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Covenant of Mayors for Climate & Energy Eastern Partnership

Covenant of Mayors for Climate & Energy – Eastern Partnership

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Part 4

Establishment of Municipal Energy Management System (EMS) in the EU countries: legal and organizational aspects, succes stories of CoM signatories, issues to be considered

Energy Agencies in EU

- **Energy agencies and regions play an essential role as accelerators of the energy transition**. Together with regional authorities and departments they implement, coordinate and facilitate sustainable energy and environment policies.

- Since the 1990s, EU institutions recognized the importance of sub-national levels in policy-making and funding programmes that enabled energy agencies, regions and cities to develop and implement energy policies, benefiting their economic development. Initiatives like the Covenant of Mayors – Europe and ManagEnergy consolidated the partnership between the European Commission and regions, stimulating a bottom-up flow of data and policy recommendations. The European Parliament and the Committee of the Regions have also played important roles in recognizing the importance of sub-national entities in implementing the Paris Agreement.

Source: Fedarene.org

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Energy Agencies in EU

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- **Regions and their Energy Agencies are uniquely positioned to lead the energy transition** because of their close proximity to local communities, businesses, and policymakers, and the collaboration with a wide range of stakeholders.
- **Policy implementation:** They work with other governments to create a more coordinated and effective approach to policy implementation. They have consistently proven to be effective delivery agents for the EU's clean energy legislation.
- **Energy expertise:** Energy agencies have a deep understanding of the energy systems, technologies, and policies that drive the green energy transition. They provide product-independent, client-oriented advice for the best possible sustainable energy outcomes.
- **Local engagement:** Regions and their Energy Agencies can engage local communities, businesses, and policymakers, creating a sense of ownership and participation. This approach can increase public support for green energy initiatives and make the transition more sustainable.

Source: Fedarene.org

Energy Agencies in EU

- **Innovation:** They are often pioneers and drivers of the energy transition, continuously developing new services, tailored solutions, and ways of working. Experimenting with new technologies and business models, their diversity of approaches offers a wealth of experience to be shared and further developed.
- **Education and training:** They provide education, training, and awareness raising on sustainable technologies and financing. They promote the benefits of the green energy transition.
- **Facilitation and project aggregation:** They provide facilitation, advice, and technical assistance for sustainable energy projects, including project development, design, and implementation. They are in an ideal position to act as aggregators of local projects to upscale local initiatives, as well as replicate successful approaches across their territory.

Source: Fedarene.org

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Energy Agencies in EU

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Energy Agencies in Slovenia

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LEA Pomurje
Lokalna energetska agencija za Pomurje

LEA
Spodnje Podravje

LEAD
Lokalna energetska agencija Dolenjska - Posavje - Bela krajina

leag
Lokalna energetska agencija Gorenjske

GOLEA

energap
Energetsko podnebna agencija za Podravje

KSSENA

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Energy Agencies in Slovenia - consortium of LEAs

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Cooperation of SI-HR Energy Agencies

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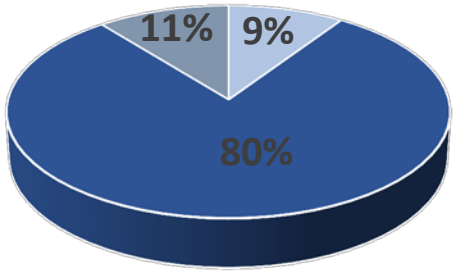
Energy Agency of Savinjska, Šaleška and Koroška region (KSSENA)

We provide a wide range of services in the field of energy management and development of local communities.

We have been involved in almost all stages of the process including data acquisition, baseline development and benchmarking, design of investment measures (investment and financing, CBA analysis, GHG emission reduction, etc.) and technical support in the implementation, monitoring and evaluation phases.

