate all the circumstances.
In addition, the collaboration between these different professionals, should be lead to an effective model to evaluate the correspondence between energy properties declared in the projects and the real performance of the buildings realized, after a period of adequate monitoring.

Moreover, voluntary application of passive or nearly zero energy buildings for incentive or facilitation, should consider the obligation to consult bodies officially accredited by the appointed Region, possessing experienced technicians, in relation to every project's steps (design, construction, testing). The chance to refer to this kind of experts is currently missing on the territory, particularly during testing and monitoring.

Finally, to enhance the monitoring action, it would be important to make these procedures part of the executive project. More clear and simple methodologies for designers and builders would help this process.
While the system of buildings certification is currently based on normalized standard conditions, the quality control should be addressed to both individual elements and the building as a whole.

9

Renewable energy sources

9.1 Development of renewable energy sources in Cesena

The Administration of the Municipality of Cesena always showed a will to accompany its agenda to that taken by the other European Union member States, with regard to the fight against climate change occurred in the last decades and the development of environmental sustainability connected to energy production.

For this reason, the Municipality of Cesena joined the "Covenant of Mayors", a European action that involves local and regional authorities working to raise energy efficiency and spread the use of renewable energy sources in their lands, taking the responsibility to reduce by 2020 carbon dioxide emissions 20% less than in 1990. SEAP (the Action Plan for Sustainable Energy) was born in this context, a key document underlining processes, schedules and tasks in order to achieve 2020's goals.
SEAP is part of a bigger vision, expressed by the Administration in the Municipal Energy Plan (PEC) and ratified on April 2011, in order to fulfil its commitments.

The Municipal Energy Plan sets a series of interventions able merge the Municipality's objectives for 2020, among which the energy redevelopment of 18% of residential surface (about 630.000 square meters), from energy label E to C and the construction of new buildings A and B's energy label.
In addition, among the interventions identified in the PEC for the achievement of the 2020 targets there is a greater energy production using renewable energy sources, also related to the redevelopment of the buildings; for example, the construction of cogeneration plants, also connected to district heating networks, the use of waste and dedicated biomass in cogeneration plants, the construction of solar photovoltaic and solar thermal panels on residential, industrial and commercial roofs, the purchase of energy from renewable sources to replace the purchase of electricity from traditional sources are hypothesized, to achieve the emission reduction framework as provided for in the Covenant of Mayors.

In fact, to achieve the goal of reducing emissions by 2020, three categories of intervention have been identified:
- Power Saving Techniques: reducing emissions is given to measures that are able to reduce energy consumption while maintaining the same output of the system;
- Techniques for the production of energy from renewable sources: in this case the reduction of carbon dioxide is achieved through the production of the same amount of energy but from renewable sources;
- Techniques for capture of CO2 emission: reduction is not due to lack of production or the production of energy from non-polluting sources, but to the use of techniques which act as sinks for carbon dioxide (eg woodlands).

In particular, as regards the production of energy from renewable sources, it has been hypothesized to produce::

o Energy from biomass: production of heat and / or electricity by treatment of organic waste or dedicated cultivation of non-food crops toward the production of energy;
o Photovoltaic solar energy: production of electricity from solar energy using photovoltaic solar panels;
o Solar thermal energy: thermal energy production from solar energy by using solar panels;

omitting energy production with wind farms, hydroelectric and geothermal power, as difficult according to the peculiarities of the municipal territory.

In the SEAP, in the assumptions of deployment of each technology in order to achieve the emission reduction target, account was taken of the state of the art at the time of preparation of that, and therefore of the technologies developed at that time, with lower energy efficiency that of technologies now on the market.
To achieve the objectives of the SEAP, two different scenarios among which the municipal administration can choose according to their needs have been proposed, as outlined below only for the part concerning the production of energy from renewable sources.

- **SCENARIO 1**

1) Biomass from waste:
Assumptions for the production of 7 GWh thermal cogeneration with biomass from waste (based on a Coldiretti's study on the Province). This technique has been considered with the aim of enhancing biomass waste from the municipality, considering the energy potential of agricultural waste exploited through co-generation plants, the potential of which have been shown in a study by the Federation Coldiretti;

2) Solar photovoltaic energy:
Installation of approximately 425,000 square meters (38 MWep) of photovoltaic panels, corresponding to 25% of the area occupied by roofs in the residential sector; the surface of the panels can be deployed in warehouses in the industrial sector. It is considered the average irradiance of the territory of the Municipality of Cesena, equal to 1,400 kWh / kWp;

3) Solar thermal energy:

Installation of approximately 85,000 square meters (40 MWtp) of solar thermal panels, corresponding to 5% of the area occupied by roofs in the residential sector; would cover approximately 50% of the domestic hot water demand in the residential sector. It is considered the average irradiance of the territory of the Municipality of Cesena, equal to 1,400 kWh / kWp and an average yield of panels equal to 70% (mean value of the solutions on the market at the time of preparation of the SEAP).

