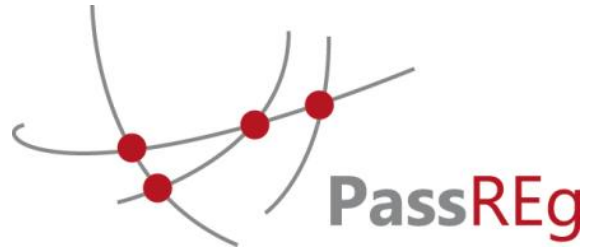




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# IEE PassREg

## PASSIVE HOUSE REGIONS WITH RENEWABLE ENERGY

**Success Model**

**City of Zagreb**

Version 1.1 / 31.12.2014

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## INTRODUCTION

The **Success Model** is a description of the terms, documents and actions that would ensure accelerated implementation of "nearly zero-energy buildings" ("passive buildings") throughout the municipality. For this purpose, it is accompanied by a clear and measurable **interim and final targets** and timetables for achieving them, which are represented by a **Roadmap** (Schedule). It describes the successive steps to develop patterns of success (Success Model) and timetables for achieving them.

Items included in the Success Model are described in two horizons - today (baseline) and future state. The description of today (baseline) policies and practices presents results achieved by now. The description of future policies and instruments outlines the means by which to achieve predetermined objectives of this project and in a wider scope – the European and national climate and energy efficiency building policy:

**from 2019/2021, new buildings will be designed and constructed according to the "nearly zero-energy" standard.**

The description of the baseline has to be succinct and precise, and the introduction of new policies and instruments - explained and justified in enough detail. If the description of the baseline for some of the pre-marked points can not specify a particular activity, this must be reported, in order to make it clear what is the starting point of the new Success Model of the region (municipality). The short presentation of the baseline (already prepared on the basis of pre-distributed model structure and content) can be used at this point (see annex 1).

It is strongly recommended for the improvement of existing Success Models and the compilation of new ones that the regions involved in PassREg project actively use the experience of pre-selected pilot Front Runner Regions. The descriptions of their Success Models provide detailed information for all project partners.

### **Note:**

**In terms "nearly zero-energy building" and "passive building" used in this text is put the same meaning. PassREg project aims to establish the "passive house" standard of as the basis for the definitions of "nearly zero-energy building", which are currently under development and are to be adopted in any member country of the European Union.**

# 1

## ENERGY AND BUILDING POLICY

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### National framework

#### Baseline

Energy Strategy of the Republic of Croatia (Official Gazette 130/09) incorporates the following obligations taken over from the EU goals by 2020:

- 20% gross immediate consumption from the RES
- 10% share of RES used in all forms of transport
- 20% reduction of total energy consumption
- 20% reduction of greenhouse gasses emissions

Package of 4 laws complied with the Third energy package of EU laws:

- Energy Act,
- Electricity market Act,
- Gas Market Act,
- Act on Regulation of Energy-Related Activities.

The authorization and responsibility for determining and conducting the policies for stimulating energy production from renewable energy source, the conditions and manner of production and use of energy from the renewable energy sources at the energy market, financial incentives for the use of renewable energy sources and other issues connected with the use of renewable energy sources are set out in the Energy Act (Official Gazette 120/12), a special act which will set out the use of renewable energy sources (RES) as well as other acts.

#### STRUCTURE OF LEGISLATION ON ENERGY IN CROATIA

- Energy Law (Official Gazette 120/12)
- Act on efficient end-use of energy in the final consumption (Official Gazette 152/08, 55/12),
- Electricity market Act (Official Gazette 177/04, 76/07, 152/08, 14/11, 59/12)
- Gas Market Act (Official Gazette 40/07, 152/08, 83/09, 91/11, 114/11)
- Act on Regulation of Energy-Related Activities (Official Gazette 120/12)
- Act on thermal energy market (Official Gazette 42/05, 20/10)
- Law on Oil and Oil Derivatives market (Official Gazette 57/06, 18/11)
- Act on Biofuels for Transport (Official Gazette 65/09, 145/10, 26/11)
- Act on renewable energy sources (in production)
- Energy Strategy of the Republic of Croatia (Official Gazette 130/09)

Pursuant to Article 28, paragraph 8 of the Energy Act, the Government of the Republic of Croatia on 31 May 2012, adopted the Tariff System for the Production of Electricity from Renewable Energy Sources and Cogeneration (official Gazette 63/12, 121/12) which regulates the right of eligible producers of electricity to an incentive price of electricity paid by the market operator for the electricity produced and delivered from plants using RES and cogeneration plants, excluding own consumption. The Tariff defines the amounts of fixed tariff items and the variable part of tariff items for electricity produced in plants using RES and cogeneration plants, depending on the type of source, power and other elements of delivered electricity, as well as the manner and conditions of application of those elements.

In the **Energy Act** (Official Gazette 68 /01, 177/ 04, 76 / 07) for the first time Republic of Croatia expressed a positive attitude towards energy efficiency and clearly emphasized that effective energy use in the interests of the Republic of Croatia.

**Law of Environmental Protection and Energy Efficiency Fund** (OG 107/ 03) which should engage in finance the preparation, implementation and development of programs, projects and similar activities in the field of conservation, sustainable use, protection and improvement of the environment, energy efficiency and renewable energy sources.

**Construction Act** ( Official Gazette 175 /03, 100/ 04) has determined that the energy savings and thermal protection are one of the six essential requirements for the building .

**Law of Spatial Planning and Construction** ( 76/ 07) defines the importance of energy efficiency and obligates energy certification of buildings .

**Law of Production , Distribution and Supply of Thermal Energy** ( Official Gazette 42 /05 ) provides all of the essential elements in the production , distribution and supply of heating energy , obligates the individual measurements of thermal energy new buildings , and opens the possibility of individual measurements and thermal regulation energy facilities constructed before the entry into force of this law .

**Technical regulation on rational use of energy and thermal protection in buildings** (OG 110/08, OG 89/09, OG 79/13) the following minimum energy performance requirements are laid down:

- maximum permitted annual energy use for heating per m<sup>2</sup> of usable floor area of a residential building ( $Q'_{H,nd}$  in kWh/(m<sup>2</sup>a)), or per m<sup>3</sup> of a heated part of a non-residential building ( $Q'_{H,nd}$  in kWh/(m<sup>3</sup>a));
- maximum permitted transmission heat transfer coefficient per m<sup>2</sup> of a heated part of the building ( $H'_{tr,adj}$  in W/(m<sup>2</sup>K));
- prevention of overheating due to solar radiation during summer;
- limitation of the air-tightness of the building envelope;
- maximum allowed heat transmission coefficients  $U$  in W/(m<sup>2</sup>K) of building components of new buildings, small buildings (of usable floor area  $A_K < 50$  m<sup>2</sup>) and after renovation works performed on existing buildings;
- minimization of the impact of thermal bridges;
- maximum permitted water vapour;
- prevention of surface condensation of water vapour.

Through the *Technical regulation on rational use of energy and thermal protection in buildings* (OG 110/08) the maximum allowed heat transfer coefficient  $U$  in W/(m<sup>2</sup>K) of building components (walls, windows, ...) of new buildings, small buildings of usable floor area  $A_K < 50$  m<sup>2</sup> and after renovation works performed on existing buildings are set.

No.	Structural part	$U$ , [W/(m <sup>2</sup> K)]			
		$\theta_i \geq 18^\circ\text{C}$		$12^\circ\text{C} < \theta_i < 18^\circ\text{C}$	
		$\theta_{e,month,min} > 3^\circ\text{C}$	$\theta_{e,month,min} \leq 3^\circ\text{C}$	$\theta_{e,month,min} > 3^\circ\text{C}$	$\theta_{e,month,min} \leq 3^\circ\text{C}$
1.	External walls, walls to the garage, attic	0,60	0,45	0,75	0,75
2.	Windows, balcony doors, roof windows, transparent facade elements	<b>1,80</b>	<b>1,80</b>	3,00	3,00
3.	Flat and pitched roofs above heated rooms, ceilings to the attic	0,40	0,30	0,50	0,40
4.	Ceilings above external air, ceilings above garages	0,40	0,30	0,50	0,40

5.	Walls and ceilings to non-heated rooms and non-heated stairways at a temperature higher than 0°C	0,65	0,50	2,00	2,00
6.	Walls to the soil, floors on the soil	0,50	0,50	0,80	0,65
7.	External doors, doors to non-heated stairways, with non-transparent door wings	2,90	2,90	2,90	2,90
8.	Walls of the roller shutter box	0,80	0,80	0,80	0,80
9.	Ceilings between apartments, ceilings between heated working premises of various users	1,40	1,40	1,40	1,40

**Note:**  $\theta_{e,month,min}$  is the mean monthly temperature of the outdoor air in the coldest month at the building location.

Through the newest *Technical regulation on rational use of energy and thermal protection in buildings* (OG 79/13) the maximum allowed **annual primary energy**, which include energy for space heating, cooling, ventilation and domestic hot water, is laid down for the new single-family houses.

For all localities in Croatia with less than 2.200 heating degree days per year, the maximum allowed annual primary energy for new single-family houses is set to value **90 kWh/(m<sup>2</sup>a)**.

For all localities in Croatia with 2.200 or more heating degree days per year, the maximum allowed annual primary energy for new single-family house is set to value **160 kWh/(m<sup>2</sup>a)**.

The maximum allowed heat transfer coefficients  $U$  in W/(m<sup>2</sup>K) of building components (walls, windows, ...) are the same both for new buildings and for existing buildings undergoing major renovations. They are obligatory for every major refurbishment as well.

The maximum allowed annual primary energy is only laid down for the new single-family houses.

The minimum requirements do not apply in the following building categories:

(a) Monument buildings and buildings officially protected as part of a designated environment or because of their special architectural or historical merit, in so far as compliance with certain minimum energy performance requirements would unacceptably alter their character or appearance;

(b) buildings used as places of worship and for religious activities;

(c) temporary buildings with a time of use of two years or less, industrial sites, workshops and non-residential agricultural buildings with low energy demand and non-residential agricultural buildings which are in use by a sector covered by a national sectoral agreement on energy performance;

(e) stand-alone buildings with a total useful floor area of less than 50 m<sup>2</sup>., should only comply with the requirements for the building envelope components.

Through the *Technical regulation on rational use of energy and thermal protection in buildings* (OG 110/08, 89/09, 79/13) the following energy performance characteristics of the technical building systems are defined:

- in the case of panel heating (e.g. floor heating) the heat transfer coefficient of the building parts, which are located between the heating surface and the outside air, floor or unheated part of the building, should not be greater than 0,35 W/(m<sup>2</sup>K) (OG 110/08, Article 37.)
- the heating body is placed in the front of glass surface area, the back side of the heating body should be protected with the lining against radiation with the heat transfer coefficient not greater than 0,9 W/(m<sup>2</sup>K); (OG 110/08, Article 39.)
- all heating bodies must be equipped with thermostatic valve if the surface of the net usable floor area is greater than 6 m<sup>2</sup> (OG 110/08, Article 40.);

- the minimum required thickness of insulation of space heating and domestic hot water distribution subsystems (OG 110/08, Article 41.);
- all air handling units for ventilation and air conditioning with a fresh air supply higher than 2.500 m<sup>3</sup>/h must have built in a heat recovery system (the minimum heat recovery has not been defined yet) (OG 110/08, Article 44.);

From 1<sup>st</sup> of July 2013 (the date of the accession of the Republic of Croatia to the European Union) all existing buildings and their separately used units (e.g. apartments) when sold should have a valid energy certificate.

Also, from 1<sup>st</sup> of January 2016. the energy certificate of the separately used units will be also obligatory when these units are rented out or leased.

The validity of energy certificate is 10 years.

### **EU directives in Croatian legislation:**

The European Directive 2010/31/EU has stimulated the drafting of national technical standards on the energy performance of buildings. The purpose of this phase is to investigate the levels of implementation of the European Directive, with particular reference to the existence or otherwise of the procedures for calculating the energy performance of buildings (national and / or regional), specifying:

The implementation of the Directive 2010/31/EU of the European parliament and of the council of 19 May 2010 on the energy performance of buildings in Croatia is entirely into the responsibility of the Ministry of Construction and Physical Planning.

The recently last transposition of the European Directive 2010/31/EU has been done through the Building act, published in the Official Gazette No. 153/13, at the end of 2013.. The date of application of the new Building act is 1st January 2014.

Regulations which indirectly transpose the EPBD requirements in Croatian legislation are:

- Technical regulation on rational use of energy and thermal protection in buildings (OG 110/08, OG 89/09, OG 79/13)
- Technical regulation on heating and cooling systems in buildings (OG 110/08)
- Technical regulation on ventilation systems, partial air-conditioning and air-conditioning of buildings (OG 03/07)
- Technical regulation for chimneys in construction works (OG 03/07)
- Technical regulation for windows and doors (OG 69/06)

Directive 2012/27/EU- Energy Efficiency - is in the process of incorporation within the new Physical Planning and Building Act (Official Gazette 76/07, 38/09, 55/11, 90/11, 50/12) and within the new Energy Efficiency Act.

The Electricity market Act (Official Gazette 177/04, 76/07, 152/08, 14/11, 59/12) incorporated the provisions of the new Directive 2012/27/EU from 25th of October 2012 on energy efficiency.

Directive 2012/28/EC - Renewable sources of energy – is incorporated within Electricity Market Act (Official Gazette 177/04, 76/07, 152/08, 14/11, 59/12, 22/13) and Act on Biofuels for Transport (Official Gazette 65/09, 145/10, 26/11).

Pursuant to Article 8, paragraph 2 of the Electricity Market Act, the Minister of Economy, Labour and Entrepreneurship issued the Ordinance on Acquiring the status of Eligible Electricity Producer (Official Gazette 88/12) which Ordinance establishes the conditions for acquiring that status which may be acquired by a project holder or producer who in a single generation plant simultaneously produces electricity and heat, uses waste or RES for electricity production in an economically viable manner in compliance with environmental protection.

The new Renewable energy sources Act is still in production as well as the Third National Energy Efficiency Action Plan (NEEAP).

The second National Action Plan is the base for drafting new, third plan which drafting is in progress by Ministry of Economy and Ministry of Construction and Physical Planning. This document will include detailed analysis of achieved goals in 2011 and 2012 as a prerequisite of achieving the EU's 20% reduction target in primary energy consumption by 2020 in comparison with the basic scenario (business-as-usual) aligned with the strategic and legislative framework of the Republic of Croatia, namely - National Programme of the Republic of Croatia on energy efficiency for the period from 2008. to 2016, the Strategy on Energy Development of the Republic of Croatia (Official Gazette 130/09) and the Act on Energy Efficiency in direct consumption (Official Gazette 152/08, 55/12).

Directive 2010/31/EU – Energy performance in buildings is incorporated within Act on efficient end-use of energy in the final consumption (Official Gazette 152/08, 55/12).

Directive 2009/125/EC – Ecodesign requirements for energy-related products – is incorporated in Act on efficient end-use of energy in the final consumption (Official Gazette 152/08, 55/12).

Direktive 2005/75/EZ all incorporated within The Public Procurement Act (Official Gazette 90/11).

Directive 2009/119/EC is incorporated within Law on Oil and Oil Derivates market (Official Gazette 57/06, 18/11).

Directive 2009/73/EC is incorporated within Gas Market Act (Official Gazette 40/07, 152/08, 83/09, 91/11, 114/11, 28/13).