Financing of KSSENA

Revenue by cash-flow



- THE FOUNDERS
- EUROPEAN PROJECTS

I. TOTAL REVENUE	**1.253.736,01**
1. REVENUE FOR THE PUBLIC SERVICE	**1.119.899,61**
A. Revenue from public finances	**97.495,34**
b. Funds received from municipal budgets	97.495,34
B) Other revenue for the operation of public service activities	**1.022.404,27**
Interest received	11.378,94
Other current revenue from the public service	234,55
Donations received from domestic sources	20.000,04
Funds received from other European institutions	990.790,74
2. REVENUE FROM THE SALE OF GOODS AND SERVICES ON THE MARKET	**133.836,40**
II. TOTAL EXPENDITURE	**2.782.749,39**
1. PUBLIC SERVICE EXPENDITURE (Salaries and other employee expenditure, expenditure on goods and services, interest payments, capital expenditure)	**2.572.550,85**
2. EXPENDITURE ON SALES OF GOODS AND SERVICES ON THE MARKET (Salaries and other employee expenditure, employer's contributions, expenditure on goods and services)	**210.198,54**

Energy reconstruction of Vila Bianca - before

- Investment: € 2,135,493
- European Regional Development Fund: € 1,213,499 (56.8%)
- Own funds Velenje: € 921,994 (43.2%)

Energy reconstruction of Vila Bianca - after

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ELENA (European Local Energy Assistance)

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ELENA is a joint initiative by the EIB and the European Commission under the Horizon 2020 programme. ELENA provides grants for technical assistance focused on the implementation of energy efficiency, distributed renewable energy and urban transport programmes.

- Energy retrofit programme of public buildings in City Municipalities of Novo mesto, Kranj and Celje
- 191.295,42 EUR co-financing from ELENA for Municipality of Celje – **documentation development**
- 226.293,73 EUR total costs for Municipality of Celje
- Different types of buildings: schools, kindergartens, administrative-office buildings and buildings of wider social significance

ELENA EOMO project – Municipality of Celje

Higlights of Energy renovation project of buildings:

The final number of the Extended energy audits was 25.

After economic and technical review the buildings were grouped in to 2 sets:

- The first set of public buildings that will be deeply renovated with - investment and organizational measures. The project will be implemented through EPC and co-financed by the Cohesion fund (40 % EU co-financing).
- The second set of public buildings that will also have deep renovation and project will be implemented through public partner and co-financed by the Cohesion fund (40 % EU co-financing).

ELENA EOMO project – Municipality of Celje

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Set of all buildings:

FIRST SET OF BUILDINGS		Area	Energy source	Energy use intensity			
				Before measures		After measures	
				HE	EE	HE	EE
1	Celjski dom	4,062	Natural gas	379.51	128.44	142.11	106.04
2	Osnovna šola Hudinja	4,241	Natural gas	505.28	97.79	333.84	81.75
3	Vrtec Zarja, enota Živ Žav	998	District heating	191.22	93.99	100.67	76.84
4	Vrtec Zarja, denote Iskrica	888	District heating	124.79	81.42	61.54	72.42
5	Vrtec Anice Černejeve, enota Mavrica	1,092	District heating	182.48	83.55	93.79	63.25
6	IV. osnovna šola Celje	5,082	Natural gas	428.63	112.77	276.08	104.88
7	Vrtec Tončke Čečeve, enota Center	932	Natural gas	197.23	24.89	93.29	26.37
8	I. osnovna šola Celje, dislocirana enota	1,878	Natural gas	227.45	64.01	115.61	49.02
9	Osnovna šola Glazija	4,702	Natural gas	618.60	133.41	300.35	126.57
10	II. osnovna šola Celje	4,087	Extra-light heating oil	295.23	125.04	198.37	109.60

ELENA EOMO project – Municipality of Celje

Summary energy and financial data for the first set of buildings:

Investment id:	Deep energy renovation of public buildings owned by the Municipality of Celje
Investment costs - constant prices (in EUR	2,843,581
Investment costs - current prices (in EUR)	2,880,548
EnPC period (years)	15
EU co-financing (in EUR)	932,322
Public co-financing (in EUR)	209,772
VAT	512,777
Private co-financing (in EUR)	1,188,710
Reduction of CO2 emissions (in kg/a)	386,235
Estimated heat savings per year (in kWh and %)	1,434,726; 21,29 %
Estimated electricity savings per year (in kWh and %	128,625; 3,74%
Estimated heat savings per year (in EUR)	105,710
Estimated electricity savings per year (in EUR)	22,506
Participation of the public partner in savings (in %)	1%
Return on investment (ROI) (in years)	>35
eIRR/C (in %)	0.85%
Return on investment (ROI) of private capital (in years)	15

ELENA EOMO project – Municipality of Ljubljana

- European Local Energy Assistance Within 6 years after successful application for the TA ELENA funding for the preparation of pre-investment documentation COL adopted the Decree on public private partnership on the PPP EPC for city owned buildings that enable us to sign the first PPP EPC contract with the consortium of companies Petrol and Resalta (before GGE).

- The project was implemented in accordance with Slovenian national legislation and EU Cohesion policy, with **total investment of 15 million EUR**. Within EOL1 **48 public buildings** (educational, sports, health, administration, cultural) were energy retrofitted, among which **25 deeply energy retrofitted** (51% of investment covered by private partners, 40% by Cohesion funds and 9% by the COL) and **23 partially retrofitted** (51 % invested by private partners, 49% by COL).

- Within deeply retrofitted buildings, **the 25% share of energy represent renewable energy sources.**

ELENA EOMO project – Municipality of Ljubljana

Additional challenges were the retrofit of the cultural heritage objects and objects where the approval of the authors was obligatory, as well as objects where the static reinforcement was necessary.

ELENA EOMO project – Municipality of Ljubljana

Guaranteed annual savings from improved energy efficiency are **8.245 MWh** of energy (heat + electricity).

The project EOL-1 will also contribute to reduction of greenhouse gas emissions, equivalent to CO_2 absorption of about **150.000 trees or 340 hectares of forest.**

Total baseline consumption of 48 buildings:

- **heat: 41.166.692 kWh**
- **electricity: 16.988.055 kWh**

Achieved annual savings are around **1,0 million EUR** (heat + electricity + maintenance).

EE renovation of buildings in Velenje

- Model for a 12-year payback period
- 5 mio € - Cohesion fund

	Building	Annual savings on heating				Investment		Indicators
		Annual savings on heating (€)	Annual savings on electricity (€)	Annual savings TOTAL (€)		Investment (€)		Easy payback period (years)
1	Center za vzgojo izobraževanje in usposabljanje	21.252	4.295	25.547		881.584		35
2	GS Fran Korun-Koželjski	27.320	5.634	32.954		2.789.183		85
3	**Občinska stavba Velenje**	17.717	7.888	25.604		2.196.048		86
4	OŠ Antona Aškerca	21.802	3.524	25.326		2.226.168		88
5	OŠ Gorica	38.222	5.727	43.949		2.289.043		52
6	OŠ Gustava Šiliha	29.896	3.663	33.559		1.712.905		51
7	OŠ Livada	31.343	1.742	33.085		2.429.083		73
8	OŠ Mihe Pintarja Toleda	35.356	3.124	38.480		2.215.812		58
9	OŠ Šalek	34.964	5.748	40.711		2.834.976		70
10	Vrtec Ciciban	9.743	454	10.197		1.063.340		104
11	Vrtec Vrtiljak	14.759	3.738	18.497		1.496.874		81
	TOTAL			327.909		22.135.015		68

PV power plant: Next steps

The Energy Agency KSSENA has prepared an analysis for the Municipality of Velenje regarding the installation of solar power plants on public buildings owned by the municipality. The findings of the study indicate that it is currently feasible to install solar power plants on 12 buildings, which are presented in the table below. The total installed capacity of these power plants amounts to 1.6 MW.

Solar power plants are already in place on five public buildings.