- **SCENARIO 2**

1) Biomass from waste:
Assumptions for the production of 7 GWh thermal cogeneration with biomass from waste (based on a Coldiretti's study on the Province);

2) Solar photovoltaic energy:
Installation of approximately 800,000 square meters (72 MWep) of photovoltaic panels, corresponding to 45% of the area occupied by roofs in the residential sector; the surface of the panels can be deployed in warehouses in the industrial sector;

3) Solar thermal energy:

Installation of approximately 118,000 square meters (57 MWtp) of solar thermal panels, corresponding to 7% of the area occupied by roofs in the residential sector; would cover about 75% of the domestic hot water demand in the residential sector;

4) Dedicated Biomass:
Hypothesis of use of 15 square kilometres of land to be devoted to the cultivation of biomass for the production of energy from cogeneration with use of biogas. In contrast to the biomass of the waste, in this case the dedicated cultivation of non-food crops for the production of energy through cogeneration systems is considered; in this case, being crops "ad hoc", their power energy increases, and consequently increases the potential of the technique for the achievement of the ultimate objective of reducing emissions.

9.2 Economic levers

Since years, the Italian system already provides for diversified systems to support the production of electricity from renewable sources and for buildings' energy improvements and energy savings.

In particular, economic instruments in force to promote energy production plants powered by renewable energy sources are:

- **Certificati Verdi** *("Green Certificates")*: securities issued by GSE (Agency for Energy Services) at a rate proportional to the energy produced with a system powered by renewable sources and operating by 31 December 2012. Each Green Certificate certifies conventionally the production of 1 MWh of renewable energy and can be traded or sold by producers to subjects obliged to produce an amount of electricity from renewable sources in a specific market, thus getting an economic return;

- **Tariffa Onnicomprensiva** *("All-Inclusive Rate")*: it is the incentive mechanism alternative to the Green Certificates, reserved to qualified systems IAFR (powered by renewable sources), with an average annual capacity not exceeding 1 MW or 0.2 MW for wind-power installations. It 'a support system based on the delivery of a fixed rate, which includes both the incentive and the compensation for electricity fed into the grid, the value of which depends on the type of source used;

- **Conto Energia** *("Energy Sum")*: it is a support system that ensures a constant compensation of the electricity produced from solar photovoltaic systems connected to the grid and solar thermodynamic plants, for a fixed period (20 years for photovoltaic installations, 25 years for the thermodynamic solar ones) through a rate for all the energy produced by the systems. This incentive system was introduced in Italy in 2005, with the Ministerial Decree dating 28th July 2005 (First

Energy Sum) and it is currently regulated by the Ministerial Decree of 5th July 2012 (Fifth Energy Sum).
The rate is in addition to the sale's income or value, through on site exchange or self-consumption and the energy produced varies depending on the size and degree of the system's architectural integration. The scheme rewards renewable productions done independently from the electricity produced.
The last energy sum redefines the manner of incentives for the production of electricity from photovoltaic, which shall apply after 45 days from the date of attainment of a cumulative annual indicative financial cost of the incentives for photovoltaic amounted to EUR 6 billion, and up to 30 days after reaching the threshold of € 6.7 billion a year, after which we do not accept further applications for assistance.
The threshold was reached June 6, 2013 and therefore, according to the resolution 250/2013/R/efr of the Authority for Electricity and Gas, the V Conto Energia expired July 6, 2013;

- **Titoli di Efficienza Energetica o Certificati Bianchi** *("Energy Efficiency Certificates" or "White Certificates")***:** negotiable securities that certify the achievement of energy savings in final use of energy through interventions and projects to increase energy efficiency. This system of white certificates was introduced into the Italian law by Ministerial Decrees on the 20th July 2004 and provides distributors of electricity and natural gas to reach annually certain quantities of primary energy savings, expressed in equivalent tonnes of oil saved (TEP).
  A certificate is the same of saving a ton of equivalent oil (TEP); companies distributing electricity and gas can carry out its obligation implementing energy efficiency projects entitling white certificates or acquiring TEE by others on the market of Securities Energy Efficiency organized by GME;