The process of adjustment of the remaining part of the national legislation related to energy, renewable sources of energy and energy efficiency and other related laws with the new directives is still in progress.

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

Programme of refurbishment of public building and Programme of private houses refurbishment is in preparation and should start with the implementation during 2014. Through the Programme refurbishment of private houses State should enable subsidy of up to 40% of expenses for refurbishing private houses (insulation and joinery).

The new Act of Thermal Energy Market (Official Gazette 42/05, 20/10), the new Physical Planning and Building Act (Official Gazette 76/07, 38/09, 55/11, 90/11, 50/12), the new Utilities Act (Official Gazette 36/95, 70/97, 128/99, 57/00, 129/00, 59/01, 26/03, 82/04, 110/04, 178/04, 38/09, 79/09, 153/09, 49/11, 84/11, 90/11) and the new Law on Protection against light pollution (Official Gazette 114/11) etc. are in production and we do not have specific information about state of the process. Croatian Government by further regulations, orders and instructions as bylaws elaborates the basic laws in order to regulate specific issues related to energy sector.



## Political will at the local level

### **Baseline**

The City of Zagreb is the leading city in Croatia in terms of recognizing the importance of sustainable energy development. As one of the first European capitals the City of Zagreb has joined the Covenant of Mayors initiative, showing will and commitment to go beyond the EU energy targets. The CoM was accepted by the City of Zagreb Assembly on the 30. October 2008. The Sustainable Energy Action Plan of the City of Zagreb is a key document for the implementation of energy efficiency, renewable energy sources and environmentally friendly fuels projects at city level. The City office for energy, environment protection and sustainable development was established in 2009 as a department which coordinates City's efforts in energy efficiency, sustainability, conservation and renewable energy.

As Covenant Supporting Structure, the City of Zagreb promotes the Covenant of Mayors movement and supports the commitments of its signatories among other Croatian cities as well as other cities from the Region (e.g. Croatian Covenant of Mayors Club, Covenant of Mayors Club of South-East Europe Capital Cities). Through the European project "Energy for Mayors", the City of Zagreb developed Sustainable Energy Action Plans (SEAPs) for ten Croatian Cities and involved citizens and local stakeholders in the process. Our aim is to contribute to the achievement of the EU climate and energy goals by supporting implementation of the Covenant of Mayors engaging Croatian cities and cities from the region in sustainable energy action. We also want to achieve direct energy and financial savings, reduce harmful impact on the environment, implement a proactive energy policy and raise the level of responsibility and consciousness of employees and citizens of Zagreb in the process of global warming and climate change.

Among others, the City of Zagreb has also been active on the international plan through its membership in international and intercity organizations and associations (Eurocities, Energy Cities, The Assembly of the European Regions – AER, Metropolis, Major Cities of Europe IT Users' Group, Impacts, Union of the capital cities of the central and south-eastern Europe etc.) and by participating in numerous international conferences on the development and advancing of local self-administration and on projects important for the development of the city.

### **Success Model**

Regulations dictate energy grade C must be reached with new builds and refurbishments, anything above that is left at the will of the investor. There is a lack of financial mechanisms available to support such actions. It has been identified that the existing building stock should be a primary focus for CO<sub>2</sub> savings in the Republic of Croatia and policy and funding mechanisms are largely focussed on 'affordable refurbishment' rather than NZE new buildings. Introduced limits for receiving a feed in tariff for producing green electricity is also not helping RES implementation that raised many interest in the past years, now the quota is used on the first day of the year and it is very hard to qualify for the tariff. Judging by the current regulations the Croatian Government is not convinced that PH and NZEB builds are appropriate to be mandated by the Regulations at this time and hence it is not a clear requirement.

City of Zagreb Energy Policy:

- Statement on the policy of energy efficiency and environmental protection, March 28th, 2008;
- Covenant of Mayors, October 30th, 2008;
- Member of ICLEI, April 19, 2000 ;

- Member of Eurocities and Metropolis, 2002 ;
- Member of the Association Energie-Cites, November 25th, 2008;
- Declaration on Climate Change, EUROCITIES, March 16th 2009;
- Supporting Structure Covenant of Mayors, April 27th, 2009;
- Sustainable Energy Action Plan, April 20th, 2010;
- Energy efficiency program in the immediate consumption 2010-2012, July 14th, 2010;
- Green Digital Charter, October 24th, 2010;
- Plan for energy efficiency in the immediate consumption of the 2011, March 11th, 2011

## Local climate and sustainable energy policy

### Baseline

In accordance with European Directive 2006/32/EC on energy end-use efficiency and energy services the second national energy efficiency plan (NPEU) in Croatia is developed and adopted for the period from 2008. to 2016. In the second national energy efficiency plan the energy efficiency objectives are laid down. The second energy efficiency plan is also basis for the development of three three-year national efficiency action plans by 2016. In each action plan the effects and if necessary the revision of actual measures have to be analyzed in order to achieve the set objectives by 2016.

Goals of the City of Zagreb Energy Policy:

- Quality, quantity and security of energy supply of the City of Zagreb
- Rational energy use and energy savings of City Administration buildings in City of Zagreb
- Monitoring of energy consumption of all City Administration buildings in City of Zagreb
- Optimization of the energy allocation in City of Zagreb
- Creating and updating the Register of CO2 emissions
- Implementing energy saving measures, renewable energy and environmentally friendly fuels.
- Informing and educating employees of the city administration and citizens in order to raise awareness about necessity of environment and climate

**ZagrebPlan** is a document containing the vision for the period up to 2020. It is a complex development document which sees development through competitive economy as well as through environment, sustainable management of spatial assets, quality of life, social cohesion and equality. Development and adoption of ZagrebPlan is also a condition for co-funding from the EU structural funds, once Croatia becomes the EU member state. Energy efficiency is a part of this general plan that covers all sectors and activities in the City of Zagreb area.

In accordance with the regulations of the Law on Efficient Use of Energy in Final Energy Consumption, each county in the Republic of Croatia is obliged to make an Energy Efficiency Program in the Final Energy Consumption. Pursuant to Article 2 of the City of Zagreb Law, City of Zagreb is a County and is therefore required to develop energy efficiency programs.

### The Sustainable Energy Action Plan of the City of Zagreb (SEAP)

The Action plan represents the basic document which on the basis of the data collected on the detected situation identifies and gives precise and clear guidelines for the implementation of projects of energy saving, application of energy efficiency measures, renewable sources of energy use and

ecologically acceptable fuels on the city level which will result in the reduction of CO2 emission in the City of Zagreb of 21% by 2020.

The main targets of the development and implementation of the Action Plan are:

- Reduce CO2 emissions in all sectors by the implementation of the energy efficiency measures, use of renewable sources of energy and ecologically acceptable fuels, rational management of the consumption, continuous education and other measures;
- Contribute as much as possible to the safety and diversification of energy supply of a city;
- Reduce energy consumption in the Buildings, Traffic and Public Lighting Sectors;
- Enable the transformation of urban districts into ecologically sustainable areas.

The obligations from the Action Plan refer to the entire territory of the City of Zagreb, both public and private sector. The plan defines a number of necessary activities in the Buildings, Traffic and Public Lighting Sectors; it does not include directly the Industry Sector since the Industry Sector is not within the city's competence, and for that sector special measures have to be developed in cooperation with the competent subjects at the local and national level. Building sector is the one recognized to have biggest potential for energy savings as energy consumption in buildings makes 65% of the overall City of Zagreb consumption.

**Energy Efficiency Program in the Final Energy Consumption** is a document made for the period of three years aimed at implementation of policies to improve energy efficiency in the county.

The plan defines a number of necessary activities in the Buildings, Traffic and Public Lighting Sectors and their sub-sectors. Estimates of energy consumption in the period from 2010 to 2012 are made using the software package LEAP - Long range Energy Alternatives Planning System, developed at the Stockholm Environment Institute. LEAP is a widespread tool for the analysis of energy strategies and programs focusing on reducing emissions of greenhouse gases.

Energy Efficiency Program in the Final Energy Consumption is the base for developing Energy Efficiency Plan in the Final Energy Consumption.

In accordance with the regulations of the Law on Efficient Use of Energy in Final Energy Consumption, each county in the Republic of Croatia is obliged to make an Energy Efficiency Plan in the Final Energy Consumption. Pursuant to Article 2 of the City of Zagreb Law, City of Zagreb is a County and is therefore required to develop energy efficiency programs.

**Energy Efficiency Plan in the Final Energy Consumption** is a document made for the period of one year aimed at implementation of policies to improve energy efficiency in the county. It needs to be made each year in accordance with Energy Efficiency Program in the Final Energy Consumption of City of Zagreb.

The plan defines a number of necessary activities in the Buildings, Traffic and Public Lighting Sectors and their sub-sectors.

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

Successful implementation of the City of Zagreb energy policy and listed programmes and plans should enable Zagreb to reach the set goals of reducing energy consumption by 20%, increasing production from renewables by 20%, reducing CO2 emissions by 20% and increasing the use of bio fuels by 10% until 2020 which is in line with the national goals also. Most of the measures in planning documents are focused on the building sector, followed by transport sector.

The first review of the Sustainable energy Action plan is currently underway and we expect the reviewed version to be adopted shortly. Revised Action plan is going to include the necessary activities in the Industry Sector.

The Sustainable Energy Action Plan of the City of Zagreb (SEAP) as key document that (based on collected data of energy consumption): Identifies and provides precise and clear guidelines for the implementation of energy efficiency, renewable energy sources and environmentally friendly fuels projects at the city level which will result in reducing CO<sub>2</sub> emissions by more than 20% by 2020.

Through three main sectors of energy consumption in the City of Zagreb (sectors of building, transport and public lighting) entail 51 priority measures and activities for the reduction of greenhouse gases by 21% by 2020. Some of these measures and activities are:

- Education and awareness campaigns for users of city-owned buildings and citizens
- Building Sector: energy audits and energy certification; introduction and installation of solar panels and photovoltaic systems in institutions (e.g. The photovoltaic power plant located on roof of the City Administration); remote energy consumption monitoring equipment; modernization of boiler rooms in buildings, energy balance and GHG emissions monitoring; modernization of lighting in 1000 school classrooms; modernization of heating oil boiler rooms (replacement with pellet and gas boilers); thermal isolation of facades and roofs; subsidizing the installation of renewable energy sources for individuals and legal entities in the city's area;
- Transport Sector: Training of ecologically conscious driving; promoting of the use of alternative fuels; Campaign "One day a week without a car"; development and improvement of the public transportation network; replacement of the existing public buses with hybrid and alternative ecologically acceptable fuels; establishment of a bicycle-rent network equipped with IT theft protection;
- Public Lighting Sector: Replacement of the out-dated lighting bodies with energy more efficient and ecologically more acceptable lighting bodies and management and regulation of the public lighting system, etc.
- Activities and actions within the ZagEE project including implementation of energy efficiency measures and renewable energy sources in buildings owned by the City of Zagreb. The ZagEE project is divided in two specific investments: refurbishment of public buildings and public lighting. The refurbishment of public buildings includes standard energy efficiency renovation measures and installation of renewable energy sources (solar panels and collectors) in 87 buildings owned by the City of Zagreb. The modernisation of public lighting includes replacement of the obsolete lighting systems with LED lamps with regulation during late night hours and on park spaces in 3,000 locations.

## Local policy instruments for energy efficiency in buildings

### **Baseline**

City of Zagreb is implementing measures in line with the priority measure and activity plan from the City of Zagreb SEAP. Many projects were implemented on public buildings (awareness raising activities, RES implementation - PV and solar systems, modernization of indoor lighting, heat splitters etc.) that are used as an example for further dissemination.

City of Zagreb launched the first subsidy call for implementation of RES on private buildings in 2011, since then call is held each year and last year it was expanded to cover heat pumps also due to the city area having big potential for application of heat pumps. City is co-financing up to a maximum 40% of the RES project value on private building. There is 150 subsidies available each year.

City of Zagreb keeps track and is monitoring energy consumption in approximately 900 buildings (1.425,000 m<sup>2</sup>) owned by the City, through Energy Management Information System software. The data is used for monitoring energy consumption, analysis of figures, developing energy audits and

energy certificates as well as other purposes. Energy Management Information System of the City of Zagreb enables implementation of measures and activities in the buildings sector and leads to an effective decision making process. Buildings that need refurbishing the most, and the measures required to implement the actions set in the City of Zagreb SEAP, are easily identified. Monitoring, analyzing and reporting energy consumption are three essential elements of effective Energy management information systems (EMIS). To establish proper control over energy and water use it is necessary to have all the vital energy consumption inputs in the information system. Energy and water consumption information from energy bills and energy and water consumption from metering devices are two main sources of information in EMIS. To effectively monitor energy consumption this data is being calculated with basic and advanced calculations in analytical part of EMIS. Reporting the users on how the energy or water is consumed in their objects is also important because in the end they are the ones that are consuming energy and water so they have to be informed on how they do it. Only with clear picture of how much energy and water buildings consume it is possible to make improvements and in the end energy and water savings. As a result of EMIS usage City was able to prepare many projects related to implementation of energy efficiency measures in building sector and keep track of their effectiveness.

### **S u c c e s s   M o d e l**

At the moment Zagreb is developing a new and improved EMIS software that should solve many issues and offer new ways of keeping track and analysing energy consumption in buildings in the city area. Implementation timeframe: January, 2012- June, 2015.

Citizen interest for energy efficiency projects is there, but lack of funding is the big issue. There is a need for incentives when building or refurbishing to the NZEB level, at the moment only available subsidy is for RES application. City is working on the incentive model and plans to apply for co-funding to Croatian Fund for Environment Protection and Energy Efficiency. City of Zagreb has developed a Set of guidelines for energy standards and regulations going beyond current Croatian standards, but document needs to be updated with new legislation adopted since that time and then proposed to the City Council for adoption. A model for Subsidies for the improvement of thermal isolation of buildings, one of the SEAP measures that is planned to be launched during 2014, is in development.