		MOČ SE (v kW)	Investicija (v EUR)
1	SE Gorica	132,00	165.000,00
2	OŠ Miha Pinter Toledo	44,00	55.000,00
3	OŠ ŠALEK	100,00	125.000,00
4	OŠ ANTONA ŠAKERCA	87,00	108.750,00
5	VRTEC TINKARA	99,00	123.750,00
6	ZDRAVSTVENI DOM	184,00	230.000,00
7	CVIU	44,00	55.000,00
8	GŠ Fran Korun Koželjski	84,00	105.000,00
9	GARAŽNA HIŠA GORICA	199,00	248.750,00
10	AVTOBUSNA POSTAJA VELENJE	442,00	552.500,00
11	SE Vinska Gora Šola	34,00	42.500,00
12	SE Vinska Gora Telovadnica	151,00	188.750,00
	Skupaj	1.600,00	2.000.000,00

Hydrogen Future

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AMBITION TO BECOME A HYDROGEN VALLEY

OBJECTIVE:

Develop and deploy a replicable, balanced and integrated hydrogen economy by facilitating investment into market-ready hydrogen technologies.

CONTEXT:

- Make use of available local hydrogen sources and apply it in applications for facilitating the energy transition, starting with zero-emission public transport.
- Build upon the deployment project to carry out coordination and support activities, targeted at raising awareness, work to include hydrogen technologies into the formal and informal educational curricula's (local /national elementary schools) as well as research and development programmes (local/national vocational high-schools and academia).
- Establish the demonstration pilot as a development platform (transfer of knowledge) that can be used to replicate similar projects across SEE and other coal intensive regions in transition.

Hydrogen Future

The investment project is constitued from 3 key elements:

1.) The construction of a **Hydrogen Refueling Station**,
2.) **Upgrade local hydrogen** production facilitates (electrolyzer, compresor units, storage, etc.)
3.) Modernization of the existing public transport service Lokalc (currently operating EURO5 and EURO6 diesel-powered minibuses) with **Fuel Cell Electric Vehicles.**

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PROJECT PROCURE

Pre-commercial Procurement of Breakthrough Solutions for 100% Renewable Energy Supply in Buildings

ProcuRE brings together **6 procurers** from **6 countries**, responsible for over **21,000 public buildings**, to invest over **€7 million** in R&D to tackle their common challenge of achieving **100% Renewable Energy Supply (RES)** in existing stock. Consortia bidding are expected to deliver a comprehensive package of tools enabling delivery across Europe and beyond of customised fullrenewable building renovation. The systemic packages comprise services from design to implementation, and day-to-day operation, and contracting/financing, ensuring that the building continues to perform as designed over the full life-cycle.

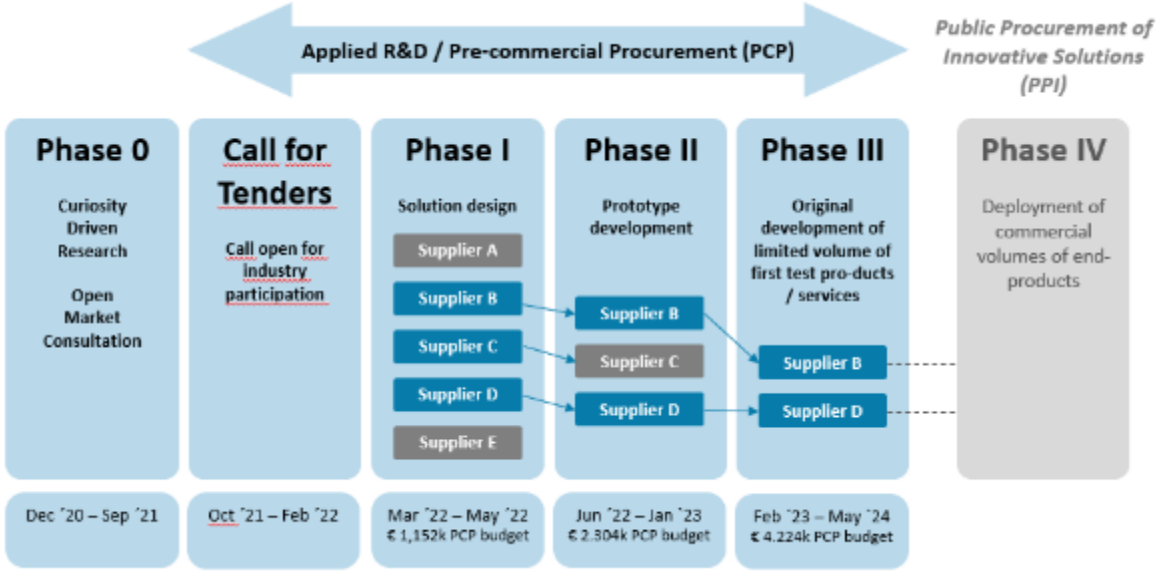
Programme: Horizon 2020
Duration: 42 months (start in December of 2020)
Project budget: 9,848,812,50 €
KSSENA's budget: 1,517,625,00 €

