



Territorial Operational Plan

Sub Activity 5.1.2 in WP5

Produced by: Energy Institute Hrvoje Požar

Contents

1. ANALYSIS AND SUMMARY OF THE EXISTING SITUATION ON THE ENERGY PERFORMANCE IN BUILDING STOCK IN THE REFERENCED REGION	5
1.1. Analysis of territorial strategies	5
1.1.1. <i>National Energy Efficiency Program 2008-2016</i>	5
1.1.2. <i>Third National Energy Efficiency Action Plan (July 2014)</i>	5
1.1.3. <i>Second National Energy Efficiency Action Plan</i>	5
1.1.4. <i>National Action Plan for Renewable Energy Sources to 2020</i>	6
1.1.5. The 2014 – 2015 Energy Renovation Programme for Public Sector Buildings.....	6
1.1.6. The 2014 – 2020 Energy Renovation Programme for Residential Buildings	7
1.1.7. The 2014 – 2020 Energy Renovation Programme for Commercial non-Residential Buildings	9
1.1.8. The 2014 – 2015 Energy Renovation Programme for Public Sector Buildings.....	10
1.1.9. The 2014 – 2020 Energy Renovation Programme for Residential Buildings	11
1.2. Legislation	12
1.2.1. Act on Energy Efficiency	12
1.2.2. Building Act	12
1.2.3. Act on energy efficiency in the final energy consumption (OG 152/08, 55/12, 101/13, 14/14)	13
1.2.4. Regulation on energy auditing and energy certification of buildings (OG 48/14)	13
1.2.5. Regulation on energy audits of constructions and energy certification of buildings (OG 81/12, 29/13, 78/13) ...	13
1.2.6. Technical regulation on rational use of energy and thermal protection of buildings.....	13
1.2.7. Technical regulation on energy economy and heat retention in buildings (OG 110/08, 89/09, 78/13, 90/13)	14
1.2.8. <i>Regulation on requirements for eco-design of products related to energy</i>	14
1.2.9. <i>Regulation on contracting and implementation of energy services in the public sector (OG 69/2012)</i>	14
1.2.10. <i>Government Decree on the bodies in management and control systems for the use of European Social Fund, The European Fund for Regional Development and Cohesion Fund</i>	15
2. DEVELOPMENT OF TERRITORIAL OPERATIONAL PLANS.....	16
3. PLANNING OF SUSTAINABLE URBAN DEVELOPMENT	18
4. ENERGY MANAGEMENT	18
4.1. Project "Removing barriers to energy efficiency in Croatia"	18
4.2. Energy Management Information System – EMIS results.....	19
5. MONITORING EXISTING SITUATION	20
6. REQUIRED CONTROLS.....	20
7. USERS EDUCATION AND STAKEHOLDER MANAGEMENT	21
8. FINANCING EE AND RES IN BUILDINGS.....	22
8.1. Croatian Bank for Reconstruction and Development (HBOR).....	22



8.2.	Environmental Protection and Energy Efficiency Fund	23
8.3.	European Bank for Reconstruction and Development.....	25
8.4.	European Investment Bank	26
8.5.	Green for Growth Fund	26
9.	OTHER	27

TASK

Sub-activity 5.1.2 Territorial operational plans

Territorial operational plans are the ultimate outputs of the TRACE project. The plans will elaborate on the ways in which the partners will integrate the experiences gained and lessons learnt throughout the project into territorial or national policies. Nine (9) territorial operational plans will be developed in total, namely one by each of the following partners: Piraeus, Gabrovo, Mantova, Perugia, SERDA, Zagreb, ENERO, KSSENA and EEC.

In addition, the territorial operational plans will have an impact on the policy making process at local, regional or national level and they will identify issues for policy change, funding priorities and further investment in this domain.

This territorial operational plan analysis existing situation on the energy performance in building stock and elaborate and compare all the possible scenarios of a future energy system in Croatia.

1. ANALYSIS AND SUMMARY OF THE EXISTING SITUATION ON THE ENERGY PERFORMANCE IN BUILDING STOCK IN THE REFERENCED REGION

1.1. Analysis of territorial strategies

National strategies and plans

In recent years many strategies and plans were developed. The most important ones are described below.

1.1.1. National Energy Efficiency Program 2008-2016

The National Energy Efficiency Program for the 2008-2016 period (NPEu) was established on the basis of the Act on Efficient Energy Use in Final Consumption and its goal is to make the Program an all-encompassing basis for the Ministry of Economy in order to create other official documents related to energy efficiency, along with the creation of a new legislature for the transfer of the European legislative into the Croatian legislature. It is also the basis for the National Energy Efficiency Action Plan. The National Program presents therefore an Energy Efficiency Master Plan for Croatia. The document was made in September 2008 and was afterwards revised in October 2009.

1.1.2. Third National Energy Efficiency Action Plan (July 2014)

The 3rd NEEAP was adopted on 30 July 2014 and adds some additional activities and measures to the 2nd NEEAP. It sets up measures for energy savings and goals up to 2016. The 3rd NEEAP also sets targets for the increase in the number of near zero energy buildings (requirement form EPBDr).

In accordance with the European Directive 2006/32/EC on Energy End-Use Efficiency and Energy Services (ESD), a National Energy Efficiency Programme has been established for the 2008-2016 period. Objectives and goals for energy savings are determined for three 3-year periods until 2016. Every National Energy Efficiency Action Plan (NEEAP) analyses the previously implemented measures and their effects, along with the revision of measures and the establishment of new sectorial measures in order to secure the fulfilment of objectives until 2016. The 3rd National Energy Efficiency Action Plan for the Republic of Croatia is made in accordance with the EED and takes into account EPBD II.

The 3rd National Energy Efficiency Plan includes the energy efficiency obligations in accordance with the Article 7 of the Energy Efficiency Directive (EED). According to this Article, the national energy savings objective in the 2014-2020 period will amount to 1,938 PJ per year and 54,250 PJ in total.

1.1.3. Second National Energy Efficiency Action Plan

The Second National Energy Efficiency Action Plan of the Republic of Croatia until the end of 2013 has been adopted pursuant to Article 6 paragraph 3 of the Act on Efficient Energy Use in Direct Consumption, as required by Article 14.1 of Directive 2006/32/EC on energy efficiency and energy services (ESD), which requires from European Union (EU) Member States to prepare, every three years, and submit to the European

Commission (EC) the plans containing measures whose implementation would achieve the intended energy savings targets in direct consumption by 2016.

The NEEAP places emphasis on the preparation and implementation of detailed and comprehensive national programmes of complete reconstruction of residential and non-residential buildings, which would enable the achievement of savings in the amount of 10.4 PJ or 53 % of the national target by 2016.

1.1.4. National Action Plan for Renewable Energy Sources to 2020

The document defines the total national target for renewable energy use in line with prescribed methodology and sectorial objectives and trajectories in the production of electricity, heating and cooling from renewable sources.