## 2

# ECONOMICS AND FINANCE

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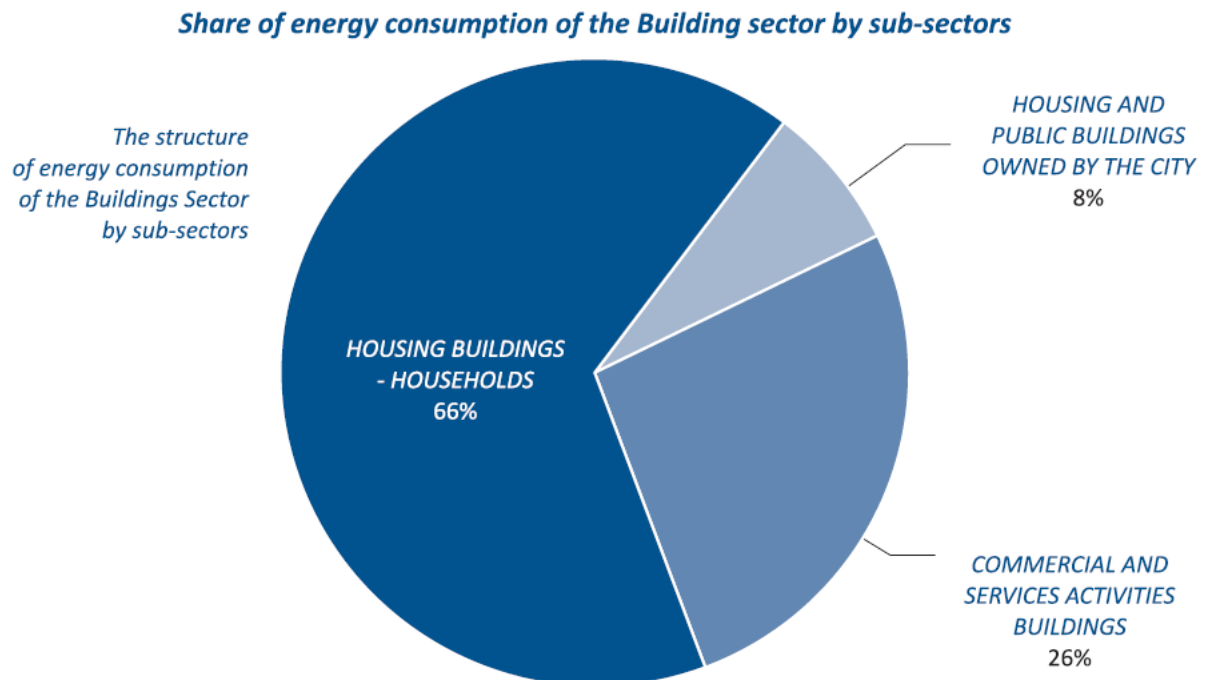
## Economic objectives and indicators

### Baseline

Source of baseline data was City of Zagreb Sustainable Energy Action Plan. For the needs of energy consumption analysis the Buildings Sector of the City of Zagreb is divided into the following sub-sectors:

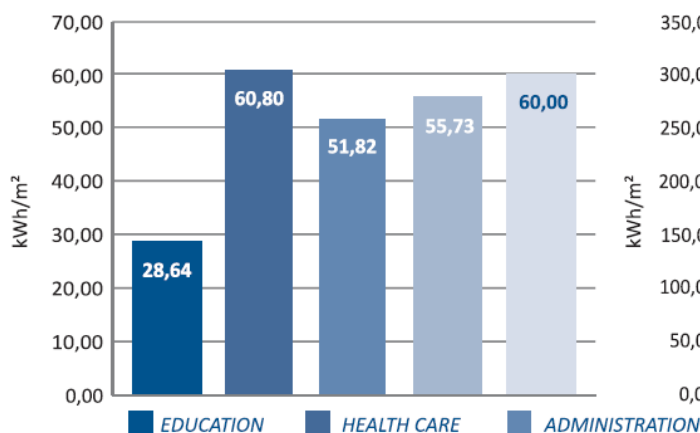
- Buildings of the City Government, institutions and companies owned or managed by the City of Zagreb;
- Residential buildings;
- Buildings of commercial and service activities.

According to the conducted energy analysis of individual sub-sectors of the Buildings Sector in the City of Zagreb, the largest consumers of energy are households, than followed by buildings of commercial and service activities, a finally buildings and companies owned and used by the City as seen on the figure below.

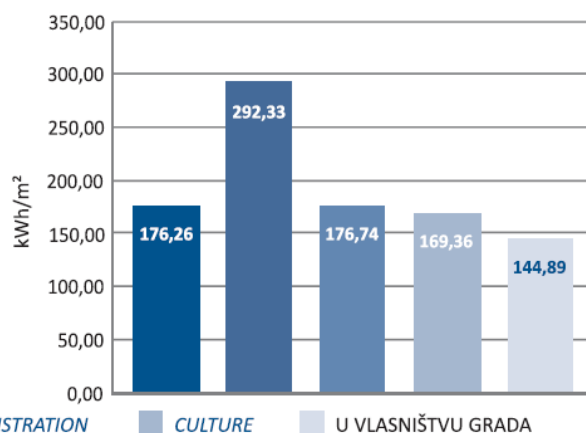


## Buildings of the City Government, institutions and companies owned or managed by the City of Zagreb

*Specific consumption of electric energy*



*Specific consumption of thermal energy*



## Residential buildings

THE CITY OF ZAGREB – HOUSING BUILDINGS								
DATA ON THE CONDITION AND CONSUMPTION FOR 2008								
Total number of apartments <sup>1) 2)</sup>	Total floor area of facilities <sup>1) 2)</sup> (m²)	Consumption of electrical energy (kWh) <sup>2)</sup>	Specific consumption of electrical energy (kWh/m²)	Consumption of thermal energy (MWh) <sup>3)</sup>	Number of consumers connected to CTS <sup>4)</sup>	Floor area of apartments connected to CTS (m²) <sup>5)</sup>	Share of floor area connected to CTS	Specific consumption of heating warmth (kWh/m²)
280.354	18.533.107	986.827.000	46.62	1.052.244	92.146	5.038.332	27,19%	208,85

Consumption of natural gas (m³) <sup>4)</sup>	Consumption of natural gas for heating (m³)	Number of facilities heated with gas <sup>5)</sup>	Floor area heated with gas (m²) <sup>5)</sup>	Share of the floor area heated with gas	Specific consumption of gas (m³/m²)	Consumption of heating gas (l) <sup>6)</sup>	Floor area heated with heating gas (m²) <sup>5)</sup>	Share of the floor area heated with heating oil <sup>6)</sup>	Specific consumption of heating oil (l/m²)
247.217.756	168.108.074	131.664	9.268.878	50,01%	18,14	30.552.159	1.855.537	10,01%	16,47

Consumption of firewood (kWh) <sup>4)</sup>	Floor area heated with firewood (m²) <sup>5)</sup>	Share of the are heated with firewood <sup>6)</sup>	Specific consumption of firewood (kWh/m²)	Consumption of electrical energy for heating (kWh) <sup>4)</sup>	Floor area heated with electrical energy (m²) <sup>5)</sup>	Share of the floor area heated with electrical energy <sup>6)</sup>	Specific consumption of electrical energy for heating (kWh/m²)	Total consumption of thermal energy (kWh)	Specific consumption of thermal energy (kWh/m²)
275.215.532	1.638.704	8,84%	167,95	122.879.297	731.655	3,95%	167,95	3.318.651.613	179,07

## Buildings of commercial and service activities

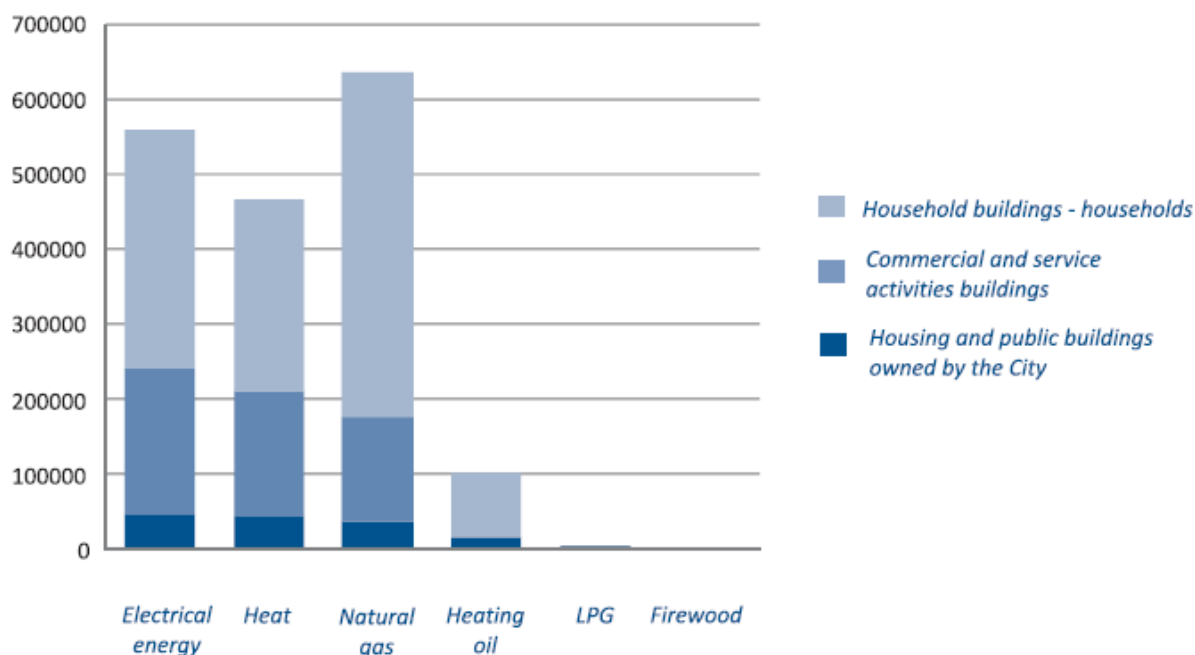
Creation of a report with the data on the consumption of electrical energy for a certain period for facilities of the Commercial and Service Activities Sub-sector on the territory of the City of Zagreb is not possible at the moment. For that reason the only possibility was to estimate the consumption of electrical energy in this sector. The reliability of the estimation is in this case lowered by the fact that the differences in the consumption of electrical energy of certain activities within the sector are very large. Based on the experience for a specific consumption of this sector, the average value of 75,00 kWh/m<sup>2</sup> was taken. Due to a different classification of the sector, the data on the consumption of thermal energy collected from the City Heating Plant and the data on the consumption of natural gas from the Gradska plinara show relatively large deviations and are not usable for the needs of this analysis. For that reason the specific consumption of thermal energy was also estimated on the basis of experience at 170 kWh/m<sup>2</sup>.

CO2 emissions of the building sector

KATEGORIJA <i>CATEGORY</i>	Emisija, t CO <sub>2</sub> / <i>Emission, t CO<sub>2</sub></i>						
	iz potrošnje el. en. <i>from the el. energy production</i>	iz potrošnje topline <i>from the heat consumption</i>	iz potrošnje prirodnog plina <i>from the natural gas consumption</i>	iz potrošnje lož ulja <i>from the heating oil consumption</i>	iz potrošnje LPG-a <i>from the LPG consumption</i>	iz potr. ogrjev. drva <i>from the firewood consumption</i>	iz svih izvora <i>from all sources</i>
<b>STAMBENE I JAVNE ZGRADE U VLASNIŠTVU GRADA/<i>HOUSING AND PUBLIC BUILDINGS OWNED BY THE CITY</i></b>							
Školstvo <i>Education</i>	7 784,4	14 238,3	9 894,8	11 227,7	0,0		43 145,2
Zdravstvo <i>Health Care</i>	6 277,3	10 815,6	9 832,0	47,0	0,0		26 971,9
Uprava <i>Administration</i>	1 856,1	2 044,9	1 852,7	550,7	0,0		6 304,4
Kultura <i>Culture</i>	2 190,5	24,9	4 124,1	0,0	0,0		6 339,5
Poslovni prostori i stanovi u vlasništvu grada <i>Business facilities and apartments owned by the city</i>	5 925,2	4 912,5	4 854,4	0,0	0,0		15 692,1
Zgrade članica Zagrebačkog holdinga <i>Construction of Zagrebački holding buildings</i>	21 553,1	10 577,0	7 152,0	1 530,4	58,8		40 871,3
<b>UKUPNO TOTAL</b>	<b>45 586,6</b>	<b>42 613,2</b>	<b>37 710,0</b>	<b>13 355,8</b>	<b>58,8</b>	<b>0,0</b>	<b>139 324,4</b>
<b>ZGRADE KOMERCIJALNIH I USLUŽNIH DJELATNOSTI/<i>BUILDINGS OF COMMERCIAL AND SERVICE ACTIVITIES</i></b>							
<b>UKUPNO TOTAL</b>	<b>194 800,3</b>	<b>166 776,4</b>	<b>137 303,4</b>	<b>0,0</b>	<b>0,0</b>		<b>498 880,1</b>
<b>STAMBENE ZGRADE - KUĆANSTVA/<i>RESIDENTIAL BUILDINGS - HOUSEHOLD</i></b>							
<b>UKUPNO TOTAL</b>	<b>318 745,1</b>	<b>256 747,5</b>	<b>459 863,2</b>	<b>85 960,5</b>	<b>0,0</b>	<b>0,0</b>	<b>1 121 316,3</b>
<b>UKUPNO - Zgrade Buildings - TOTAL</b>	<b>559 132,0</b>	<b>466 137,1</b>	<b>634 876,6</b>	<b>99 316,3</b>	<b>58,8</b>	<b>0,0</b>	<b>1 759 520,8</b>



### CO<sub>2</sub> emissions from the Buildings Sector



CO<sub>2</sub> emission by sectors and energy sources:

Energy source	Emission t CO <sub>2</sub>				% Share by energy source
	Traffic	Public lighting	Buildings	Total by energy sources	
Diesel	558 037.3			558 037.3	19.97
Heating oil			99 316.3	99 316.3	3.55
Motor petrol	417 817.8			417 817.8	14.96
Biodiesel	0.0			0.0	0.00
LPG	6 688.7		58.8	6 747.5	0.24
Natural gas	90.1	71.8	634 876.6	635 038.5	22.73
Firewood			0.0	0.0	0.00
Electrical energy	22 474.0	29 102.3	559 132.0	610 708.3	21.86
Heat			466 137.1	466 080.7	16.68
<b>TOTAL</b>	<b>1 005 107.9</b>	<b>29 174.1</b>	<b>1 759 520.8</b>	<b>2 793 746.4</b>	<b>100.00</b>
<b>Individual sector share, %</b>	<b>35.98</b>	<b>1.04</b>	<b>62.98</b>	<b>100.00</b>	<b>100.00</b>

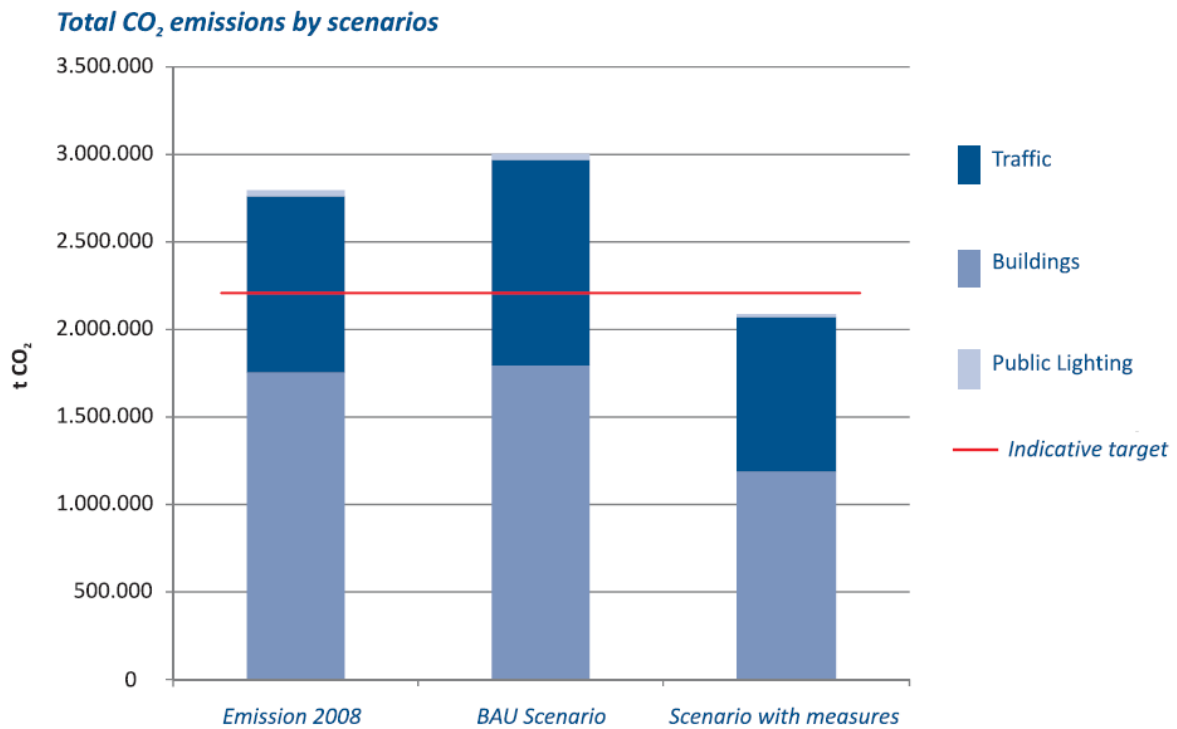
Projections of inventory emissions for the scenario without measures and the scenario with measures

