

# PROJECT

## „ENERGY EFFICIENCY PROJECT IN CROATIA“ – AFTER 6,5 YEARS OF IMPLEMENTATION (JULY 2005 – FEBRUARY 2012)



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### Project summary:

The energy efficiency project in Croatia (EE Project) aims to increase citizens' awareness on the efficient use of energy and encourages the application of economically feasible and energy efficient (EE) technologies, materials and services in public and residential sectors in Croatia. The final aim is to reduce energy consumption and greenhouse gas emissions into the atmosphere.

The basis of the EE project is a complex process of behavioral change in energy users and energy management in the public and residential sectors. Change in behavior takes time, knowledge and motivation. The EE project achieves this by a combination of strategic approaches at the national level that create the right conditions to launch national programs and activities, and practical and professional assistance at the local and national levels. This, in turn, enables investments, which then initiate sustainable market development.

### The EE project evolved into three main national components:

1. The project „Systematic energy management in cities and counties of Croatia“ (SGE project) introduces systematic energy management in cities and counties by launching the application of energy efficiency principles for buildings owned or used by local or regional governments.
2. „Bringing your own house in order“ is a government program (HiO program) that introduces systematic energy management in ministries and other governmental bodies by launching the application of energy efficiency principles in buildings owned or used by the central state administration.
3. The systematic information and education of citizens correlated with the initiation of the transformation of the EE market mean a matrix of originally developed and implemented activities with intention to enable sustainable development of the EE market and ensure consistent planning, design and implementation of the EE measures in buildings.

### THE EE PROJECT CONCEPT: PUBLIC SECTOR AS A LEADER IN IMPLEMENTING ENERGY EFFICIENCY IN ITS OWN HOUSE

The skeleton of project intervention is capacity building for the application and implementation of the systematic and continuous energy management in all buildings within the public sector in Croatia. The EE project is developing a critical mass of human, organizational and procedural resources necessary for energy management as the basic condition for permanent change in habits regarding the use of energy and other resources necessary for the activities of the public sector. This approach has been recognized as one of the most ambitious in Europe. It is a remarkably complex, long-term and technically and financially demanding venture that encompasses the continuing education and technical support, as well as the organization and coordination of activities in more than 150 units of public administration (cities, counties, ministries) in Croatia. This same approach - which focuses on educating local experts both in the public and technical sectors, building managers, non-governmental organizations, and other local stakeholders - ensures that all sustainable capacities (e.g., the system for energy management) are in effect.

## WHY SYSTEMATIC ENERGY MANAGEMENT?

### A POTENTIAL FOR FINANCIAL SAVINGS ATTAINABLE BY AN IMPROVEMENT IN ENERGY EFFICIENCY IN URBAN AREAS

Energy costs in Croatia = 15% of GDP	
<b>GDP in Croatia in 2009</b>	<b>333 billion HRK (44 billion €)</b>
<b>Energy costs in Croatia in 2009</b>	<b>50 billion HRK (6,5 billion €) – 15 % of GDP</b>
<b>Of that</b>	<b>50% spent in cities (urban areas)</b>
<b>Or</b>	<b>25 billion HRK (3,25 billion €)</b>
<b>Potential of energy savings</b>	<b>30%</b>
<b>or</b>	<b>7,5 billion HRK (1 billion €)</b>
<b>= 2,25 % of GDP</b>	

### Status in 2005 (6,5 years ago):

- An incomplete legal framework in the area of energy efficiency
- Insufficient human and technical resources for energy management in the public sector
- The majority of data regarding buildings owned or used by cities, counties and ministries were incomplete, and provided no information on energy consumption and the cost of thereof
- A general absence of energy management in buildings
- Insufficient awareness of energy efficiency as an energy source, and inadequate knowledge on energy efficient products and technologies.
- Only two companies in Croatia had the professional capacities necessary to conduct energy audits in buildings

### KEY STEPS TO INTRODUCE ENERGY MANAGEMENT IN PUBLIC BUILDINGS:

A political decision on project implementation and a public declaration of an Energy policy and its aims	RESPONSIBILITY
Establishing and organizing an Office for energy management (EE team) within the organizational structure in public administration and local management	
Establishing the buildings' registry	DATABASE AND TOOLS
Using the Energy Management Information System (EMIS)	
The identification and implementation of measures that improve energy efficiency (Energy audits are the key instrument in identifying economically feasible measures in order to improve energy efficiency, and their implementation is recommended before initiating any investments)	STARTING INVESTMENT CYCLE AND ENCOURAGING MARKET DEVELOPMENT
Local promotion of a sustainable use of energy and the implementation of measures that improve energy efficiency in the public sector	
Training and capacity building (public administration, EE team, technical staff, employees)	EDUCATION
The implementation of the concept of the "Green Office" in everyday office activities	