- **Conto Termico** *("Thermal Sum")*: The publication of the Ministerial Decree on 28th December 2012 called "Thermal Sum", gave effect to a support system for the promotion of small-scale interventions to increase energy efficiency and the production of thermal energy from renewable sources.
  Interventions to incentive refer both to existing buildings envelope's efficiency (insulation of walls and roofs, replacement of windows and solar screens installation) and the replacement of existing systems for winter heating systems with higher efficiency (condensing boilers) and replacement or, in some cases, new installation of power systems using renewable sources (heat pumps, boilers, biomass stoves and fireplaces, solar thermal systems also combined with solar cooling technology).
  The new decree introduces also specific incentives for energy diagnosis and energy certification if combined to the intervention above mentioned and in certain conditions. The incentive is a contribution to the expenses carried out and it is paid with annual rates for a variable duration (between 2 and 5 years) as a function of the interventions realized.
  The real news of this tool is the chance for Public Administrations to direct access to intervention on their properties. In fact, the Decree funds a yearly expense to a total amount of 200 million euro for interventions realized by Public Administration and of 700 million euro for interventions realized by private users;

The incentives described represent a consolidated national energy system, to address with necessary adaptations, for the next period, as an element of continuity important to achieve the Community new objectives.

9.3 Successful practices

In the framework of the Municipal Energy Plan of the Municipality of Cesena the project "Schools of the Sun" is inserted that the City committed Energie per la Città S.p.a..
The project involves the installation of photovoltaic systems on the roofs of school buildings through a process divided into phases: planning, design, implementation, monitoring and disclosure.

The systems, operating with on-site electrical power exchange mode, provide renewable energy directly to the users school, covering in some cases 100% of energy needs.
The planning of measures starts from the consideration that the construction of the plants coplanar on the roofs of school buildings does not involve the use of green ground.
The systems are constantly monitored by a remote control system that allows the operational headquarters of Energie per la Città S.p.a. to monitor the energy production data and system.
“Schools of the Sun” can be identified by plaque affixed to the entrance of the school.

At the end of the work, the Municipality of Cesena and Energie per la Città S.p.a. organize moments of energy education in schools to encourage the culture of the energy produced by plants fueled by renewable sources, but also energy saving.

Additional information about the project is available on the website of Energie per la Città Spa:
(http://www.energieperlacitta.it/progetti/le-scuole-del-sole)

9.4 Communication activities

As part of the project PassREg were carried out different activities of dissemination and awareness raising on issues related to the production of energy from renewable sources:

- 23 March 2013: as part of "Agrofer", an event dedicated to renewable energy sources and sustainable development, the project "PassREg" and the principles underlying the spread of passive houses and facilities for the production of energy from renewable renewables has been presented;

- 20-21-22 June 2013: On the occasion of the EU Sustainable Energy Week 2013 was opened 's "Power Point" in the Museum of Natural Sciences of the Municipality of Cesena, an area in which you can find kits educational and demonstration of biomass, biofuels, wind, solar thermal and photovoltaic, and discover the benefits of energy savings thanks to a path that consists of 30 posters. In these three days

were also held workshops on renewable energy projects and visits to the Municipality of Cesena, among whom was shown the beacon project presented as part of the project and PassREg and projects underway at Energie per la Città S.p.a;

- Inauguration of photovoltaic systems installed in various schools, with awareness of students and teachers (activities still in progress);

- Events of the square on the issues of energy conservation and renewable energy;

- 21-26 March 2014: “Energy week”, focused on Energy saving and e sustainable energy. Energy saving projects and system for the production of energy from renewable sources projects produced by the Municipality of Cesena via Energie per la Città S.p.a. were presented. In addition, the project products from middle school students as part of an education project on energy saving and development of renewable energy sources were presented. Within the week, two photovoltaic plants installed at the service of two middle schools were also inaugurated.

In addition, in November 2013, Energie per la Città S.p.a., in collaboration with the Municipality of Cesena, launched a project entitled "With the right energy ... we can all be superheroes", aimed at middle schools and all citizens of Cesena, which aims to promote, in a fun and curious way, energy saving and renewable energies.

The goal of the project is to sensitize citizens on the importance of renewable energy and energy conservation, starting from the good practice has already been made in recent years in the town of Cesena then widen and deepen the reflection on these issues so that they can spread further and get to all citizens.