Scenario	Sector	2008	2020	% in comparison to 2008
Scenario without measures	Traffic	1.007.443,07	1.176.179,86	16,75
	Buildings	1.759.432,26	1.799.993,95	2,31
	Public lighting	29.175,56	32.085,79	9,97
	TOTAL	2.796.050,89	2.980.754,77	7,59
Scenario with measures	Traffic	1.007.443,07	876.356,82	-13,01
	Buildings	1.759.432,26	1.193.407,15	-32,17
	Public lighting	29.175,56	24.228,17	-16,96
	TOTAL	2.796.050,89	2.093.992,13	-25,11

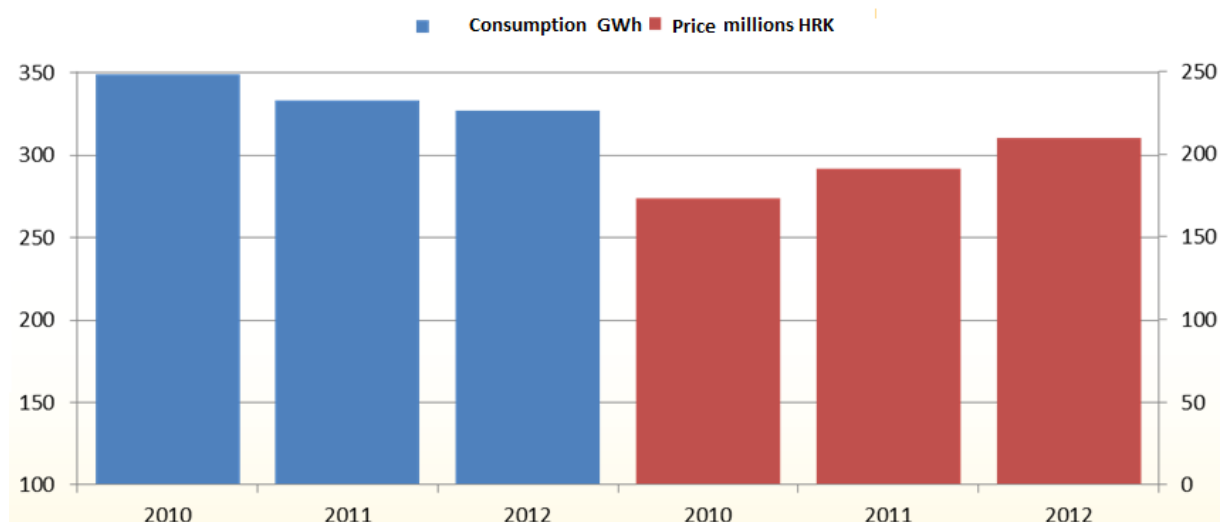
## Success Model

Total potentials of emission reductions by sectors

Sector	Reduction potentials	Share in the total potential, %
Traffic	299.823,04	32,8
Buildings	606.586,80	66,3
Public lighting	7.857,62	0,9
<b>TOTAL</b>	<b>914.267,47</b>	-



All units of local government in Croatia are obliged by law to keep track of energy consumption in their public buildings. Data on consumption and the cost of energy, water and production from RES is entered into the database and the data is then used to determine potential measures and also to track the effects of implemented measures. Due to successful implementation of awareness raising and energy efficiency measures in public buildings energy consumption of municipal buildings dropped by 6,28%, but the cost raised with the price of energy in 2 years as shown on the figure below:



## Economic levers

City is co-financing up to a maximum 40% of the RES project value on private building. There is 150 subsidies available each year. Croatian Environmental Protection and Energy Efficiency Fund (EPEEF) is regularly publishing calls for subsidizing various energy efficiency projects for private and public sector. Commercial banks have green loan programmes.

## Forms of funding

The City of Zagreb has at its disposal significant sources to finance SEAP measures and activities in the form of grants through various programmes of the European Union, and possible sources significantly increased with the accession of the Republic of Croatia in the European Union. Overview of forms of funding from financing mechanisms of RES and RUE projects in Croatia:

### 1. Environmental Protection and Energy Efficiency Fund (EPEEF)

The Environmental Protection and Energy Efficiency Fund of the Republic of Croatia is a structured extra-budgetary fund which finances projects and activities in three basic areas: environmental protection, energy efficiency and the use of renewable energy sources. It has been established by the Law on the Environmental Protection and Energy Efficiency Fund on July 1st 2003 (Official Gazette of the Republic of Croatia No. 107/2003). Resources for financing the activities of the Fund are mostly secured from specific-purpose revenues such as:

- Charges on polluters of the environment (charges for emissions of CO<sub>2</sub>, SO<sub>2</sub> and NO<sub>2</sub>);
- Charges for burdening the environment with waste (non-hazardous and hazardous waste, industrial waste, special categories of waste such as packaging, old tyres, electric and electronic equipment, oil, old vehicles, batteries);
- Special environmental charge on motor vehicles.

Fund's financial resources are allocated on the basis of the public tender which is published in official gazette of the Republic of Croatia. Beneficiaries/end users can be divided between:

- Regional self-government and units of local self-government;
- Legal and natural persons.

The resources of the Fund are issued through:

- Loans;
- Subsidies of loan interest rate;
- Financial aid;
- Grants.

The Fund's co-financing cannot exceed 40% of total eligible investment costs with the exception of regional and local self-government projects and programmes in territories which are under special government protection. In such specific cases up to 80% of the investment can be co-financed by the Fund.

In 2011 revenues of the Fund amounted to EUR 148,65 million out of which EUR 17,66 million were allocated for RES and RUE projects and programmes.

<b>Structure/services provided</b>	<ul style="list-style-type: none"> <li>▪ Loans;</li> <li>▪ Subsidies of interest rate;</li> <li>▪ Financial aid;</li> <li>▪ Grants.</li> </ul>
<b>Eligible costs</b>	<ul style="list-style-type: none"> <li>▪ RES and RUE investment costs (VAT included).</li> </ul>
<b>Financial framework</b>	<ul style="list-style-type: none"> <li>▪ Grants up to 80% (or EUR 190,000) of total project costs for applicants from regional self-government and units of local self-government;</li> <li>▪ Zero interest loans with repayment period of 7 years (grace period of 2 years, payback period of 5 years), up to EUR 190,000. Available to legal and natural persons;</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Subsidy of loan interest rate – up to 2% or EUR 108,000. Available only to legal and natural persons.</li> </ul>
<b>Special features</b>	<ul style="list-style-type: none"> <li>▪ Applicants from territories which are under special government protection can receive co-funding of up to 80% of total investments costs.</li> </ul>

#### **Application process:**

- Public tender is published on average every two years with tender documentation and conditions available on Fund's official web page.

#### **2. Croatian Bank for Reconstruction and Development (HBOR)**

Croatian Bank for Reconstruction and Development (HBOR) is the development and export bank of the Republic of Croatia with a main task of promoting the development of Croatian economy. By extending loans, ensuring export transactions against political and commercial risks, issuing guarantees and providing business advice, HBOR builds bridges between entrepreneurial ideas and their accomplishment with the objective of enhancing the competitiveness of Croatian economy. The founder and sole owner of HBOR is the Republic of Croatia which guarantees for all of bank's financial liabilities.

HBOR has introduced several credit lines designed specifically for supporting projects of renewable energy sources and energy efficiency, two of which are currently active. Loan Programme for the Financing of Projects of Environmental Protection, Energy Efficiency and Renewable Energy Resources was the first credit line in Croatia of such kind, enabling investors from public and private sector to acquire loans under favourable financial conditions. In 2012 a new programme under the European Commission initiative: Energy Efficiency Finance Facility 2006 and 2007 was developed and is currently being implemented in co-operation with the European Investment Bank (EIB). The grant funds may be used together with the loan funds provided by the EIB directly through HBOR or through commercial banks that have entered into co-operation agreements with HBOR. The loans are intended for the financing of fixed assets within the framework of investments which contribute to the saving of energy and/or the reduction of CO<sub>2</sub> emissions, i.e. which increase energy efficiency of facilities in the building and industry sector.

<b>Structure/services provided</b>	<ul style="list-style-type: none"> <li>▪ Loans;</li> <li>▪ Grants (combined with loans).</li> </ul>
<b>Eligible costs</b>	<ul style="list-style-type: none"> <li>▪ RES and RUE investment costs of up to 75% (VAT excluded).</li> </ul>
<b>Financial framework</b>	<ul style="list-style-type: none"> <li>▪ The loan amount is not limited though minimum is set at 13,500 EUR;</li> <li>▪ Repayment period up to 14 years with a maximum grace period of 3 years;</li> <li>▪ Interest rate is variable based on the Decision of HBOR Managing Board (currently at 4%).</li> </ul>

<b>Special features</b>	<ul style="list-style-type: none"> <li>▪ Should the Environmental Protection and Energy Efficiency Fund approve the interest subsidy, the above interest rate shall be reduced by 2% or by the amount of the approved subsidy;</li> <li>▪ The EIB loan programme grant can be used solely for reduction of the loan principle by 15% in case the investment leads to energy savings of at least 20% (industry sector) or 30% (building sector); Free technical assistance (TA) is available in project preparation and verification phases.</li> </ul>
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#### **Application process:**

- A detailed investment/business plan which complies with the HBOR methodology needs to be created in order to receive consideration for funding.

### **3. Energy Service Company (ESCO)**

An energy service company or ESCO is a commercial business providing a broad range of comprehensive energy solutions including designs and implementation of energy savings projects, energy conservation, energy infrastructure outsourcing, power generation and energy supply, and risk management. ESCOs have been long considered an important instrument for delivering improved energy efficiency and establishing a market for energy savings. ESCOs have four fundamental operational features. First, ESCOs guarantee the energy savings and/or the provision of the same level of energy service at a lower cost by implementing an energy efficiency project. A performance guarantee can take several forms. It can revolve around the actual flow of energy savings from a project, can stipulate that the energy savings will be sufficient to repay monthly debt service costs for an efficiency project, or that the same level of energy service will be provided for less money. Second, the remuneration of ESCOs is directly tied to the energy savings achieved. Third, ESCOs typically either finance, or assist in arranging financing for the installation of an energy project they implement by providing a savings guarantee. Last, but not least, ESCOs retain an on-going operational role in measuring and verifying the savings over the financing term. However, many variations of the original model have also been developed such as Energy Performance Contracting, Energy Contracting or Chauffage, as well as BOOT model (Build, Own, Operate and Transfer) which is very popular solution in the industry sector.

There is only one fully functional Energy Service Company in Croatia, namely HEP ESCO Ltd., which develops, executes and finances energy efficiency projects on a commercial basis. The company was founded by Hrvatska elektroprivreda – HEP, the state owned electric utility and is a recipient of financial support from the GEF and World Bank loans through the Energy Efficiency Project Croatia. The project was initiated by the World Bank (IBRD) and Global Environment Facility (GEF) in collaboration with HEP and Croatian Reconstruction and Development Bank (HBOR). For this purpose HEP and/or HEP ESCO was extended a loan by the World Bank in the amount of EUR 4.4 million and a GEF grant in the amount of 5 million USD. The total value of the Project, with participation of domestic banks, is estimated at 40 million USD over a six-year period.

HEP ESCO provides a full range of energy services with repayment through savings. The service includes project development, execution and financing in the manner that savings in energy costs and maintenance are used to achieve investment return. The risk of savings being achieved is assumed by HEP ESCO by giving guarantees to the client and after the investment is repaid, HEP ESCO withdraws from the project and passes all benefits to the client. HEP ESCO currently manages more than 50 projects in the areas of public lighting, buildings, industry and energy supply systems. The projects are in various stages of development, execution or financing.

The sources of financing are various. Besides international aid and loans (World Bank, GEF), local financial institutions have proved to be interested, and the HEP ESCO's own equity is being used for project implementation. There are further funds and programs in Croatia for energy efficiency, such as the Fund for Environmental Protection and Energy Efficiency (in the form of subsidies) and the UNDP program (grant for feasibility studies). The "first out" contract model has been used in past projects.

Since the ESCO that is working in Croatia is a state-owned company, primary attention is not on profit-making, but on supporting national interests, mainly energy efficiency and environmental protection. Therefore, the objectives of the company when it was set up were to develop capacity and know-how, find sustainable project financing mechanisms, and develop consumer demand.

The potential market for EPC/energy efficiency project in Croatia is estimated at more than 2.4 billion and is constantly growing. Application of Dir. 32/2006 (ESD) resulted in two key documents - the Energy Strategy of Croatia (2009) and the National Energy Efficiency Action Plan (2011), but the key implementing legislation is still missing.

<b>Structure/services provided</b>	<ul style="list-style-type: none"> <li>▪ Preparation, financing and implementation of RES and RUE projects.</li> </ul>
<b>Eligible costs</b>	<ul style="list-style-type: none"> <li>▪ RES and RUE capital investments including all activities necessary to prepare project documentation.</li> </ul>
<b>Financial framework</b>	<ul style="list-style-type: none"> <li>▪ There is no minimum or maximum size of the project: each project is tailored according to investor's needs;</li> <li>▪ Typical project repayment period: 5-8 years.</li> </ul>
<b>Special features</b>	<ul style="list-style-type: none"> <li>▪ In Croatia, in cases when the ESCO provides project financing, the ESCO repayment is not counted as a public debt.</li> </ul>

#### 4. EU Structural Funds (SF)

The Structural Funds are financial tools set up to implement the Cohesion policy also referred to as the Regional policy of the European Union. They aim to reduce regional disparities in terms of income, wealth and opportunities. Europe's poorer regions receive most of the support, but all European regions are eligible for funding under the policy's various funds and programmes.

The Structural Funds are made up of the European Regional Development Fund (ERDF) and the European Social Fund (ESF). Together with the Common Agricultural Policy (CAP), the Structural Funds and the Cohesion Fund make up the great bulk of EU funding, and the majority of total EU spending.

The overall budget for the current programming period (2007-2013) is EUR 347 billion: EUR 201 billion for the European Regional Development Fund, EUR 76 billion for the European Social Fund, and EUR 70 billion for the Cohesion Fund. The objectives setup shapes the main focus of interventions (eligible activities and costs) and the overall allocations of funds from the EU budget. The key indicator for the division of regions under singular objectives is the Gross National Product per capita (GDP p.c.) level.

The Member States in cooperation with regional and local authorities and other actors analyse their own priorities and needs and prepare their national strategies (National Strategic Reference

Frameworks) and operational programmes. At the same time, they have to take into account common priorities of the EU and make sure that they comply with them.