PROCU RE

PROJECT PROCURE

Pre-commercial Procurement of Breakthrough Solutions for 100% Renewable Energy Supply in Buildings

- PCPs follow a multi-staged process to select the most suitable and promising innovation; R&D services are funded at all stages
- PCP introduction – process:



Pilot facilities included in PROCURE project

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VELENJE, SLOVENIJA

- Primary school
- Envelope 20 years old
- Upgrades expected before Phase III [1]
- Space heating: oil + electric

BARCELONA, ŠPANIJA

- Offices + data centre
- 2010 upgrade to envelope (1850)
- Central heat pump with several splitters
- AC for data needs upgrade, monitoring installed since 2015

NUREMBERG, NEMČIJA

- Primary school + nursery
- Built 2015 to passive-house standards
- Natural gas condensing boiler (radiators)
- No RES; basic HVAC control system

ISTANBUL, TURČIJA

- Office + bakery school
- Built 2015
- Variable Refrigerant Flow system
- No RES or monitoring

VIA NOVA DE GAIA (PORTO), PORTUGALSKA

- Primary school + nursery
- Built 2014 to national standards
- Natural gas boiler, heat pump for cooling
- Small solar thermal; advanced control system for building

EILAT, IZRAEL

- Future: Office + Maker + Exhibition
- Old terminal and tower - Built 1960
- Upgrades expected before phase III [1]
- Central HVAC, local AC systems, chillers

Other projects

EL-practice

The project willadults (29-39 develop an educational programme aimed at energy literacy for young years old), aiming to empower people with the competences, skills, knowledge and confidence to take responsibility for their life choices and to actively engage in actions to create a sustainable society.

VISIONS2045

Visions 2045 pursues the goal of accompanying schools on their way to climate neutrality. A holistic approach is taken to make them drivers and role models in reducing their carbon footprint and to engage them in reaching local climate and energy targets in collaboration with local authorities.

Other projects

H2MA

H2MA brings together 11 partners from all 5 Interreg Alpine Space EU countries (SI, IT, DE, FR, AT), to coordinate and accelerate the transnational roll-out of green hydrogen (H2) infrastructure for transport and mobility in the Alpine region. It works to accelerate the transnational roll-out of green hydrogen mobility infrastructure in the Alpine region, to curb CO2 emissions and foster the transition to low-carbon transport.

ENERGee Watch

The overall objective of ENERGee WATCH is to establish a peer learning programme that will enable regional and local authorities to identify, monitor and verify their sustainability actions in a timely and accurate manner. The learning will focus on local/regional/provincial administrative units and their agencies responsible for collecting and monitoring energy data and energy plans.

Other projects

- **3DIVERSE**

3DIVERSE will enact a holistic, multi-sectoral and multi-level approach to planning and implementation of investments into sustainable energy infrastructure through coordinated application of supply and demand side measures.