National Programmes for Energy Renovation of Buildings

Along with the National Strategies and Action Plans described in the previous chapter, The Ministry of Construction and Physical Planning designed five programmes for energy renovation of buildings in Croatia as follows:

1.1.5. The 2014 – 2015 Energy Renovation Programme for Public Sector Buildings

One of the objectives of the Programme is to meet the requirements according to Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, which requires each Member State to ensure that, from 1 January 2014, 3 % of the total floor area of heated and/or cooled buildings owned and occupied by its central government is renovated each year. In case of non-compliance with the above Directive, the European Commission may open the official European Union law infringement proceedings.

The Act on Efficient Energy Use in Direct Consumption (Official Gazette, Nos. 152/2008, 55/2012 and 101/2013) and the Regulation on Contracting and Implementation of Energy Services in the Public Sector (Official Gazette, number 69/2012) regulate the procedure for performing energy services in the public sector and thus ensure that energy efficiency improvement measures for public sector buildings are performed without any additional budgetary spending of the owner/user.

The energy efficiency programmes performed in the Republic of Croatia so far ensured neither the complete renovation of buildings nor the use of energy services - only individual energy efficiency measures on buildings have been performed and incentives to building owners granted. This is the first Programme encouraging complete renovation of buildings, including measures to be performed on the building envelope, thermal and electro-technical systems and interventions on the water-supply systems, and for this purpose it uses private capital investments for public buildings, without any additional cost for the state and with the co-financing from the Environmental Protection and Energy Efficiency Fund.

The Energy Renovation Programme for Public Sector Buildings emphasizes the leading role of the state in the stimulation of the development of the energy efficiency market, which will result in the transfer of energy efficiency from the public sector to the private sector.

The programme envisages the energy renovation of existing buildings for which renovation is determined to be profitable according to the model developed by this Programme, i.e. for the buildings that can be renewed providing that the energy service provider can offer energy savings proven by the preparation of an energy renovation project. The existing building is considered to be a building built on the basis of a building permit or other corresponding document and any other building made equal in status to such a building with a corresponding act that regulates construction or act on the procedure with illegally built buildings.

Such a situation is deemed to exist in conditions when the relation of the necessary investment in the energy renovation and the energy savings achieved by the beneficiary is such that it enables the energy service provider to carry out the energy renovation of the building, and all process costs, including maintenance costs, design costs, financing and other costs can be compensated from the fee paid by the client with an adequate profit. Although such a situation cannot always be predicted with certainty, in the inclusion of the building in the Programme, it is estimated that the certainty of carrying out the renovation without new process costs of the public sector is higher if the building meets the following conditions:

1. if the building has high levels of energy consumption (usually $> 200 \text{ kW/h/m}^2$)
2. if the building is not part of a complex, and can be clearly separated from the consumption of neighbouring buildings
3. if the building has no disadvantages in terms of other essential conditions for the building
4. if the building is not under the regime of the protection of cultural goods, which would prevent a cost-effective energy renovation.

Specific objectives of the Programme linked to the 3rd National Energy Efficiency Action Plan (summarized in the previous chapter) are:

1. implementation of a comprehensive renovation of 200 public sector buildings, with a total floor area of about $420,000.00 \text{ m}^2$
2. reduction of energy consumption in renovated buildings by 30-60 %, or by approximately 150 kWh/m^2 annually
3. reduction of CO_2 emissions by about 20,500 t annually
4. investments in the amount of approximately $400,000,000.00 \text{ kn}$ ($\approx 52,219,321.15 \text{ €}$)¹

1.1.6. The 2014 – 2020 Energy Renovation Programme for Residential Buildings

Energy Renovation Programme for Residential Buildings is based on the 2nd National Action Plan on Energy Efficiency. It analyses the state of the existing housing fund and the energy consumption in it, and proposes and elaborates measures for the advancement of the energy efficiency of the existing buildings which will be carried out in the 2014 to 2020 period. The Programme does not refer to the construction of new buildings. The Programme has become an integral part of the new three-year national action plan that has been adopted in July 2014 in accordance with the 2012/27/EU Energy Efficiency Directive. The 3rd National Energy Efficiency Plan includes the energy efficiency obligations in accordance with the Article 7 of the Energy Efficiency Directive (EED). According to this Article, the national energy savings objective in the 2014-2020 period will amount to 1,938 PJ per year and 54,250 PJ in total.

¹ According to the currency exchange rate in November 2014; $1 \text{ HRK} \approx 7.66 \text{ EUR}$

Taking into account determined characteristics of the building stock in Croatia, the priorities of this Programme have been defined – residential buildings built by 1980 and energy measures aimed at the reduction of the thermal needs of residential buildings, the improvement of the efficiency of heating systems and the replacement of energy sources (especially electric power and fuel oil) with environmentally, economically and energetically more favourable sources, especially renewable energy sources.

The Energy Renovation Programme for Residential Buildings has two important subprogrammes. For both the **multi-apartment building energy renovation subprogramme (MAB)** and the **family houses energy renovation subprogramme (FH)**.

The Programme foresees following measures for multi-apartment buildings:

- MAB.1 Energy examinations and certificates
- MAB.2 Preparation of project documentation
- MAB.3 Integrated renovation of buildings
- MAB.4 Individual measurements of the consumption of thermal energy

Measures related to energy certification (MAB.2) and the preparation of project documentation for the renovation of multi-housing buildings are considered to be a necessary precondition for the implementation of complex technical projects for the integrated renovation of these buildings (MAB.3) and therefore a considerably larger amount for the subsidisation of these activities is planned in the Programme, compared to the usual amounts awarded by the Environmental Protection and Energy Efficiency Fund (EPEEF).

Family house energy renovation programme foresees following measures:

- FH.1 - Renovation of house envelope
- FH.2 - Heating system replacement
- FH.3 - Stimulation of use of RES

The most significant expected effects of the implementation of this Programme are the following:

- energy savings of about 270 GWh in direct consumption, which means achieving almost 15% of the total framework goal for the 2008-2016 period, or about 44% of the total framework goal for the three-year period between 2014 and 2016;
- the stimulation of investments in the total amount of 817.5 million HRK (≈106.72 million EUR) annually with the share of state incentives of only 16% of the value of the total investment (included is the return of funds to the state budget from VAT collection and employers' contributions);
- reducing expenditures of citizens for energy in the amount of 116 million HRK annually;
- CO2 emission reduction of about 72,000 tonnes annually;
- providing employment for 3,000 people annually;
- increased stability of energy supply;

- improved state and increase of market value of real estate (provided that energy efficiency is evaluated as a tax relief in future legislation concerning the taxation of real estate);
- development of the manufacturing industry, especially industry of thermal insulation materials and wood processing industries;
- reduction of 'grey economy';
- reduction of energy poverty and general improvement of housing conditions.

1.1.7. The 2014 – 2020 Energy Renovation Programme for Commercial non-Residential Buildings

The primary objective of the Programme is to initiate a comprehensive energy renovation process of commercial non-residential buildings in the Republic of Croatia.