The project is addressed to all citizens; therefore, with the help of a cooperative expert in educational activities on environmental issues, different communication languages reach the different age groups and different skills enhance the potential have been prepared:
• with regard to young people, the project will include meetings in schools and to their involvement in the creation of promotional material;
• for children and families, the project includes three days of celebration and games in the streets and in the parks on the theme of energy;
• to involve adults and seniors, evening meetings at all the twelve municipal districts have been and will be made.

The meetings in schools started on November 8, 2013, by the plexus of Anne Frank Middle School and continued throughout the winter with 250 students, with three meetings in each of 12 different classes of secondary schools in the city. In parallel, the evening meetings were held in the Districts of the neighbourhood. While the spring started the public events for families.

Additional information about the project is available on the website of Energie per la Città Spa:
http://www.energieperlacitta.it/notizie/con-lenergia-giustapossiamo-essere-tutti-super-eroi

10
ROADMAP

10.1 SWOT Analysis

On the basis of the identified success model, a SWOT analysis of the model has been developed, to circumscribe the strengths and weaknesses and the opportunities and risks that may occur in its implementation, summarized in the following table :

Key strengths	**Weaknesses**
- Commitment by the city administration to disseminate the knowledge gained from the examples of good practices of the Front Runners Regions - Next study and approval of Municipal Structural Plan, which should contain incentives for those who build NZEB and passive buildings; - Involvement of all sectors of the Municipality of Cesena interested in the implementation of standards related to buildings with low energy consumption; - Events for training and awareness; - Economic and financial levers already existing in Italy, to support refurbishment of existing buildings	- Limited dissemination of issues related to passive houses outside of the professional groups involved in their implementation; - Few professionals able to apply the principles of NZEB, especially within the local administration; - The market for materials used for passive buildings and the market of these buildings is still not very large; - The system of quality control doesn't include the assessment of standards for passive buildings
Favourable opportunities	**Threats and risks**
- Events planned to raise awareness of citizens and for the dissemination of issues related to NZEB and passive houses; - Projects of educational activities in schools; - Communication strategy according to the different target groups identified, with diversified messages and goals; - Opportunity to study examples of good practices that already exist in Europe, including energy-efficient buildings built and designed by the Municipality of Cesena	- Future national policy for implementation of the legislation not in line with the objectives set in relation to the NZEB before 2020; - Economic crisis; - Economic and financial levers that will disqualify new low energy buildings; - Poor adhesion to training programs by specialists identified in and out the local Administration

10.2 Roadmap

The actions and measures to be implemented for the development of the new success model are:

- Events planned for the project PassREg, among which there are the Regional Building Forums (scheduled for November 2013, November 2014 and for the years following the end of the project), the Passive House Days (scheduled for November 2013, November 2014 and for the years following the end of the project), the info sessions (3 more planned), training course for trades persons, the course for craftsmen of the beacon project's construction (which will be made after the conclusion of the tender, which will identify the company that will build the project);

- Events and info sessions for students, citizens, associations and workers: some events will be included within those planned for the project PassREg;

- Realization of the beacon project, and subsequent dissemination of results;

- Adoption and approval of the new Cesena's Municipal Structural Plan, which will promote a discipline of urban regeneration to facilitate the recovery and, in some cases, reconstruction of existing private and public buildings, with incentives to those who choose to build pursuing high levels of excellence in energy and seismic;

- Training courses for municipal administration staff, for designers and manufacturers of passive houses, which will be directly involved in the creation and dissemination of NZEB;

- Creation of examples of success (eg municipal schools designed according to the standards of the buildings with low energy consumption) and their subsequent monitoring for quality assurance of the building, with dissemination of results;

- Advertising and communication: using the Communication Plan released by the Municipality of Cesena, advertising will be provided via the Municipality of Cesena's and Energy for the City spa's website, dissemination through brochures aimed at different target groups involved, press releases before and after each event , dissemination of the results achieved by the project.

Annexes:

1. Template for the description of the Cesena's baseline (available in Alfresco - file name: Overview of the Starting Point of the AR_Common framework_Cesena.doc, link:http://alf.passiv.de:8080/share/page/site/passreg/document-details?nodeRef=workspace://SpacesStore/e855bf3f-b2fe-4790-b39e-634da06300ab)
2. Indicative scenario for the preparing and performing of Regional Building Forums in aspiring regions involved in PassREg project (available in Alfresco)
3. Municipality of Cesena's communication strategy