- **VR versus Climate Change**

The main goal of the project is to raise awareness and educate students about the climate changes we are witnessing, and thus encourage them to find solutions and to deal responsibly with the environment and waste. The purpose of the project is to present the issue of climate change to students through various activities during the school year.

Other projects

CERVINO

CERVINO facilitates the exchange and visualisation of energy data within the Alpine territory. It sets up a stable and reliable system that enables a better collection, management, update and use of Alpine energy data.

EXCITE

The main goal of the EXCITE project is to implement the well-established energy management scheme of the European Energy Award – eea in Central and Eastern European municipalities, enabling them to become trusted partners to the investors and engaging local communities for deliberate climate action.

Croatia – Energy Agency Regea

Founded on April 1, 2008 by the City of Zagreb, Krapina-Zagorje County, Karovac County and Zagreb County through the program Intelligent Energy-Europe. The foundation of REGEA started from the desire to do better and more.

The establishment of REGEA was based on a simple desire to do better and more. The idea came to life at a conference in Brussels in November 2005. Contemplating over the results achieved by European regions and cities, I thought – And why can't we do the same?! dr. sc. Julije Domac.

Source: Regea.org

Croatia - Regea

REGEA PROJECT

Construction of a photovoltaics (PV) power plant on the roof of the General Hospital in the city of Zabok according to the physical PPA model