After EU accession, Croatia will have at its disposal the Cohesion Fund and Structural Funds for the use of which Croatia has started to prepare by using pre-accession funds. In the second half of 2013, the total EU funds approved for Croatia amount to EUR 687.5 million. The most of this amount comes from the Structural Funds and Cohesion Fund (EUR 449.4 million) and European Fisheries Fund (EUR 8.7 million). Croatia will also have at its disposal the so-called Schengen Facility, intended for financing of the measures having to do with EU's outer border, i.e. for preparation of implementation of Schengen aquis (EUR 40 million). As part of the so-called 'Transitional Facility', intended for strengthening of administrative and judicial capacity, Croatia will receive EUR 29 million. Also, EUR 75 million from the 'Cash Flow Strengthening Facility' has been earmarked for Croatia. Croatia's payments to the European Union's budget in the second half of 2013 are estimated to the amount of EUR 267.7 million, which is three times less than the amount that Croatia has at its disposal in 2013. Most of the investments in the energy sector will be made through Operational Programme Environment and Energy.

The amount of the resources Croatia will be receiving from the EU funds, i.e. the resources it will be paying to the EU budget from 2014 on will be known after adoption of the European Union Multiannual Financial Framework for 2014 – 2020.

<b>Structure/services provided</b>	<ul style="list-style-type: none"> <li>▪ Grants</li> </ul>
<b>Eligible costs</b>	<ul style="list-style-type: none"> <li>▪ RES and RUE projects.</li> </ul>
<b>Financial framework</b>	<ul style="list-style-type: none"> <li>▪ Project size and other conditions will be determined by the Operational programmes;</li> <li>▪ Structural funds available in 2013: around EUR 300 million;</li> <li>▪ Maximum grant component: up to 85% of eligible expenditures.</li> </ul>
<b>Special features</b>	<ul style="list-style-type: none"> <li>▪ Structural funds are open to both public and private beneficiaries.</li> </ul>

#### **Application process:**

- The procedures for the allocation of Structural Funds to projects differ depending on the relevant national or regional programme. Application procedures (e.g. on-going application and project selection, calls for proposals or competitions with fixed deadlines) are decided by the Managing Authority, depending on what is most appropriate for the activities in question. Project selection criteria are agreed by each programme's Monitoring Committee and are published (e.g. on managing authority websites).

#### **5. EU Cohesion Fund (CF)**

The Cohesion Fund is aimed at Member States whose Gross National Income (GNI) per inhabitant is less than 90% of the Community average. It serves to reduce their economic and social shortfall, as



well as to stabilise their economy. It supports actions in the framework of the Convergence objective. It is now subject to the same rules of programming, management and monitoring as the ESF and the ERDF.

For the 2007-2013 period the Cohesion Fund concerns Bulgaria, Cyprus, the Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia and Slovenia (plus Croatia in 2013). Spain is eligible to a phase-out fund only as its GNI per inhabitant is less than the average of the EU-15. After EU accession, Croatia will have around EUR 150 million at its disposal from the Cohesion Fund.

The Cohesion Fund finances activities under the following categories:

- Trans-European transport networks, notably priority projects of European interest as identified by the Union;
- Environment; here, Cohesion Fund can also support projects related to energy or transport, as long as they clearly present a benefit to the environment: energy efficiency, use of renewable energy, developing rail transport, supporting intermodality, strengthening public transport, etc.

Member States submit applications for financing to the European Commission, which generally decides on funding within three months. The proposals must include key elements explaining what and why it is being proposed, the feasibility and financing of the project and the impact it will have in socio-economic and environmental terms. All projects must comply with Community legislation in force, in particular the rules on competition, the environment and public procurement.

The Commission analyses, if all conditions for the financing are met, including:

- The economic and social benefits generated by the project in the medium term, as demonstrated by a cost-benefit analysis;
- The project's contribution to achieving Community objectives for the environment and/or the Trans-European Transport Network;
- Compliance with the priorities set by the Member State;
- The project's compatibility with other Community policies and consistency with operations undertaken by the Structural Funds.

For projects, which generate considerable revenue, the support is calculated taking into account the forecasted revenue. The polluter-pays principle (the body that causes pollution should pay for it) has an impact on the amount of support granted. For projects to be carried out over a period of less than two years or where Community assistance is less than EUR 50 million, an initial commitment of 80% of assistance may be made when the Commission adopts the decision to grant Community assistance. The combined assistance of the Fund and other Community aid for a project cannot exceed 85% of the total expenditure relating to that project. Exceptionally, the Commission may finance 100% of the total cost of preliminary studies and technical support measures – in view of the limited budget available for such levels of support this is restricted to EU wide technical assistance.

The Member States are responsible for implementing the projects in line with the Commission Decision, managing the funds, meeting the timetable, complying with the financing plan and, in the first instance, ensuring financial control. The Commission makes regular checks and all projects are subject to regular monitoring.

In the following programming period (2014-2020) Cohesion fund will cover not only major transport and environmental protection infrastructures, but also projects in the fields of energy efficiency, renewable energy and intermodal, urban or collective transport.

<b>Structure/services provided</b>	<ul style="list-style-type: none"> <li>▪ Grants</li> </ul>
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<b>Eligible costs</b>	<ul style="list-style-type: none"> <li>▪ Capital investments made in the environmental and transport sector.</li> </ul>
<b>Financial framework</b>	<ul style="list-style-type: none"> <li>▪ Minimum project size: EUR 25 million for environmental and EUR 50 million for transport projects;</li> <li>▪ Grant funding is limited to 85%;</li> <li>▪ Around EUR 150 million available for 2013.</li> </ul>
<b>Special features</b>	<ul style="list-style-type: none"> <li>▪ The financial assistance of the Cohesion Fund can be suspended by a Council decision (taken by qualified majority) if a Member State shows excessive public deficit and if it has not resolved the situation or has not taken the appropriate action to do so.</li> </ul>

#### **Application process:**

- Since member states are the beneficiaries of the Cohesion fund and not the regions, member states can choose projects they wish to propose to the Commission. The projects must be in line with national strategic plans and CF Reference Framework (EU, National, regional priorities). The Commission is in charge of evaluation, appraisal and monitoring of CF projects. The project application should include a feasibility study, financial analysis or cost-benefit analysis - CBA.

#### **6. European Investment Bank (EIB)**

The European Investment Bank is the European Union's long-term lending institution established in 1958 under the Treaty of Rome. A policy-driven bank, the EIB supports the EU's priority objectives, especially boosting sustainable growth and job creation. It aims to provide long-term lending in order to mobilise funding from the private and public sectors. Within the EU the EIB has 6 EU priority objectives for its lending activity:

- Cohesion and Convergence (regional policy);
- Support for small and medium-sized enterprises (SMEs);
- Environmental Sustainability;
- Knowledge Economy;
- Development of Trans-European Networks of transport and energy (TENs);
- Sustainable, competitive and secure energy.

The EIB has a long standing presence in the Western Balkans and Croatia and is becoming the largest international financier in the region. The EIB is supporting all major infrastructure sectors (transport, energy, health and education, water and sanitation) as well as small and medium sized enterprises (SMEs), industry, services and local authorities. EIB lending in Croatia since 2001 reached around EUR 2.4 billion at the end of 2010. In 2010, the EIB increased its activities in Croatia as a response to the economic crisis. The loan signatures amounted to a record level of EUR 511 million in 2010, coming from EUR 415 million in 2009 and EUR 170 million in 2008. This support went mostly towards SMEs investments with new SME credit lines established with local financial institutions such as HBOR and public sector projects in line with the priorities of the Government. Croatia is a beneficiary of EU Pre-Accession Programmes (Phare, ISPA and IPA). Through its various loan products, the EIB provides the

financial resources needed for co-financing projects with EU grants, thus contributing to the successful implementation of the Croatian National Development Plan.

<b>Structure/services provided</b>	<ul style="list-style-type: none"> <li>▪ Loans;</li> <li>▪ Guarantees;</li> <li>▪ Technical assistance - support to prepare bankable projects (e.g JASPERS, ELENA), EPEC (advise on PPPs);</li> <li>▪ Financial engineering – Innovative financial instruments: JESSICA, JEREMIE and JASMINE</li> </ul>
<b>Eligible costs</b>	<ul style="list-style-type: none"> <li>▪ Large scale RES and RUE investments.</li> </ul>
<b>Financial framework</b>	<ul style="list-style-type: none"> <li>▪ Direct loans – minimum investment size of EUR 50 million with payback period of up to 25 years. The EIB generally lends a maximum of 50% of total project costs. Interest rates are lower than market ones;</li> <li>▪ Intermediated loans – for small and medium-scale projects (less than EUR 50 million) via national and regional intermediary banks. Lending decision under this scheme remains with the clearing bank or finance house with access to EIB funds.</li> </ul>
<b>Special features</b>	<ul style="list-style-type: none"> <li>• EIB loans can be combined with EU and national grants.</li> </ul>

**Application process:**

- No special formalities are attached to the submission of applications to the EIB for individual loans. Project promoters are required simply to provide the Bank's Operations Directorate with a detailed description of their capital investment together with the prospective financing arrangements. Initial contacts to discuss a proposed project can be in any form, by telephone, fax, e-mail or letter. For such first contacts, the project promoter should provide sufficient information to allow verification of compliance of the investment with the eligibility criteria of the EIB and have a well-developed business plan.

## 7. European Bank for Reconstruction and Development (EBRD)

Founded in 1991, the European Bank for Reconstruction and Development (EBRD) uses the tools of investment to help build market economies and democracies in 30 countries from central Europe to central Asia. Headquartered in London, the EBRD is now owned by 63 countries and two intergovernmental institutions. Despite its public sector shareholders, it invests mainly in private enterprises, usually together with commercial partners. However, in the infrastructure and environment sector, the Bank works with local, national and regional authorities to develop infrastructure projects. The EBRD also supports local commercial banks, which in turn provide loans to SMEs.

The EBRD offers long-term loans with convenient interest rates, buys capital shares, issues various guarantees and finances leasing and trade. The EBRD funds up to 35% of the total project cost so the additional funding by sponsors and other co-financiers is required. However, the EBRD may identify additional resources through its syndications programme. Loans are tailored to meet the particular requirements of a project. The credit risk may be taken entirely by the Bank or partly syndicated to the market. Through its donor funds it offers technical assistance and consulting services to local companies. In accordance with its mission more than 80% of the portfolio of EBRD activities refers to the private sector whereas the remaining 20% refers to activities in the public sector. The sectorial division of the portfolio of the EBRD is: 26% financial sector, 22% infrastructure, 20% business sector, 18% energy sector and 14% micro and small enterprises.

EBRD also offers grants for small and medium-sized enterprises (MSMEs) through TAM/BAS programme in order to access a diverse range of consulting services by facilitating projects with local consultants on a cost sharing basis. Enterprises can apply for assistance in various fields of services and activities such as creating feasibility studies, business plans, engineering studies, architectural planning/design, energy audits, environmental impact assessments, etc.

<b>Structure/services provided</b>	<ul style="list-style-type: none"> <li>▪ Loans;</li> <li>▪ Equity;</li> <li>▪ Guarantees.</li> </ul>
<b>Eligible costs</b>	<ul style="list-style-type: none"> <li>▪ RES and RUE projects.</li> </ul>
<b>Financial framework</b>	<ul style="list-style-type: none"> <li>▪ Direct loans for projects larger than EUR 5 million, smaller loans available from partner banks and financing facilities (CroPSSF, WeBSEDF);</li> <li>▪ Market based loan interests;</li> <li>▪ Funding usually limited to 35% of total eligible costs.</li> </ul>
<b>Special features</b>	<ul style="list-style-type: none"> <li>▪ EBRD TAM/BAS programme offers up to 75% (or EUR 10,000) of grant funding for consulting services.</li> </ul>

**Application process:**

- In order to apply for funding the investor should contact regional EBRD office or partner bank.

### 8. European Local ENergy Assistance (ELENA)

ELENA is a European Facility aiming, through technical assistance, at supporting regional or local authorities in accelerating their investment programmes in the fields of energy efficiency and renewable energy sources. It supports the local and regional authorities in contributing to the “20-20-20” initiative of the EU. This grant support is provided within the framework of the IEE II programme. Eligible costs for ELENA support correspond to any technical support that is necessary to prepare, implement and finance the investment programme. This technical support may be of different types, for instance: feasibility and market studies, structuring of programmes, business plans, energy audits, preparation of tendering procedures and contractual arrangements and project implementation units. However, hardware costs, such as measurement equipment, computers or office space, are excluded. The objective of ELENA is to increase experience in developing investment programmes of a certain size, normally above EUR 50 million. Small projects can be supported when they are integrated into larger investment programmes. Regrouping of small projects into larger programmes allows transaction costs to be reduced and improves the “bankability” of the individual projects, which is one of the ELENA selection criteria.

ELENA covers up to 90% of the technical support cost needed to prepare, implement and finance the investment programme. This could include feasibility and market studies, programme structuring, energy audits and tendering procedure preparation. One objective of the ELENA facility is to contribute to the development of investment programmes in order to achieve a minimum ratio (leverage) of 20 between the total investment costs of the investment programme supported and the total cost of the ELENA grant assistance. The maximum duration of a project supported by ELENA is limited to three years.

ELENA can be combined with EU or national grants. However, it cannot be combined with other financial assistance from the EU budget for the same purpose (technical assistance to support the development of the same investment programme to be supported by ELENA).

For projects smaller than EUR 50 million three new ELENA facilities are currently being developed in cooperation with EBRD, KfW and CEB. These facilities should address projects with size between EUR 30 and 50 million. Projects smaller than EUR 30 million can be submitted to IEE MLEI project development assistance programme.

<b>Structure/services provided</b>	<ul style="list-style-type: none"> <li>▪ Grants for technical assistance.</li> </ul>
<b>Eligible costs</b>	<ul style="list-style-type: none"> <li>▪ RES and RUE project preparation costs.</li> </ul>

<p><b>Financial framework</b></p>	<ul style="list-style-type: none"> <li>▪ Minimum project size: 50 million EUR;</li> <li>▪ Leverage factor: 20;</li> <li>▪ Current budget set at 39 million EUR (for all ELENA facilities: EIB, EBRD, KfW, CEB);</li> <li>▪ Grants cover up to 90% of eligible costs.</li> </ul>
<p><b>Special features</b></p>	<ul style="list-style-type: none"> <li>▪ In cases when the actual leverage factor is less than 20 or if the technical assistance period lasts more than three years the beneficiary has an obligation to reimburse, in part or in full, the amounts received from the ELENA fund.</li> </ul>

**Application process:**

- There are no calls for proposals and assistance is granted on a first-come first-served basis within the limits of the given budget. Potential investors can contact the EIB by telephone, fax, e-mail or letter. Based on the information provided in the pre-application stage, the EIB will assess whether the proposal meets the selection criteria, and the need for technical assistance of the specific investment programme. A positive outcome of this first assessment will allow for a request for assistance to be prepared and submitted to the EIB using the application form. The Bank will then present the proposal to the European Commission for approval. The selection procedure takes around three months.

**9. European Energy Efficiency Fund (EEE-F)**

On 1st July 2011, the European Commission launched a new European Energy Efficiency Fund (EEE-F) as part of the European Energy Programme for Recovery (EEPR). The EEEF will allocate around EUR 146 million from the EEPR (3.7% of the total EEPR envelope) to a new financial facility dedicated to energy efficiency and renewable energies projects. The EEEF will invest in energy saving, energy efficiency and renewable energy projects, particularly in urban settings, achieving at least 20% energy saving or GHG/CO<sub>2</sub> emission reduction. The fund will offer a wide range of financial products such as senior and junior loans, guarantees or equity participation to local, regional and (where justified) national public authorities to promote sustainable energy investments. Potential beneficiaries are public authorities (e.g. municipalities), preferably at local and regional level, and public or private companies, which are acting on behalf of those public authorities, such as local energy utilities, Energy Service Companies (ESCOs), district heating combined heat and power (CHP) companies or public transport providers.