## Results achieved after 6,5 years of a systematic implementation of project activities:

### Public policy:

- Energy policy in line with the EU energy policy; the National energy efficiency program adopted (NPPEU) 2008-2016; First national energy efficiency action plan (2008-2010); Second energy efficiency action plan is expected.
- The Energy charter signed by ALL city and county mayors in Croatia (127 cities and 20 counties), all 20 ministries actively involved in project implementation.
- In 2012, the core project team participated in drafting and consultative process preparation of amendments to the End-use Energy Efficiency Act. Direct project experiences regarding the need of structural changes in local, regional and national organizational structures and official engagement of qualified energy managers have been incorporated in the Act. The lack of energy managers in the structure has been identified as one of most important barrier to consistent implementation of EE measures in buildings.

### Human and technical capacities:

- Energy offices and Energy teams established in 68 cities and 15 counties with a total number of 373 employees and 30 employees in 10 ministries.
- The Building register established for approximately 10.000 buildings owned or used by the public administration in Croatia: a total number of 6612 buildings in 19 counties, 80 cities and 15 ministries have been identified so far.
- The Central information system for energy management – EMIS, a web application for monitoring and analyzing energy consumption in public sector buildings has been established.

### Building data:

- Data on energy consumption is collected for approximately one half of all buildings owned or used by the public administration in Croatia. More precisely, data on 5.481 buildings have been analyzed and input in EMIS in both national projects (local and regional governments as well as state administration). 4.474 buildings control their energy costs by checking their bills, while approximately 1.532 buildings monitor energy consumption by reading energy and water meters twice a week. The number of independent buildings that regularly control their energy costs by checking their bills is 1.422, while 1.035 buildings monitor energy consumption by reading energy and water meters twice a week. The system for automatic and remote metering has been implemented in 36 buildings. Data on all public buildings will be collected within the next 1.5 years, and the system will be administered by a relevant public body.

### Energy audits and investments, achieved savings:

- Some 15 companies in Croatia have the professional and technical capacities to implement energy audits.
- The EE project has carried out 1.126 energy audits in 30 cities and 7 counties. During this process, potential investments in energy efficiency measures that amount to 1.59 billion \*HRK have been identified. The potential for savings is 76.000.000 \*HRK per annum. In addition, the potential for a reduction in CO<sub>2</sub> emissions is 189.000 t per annum. 16 energy audits have been carried out in ministry buildings, and potential investments in energy efficiency measures in the amount of 90.200.000 \*HRK have been identified. The potential for annual savings amounts to 15.150.000 \*HRK, and a reduction in CO<sub>2</sub> emission of up to 5.000 t/per annum. The average simple payback period is 5,96 years.
- Within HIO program, in y2011 there are 24 energy certificates and another 64 energy audits for public buildings obtained, which is mandatory according to End-use energy efficiency national legislation. Also, detailed investment studies were done for 6 institutions, project documentation for various stages of preparation for reconstruction of 11 buildings, and project tasks for 18 objects have been done.
- At present, in 2012, the new Government works on preparation of Public buildings retrofitting program based on the outcomes of these energy audits.
- Croatian cities and counties have invested a total amount of 102.523.590 \*HRK in energy efficiency measures in 78 buildings. These measures have accomplished a cumulative reduction of 7.911 t in CO<sub>2</sub> emissions per annum.

### SGE:

The estimated annual savings as a result of the so called “no investment measures”, achieved primarily by changing the way energy systems are utilized, and by behavioral changes in users as a result of EMIS implementation, are as follows:

- Energy: 137.373 MWh
- Emissions: CO<sub>2</sub>: 38.074 t
- Energy cost: 64.589.000 \*HRK

### HiO

The “No investment measures” implemented in buildings owned or used by ministries have resulted in savings of 5.650.000 \*HRK by end of October, 2011 (around 2.000.000 Kn annually)

Additional EE measures that required investments in the amount of 4.000.000 \*HRK have resulted in financial savings of 15.600.000 \*HRK (around 10.000.000 Kn annually)

The cumulative financial savings in first 3 years of Program implementation are around 21.300.000Kn (with more than 4.000 t CO<sub>2</sub>). EE measures temporary in implementation in fourth year are going to bring this numbers much higher.