The Programme covers:

- An analysis of commercial non-residential buildings in the Republic of Croatia
- An overview of cost-optimal energy efficiency measures
- A detailed plan for energy renovation of commercial non-residential buildings 2014 – 2016
- An impact analysis of the implementation of cost-optimal energy renovation measures in commercial non-residential buildings
- An analysis of financing models of Programme implementation

Precise and uniform definition of commercial non-residential buildings within the legislative framework of the Republic of Croatia currently does not exist, and the term “non-residential commercial buildings” is described in various ways in different programs, strategies and legal framework of the Republic of Croatia. This definition is not covered in most important acts in the field of construction - Construction Act and the Physical Planning Act. According to available sources, international and domestic, commercial buildings are described as those where less than 50% of the total area is used for residential purposes.

Within the Programme, a ‘commercial non-residential building’ is defined as any building with majority private ownership where more than 50% of gross floor area is intended for use in the business and/or service sector, including one of the intended uses specified:

- Offices,
- Hotels, restaurants and catering facilities,
- Wholesale and retail premises,
- Industrial facilities,
- Other.

The Programme foresees and analyses impact of implementation of following EE and RES measures:

- C2 measures to encourage the use of solar energy in the camps
- C3 measures to encourage investment in solar heating systems and other measures to improve EE in hotels
- C4 measures to increase the efficiency of refrigeration systems in hotels and other tourist facilities
- C5 energy renovation of commercial non-residential buildings

The Programme provides an overview of an area and number of buildings set for renovation, a potential of energy and financial savings, and investment costs required with respect to various intended uses of commercial non-residential buildings, with the aim of accomplishing the 2016 objective as set in the 2nd NEEAP as well as targets set in the new 3rd NEEAP. A cumulative reduction in CO₂ emissions following the implementation of energy renovation is estimated at 121.3 kt CO₂ in 2016 and 703.3 kt CO₂ by the 2020.

Continuing the implementation of the Environmental Protection and Energy Efficiency Fund programme and projects directed on small- and medium-sized energy efficiency projects (aid ceiling of 200,000 € in accordance with the de minimis rule - [Link](#)), with a greater volume covered, that is, a greater number of projects.

These government schemes are in place to contribute to the reaching of the objectives of the strategies and plans and they are directly linked to their 2020 goals.

According to the data acquired in the Environmental Protection and Energy Efficiency Fund (EPEEF), the envisaged total of 25 million HRK (≈3.3 million EUR) was exceeded and there has been substantial interest in the project. EPEEF has, as of October 2014, approved:

- 43.6 million HRK (5.8 million €) for 75 buildings
- 4 million HRK (0.5 million €) for 10 projects in commercial services sector

1.1.8. The 2014 – 2015 Energy Renovation Programme for Public Sector Buildings

Current status of the project (November 2014) has a total of 4 Energy Performance Contracts (EPC) for 8 buildings with capital expenditure in excess of 23 million HRK (≈3 million EUR) have been signed as of end of October 2014. Total area covered under signed contracts is 31,037 m².

The Agency for Transactions and Mediation in Immovable Properties (APN), which is authorised by the Government of the Republic of Croatia to implement the project, has published 20 public procurement notices as of end of October 2014.

There are currently verified terms of reference and/or energy audits for a total of 297 public buildings.

The Programme is, in its essence, ESCO/EPC based co-financing mechanism. Total of 160 million HRK (≈21 million €) has been allocated for 40% of eligible costs financing based on co-financing agreement signed between APN and the Environmental Protection and Energy Efficiency Fund (EPEEF).

Based on the progress made, the Programme is lagging behind targets set for 2014. Out of 150 notices of public procurement procedure planned to be published by APN in 2014, as of end of October 2014 total of 20 notices of public procurement procedure have been signed, and out of that 4 EPCs have been signed.

1.1.9. The 2014 – 2020 Energy Renovation Programme for Residential Buildings

The Energy Renovation Programme for Residential Buildings has two important subprogrammes. For both the **multi-apartment building energy renovation subprogramme (MAB)** and the **family houses energy renovation subprogramme (FH)**, there is a grant-based co-financing mechanism available from the Environmental Protection and Energy Efficiency Fund (EPEEF).

In the case of MAB, EPEEF co-finances up to 40% (based on certain socio-economic criteria – 60 or 80%) of investments with an absolute amount of 1.4 million HRK (≈182,768 EUR) per project, corresponding to 40% of total investment. Based on the available data from the EPEEF, the MAB subprogramme has yielded huge interest. Envisaged 20 million HRK (≈2.7 million EUR) have been exceeded, and Programme has resulted, as of October 2014, in allocation of total of 44.2 million HRK (≈5.8 million EUR).

EPEEF has, as of October 2014, approved for MAB:

1. > 2.2 million HRK (0.3 million €) for energy audits and certificates for total of 447 buildings
2. > 8 million HRK (1 million €) for project design for total of 245 buildings
3. > 34 million HRK (4.5 million €) for energy renovation for total of 82 buildings

For FH, envisaged 50 million HRK (≈6.7 million €) – 25 million for EE projects and 25 million for RES projects in family houses have been exceeded.

EPEEF has, as of October 2014, approved for FH:

1. > 112 million HRK (15 million €) for EE projects for 3.400 houses
2. > 43 million HRK (5.7 million €) for 2.600 RES projects

1.2. Legislation

Since 2007 Croatia has undergone a long way in development of EE and RES legislation. Progress made has resulted in creation of regulatory framework completely harmonized with EU legislation. Almost all European relevant Directives have been transposed into Croatian legislation, including building regulation, mandatory energy certification of buildings (currently there are more than 50,000 certified buildings), mandatory energy labelling of household appliances and energy related products. Also, detailed legislation was adopted that provides basis for national financing schemes for EE and RES.

Following list depicts official documents that can be considered to be underlying basis of legislative framework for EE and RES investments in Croatia.