At its launch the initial fund volume will be EUR 265 million: in addition to the EU contribution (EUR 125 million), the European Investment Bank (EIB) will invest EUR 75 million, Cassa Depositi e Prestiti SpA (CDP, Italy) EUR 60 million and the designated investment manager (Deutsche Bank) EUR 5 million. Other financial institutions at Member State level have been invited and could also join the fund later. In addition private sector investors are expected to leverage the public sector contribution.

In addition, about EUR 20 million of the EU funding will be made available as grants for project development services (technical assistance) related to technical and financial preparation of projects. The technical assistance offered under this new facility targets investment projects (incl. projects smaller than EUR 50 million), which will be financed by the fund, by applying the successful ELENA model. The fund and the associated technical assistance are complementary to the support provided under ELENA. EU funds will have to be allocated to investment projects, project development services and technical assistance during a period of 3 years, which will end on 31<sup>st</sup> March 2014.

<b>Structure/services provided</b>	<ul style="list-style-type: none"> <li>▪ Loans;</li> <li>▪ Guarantees;</li> <li>▪ Equity;</li> <li>▪ Grants for technical assistance.</li> </ul>
<b>Eligible costs</b>	<ul style="list-style-type: none"> <li>▪ RES and RUE projects and preparation costs;</li> </ul>
<b>Financial framework</b>	<ul style="list-style-type: none"> <li>▪ Loans between EUR 5-25 million;</li> <li>▪ Market-based financing (interest rate depends on the risk structure of the investment);</li> <li>▪ Leverage factor: 20;</li> <li>▪ Grants cover up to 90% of eligible costs (EUR 20 million available for grants).</li> </ul>
<b>Special features</b>	<ul style="list-style-type: none"> <li>▪ Grants are available only for projects applying for funding to the EEE-F;</li> <li>▪ Fast &amp; Flexible procedures: no call, one stop-shop for TA and financing, no more than 6 month from pre-screening until financing decision;</li> <li>▪ The EEE-F can only invest in new projects, and cannot refinance existing obligations.</li> </ul>

**Application process:**

- Projects can be submitted at any time on a first-come first-serve basis. Deutsche Bank, as the Fund Manager of EEE-F, conducts the initial screening and, in case of a positive outcome of this first stage, detailed due diligence of the project. For the due diligence process further project information, such as a financial model, comprehensive project description and technical details are required.

**10. Western Balkans Investment Framework (WBIF)**

Officially launched in December 2009, the WBIF is a joint initiative of the Commission together with the CEB, the EBRD and the EIB (collectively referred to as the ‘partner IFIs’),

endorsed by the European Council. It is an innovative financing initiative which pools grant resources in order to leverage loans for the financing of priority infrastructure and socio-economic development in the Western Balkans.

Projects receiving a grant contribution from WBIF must be on the territory of one or more of the following beneficiaries in the Western Balkans: Albania, Bosnia and Herzegovina, Croatia, Kosovo, the former Yugoslav Republic of Macedonia, Montenegro and Serbia.

Investment projects should support any sector that contributes to the economic, social and environmental development of the Western Balkans. Eligible sectors include infrastructure development within the environment, energy, transport and social sectors and also private sector development. Priority projects are defined and proposed by the beneficiaries.

The WBIF provides grant resources to projects likely to be supported by loans from the partner IFIs and other financing partners. Grants have the objective of preparing projects, accelerating existing loans or enabling projects by bridging a funding gap. The WBIF offers beneficiaries an integrated financial package for investment projects in priority infrastructure and for private sector development. These grant resources originate from: EC Instrument for Pre-Accession (IPA); grant contributions from the CEB, the EBRD and the EIB; and bilateral grant contributions from bilateral donors through the European Western Balkans Joint Fund (EWBJF).

The National Instrument for Pre-Accession Coordinators (NIPACs) within each beneficiary determines national priorities after consultation with the relevant ministries. The EU Delegations are consulted to ensure that planned projects are consistent with national strategies and the EU Directorates General verifies that they are aligned with EU policy. Resources are pooled to leverage maximum value from the grant contributions. Where appropriate, WBIF contributions are combined with on-going IPA funding to maximise the viability of the projects, streamlining project preparation and future lending possibilities. Where possible, grant co-financing is used to bridge the projects' funding gap in order to make the projects viable.

<b>Structure/services provided</b>	<ul style="list-style-type: none"> <li>▪ Loans;</li> <li>▪ Grants.</li> </ul>
<b>Eligible costs</b>	<ul style="list-style-type: none"> <li>▪ RES and RUE projects and preparation costs;</li> </ul>
<b>Financial framework</b>	<ul style="list-style-type: none"> <li>▪ Loans up to EUR 500 million for major capital investments;</li> <li>▪ Financing is provided by the participating banks (EIB, EBRD, CEB) and interest rates depend on the risk structure of the investment;</li> <li>▪ Grant funds can be used to cover project preparation costs.</li> </ul>



<p><b>Special features</b></p>	<ul style="list-style-type: none"> <li>▪ Potential projects have to be submitted to Croatian Ministry of Regional Development and EU Funds which or the National IPA Coordinator.</li> </ul>
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**Application process:**

- Projects must be nominated or endorsed by the National IPA Coordinator of the respective country and projects with regional impact take precedence when deciding among applications. The Steering Committee takes all decisions related to the Joint Grant Facility including project approvals and provides strategic guidance for the WBIF. It is composed of representatives of the beneficiaries, the EC, partner IFIs and bilateral donors) and meets every six months. It is co-chaired by the Commission (on a permanent basis) and one of the bilateral donors (on an annual rotating basis).

**11. Croatian Private Sector Support Facility (CroPSSF)**

CroPSSF is a part of the new EU/EBRD Western Balkans Private Sector Support Facility which provides financing to commercial banks in the region in order to be on-lent to companies for investments in the areas of competitiveness and sustainable energy. In Croatia, the framework includes two on-lending windows for priority areas: SME Competitiveness (SME-CSF) and Sustainable Energy (SEFF). It is envisaged that up to EUR 80 million will be provided in loans to Croatian companies via local partner banks. Croatia is with CroPSSF the 15<sup>th</sup> country in which this EBRD programme is being launched.

The Small and Medium Sized Enterprises Competitiveness Support Facility (SME-CSF) supports investments by Small and Medium Sized Enterprises (SME) to improve competitiveness and sustainability in preparation for EU accession. In the sense of SME-CSF competitiveness projects are investments which aim to achieve the fulfilment of national or EU standards with regard to the environment, health and safety or product quality and safety. Up to EUR 1 million can be financed per company. Incentives of up to 20% of the investment amount may apply if certain conditions are met.

The Sustainable Energy Financing Facility (SEFF) is dedicated to improving the supply of long term finance for investments in energy efficiency and renewable energy for private sector enterprises of all sizes and residential customers. Investments of up to EUR 5 million per company can be funded by SEFF. Energy Services Companies (ESCO) are also eligible for funding under the programme. Incentives are available covering up to 20% of the investment amount if certain conditions are met.

The facility is available to private enterprises, sole proprietors, individual or groups of households, ESCOs or other private legal entities formed under the laws of and operating in Croatia. They may not be majority-owned or controlled by the state, or by any other political, governmental or administrative body, agency or sub-division thereof.

For both facilities, a qualified Project Consultant is at your disposal to help develop the project up to the final loan agreement with all technical requirements. This service is provided free of charge to all eligible borrowers with appropriate project ideas. The first

Croatian bank to sign a loan agreement under the Sustainable Energy Financing Facility (SEFF) in 2011 was Privredna banka Zagreb d.d.

<b>Structure/services provided</b>	<ul style="list-style-type: none"> <li>▪ Loans;</li> <li>▪ Subsidies;</li> <li>▪ Technical assistance.</li> </ul>
<b>Eligible costs</b>	<ul style="list-style-type: none"> <li>▪ RES and RUE projects;</li> <li>▪ Upgrading production processes to comply with EU safety and quality regulations.</li> </ul>
<b>Financial framework</b>	<ul style="list-style-type: none"> <li>▪ Loan amount vary from up to a maximum of EUR 1 million (SME-CSF) and EUR 5 million (SEFF);</li> <li>▪ Financial incentives of up to 20% of the investment costs can be received if expected energy savings are achieved.</li> </ul>
<b>Special features</b>	<ul style="list-style-type: none"> <li>▪ Free technical assistance is available to project developers and financial borrowers in order to prepare loan applications and train local bank experts.</li> </ul>

**Application process:**

- To apply for funding the investor should fill the application forms available at the official web page contact and send them to the CroPSSF team or a participating bank. A quick assessment of general project eligibility will be made and the investor will be guided by the project consultants through the rest of the application process. This assistance is free-of-charge.

**12. Western Balkans Sustainable Energy Direct Funding Facility (WeBSEDFF)**

The Western Balkans Sustainable Energy Direct Financing Facility (WeBSEDFF) is an investment facility supported by the EBRD endowed with up to EUR 100 million of loan funds. WeBSEDFF operates in Albania, Bosnia and Herzegovina, Croatia, FYR Macedonia, Montenegro and Serbia (including Kosovo). The facility is open to local small and medium enterprises (SME) or project developers to implement:

- Industrial energy efficiency;
- Renewable energy projectsM
- ESCO: EE projects in public sector through ESCO contracts.

Under the WeBSEDFF the EBRD provides direct loans from EUR 2 million (for certain countries from EUR 1 million) up to EUR 6 million. The facility is in the amount of EUR 50 million and is supported by EUR 11 million in technical assistance and grant funds. In addition, the facility is supported by an institutional capacity building component in the amount of EUR 2 million.

Under this scheme eligible borrowers can also obtain:

- Technical consultancy services free of charge, provided by the Project Consultant, who supports the preparation of sustainable energy projects.
- Incentive payments based on the estimated reduction of CO<sub>2</sub> emissions resulting from project implementation.

In order to qualify for a WebSEDFD loan, the companies and projects have to meet certain eligibility criteria:

- Technical criteria: at least 20% of energy savings for industrial energy efficiency projects minimum efficiency (utilization) rate for renewable energy projects;
- Financial criteria: a sound financial and economic structure with sufficient equity capital contributed to the project by the sponsor;
- Other criteria: for projects requiring concessions, licenses and permits, those should be obtained in compliance with the relevant EBRD requirements (transparent and competitive process, among others).

The WebSEDFD project consultant undertakes technical and environmental due diligence and may support the borrower in the project development if necessary.

<b>Structure/services provided</b>	<ul style="list-style-type: none"> <li>▪ Loans;</li> <li>▪ Subsidies;</li> <li>▪ Technical assistance.</li> </ul>
<b>Eligible costs</b>	<ul style="list-style-type: none"> <li>▪ RES and RUE projects.</li> </ul>
<b>Financial framework</b>	<ul style="list-style-type: none"> <li>▪ Direct loans from EUR 1 to 6 million;</li> <li>▪ Market based interest rates;</li> <li>▪ Facility budget: EUR 50 million.</li> </ul>
<b>Special features</b>	<ul style="list-style-type: none"> <li>▪ Technical support available for financial and non-financial institutions: staff training, assistance with preparation of RES/RUE projects (feasibility studies) in order to make them more bankable.</li> </ul>

**Application process:**

- Project proposals are sent by e-mail and must include a short description and status of the project. Investment projects are assessed by the EBRD on the basis of information made available by the sponsors (feasibility studies, energy audits, business plan). Technical consultants are hired by the EBRD to prepare energy audits and to supply the Bank with a technical evaluation of the prospective projects. Based on the investigation findings, EBRD takes decisions on loan disbursement.

Upon completion of the project, the verification consultant verifies the implementation and the EBRD pays the incentive payment to the borrower.

### 13. Green for Growth Fund Southeast Europe

The Green for Growth Fund, originally called the SE4F was created on 17 December 2009 and from the outset was structured as an investment company with variable shared capital ("SICAV"). Investors in GGF include the European Investment Fund (as the custodian for European Commission funds), KfW (own funds and as custodian for funds from the German Ministry of Economic Cooperation and Development), EIB, EBRD and the private German bank, Sal Oppenheim. The EC, Austrian Development Bank and the German Ministry of Economic Cooperation and Development also provide funds for technical assistance. In line with its commercially driven approach, the fund is managed by a private fund manager, a consortium of Oppenheim Asset Management (Fund Manager) and Finance in Motion (Fund Advisor). Investments are expected to produce an acceptable rate of return and any dividends generated may be distributed to the different shareholders in line with their risk profile and specific developmental objectives.

The main objective is to help the countries of Southeast Europe achieve 20% savings in energy or 20% savings in CO<sub>2</sub> emitted for each of its investments. These investments and the development of financial products in this sector are expected to contribute to the countries' capacity to meet the obligations they have assumed under the EC targets.

Other objectives of the Fund include:

- Providing additional development financing for RUE and small RES projects to broaden the financial base for these kinds of investments in the Southeast European Region;
- Address specific needs of underserved market segments;
- Increase awareness of RUE/small RES investments among companies and private households;
- Contribute to broadening and deepening the financial sector serving those development needs;
- Harmonise and coordinate donor initiatives;
- Attract additional private capital for investments in EE/small RE projects in the region and offer investors an attractive financial return in line with market expectations.

Unlike most other funds, GGF provides financing for private households and several of the target partners include some of the more difficult financing propositions, e.g. housing associations and ESCOs. Therefore, more complex financing arrangements are possible in terms of guarantees, direct financing for larger borrowers and equity financing. To date the emphasis is on loan funding which is usually more focused on the private sector given the borrowing limitations in the public sector. Both the "commercially viable" requirement of the GGF and the desire to build up an initial portfolio quickly have influenced the choice of projects to finance. However the fund has explicitly highlighted its intention to provide more varied financial products to reflect its diverse potential target partners.

<b>Structure/services provided</b>	<ul style="list-style-type: none"> <li>▪ Loans;</li> <li>▪ Equity;</li> <li>▪ Guarantees;</li> <li>▪ Technical assistance.</li> </ul>
<b>Eligible costs</b>	<ul style="list-style-type: none"> <li>▪ RES and RUE projects.</li> </ul>
<b>Financial framework</b>	<ul style="list-style-type: none"> <li>▪ Investments through financial institutions range from EUR 500,000 to 5 million;</li> <li>▪ Investments to non-financial institutions (ESCOs and municipalities) can range from EUR 100,000 to 10 million;</li> <li>▪ Market based loan interests;</li> <li>▪ Amount of approved investments since 2009 – EUR 91.4 mil.</li> </ul>
<b>Special features</b>	<ul style="list-style-type: none"> <li>▪ Technical support available for financial and non-financial institutions: staff training, assistance with preparation of RES/RUE projects (feasibility studies) in order to make them more bankable.</li> </ul>

**Application process:**

- There is no standard application form. Investment study in English should be prepared and all the necessary permits need to be obtained for the project to receive consideration for funding.

## 3

### KEY ACTORS

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This section introduces stakeholders (individuals and institutions) engaged in the development and implementation of policies to promote “nearly zero-energy” / “passive” buildings.