\*April 2012 UN exchange rate / 1 USD = EUR 0,753/ 1 USD = HRK 5,6

## Education:

Various educational programs have been developed that target both technical and non-technical staff – employees of the public sector and the building management sector.

Education		
Workshop/course	No. of participants (HIO)	No. of participants (SGE)
Green Office motivational workshops	5987	596
Workshops for the establishment of the Green Office	67	466
Course for energy advisors	199	389
Course for building's technical staff	226	474
Responsible staff	951	791
Technical and maintenance staff	792	2037
EMIS workshops	426	1095
<b>Total</b>	<b>8648</b>	<b>5848</b>

A TOTAL number of over 500 diverse workshops took place for over 14.000 attendees.

Following the activities that aimed to improve energy efficiency in public sector buildings, the need to introduce green procurement criteria became evident. The cooperation with the "Office for central public procurement in Croatia" put an emphasis on energy efficient, **green public procurement**, which would enable a broader and greater application of energy efficient products and technologies in public buildings. This cooperation is expected to contribute to the reduction of prices of energy efficient (EE) products and technologies.

The **Informative-educational activities** have been originally developed and systematically implemented since 2006. The first activity was to establish the project's web site ([www.energetska-efikasnost.undp.hr](http://www.energetska-efikasnost.undp.hr)), a free-of-charge telephone info line for citizens (0800 200 170), and initial EE info-points for citizens in Zagreb, Split, Osijek and Rijeka. Consequently, a comprehensive national informative-educational media campaign was carried out from January, 2007 to April, 2010. In November, 2010, a facebook profile was activated for Gaspar Energetic, the animated character popularized through the national informative-educational media campaign, which quickly accrued nearly 5.000 friends.

With the aim to systematically inform and educate citizens, as well as to enhance the transformation and sustainable development of the EE market, cooperation was established with producers and distributors of top-quality EE products and technologies. The collaboration of the EE project with partner companies ("EE pool") as well as local government resulted in the opening of 107 EE info-points in 47 cities and 12 counties in Croatia. These info points include: 36 EE Info-offices, 6 EE Info-centers, 37 EE Info-galleries, 5 EE Info-corners and 23 EE Info-displays. In addition, 8 EE info days took place on the main squares, parks, sea-fronts and central locations in Split, Vinkovci, Sisak, Dubrovnik, Kutina and Pula. The most modern and advanced EE products, technologies and systems available on the market were presented, and free energy advice was offered. Three international conferences were organized in Split, Zagreb and Dubrovnik, and a national one in the city of Komiža, on the island of Vis.



Along with the national media campaign, various PR activities were conducted, a systematic dissemination of information and educational publications took place, and a partnerships with the media evolved:

- More than 150 public events and press conferences took place;
- 209 educational programs were broadcast in television and radio programs in a total of more than 54 hours, and over 200 educational articles in the press and electronic media;
- 50 projections of the educational film „My EE city“ took place;
- 600,000 copies of the educational brochure „One Ton Challenge“ and 715,000 copies of the educational brochure „200 EE advices“ were inserted in daily newspapers. In addition, 50,000 copies of an educational packet containing a brochure and a DVD of an educational cartoon "Think of tomorrow" were inserted in children's magazines;
- The "Think of tomorrow" EE school hour was held for groups of students in more than 30 elementary schools. At the time, over 500 copies of the educational packet "Think of tomorrow" were distributed. When on the 5th of April, 2011, the EE school hour took place in the elementary school Marin Getaldić in Dubrovnik, the president of the Republic of Croatia, Mr. Ivo Josipović, personally participated in the event along with the rest of the students.

Numerous expert and informative-educational publications, guidebooks and brochures were prepared and published within the scope of the project. These were systematically disseminated to all target groups, and as a research conducted from 2007 until 2011 shows, knowledge on EE measures and products, as well as on the willingness to implement these same measures significantly improved among the public:

- the number of citizens who believe they can reduce energy consumption by implementing EE measure rose from 27.9% to 47.7%;
- the number of citizens who are familiar with the available EE products rose from 33.4% to 43.9%;
- the number of citizens who use energy saving light bulbs rose from 48% to 67.4%;
- the number of citizens who use grade A+ energy efficient appliances rose from 22% to 30.8%;
- the number of citizens who use windows with low-e insulated glass rose from 14.8% to 23.4%.

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