1.2.1. Act on Energy Efficiency

The Act is developed in accordance with the European Directive 2012/27/EU from 25th of October 2012 on energy efficiency. The Act defines the system that will fulfil obligations and calculation of energy savings. It defines the national coordination body for energy efficiency. This body ensures systematic plans for enhancement of energy efficiency in Republic of Croatia and monitors implementation of energy efficiency projects in Croatia through special monitoring and verification tool developed by the Government. Environmental Protection and Energy Efficiency fund is responsible for financing EE measures and Ministry of Economy for overall implementation. National, regional and local planning is highlighted through various mandatory Plans and Programs. Obligations for energy distributors and providers are stipulated. The Act defines the energy performance contracting as a financing mechanism for implementation of energy efficiency measures in buildings. Technical regulations and ordinances that specify technical and implementation procedures have yet to be passed, as previous were repealed together with old Act on Efficient Utilization of Energy in Final Consumption.

https://vlada.gov.hr/UserDocsImages/Sjednice/2014/183_sjednica_Vlade/183 - 1.pdf

1.2.2. Building Act

This Act regulates the design, construction, operation and maintenance of buildings and the implementation of administrative and other procedures in this regard. Main focus is to ensure the protection and development of the area in accordance with the national and regional planning. One of the main focus of Building act is to transpose Energy Performance of Buildings Directive (EPBD II) that includes minimal energy requirements, integrated renewable sources and energy certification of buildings. Technical Regulation on Rational Use of Energy and Thermal Protection in Buildings provides strict technical requirements for new buildings and buildings going through refurbishment that include building envelope and energy systems (HVAC, DHW and lighting). It also proscribes the need to assess the possibility of alternative energy supply systems. Ordinance on Energy Auditing of Building and Energy Certification provides the method and conditions of implementation of energy audit in buildings and regular inspections of the heating and cooling system. The contents of the reports, the way of energy certification, content and design of the energy certificate and criteria for low-energy buildings is also provided.

OG 153/13 http://narodne-novine.nn.hr/clanci/sluzbeni/2013_12_153_3221.html

1.2.3. Act on energy efficiency in the final energy consumption (OG 152/08, 55/12, 101/13, 14/14)

The aim of this Act is achieving the goals of sustainable energy development: reducing the negative environmental impact of the energy sector, improving the security of energy supply, meeting the needs of energy consumers and the international obligations of the Croatian in the area of reducing greenhouse gas emissions by promoting the use of energy efficiency measures in the sectors of final energy consumption.

OG 152/08 http://narodne-novine.nn.hr/clanci/sluzbeni/2008_12_152_4159.html

OG 55/12 http://narodne-novine.nn.hr/clanci/sluzbeni/2012_05_55_1358.html

OG 101/13 http://narodne-novine.nn.hr/clanci/sluzbeni/2013_08_101_2275.html

OG 14/14 http://narodne-novine.nn.hr/clanci/sluzbeni/2014_02_14_298.html

1.2.4. Regulation on energy auditing and energy certification of buildings (OG 48/14)

This Regulation describes the procedures on how to conduct an energy audit of building and energy certification of buildings. It describes the design of energy certificate, energy management of buildings with energy and water consumption, etc. The Regulation also defines which buildings have to be certified and for which buildings energy audit is obligatory. It describes the energy systems that have to be analysed through an energy audit. It also defines energy classes of residential and non-residential buildings.

OG 48/14 http://narodne-novine.nn.hr/clanci/sluzbeni/2014_04_48_929.html

1.2.5. Regulation on energy audits of constructions and energy certification of buildings (OG 81/12, 29/13, 78/13)

This Ordinance implements energy audits of buildings to determine energy performance and energy management of buildings, measures to improve energy efficiency and assessment of cost-effectiveness for implementation of measures and implements energy certification of buildings.

Energy certificates are obligatory for public buildings or part of the building of mixed use that is an independent functional unit used for a public purpose or total useful floor area over 500 m², and from July 9, 2015 above 250 square meters. Any other building or its independent functional unit that is under construction or is intended for selling must have an Energy Certificate. Units rented or leased have obligation to provide energy certificates by December 31, 2015 at the latest.

OG 81/12 http://narodne-novine.nn.hr/clanci/sluzbeni/2012_07_81_1906.html

OG 29/13 http://narodne-novine.nn.hr/clanci/sluzbeni/2013_03_29_518.html

OG 78/13 http://narodne-novine.nn.hr/clanci/sluzbeni/2013_06_78_1616.html

1.2.6. Technical regulation on rational use of energy and thermal protection of buildings

This Technical regulation gives an overview on technical characteristics of buildings that are being developed or are being refurbished. It defines thermal requirements in details for each building category (residential buildings, non-residential buildings, etc.) and also energy requirements for heating, cooling, ventilation,

preparation of hot water and lighting system.

OG 97/14 http://narodne-novine.nn.hr/clanci/sluzbeni/2014_08_97_1938.html

OG 130/14 http://narodne-novine.nn.hr/clanci/sluzbeni/2014_11_130_2457.html

1.2.7. Technical regulation on energy economy and heat retention in buildings (OG 110/08, 89/09, 78/13, 90/13)

This Technical Regulation prescribes :

- Technical requirements for the rational use of energy and thermal protection to be met during the design and construction of new buildings, and the use of existing buildings that are heated to an internal temperature higher than 12 °C
- Technical requirements for the rational use of energy and thermal protection to be met in the design of reconstruction of existing buildings that are heated to an internal temperature higher than 12 °C
- Other technical requirements for the rational use of energy and thermal protection of buildings
- Technical characteristics and other requirements for certain construction products to be installed in the building for the purpose of rational use of energy and thermal protection and conformity assessment of the product with those requirements
- contents of the building design in relation to the rational use of energy for heating and cooling and thermal protection
- Content of the required thermal energy for heating and thermal energy for cooling buildings
- Maintenance of the building in relation to the rational use of energy and heat protection.

http://www.eihp.hr/hrvatski/pdf/zakoni/Tehnicki_propis_o_rac.up.en..pdf

1.2.8. Regulation on requirements for eco-design of products related to energy

Regulation establishes a framework for the setting of EU eco-design of energy-related products in order to ensure the free movement of these products in the internal market.

Outlines requirements to be met by products associated with energy covered by implementing measures, to be placed on the market and/or put into use. Contributes to sustainable development by increasing energy efficiency and the level of environmental protection, while at the same time increasing the security of energy supply.

http://narodne-novine.nn.hr/clanci/sluzbeni/2011_09_101_2075.html

http://narodne-novine.nn.hr/clanci/sluzbeni/2011_09_101_2074.html

http://narodne-novine.nn.hr/clanci/sluzbeni/2011_09_101_2073.html

http://narodne-novine.nn.hr/clanci/sluzbeni/2011_09_101_2072.html

http://narodne-novine.nn.hr/clanci/sluzbeni/2011_09_101_2071.html

1.2.9. Regulation on contracting and implementation of energy services in the public sector (OG 69/2012)

This regulation regulates the procedure for performing energy services in the public sector and thus ensure that energy efficiency improvement measures for public buildings sector are performed without any additional budgetary spending of the owner/user.



OG 69/2012 http://narodne-novine.nn.hr/clanci/sluzbeni/2012_06_69_1617.html

1.2.10. Government Decree on the bodies in management and control systems for the use of European Social Fund, The European Fund for Regional Development and Cohesion Fund

Still not valid and adopted by the Croatian Parliament. It defines Managing Authority and Intermediate Body Level 1 and/or Intermediate Body level 2

[http://www.mrrfeu.hr/UserDocsImages/Savjetovanje sa zainteresiranom javno%A1%C4%87u/Uredba o tijelima u sustavu upravljanja i kontrole_14072014.docx](http://www.mrrfeu.hr/UserDocsImages/Savjetovanje%20sa%20zainteresiranom%20javno%20A1%20C4%87u/Uredba%20o%20tijelima%20u%20sustavu%20upravljanja%20i%20kontrole_14072014.docx)

2. DEVELOPMENT OF TERRITORIAL OPERATIONAL PLANS

According to modern understandings the planning on national, regional or local level is one of the key presumptions for a balanced, quality and sustainable development in the energy sector, as well as in other sectors. Adequate energy planning on a local level determines good starting points for decentralization, safety of supply, development of competitiveness, rational using of energy resources and environment protection.