#### Departments of regional and local administrations

19 city administrative bodies have been founded in the City of Zagreb for performing activities within the self-administrative sphere and activities entrusted by the state administration.

The City’s administrative bodies are managed by the Principals and the City Assembly Professional Service is managed by the Secretary of the City Assembly.

Principals are appointed for a four-year term of office, and may be appointed again to the same duty.

The Secretary of the City Assembly is appointed and dismissed by the City Assembly.

- The Mayor’s Office
- City Control Office
- City Office for the Strategic Planning and Development of the City
- Service for the Local Self-Administration
- City Office for General Administration
- City Office for Financing
- City Office for Economy, labour and enterprises
- City Office for Education, Culture and Sports
- City Office for Health
- City Office for Agriculture and Forestry
- City Office for Physical Planning, Construction of the City, Utility Services and Transport
- City Office for Legal-Property Relations and the City’s assets
- City Office for Cadastre and Geodetic activities
- OEM - City Office of emergency management
- City Institute for the Conservation of Cultural and Natural Heritage
- City Assembly Professional Service
- City office for social protection and people with disabilities
- City office for energetics, environment protection and sustainable development
- Profesional service of the Mayor
- City Office for War Vetarans

- Office for EU programs and projects
- Public Procurement Office

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

By founding the City Office for Energy, Environment and Sustainable Development in the year 2009, the City of Zagreb started the process of sustainable energy development and environment protection. The scope of the City Office activities relates to energy and planning the energy development, thermal energy and ensuring continuous distribution of thermal energy, efficient use of energy in immediate consumption, gas market and the development of its distribution system in the City, sustainable development, renewable energy sources and ecologically acceptable fuels, environment protection, protection of air, protection of water, waste management, protection against noise as well as other affairs.

## Other stakeholders

### B a s e l i n e

Stakeholders of the City of Zagreb were divided into the following categories:

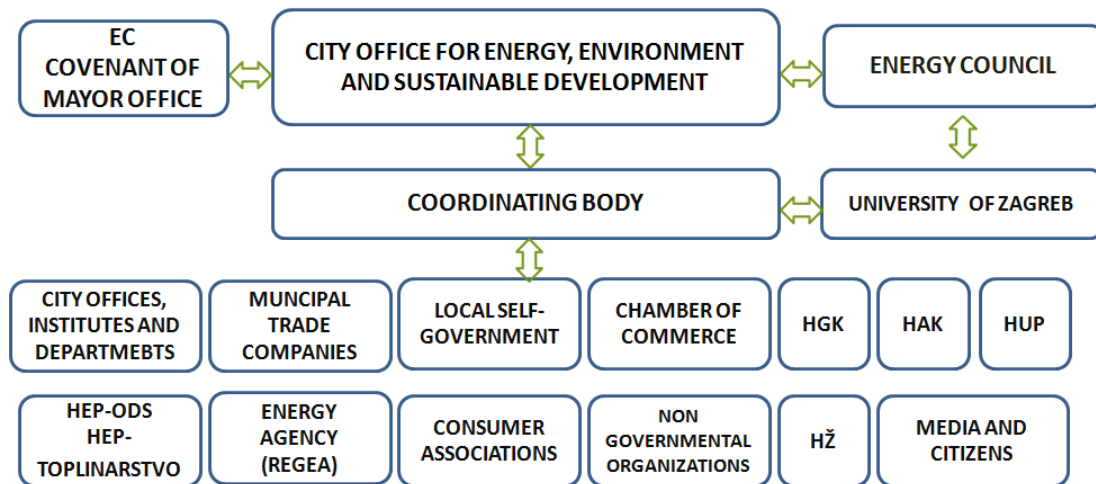
- City offices, institutes and services
- Local government (city districts and local boards)
- City companies
- Craftsmen/Croatian chamber of Trades and Crafts – Chamber of Trades and Crafts Zagreb
- Craftsmen Association of the City of Zagreb
- Entrepreneurs/Croatian Chamber of Commerce – Chamber of Commerce Zagreb
- Croatian Association of Employers
- Croatian Automobile Club
- Croatian Railway
- University in Zagreb, associate – degree colleges and academics
- Other educational and scientific institutions
- Non – governmental associations
- Consumer associations

Key stakeholders in developing City of Zagreb energy strategy:

- Authors
  - North-West Croatia Regional Energy Agency
  - City of Zagreb, City Office for Energy, environment and Sustainable Development
- Active participation in the preparation
  - Faculty of Architecture
  - Faculty of Mechanical Engineering and Naval Architecture
  - Croatian Automobile Club

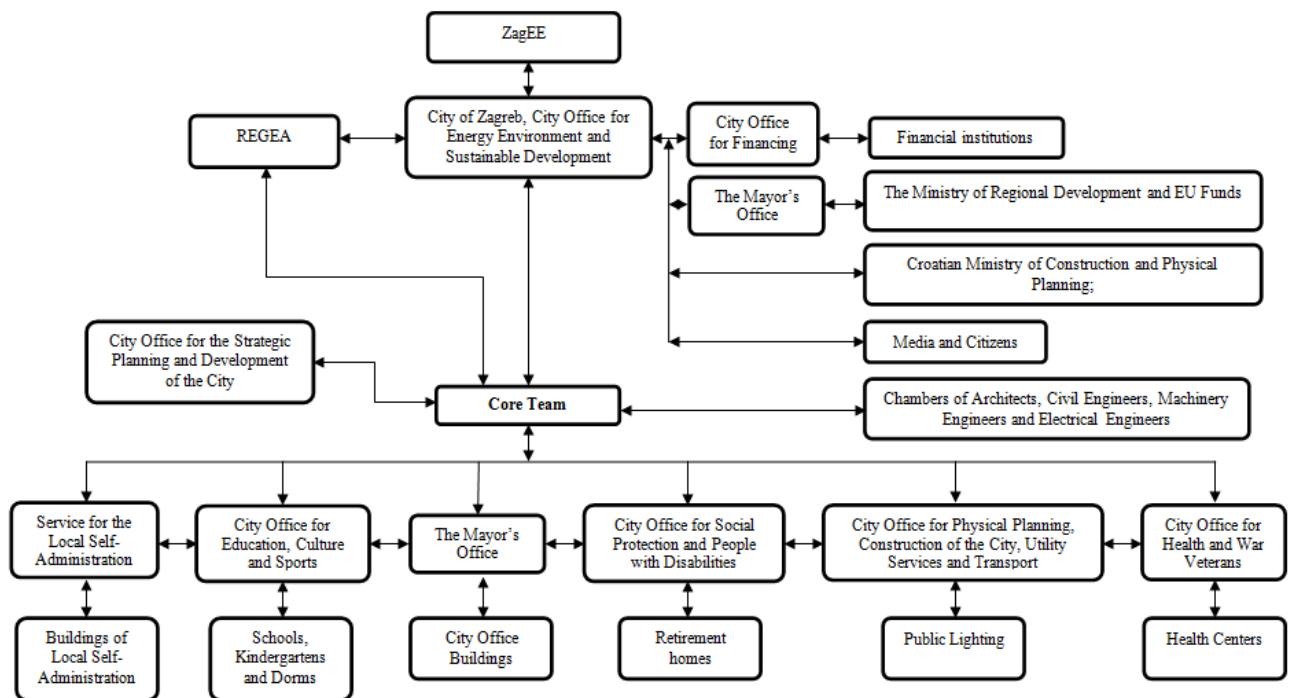
- HEP ODS d.o.o. – Elektra Zagreb
- HEP – Central Heating System
- City Gasworks Zagreb
- Croatian Railways Infrastructure
- Croatian Vehicles Centre
- EKONERG
- PHILIPS

Organisational structure for implementation of the strategy:



Energy council is an advisory body which monitors and evaluates all stages of realisation of the Strategy.

Diagram showing governance and management of the public buildings refurbishment project ZagEE:





## 4

# CAPACITY FOR PLANNING, DESIGN AND CONSTRUCTION

This section is dedicated to preparedness (knowledge and skills) of specialists on planning, design and construction for the introduction of “nearly zero-energy buildings”. It includes experts from the municipal administration, planners, developers and other interested community groups involved in the various stages of the process of creating “nearly zero-energy buildings”.

### Training of local authorities

City of Zagreb has a proven track record of implementing energy efficiency projects on the local level and EU level (e.g. ZagEE - Zagreb Energy Efficient city; TRACE - Transnational cooperation for the improvement of buildings energy performance and efficiency; EnVision; LEAP - The Leadership for Energy Action and Planning; Energy for Mayors; NiCE - Networking intelligent Cities for Energy Efficiency; i-SCOPE - Interoperable Smart City services through Open Platform for urban Ecosystems; E2STORMED; Ele.C.Tra - Electric Transport in Cities; EURONET 50/50max.)

Zagreb implemented over 50 individual RES and refurbishment projects on public buildings, but no projects fully applied the principles of passive buildings and at the moment there is none planned. Target of refurbishment of public buildings project is reaching energy grade B after modernization.

City of Zagreb staff is regularly participating in expert seminars, workshops and educational activities related to the field of energy efficiency and renewable energy sources.

Technical employees in public buildings have undergone one day training course on energy management in buildings and have been given instructions for further maintenance of technical systems. Employees of municipal departments have attended five day course and have acquired title of energy manager. Usually these persons are local contacts for national energy efficiency program and establishment of information systems for energy management – EMIS <http://www.ee.undp.hr/isge>.

### Training of designers and builders

It is very difficult to determine how many professionals would need to be trained, either designers or construction company professionals, for Passivhaus to become more common in Croatia. It seems inevitable that training would need to be instigated at varying levels and from a wider range of providers, e.g. universities as part of architecture degrees, local colleges training trades people. The nature of the training may also need to be re-examined, as discussed above, to consider distance learning qualifications and/ or evening classes, etc.

Passive House Designer courses aren't available in Croatia, but Croatian educational institutions, chambers, universities and the City are implementing many projects aimed to increasing the knowledge and skills of designers and builders.

Bild Up Skills Croatia aims to define and quantify the needs and possibilities of the Croatian building sectors in contributing to the achievement of ambitious national energy efficiency (EE) targets. In order to contribute to achieving the ambitious national EE targets, project CROSKILLS intends to analyse the national status quo, develop a national roadmap for establishing a system of lifelong training of building workers in the field of energy efficiency and to provide for the endorsement of the national roadmap and thus as well provide for a system of market evaluation of qualified workforce. Project coordinator is University of Zagreb, Faculty of Civil Engineering.

Passive House Consortium Croatia was formed during 2014 with the support of the City of Zagreb and it should ensure sustainability of the action after the end of the project. Passive House Consortium Croatia strategy plan is to unite all the associations and make the progress in linking the experts who will ensure competitive and professional institution, products and satisfied users of the passive houses

### Other measures for education and training

During Zagreb Energy Week there is a unique combination of various educational events and actions in education institutions. 8000 coloring books, 7000 windmill models, 7000 balloons and 600 manuals for teachers were distributed in all kindergartens in the City of Zagreb (206 locations, cca. 8000 children). 8000 picture books that included a game on the subject of energy and 450 manuals for teachers were distributed in all primary schools in the City of Zagreb (114 locations, cca. 8000 children). 10000 handbooks on renewable energy sources and rational use of energy were distributed in all secondary schools (67 locations, cca. 10000 pupils). All children and teachers from 14 ECO kindergartens and schools that were included into our final presentation at the main square were given 200 T-shirts. 700 informational brochures for the promotion of renewable energy sources specially designed for citizens, small and medium entrepreneurship and crafts were given to the Chamber of Crafts Zagreb, Association of Craftsmen of the City of Zagreb and Development Agency of the City of Zagreb so that they may distribute them among their members and interested citizens.

## 5

### MARKET FOR PASSIVE BUILDINGS

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There is a total of about 30 passive houses in whole Croatia. When building a passive house in comparison to business as usual scenario cost can be up to 15% higher and that fact often discourages investors of targeting that high and they settle for a lower target.

Passive and low-energy building is encouraged in more and more Croatian cities and municipalities through the reduction from payment of utility charges. Jastrebarsko , Samobor , Pozega and Sveta Nedelja are some of them . City of Zagreb for now encourages the purchase of solar collectors and photovoltaic cells since the model for subsidizing passive house builds needs to be developed.

On Croatian market all products and services required to build a passive house are available, but there is a lack of local producers other than in case of windows which seem to be in a better situation:

- The croatian company "Trohadil" produces windows who are declared to have best quality for passive buildings in the world and now they produces additionally passive doors.
- The company "Domprojekt" builds low energy prefabricated houses in Croatia, as well in Switzerland, Austria and soon will build a passive building in Franca, Dijon.

## 6

### SUCCESSFUL PRACTICES

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Other than some private family houses there are no passive buildings in the City of Zagreb area. Lack of successful local projects is the main reason why it is hard to prove the benefits and impact of passive builds in Zagreb, however, City is in the middle of implementing IEE MLEI project ZagEE where 89 public buildings are being refurbished. Target of refurbishment is not passive house level but reaching energy grade B. There are plans to pick a suitable building among 89 being refurbished and aim for the energy grade A, but that has not yet been confirmed.

The firm Flemont is starting a project that includes six high-quality apartments in two passive houses located in Zagreb suburb Mikulica. Each house will have three apartments with separate entrances and excellent sound insulation, ensuring complete privacy and atmosphere of individual housing.

The houses will have insulation of the facade and roof thickness of 20 to 30 inches.

Also, both buildings are wrapped in an extremely high-quality insulation of noise, which is achieved by thick facade insulation, triple-glazed windows, solid walls and low noise sewage pipes. Heat losses through the window surfaces are reduced to a minimum because the facilities are equipped with high-quality wooden windows triple glazed insulated glass filled with argon.

Successful energy efficient projects implemented by the City of Zagreb so far included implementation of PV systems on municipal buildings and elementary schools, solar collector's installation on kindergartens and modernization of indoor lighting in schools.

## 7

# PUBLICITY AND PUBLIC SUPPORT

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## Communication Strategy

### Baseline

City of Zagreb involvement measures and activities:

1. Education and change of behaviour of employees/users of buildings owned by the City of Zagreb
  - Organisation of educational seminars on the efficient energy use for executive employees;
  - Organization of workshops on the efficient energy use for manager of buildings owned by the City of Zagreb;
  - Measurement energy consumption in the buildings and analyze it;
  - Development and distribution of educational materiales (fliers, posters, stickers, etc.)
  - Introduce stimulating measures for energy saving to show good example.
2. Education for children and pupils (kindergartens, schools)
  - A handbook for a kindergarten teacher
  - A handbook for a school teacher
  - A coloring book for children in kindergartens (7000 per year)
  - A picture book with the game for pupils in elementary schools (7000 per year)
  - A manual "Climate and Energy" for pupils in high schools (11.000 per year)
  - Organizing of the thematic playroom in kindergartens and lesson in elementary and high schools
  - Collaboration with eco schools organizing educational programs and exhibitions (Zagreb Energy Week).