The making of a sustainable energy development plan of the certain territory is based on the analysis of various energy supply scenarios so all the possibilities of a sustainable energetic development could be taken into account.

In order to examine all possibilities in a territorial operational plan it is indispensable to develop an integrated approach which will elaborate and compare all the possible scenarios of a future energy system on certain territory. This methodological concept is especially oriented towards the analysis of economic, ecological and energy components of each individual scenario; the methodological concept at the same time develops and embeds the guidelines based on application of Demand Side Management (DSM) and Least Cost Planning (LCP). The integrated approach is composed of several key components.

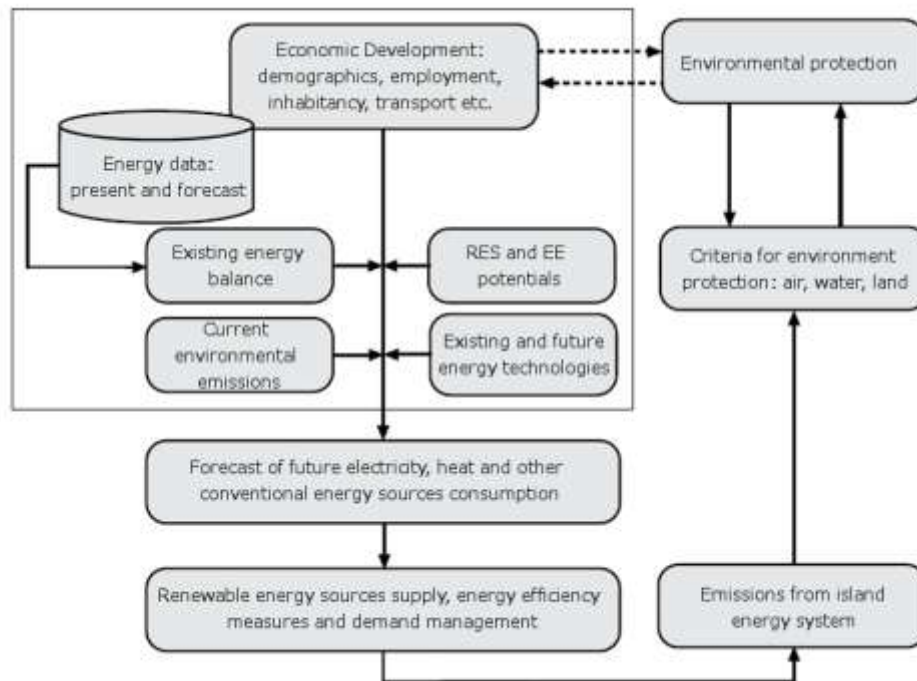


Figure 1 Methodological concept of integrated energy planning

The analysis of existing and predicting the future needs for energy is the starting point for implementation of other energy analysis. It is necessary to focus on this segment during the process of elaboration of energy plan. Methodological concept for identification of energy needs is based on the "bottom-up" approach according in which characteristics of energy consumption at the consumers, forms of energy and using of technology are analysed separately for consumption in each of the sectors. "End-use" consumption is divided in two

categories: thermal consumption for heating, cooking and preparation of hot water and non-thermal consumption for household appliances, air cooling and similar.

In order to implement the previously described analysis it is necessary to collect and analyse a series of data and facts, for example, economic development indicators, available statistic data at national and local level as well as data on energy consumption for certain categories of consumers that are collected from the companies which distribute energy.

Future energy needs are also modelled in the way that special development parameters are analysed which determines energy consumption at the very places of consumption and according to certain consumption sector. Unlike the analysis of existing final future consumption needs for energy show the real energy that is necessary to fulfil certain needs such as thermal, non-thermal and cooling needs.

Projections of future consumption needs have to be modelled using demand side energy models such as MAED (Model for Analysis of Energy Demand), LEAP (Long Range Energy Alternatives Planning System) or similar. The use of energy models is important in order to incorporate relationships between different energy efficiency measures into reduction of final energy consumption, change of consumer behaviour on the need for useful energy, or technological advances on the need for final energy.

The total amount and structure of final energy consumption also influences the total CO₂ emissions of a specific territory. Model of renewable energy sources usage should be composed of special models for each of the energy forms together with its energy-economic-ecological characteristics. Pursuant to the input constraints (for example constraints to CO₂ emissions), results of such analysis should show potentials of each renewable energy source including its economic evaluation, as well as possible needs for incentives and support. Model of energy efficiency measures should be the optimization model that enables the presentation of each measure with complete energy-economic-ecological characteristics per sectors within energy system. Results of such analysis show the potential of each measure through possible realized savings and through economic criteria (incentives).

Expected options of energy supplies are usually shown according to the previously defined future scenarios that analyses various energy perspectives, including various combinations of technology and their application. Through more scenarios, it is possible to better describe the development and impact of energy system to the island area, and an energy plan can be done in compliance with the aims of sustainable development such as improvement of energy efficiency and use of improved technologies for energy supply. The development of the scenario is also characterized by the analysis of the environment impact and equal distribution of resources.

In order to include all stakeholders in the energy planning process the citizen participation approach is strongly encouraged. After the initial data collection and preliminary results are obtained the workshop with all interested citizen groups and local authorities should be organized as to include different opinions and aspirations for future development of respective local communities.

In order to achieve goals and milestones set in the long-term strategies it is important to transpose those aims into enforceable tasks which are elaborated and described in more details in implementation plans. That way strategies provide long-term outlook and framework under which operational plans give set of specific actions which lead to a given goal (reduction of energy consumption, increase of share of renewables, reduction of CO₂ emissions).

3. PLANNING OF SUSTAINABLE URBAN DEVELOPMENT

Currently 60-70% of final energy consumption in cities is used for buildings and mobility and today considerable reductions of energy consumption in those sectors are possible due to technological innovations and changes of thinking and urban planning paradigms. Crucial aspect of that approach is a functional cooperation between actors and resources from both supply side (utilities, grid operators, energy suppliers) and demand side (citizens, companies, industry, government). This cooperation is best analyzed and later utilized through more integrative planning which takes into account economic development of specific territories, its natural resources and climatic conditions, available technological developments and existing human capital. Creative use of existing natural conditions and implementation of appropriate technology during the planning and construction can significantly reduce the need for energy later on, during the operational phase.

4. ENERGY MANAGEMENT

The main objective of sustainable energy management in the building sector is the achievement of the best possible living and working comfort while ensuring minimal costs. Energy efficiency experts examine the effectiveness of the system and implement measures for lowering the energy consumption. Energy management includes:

- energy surveys and data collection for making decisions on measurements achieving effective energy and water consumption,
- preparation of analyses and proposals for additional measures for achieving potential savings with a calculated period of return,
- expert technical and financial consulting,
- ensuring funds for the implementation of measures for effective energy and water consumption,
- implementation of measures for lowering energy and water consumption,
- optimisation of energy and water consumption in terms of the capabilities of existing equipment,
- implementation of an energy accounting and monitoring system,
- performing regular maintenance and measurements of the effects of measures for effective energy and water consumption,
- maintaining of the required documentation and ensuring minimum standards and legislative requirements

4.1. Project "Removing barriers to energy efficiency in Croatia"

The project "Removing barriers to energy efficiency in Croatia" (EE Project) was initiated in 2005. The main objective of EE project was the removal of key barriers for implementation of feasible procedures and technologies for improvement of energy efficiency (EE) in the residential and service sectors in Croatia, which are currently responsible for more than 40% of total energy consumption in Croatia. The primary focus and goal of the project was to implement systematic energy management within the buildings of Croatian public sector, in order to reduce unnecessary consumption of energy and water and to encourage the use of EE products and systems. UNDP Croatia was the implementing agency, and EE Project was implemented on behalf

of Ministry of Economy (MoE), and in later phase on behalf of Ministry of Construction and Physical Planning (MoC).

During the 8 years of continuous EE Project implementation, savings in millions of kWh of energy and millions of HRK were achieved. The analysis performed on more than 1,500 public sector buildings has shown that cumulative expected savings on all buildings that were included in EE Project for 2011, 2012 and 2013 amounted to almost 150 million HRK (≈ 26.8 million USD ≈ 19.6 million EUR).

By the end EE project in 2013 the following main results have been achieved:

- All of the 147 city mayors and county prefects have signed the „Energy Charter" through which they declaratively expressed their commitment to implement the EE measures and to promote RES.
- 102 out of 127 cities and all 20 counties have signed the Letter of Intent and were actively involved in project implementation.
- 85 cities, 16 counties and all of the ministries including 125 institutions within the ministries as well as 15 other governmental institutions have established EE teams.
- More than 1200 energy audits have been implemented. The result of these activities is the implementation of more than 260 different investment-projects with a total investment value of more than 200 million HRK.
- More than 29,000 persons have received education or training through various workshops covering different aspects of energy efficiency and energy management (e.g. energy management in general, establishment of the building register, utilization of EMIS, Energy advisors course, etc.)

Technical assistance to different ministries and other public institutions has been continuously provided, and the most important was the technical assistance to Ministry of Economy in development of existing and new strategic documents and legal framework including development of Energy Efficiency master plan for 2008-2016, Energy strategy of Republic of Croatia, First National Energy Efficiency action plan (2008-2010), Second National Energy Efficiency action plan (up to 2013), Law on Efficient end use of Energy and Several others sub laws and technical documents.

4.2. Energy Management Information System – EMIS results

Energy Management Information System (EMIS) is an innovative application that significantly facilitates monitoring, analysis and comparison of energy consumption data that was developed during the implementation of EE project.

The EMIS is in fact a web-based application that provides easy access to data on consumption and all the energy costs, a simple graphical and tabular display and a listing of the data and results of the conducted analysis to any user with user account and access to internet, regardless of their physical location. In addition EMIS simplifies data preparation for local plans for energy efficiency improvement and enables easy monitoring of achieved energy savings and preparation of reports.

The data entered in EMIS form a national public building register and an energy consumption database that includes administrative buildings, hospitals, schools, kindergartens, social institutions and other public buildings owned or used by cities, counties and the Government of Republic of Croatia.

By the end EE project in 2013 the following main results have been achieved:

- EMIS is active in 20 ministries, 20 Counties, 114 cities, 24 municipalities, and 25 other state administration bodies.
- EMIS has more than 1490 active accounts
- Almost 8,500 public buildings are included in EMIS; this is more than 85% of all of the buildings used by public sector in Croatia.
- Identified more than 10,900 energy consumption units, a functional units (parts of the building, self-standing buildings or complexes of buildings) for which energy and water consumption is measured
- EMIS contains 1.1 million energy and water invoices and 4.6 million direct meter readings out of which majority is from 46 installed energy consumption remote reading systems that cover more than 330 metering points.
- EMIS provides an easy access to simple graphical and tabular display and a listing of the energy and water consumption data for any user with internet access and user account.

5. MONITORING EXISTING SITUATION

The Center for Monitoring Business Activities in the Energy Sector and Investments (CEI) has developed a System for the Measurement and Verification of Energy Savings (SMIV), where all plans and implemented energy efficiency measures are integrated. The public administration, companies with energy efficiency contracts and the Environmental Protection and Energy Efficiency Fund are obligated to insert all of the implemented energy efficiency measures in the system. With every implemented measure there is a way to report and verify actual energy savings, which will therefore allow to make a comparison between the foreseen and actual energy savings for each measure. This kind of monitoring process is a pre-condition for systematic and consistent measurement in savings accomplished on the state level. The SMIV system has been released in June 2014.

The fourth chapter also describes the Energy Management Information System, which is also an important tool for monitoring of current trends in the building sector as far as energy efficiency is concerned.

6. REQUIRED CONTROLS

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 started in 2014 although has been established by regulation in 2012. Three step control system is prescribes: 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 m² have displayed the energy certificates.

In the fifth chapter there is a description of another control mechanism that is establish to verify, monitor and in a way control the savings that are made by certain investment in energy efficiency and renewable energy source. Another is described in the fourth chapter, it is a tool that suits as energy management system and it is an important part of control process.

7. USERS EDUCATION AND STAKEHOLDER MANAGEMENT

All members of a community have an important role in addressing the energy challenges in the building sector. Stakeholders' participation is the starting point for stimulating the behavioural changes that are needed to complement the technical actions provided by the territorial operational plan. The views of building owners and inhabitants should be known before the strategic plan is well-developed. Through the development of local initiatives of building owners, tenants and energy representatives, pressure can be made on political authorities to implement the targets set by the national strategies and action plans. Adapt city and municipality administration can allocate sufficient human resources and make sure adequate administrative structures are in place. Local administration has to identify the key stakeholders and inform them about the process of energy refurbishment and renovation. One important aspect is education – building owners and residents have to know the full extent of information about the implementation of energy efficiency measures and how this will increase energy savings (therefore, the financial gain) in the long-term from an economic and environmental perspective.