3. Education and promotion of energy efficiency for citizens
  - Continuous informing of consumers on the manners to save energy and actual energy topics through EE info-centar;
  - Implementation of thematic promotional- informative campaigns for raising citizens' awareness of energy efficiency in buildings (Zagreb Energy Week);
  - Support of events organized by non-governmental associations on topics about EE and RES;
  - Co-financing a projects by non-governmental associations with goals to educate, promote and inform citizens about energy and climate issues;
  - Creation and distribution of educational and promotional material on energy efficiency and use of renewable sources of energy through info-galleries and city-light.
  - Co-financing citizens for implementation of solar collectors (bidding).
4. Education and promotion of energy efficiency for commercial and service sector
  - Organization of exhibition on main square in the City of Zagreb;
  - Co-financing craftsman for implementation of solar collectors on their business buildings;
  - Education for the craftsmen about
    - new jobs in energy sectors;
  - A manual about RES

Informing the citizens on activities undertaken by the City is an important factor of promoting energy efficiency, use of renewable energy sources, protection of the environment and the fight against the climate changes. With the purpose of better cooperation and faster access to information, city have created the official City office website - [www.eko.zagreb.hr](http://www.eko.zagreb.hr)

Traditional Zagreb Energy Week has been organized for four years in a row. It is organized by the City Office of Energy, Environment and Sustainable Development of the City of Zagreb, in cooperation with the North-West Croatia Regional Energy Agency (REGEA). The Zagreb Energy Week is held in May and includes numerous different activities (an international conference, special expert conferences, public discussions, seminars, presentations, open door days, etc.) in cooperation with 70 partners. All activities are on the subject of energy and environment protection, possibilities of disposing of and managing own natural resources, the consequences of and fight against global warming, rational use of energy, implementation of measures of energy efficiency, renewable energy sources, ecologically acceptable fuels, the development and implementation of new technologies, possibilities of economic development and financing of projects.

The Zagreb Energy Week global aim is the inclusion of all stakeholders in the sustainable energy development of the city and also in the fight against climate change to achieve better quality of life for all citizens. In order to achieve our goals, it was important to involve not only different institutions and agencies, but also to actively include all layers of society (including the youngest generation, Ministries of the Republic of Croatia, energy and development Agencies, educational and science institutions, expert associations of

craftsmen and entrepreneurs, architects' association and the chamber of architects, construction, mechanical and electrical engineers, representatives of local and regional self-government, media representatives, civil society associations and expert associations) with the purpose of achieving synergy at all levels. The Zagreb Energy Week has also allowed for raising awareness and providing an economic impact through the cooperation with the Croatian Chamber of Economy and the Croatian Chamber of Trades and Crafts.

Through a comprehensive program, we have contributed to raising awareness and promoting efficient energy use in everyday life, raising the economy sector and spreading knowledge and experiences. Zagreb Energy Week has allowed many expert chambers as well as companies to present their products, thereby familiarizing the citizens not only with their area of expertise, but also allowing them an inside look into what technologies are now present on the market. Croatian Solar Energy Association and the company Petrokov have opened their doors for interested groups of citizens as well as groups of children and students which provided such groups with the opportunity to see how new technologies are applied in actual day-to-day work. On the other hand, such policy of open doors provided the companies with more public acclaim, as now more people understand what their field of work is and why it is important for their future.

All these practices served to actively include as many people as was possible and provide them with a chance to understand the new technologies which will in the future provide clean energy.

Raising public awareness is an extremely important part of this project. It is, therefore, important to point out that the Zagreb Energy Week was attended not only by the citizens of Zagreb, but also by many representatives of other cities in the region and Croatia.

Zagreb Energy Week is unique in that it is adapted to all the stakeholders. It communicates to the professional institutions as well as to children and students and is open for all who wish to attend it and learn from it. The fact that it can speak to all layers of society makes it a great example for cities, as well as countries. Our message "Development we don't want to stop, but pollution we can!" indicates that we have to act and think globally in order to allow for continuous development of new technologies, but at the same time prevent their negative aspects i.e. pollution.

All activities include a wide range of energy and environmental protection and actively involved all layers of society (from the youngest generation to experts) in order to achieve better synergy at all levels. Educational workshops, lectures and interactive discussions were held in all kindergartens, primary and secondary schools in the City of Zagreb. Scientific institutions, institutes, civil society organizations and companies organized seminars, presentations and open door days. The City organized an international conference "Local and regional authorities in energy efficiency development process". A presentation of electrical and environmentally acceptable cars and an exhibition where the exhibitors presented their products and services at the stands were organized at the main square in Zagreb.

In cooperation with 70 partners, we have organized several special expert conferences, public discussions, seminars and presentations which included approximately 2000 participants. Scientific institutions, institutes, The Faculty of Electrical Engineering and Computing and some companies organized open doors for 15 visiting groups of pupils, students, professional associations and citizens (app. 300 visitors). We especially highlight the international conference organized by the City Office of Energy, Environment and Sustainable Development where were presented new initiatives and amendments to legislation, the possibilities of economic development, role of local and regional

governments in the process of sustainable energy development, the development of a Covenant of Mayors network and EUROCITIES, the cooperation of Croatian cities and energy agencies, the exchange of experience and knowledge in the implementation of sustainable energy development and fulfillment of the obligations of local and regional government in the Republic of Croatia, examples of good practice of European and Croatian cities, encouraging the development of partnerships at the international level, participation in the European projects, use of European funds and development of new technological solution. The conference included the participation of numerous experts from several local and regional governments, ministries (Ministry of Construction and Physical Planning, Ministry of Regional Development and EU Funds, Ministry of Environmental and Nature Protection, Ministry of economy), EU Institutions, as well as experts from energy agencies. On May 16, a presentation of electrical and ecologically acceptable vehicles was held on the main square. The presented vehicles were Croatian electric car XD Concept (manufactured by DOK-ING), Hyundai H1 (modified in Croatia), Peugeot 3008 Hybrid and the hybrid Peugeot 508 RXH Peugeot iOn. The final exhibition on the Zagreb main square brought together more than 50 exhibitors active in the field of energy efficiency, renewable energy, environmentally friendly fuels and environmental protection and projects from 14 ECO kindergartens, primary and secondary school were presented. The City of Zagreb, City office for Energy, Environment and Sustainable Development also communicated with the citizens through 15 jumbo posters and 25 city lights showcases as well as 2000 informative leaflets with the program of the Zagreb Energy Week. In this way, the citizens were informed of the activities and could attend the events which interested them. The City office possesses a web page designed especially for Zagreb Energy Week. This web page provides all information (whole program of Zagreb Energy Week, photos, brochures, etc.) about Zagreb Energy Week.

Zagreb Energy Week targets all stakeholders, from the youngest generation to experts from the field of energy, global warming, energy efficiency and renewable energy sources. Children in kindergartens, primary and secondary schools are the best example of how we can include their parents and family in the fight against global warming. The children make great “ambassadors” of new ideas, as they are very enthusiastic about new things and like to discuss new ideas with their families, thereby spreading the knowledge and information. Students are already aware of the global problem that we encounter daily, so they are directly involved in solving these problems through their professional education. To professional chambers, craftsmen, entrepreneurs and economists we present new possibilities and solutions in the economic development, especially in this difficult period of recession. We also provide them with an opportunity to present their products and services. Scientific institutions, institutes and experts in the field of energy, global warming, energy efficiency and renewable energy sources can learn about new technologies from their colleagues from the country and region. Regional and local government learn about the said technologies through the application of the guidelines and directives of the EU, new legislations, strategies, programs and plans on the national level, new financial possibilities and development strategies that provide energy and financial savings, economic development and jobs. We also want to include them in the permanent network of energy aware cities. The Civil society organizations can raise awareness of citizens by giving them a chance to take steps in the fight against global warming themselves. The citizens constitute one of the most important target groups and for that reason we want to raise their awareness and encourage them to act rationally in their everyday life. The change of their behavior and attitude towards “clean energy” and environment will prove to be very important for our future. Zagreb Energy Week 2012 covered the largest number of participants and beneficiaries so far.

The geographical scope of the Zagreb Energy Week is very wide. The City of Zagreb has a great influence on the other Croatian cities and cities from the region. Zagreb Energy Week is a chance for us to spread knowledge and good practice examples not only from our country, but also from the countries in the region. The geographical scope of the Zagreb Energy Week is very important for developing sustainable strategy for every city. Creating a network of stakeholders is not only vital for the City of Zagreb and Croatia, but also wider. Our problem is global and for that reason we make sure we include our partner cities from the region (Sarajevo, Skopje, Podgorica, Tirana, Beograd, Novi Sad). The fact that these partner cities are very keen on participating in the Zagreb Energy Week testifies to the importance of this manifestation.

Positive results from the first and second Zagreb Energy Weeks, support and approval from the professionals and citizens as well as the interest of the international organizations and institutions are the best indicator that the City of Zagreb stands out in the wider region with its unique approach to achieving energy savings, implementation of efficient energy use, use of renewable energy sources, environmentally friendly fuels and CO<sub>2</sub> reduction.

## Communication Plan

### Baseline

Describe **existing communications plans**, programmes and specific activities related to sustainable urban development with a focus on low-energy (passive) buildings. Evaluate the results and discuss the mistakes. Identify experts who will be responsible for planning, implementation and monitoring of communication activities. If necessary, identify “faces” of the campaign, acquaint them in detail with the strategy and ensure their active and ongoing commitment. Develop a database of existing contacts, traditional conferences and events planned in the region.

### Success Model

Start by developing an **annual plan** of the envisaged communication activities:

(i) Plan **4 to 6 major events** - organized by you or conducted by external organizations, each of which have specific objectives and expected results. These events, although individually targeted to specific groups, by the end of the planning period should be extended to all defined target audiences.

(ii) Organize communication activities about the events, trying to **plan specific results of any of them** that build on previous achievements. Plan preparatory activities before each event, e.g. dissemination of information materials, articles and reports in the local media, publications, social media, forums, etc., designed especially for the event audience in order to create a basis for informed discussion.

(iii) Provide sufficient resources to **disseminate the results** after each event and to account for the reaction of the participants. Use and seek active participation in events, which directly affect the target groups (often organized by their branch associations), but do not spend too many resources in specific activities that are not directly related to the tasks at the specific stage of the plan. Do not commit to specific business interests.

(iv) Seek **synergies with other projects** in the municipality. Look for opportunities to reach out to groups that are often overlooked (e.g. children, students, women, the unemployed, etc.), but in certain situations can affect the decision making process.

(v) Determine periods for **monitoring and analyzing** the performance of the communication plan, defining responsible officers and allocating available resources. In the



event of unexpected situations and the availability of new information, changes in the plan are required.

(vi) The development of a **communication plan for the next year** should begin at least two months before the end of current one.

**Do not limit yourself to publish information on the website of the municipality only!**

### Communication activities within the project

Within the PassREg project City of Zagreb is promoting the project on many local events aimed at raising awareness, knowledge and skills in the field of energy efficiency. Brochures that were prepared for 7 target groups were translated and are disseminated during presentations of PassREg project and info sessions, also to citizens on the final day of Zagreb Energy Week on the main city square. PassREg project was recently presented on 1<sup>st</sup> program of Croatian National television in the Eco Zone show where expert passive house designer Ljubomir Miščević from University of Architecture and Nikola Petković expert from City of Zagreb City Office for Energy, Environment talked about the project and its goals.

Passive House days are organised within the project activities in collaboration with University of Zagreb, Faculty of Architecture.

## 8

### QUALITY CONTROL

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The Ministry for construction and physical planning has established independent control systems for the verification and control of issued energy performance certificates and reports of performed energy audits of existing buildings, which have obligations to perform energy audit with issuing energy performance certificate. This control system is to be started in 2014 although has been established by regulation in 2012. Three step control system is prescribed: basic check of content and status of certificates and reports, numerical control of calculated data, overall control starting from input data. Furthermore, every 10th authorized person randomly picked out and each A+ certificate will be checked. Controls will be provided by persons authorized by the Ministry.

Local administration will have to involve communal policemen servant to check if public buildings over 250 m<sup>2</sup> have displayed the energy certificates.

New buildings before using or commissioning must have an energy certificate made in the manner prescribed in the Regulations on energy audits of buildings and energy certification of buildings (Official Gazette 81/12 , 29/13 , 78/ 13) .

Existing buildings or their separate useful units that are sold must have a valid energy performance certificate and submitted for review to the buyer before entering into a contract of sale of the first July 2013.

Individual separate apartment units that are rented, leased or sold must have a valid energy performance certificate available for inspection prior to entering into a contract, lease or

rental of the first January 2016.

Public display energy certificate is mandatory for public buildings or separate useful units of buildings used for public use in mixed-use buildings :

- useful floor area over 1000 m2 must have been issued and publicly exposed energy certificate no later than 31 December 2012
- useful floor area over 500 m2 shall be issued and publicly exposed energy certificate no later than 31 December 2013
- useful floor area over 250 m2 shall be issued and publicly exposed energy certificate no later than 31 December 2015

## 9

### ROADMAP

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#### SWOT Analysis

Consistently identify, describe and evaluate the strengths and opportunities that this Success Model suggests on the one hand and describe identified weaknesses and potential threats and risks to its successful implementation on the other. On the basis of the so described and evaluated performance of the developed model, identify appropriate measures and actions to reinforce strengths and opportunities and those that may limit the impact of the weaknesses and risks (threats).

<p style="text-align: center;"><b>Key strengths</b></p> <ul style="list-style-type: none"> <li>- Commitment by the city administration to battle climate changes</li> <li>- SEAP has a measure planed for incentives for those who build passive buildings;</li> <li>- Involvement of all stakeholders;</li> <li>- Events for awareness raising;</li> <li>- Economic and financial levers already existing in Croatia, enhanced with the recent EU accession</li> <li>- Projects and educational activities in educational institutions;</li> </ul>	<p style="text-align: center;"><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>- Limited dissemination of issues related to passive houses outside of the professional groups involved in their implementation;</li> <li>- Few professionals able to apply the principles of NZEB, especially within the local administration;</li> <li>- The market for materials used for passive buildings and the market of these buildings is still not very large;</li> <li>- The system of quality control includes only certification</li> <li>- Lack of decision makers interest for setting targets of refurbishment projects higher</li> </ul>
<p style="text-align: center;"><b>Favorable opportunities</b></p> <ul style="list-style-type: none"> <li>- Events planned to raise awareness of citizens and for the dissemination focused</li> </ul>	<p style="text-align: center;"><b>Threats and risks</b></p> <ul style="list-style-type: none"> <li>- National policy for implementation of the legislation not in line with the objectives set</li> </ul>

<p>more to NZEB and passive houses;</p> <ul style="list-style-type: none"> <li>- Communication strategy according to the different target groups identified, with diversified messages and goals;</li> <li>- Opportunity to study examples of good practices that already exist in Europe and in front runner regions</li> <li>- Beacon project realisation</li> </ul>	<p>in relation to the NZEB before 2020;</p> <ul style="list-style-type: none"> <li>- Economic crisis;</li> <li>- Economic and financial levers that will disqualify new low energy buildings;</li> <li>- Poor adhesion to training programs by specialists identified in and out the local Administration</li> </ul>
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It is recommended that while developing the new Success Model, project partners should carefully analyze the descriptions of front-runners' Success Models (the "front-runner" regions of Hanover, Brussels and Tyrol) and in particular the specific actions and tools used in their successful implementation.

## Roadmap

The designed new Success Model for Zagreb region is illustrated by a text description of the sequence of measures and actions implementation and graphical illustration of the Roadmap (schedule) for the period of PassREg project implementation and after its completion (until 2020).

*Annexes:*

1. *Template for the description of the baseline of aspiring regions involved in PassREg project (available in Alfresco - file name: ..... )*
2. *Indicative scenario for the preparing and performing of Regional Building Forums in aspiring regions involved in PassREg project (available in Alfresco - file name: ..... )*