Information and education about energy renovation and refurbishment can be achieved through public events, workshops and training initiatives organized and presented in target communities; by making available online training materials, manuals, slides, forecast reports and all other useful information and through other media (handbooks, newspapers, leaflets...). The main stakeholder groups important for the development of energy renovation in buildings are:

- local administration
- municipal departments and companies (municipal energy utilities)
- supporting structures and energy agencies
- financial partners (banks, ESCOs)
- energy suppliers
- building owners
- residential representatives, tenant unions

The tools for achieving the successful education of all the stakeholders involved are high level meetings with key persons of the local administration (e.g. mayor, city council members, head of technical office or other relevant municipal offices/departments), open meetings with key people and organizations (e.g. political parties, Municipal departments, financial partners, building owners), questionnaire-based and/or telephone interviews with groups of citizens about the implementation of energy renovation programmes.

There were many successful programmes that finished in the recent years. One of them is implementation of energy efficiency info centre in many Croatian cities. The programme created a network of information centres around Croatia to give citizens hands-on advice on making their homes more energy-efficient. These information centres reflect a unique partnership: counties and towns provide the space and staff, while private-sector producers of construction materials and appliances donate demonstration equipment. Energy efficiency info centre is a place where citizens can get all the necessary information about the implementation of energy efficient technologies in their homes.

The first Energy efficiency info centre was opened in 2009 in the City of Zagreb. EE info centre is situated in main city hall and demonstrate importance of energy, environment and climate issues for city and citizens. In the City of Zagreb, information is also provided to citizens by special info galleries (situated in five buildings of city administration) and 15 info panels that are situated around the city blocks. Info panels are used for



providing information about new energy events such as Zagreb Energy Week, new procurement for grant dedicated to energy project of citizens, advice about energy saving etc.

Since 2009, in many Croatian cities the Energy efficiency info centres have been opened. One of them is in Zadar, also houses a Solar Education Centre, which provides training in solar technologies and graduated its first class of certified assemblers of solar water heaters in June 2011.

The City of Zagreb uses several tools for informing citizens about energy efficiency, renewable energy sources and environment protection. Some of them are webpage and facebook.

Webpage www.eko.zagreb.hr serves as a tool to promote energy efficiency and informs citizens on energy, environmental and climate change issues. The webpage provide information what city administration doing for sustainability of the City of Zagreb in energy and environment field. Also it provides information on different programmes and events that are organized by different associations and green organizations.

The Facebook of the City Office for Energy, Environment and Sustainable Development <https://hr-hr.facebook.com/pages/Eko-Zagreb/344901602211565is> set up as platform for motivate discussion about energy issues and opportunity for citizens to say their opinion and suggestion.

8. FINANCING EE AND RES IN BUILDINGS

Financing models for energy efficiency refurbishment project in practice assume partial or full external financing. This step in the energy efficiency project is as time consuming and requires expertise as well as energy efficiency assessment and performance of works. Even so, it is not equally observed in the project planning phase. Financial institutions still haven't opened funds to energy refurbishment projects due to long return of investment. New improved value of public building has no market value and this is not attributed to the project regardless if the loan is requested by the investor or public body.

In order to change market status of energy efficiency projects first step would be to introduce obligatory energy management in public buildings with evaluation of energy, economy and ecology efficiency. This would provide demand side management i.e. reliable purchaser on the energy efficiency market. Designers and Contractors should team up for applying to energy refurbishment projects and boost their vocational expertise in use of new materials and technologies and also improve their knowledge on energy market, i.e. become reliable service provider. Financial institutions could benefit from positive marketing when granting funds for public energy efficiency projects without losing their profit. If the 3 major stakeholders make suggested improvements number of energy efficiency projects could rise.

The following five short summaries depict five most important financing institutions in the field of energy efficiency (in the building sector) – Croatian Bank for Reconstruction and Development (HBOR), Environmental Protection and Energy Efficiency Fund, European Bank for Reconstruction and Development (EBRD), European Investment Bank (EIB) and the Green for Growth Fund (GGF).

8.1. Croatian Bank for Reconstruction and Development (HBOR)

HBOR is a development and export bank founded for the purpose of assigning credits to Croatian reconstruction and development projects. Special financing programmes were developed with financial and investment support for environmental protection, energy efficiency and RES utilisation projects. It is possible to assign credits directly or through banks that cooperate with HBOR.

Programme	CREDIT FINANCING FOR ENERGY RENEWAL OF BUILDINGS
Programme Objectives	<ul style="list-style-type: none"> • adaptation and reconstruction of buildings • equipment and devices
Programme Users	<ul style="list-style-type: none"> • energy service providers (commercial and manufacturing companies that improve the energy efficiency of public sector buildings, chosen through public tenders) • energy service clients (state administration, local and regional self-governing units; institutions, agencies, schools and hospitals) • all commercial and manufacturing companies that invest in energy efficiency
Type of Resources	<ul style="list-style-type: none"> • credit – through commercial banks² or by direct credit financing
Total budget for each project	<ul style="list-style-type: none"> • maximum credit amount is not limited, depending on the possibilities of financing by HBOR, specific investment programme, credit rating of the credit receiver, project viability on the basis of the technical and financial feasibility confirmed by APN or a technical commission, and value and quality of offered security instruments • credit is authorized in HRK with a currency clause, HBOR can consider granting credit up to 50% of pre-account investment value without VAT
Financing Conditions	<ul style="list-style-type: none"> • interest rate: 4% with a possibility of decrease • grace period: 1 year • repayment: up to 14 years including the grace period

More information at: www.hbor.hr

8.2. Environmental Protection and Energy Efficiency Fund

Environmental Protection and Energy Efficiency Fund was founded with the purpose of co-financing and supporting national energy programs, achieving the energy efficiency and renewable energy objectives set by the Republic of Croatia and by the European Commission. Grants by the Fund are assigned on the basis of a public tender published in the Official Gazette and on the Fund's website.

The following tables show examples for Public Calls for 2014 with corresponding budgets and their

1. Croatia banka d.d., Zagreb
2. Erste & Steiermärkische bank d.d., Rijeka
3. Hrvatska poštanska banka d.d., Zagreb
4. Hypo Alpe-Adria-Bank d.d., Zagreb
5. Istarska kreditna banka Umag d.d., Umag
6. OTP banka Hrvatska d.d., Zadar
7. Podravska banka d.d., Koprivnica
8. Privredna banka Zagreb d.d., Zagreb
9. Societe Generale - Splitska banka d.d., Split
10. Slatinska banka d.d., Slatina
11. Zagrebačka banka d.d., Zagreb
- 12.

implementation areas in the building sector.

FINANCIAL SUPPORT FOR SUSTAINABLE CONSTRUCTION			
Public Tender	Total budget for the public tender (HRK)	Maximal amount per contract (HRK)	Purpose
Public call for territorial administration for mutual co-financing of energy efficiency programs	25.000.000	1.000.000	The call is for the territorial administration (TA). TA has to assign the obtained grants from the Fund, on the basis of their own tenders, to the citizens in order to implement energy efficiency measures on family houses.
Public tender for co-financing energy efficiency projects in the building sector	25.000.000	1.400.000	Tender applies to legal persons (apart from the state administration that is redirected to Refurbishment Program implemented by the ATMIP) for the reconstruction of buildings according to energy efficiency principles.

ENERGY REFURBISHMENT PROGRAMME FOR MULTI-STOREY BUILDINGS – IMPLEMENTATION			
Public Tender	Total budget for the public tender (HRK)	Maximal amount per contract (HRK)	Purpose
Public tender for the co-financing of energy refurbishment of multi-storey buildings	15.000.000	1.400.000	The call is for the building managers who in the name of co-owners manage the energy refurbishment project. Supported measures include: building envelope insulation, replacement of carpentry, reconstruction of common technical building systems (heating, ventilation, lighting) and the integration of individual measurement of heat energy consumption.

CO-FINANCING OF ENERGY AUDITS, ENERGY CERTIFICATES AND PROJECT DOCUMENTATION			
Public Tender	Total budget for the public tender (HRK)	Maximal amount per contract (HRK)	Purpose

Public tender for energy audits and energy certificates in multi-storey buildings	1.500.000	200.000	The call is for the building managers who in the name of co-owners manage the implementation of energy certificates or main energy refurbishment projects.
Public tender for the energy refurbishment project documentation for multi-storey buildings	3.500.000	200.000	

More information at: www.fzoeu.hr

8.3. European Bank for Reconstruction and Development

European Bank for Reconstruction and Development is the youngest international financial institution whose mission is to primarily finance projects in the private sector that cannot find a source of financing on the market, but only those projects that assist the transition towards market economy and a democratic society. EBRD in Croatia has the possibility of granting credit directly or to grant credit through commercial banks. EBRD usually grants credit to larger projects (whose value is at least 3 million EUR), while the other projects are financed through commercial banks. In order to grant credit to larger projects, EBRD considers the credit worthiness of the client and the project profitability, after which the credit is determined with the help of a financial model. Along with the credit, EBRD offers non-refundable assets to end users (certain percentage of credit sum) that reduces the credit principal. The end user will have the right to non-refundable assets if certain conditions have been met (e.g. a specific amount of CO₂ reduction has been achieved, reduction in energy consumption).

One credit line is currently dedicated to financing energy efficiency projects and renewable energy sources in Croatia: *Western Balkans Sustainable Energy Financing Facility II (WEBSEFF II)*. Credit is distributed through one of the following commercial banks that determine their own commercial conditions:

- Privredna banka Zagreb (budget: 20 million EUR)
- Zagrebačka banka (budget: 20 million EUR)
- Erste & Steiermärkische Bank (budget: 10 million EUR)

Programme	Western Balkans Sustainable Energy Financing Facility II (WEBSEFF II)
Programme Objectives	<ul style="list-style-type: none"> • energy efficiency (energy refurbishment of buildings, energy efficiency increase)
Programme Users	<ul style="list-style-type: none"> • public and private sector
Type of Resources	<ul style="list-style-type: none"> • credit, grant, free technical assistance
Total budget for each project	<ul style="list-style-type: none"> • total budget for Croatia is 50 million EUR, maximum amount of 2.5 million EUR per project for public sector, 2 million EUR for private sector
Financing Conditions	<ul style="list-style-type: none"> • determined by the bank individually per every credit line user

More information at: www.ebrd.com

8.4. European Investment Bank

European Investment Bank (EIB) is the development bank of the European Union whose role is to contribute to the integration and the balanced development, along with economic and social cohesion of EU Member States, while similar projects are implemented outside the EU. EIB in Croatia cooperates in project financing of public and private sector, by direct financing or through commercial partner banks. EIB directly finances only projects with the total budget higher than 25 million EUR, while all the smaller projects are financed through commercial banks. Credit assets and the corresponding non-refundable assets are for the purpose of energy efficiency and renewable energy financing exclusively distributed through Raiffeisen and Erste & Steiermärkische Bank.

Programme	Green Initiative (Raiffeisen Bank)
Programme Objectives	<ul style="list-style-type: none"> energy efficiency renewable energy sources
Programme Users	<ul style="list-style-type: none"> small and medium enterprises (SMEs)
Type of Resources	<ul style="list-style-type: none"> credit and non-refundable assets
Total budget for each project	<ul style="list-style-type: none"> maximum amount is 25 million EUR non-refundable assets are determined at 12% of the total credit amount (maximal amount is 1.000.000 EUR)
Financing Conditions	<ul style="list-style-type: none"> determined by the commercial bank in agreement with EIB, interest rate is more favorable than the market interest rate

Programme	Energy Efficiency Financing – Erste & Steiermärkische Bank
Programme Objectives	<ul style="list-style-type: none"> energy efficiency
Programme Users	<ul style="list-style-type: none"> small and medium enterprises (SMEs) large enterprises public sector and other business subjects
Type of Resources	<ul style="list-style-type: none"> non-refundable assets
Total budget for each project	<ul style="list-style-type: none"> non-refundable assets at 15% of the credit principal minimal project cost is 40,000 EUR, maximum is 2.5 million EUR for production modernization (energy efficient technology) and 250,000 EUR for improving the energy efficiency of a building
Financing Conditions	<ul style="list-style-type: none"> conditions more favourable through usual commercial channels

8.5. Green for Growth Fund

The Green Growth Fund (GGF) was founded as a public-private partnership in December 2009 by the Reconstruction Loan Corporation (KfW) and the European Investment Bank (EIB) with the financial support of the European Commission, German Federal Ministry for Economic Cooperation and Development (BMZ) and

European Bank for Reconstruction and Development (EBRD). Two commercial banks, Privredna banka Zagreb (budget: 25 million EUR) and Zagrebačka banka (budget: 20 million EUR) have signed financing contracts with GGF.

Programme	Green Growth Fund (GGF)
Programme Objectives	<ul style="list-style-type: none"> • energy efficiency • renewable energy sources
Programme Users	<ul style="list-style-type: none"> • corporate clients • small and medium enterprises (SMEs) • households • industry • public sector
Type of Resources	<ul style="list-style-type: none"> • credit
Total budget for each project	<ul style="list-style-type: none"> • small projects: up to 500.000 EUR for projects that will result in a 15% reduction of CO₂ emissions or energy savings
Financing Conditions	<ul style="list-style-type: none"> • determined by the commercial bank

9. OTHER

The building sector has a huge environmental impact and the EU job market depends heavily on the construction sector. Buildings and construction consume a lot of natural resources and generate a lot of waste. The sector uses more than 50% of all materials extracted from the earth and generates more than 450 million tonnes/year of waste in the EU. Managing and disposing of old buildings is also problematic.

Examples of eco-innovation goals in the building sector:

- Environmentally-friendly construction materials and innovative manufacturing processes;
- Reducing material costs by using more efficient technologies, recycling, improving the material flow in the supply chain, substituting expensive materials for cheaper ones, outsourcing production or service activities, changing business model, developing more efficient technologies in-house
- Construction products and related processes that reduce consumption of resources, embodied carbon and production of by-product wastes.