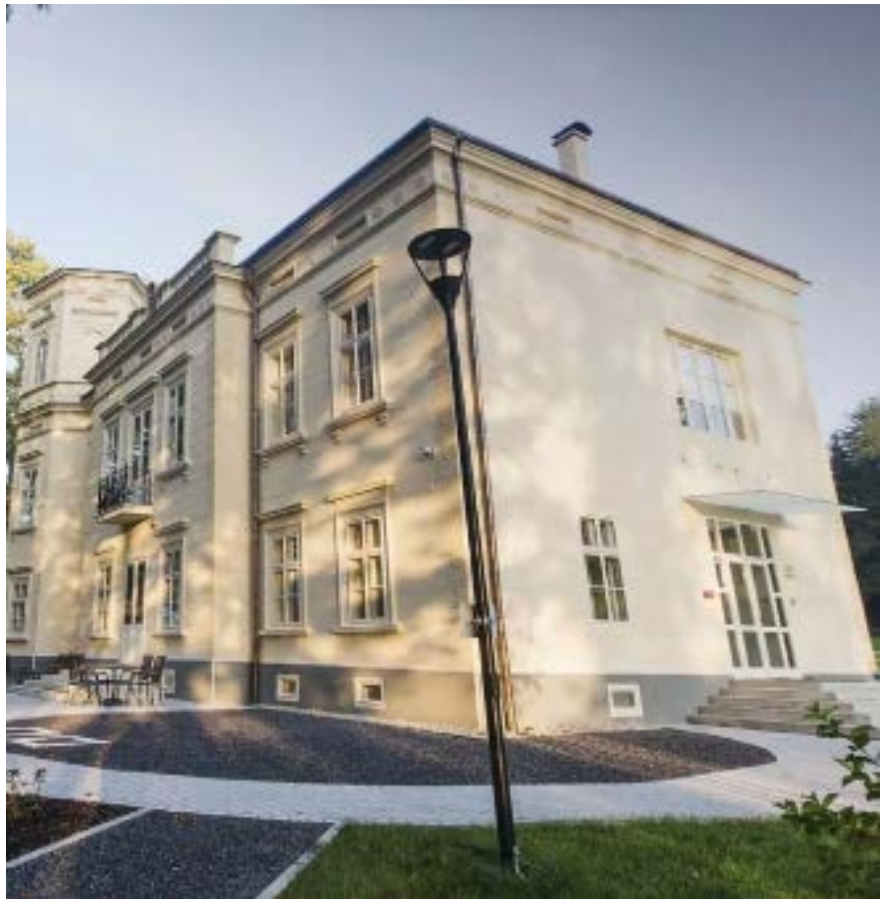
zabok.hr

- Total project value: **2,0 mil. hrk**
- Financed through a physical PPA agreement by a private partner: **100%**
- Period of project implementation: **01/2019-11/2019**
- Duration of PPA: **10 years**
- Power of the photovoltaics (PV) power plant: **420 kW**
- Share of energy produced in total consumption: **14%**
- Annual cost savings during the contract: **40.000 HRK**
- Annual cost savings after the contract expires: **250.000 HRK**

Source: Regea.org

Croatia - Regea

Energy Center Bračak
Biomass boiler 80 kW (95 % efficiency)
Cooler 95,2 kW (nominal power)
Microcogeneration (gas, 6 kW power, 14,9kW heat)



Source: Regea.org

Croatia – Ivanić Grad

Ivanić Grad: population: 15,000

2022 EUROPEAN ENERGY AWARD – ENERGY AND CLIMATE PLANS:

- 12 x Solar power plant
- Energy reconstruction of public buildings
- Energy reconstruction of street lighting

Source: Regea.org

Source: Regea.org

Vienna

In 2006, the Vienna City Council adopted the first Urban Energy Efficiency Programme (SEP), which prioritised increasing energy efficiency and saving energy. It ran until 2015 and focused especially on the buildings sector and the activities of the City Administration itself.

Mobility

Buildings

City Administration

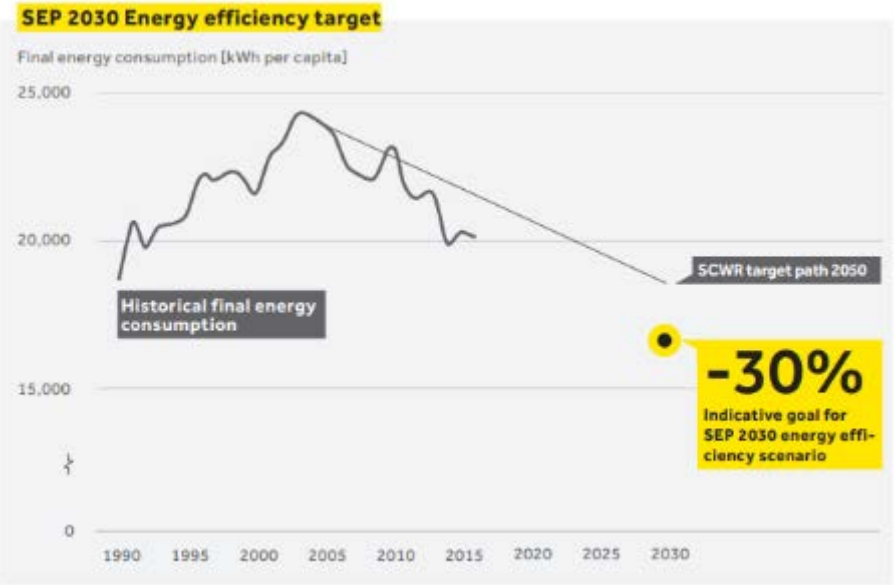
Implementation and Monitoring

Source: ma20_SEP30_englisch-2019-10-28_WEB.indd (wien.gv.at)

Vienna

In the long term – by 2050 – Vienna aims to reduce per capita final energy consumption by 40 percent from 2005 levels, as laid out in the Smart City Wien Framework Strategy. In the 11 years from 2005 to 2016, Vienna's population grew by 13 percent. In the same time, final energy consumption went down by 6 percent in absolute figures and by 17 percent per capita

Indicative energy efficiency target of minus 30 percent per capita final energy consumption by 2030



Source: ma20_SEP30_englisch-2019-10-28_WEB.indd (wien.gv.at)

Vienna

24 packages of measures with over 80 individual measures were created for the short and medium term. The measures are divided into packages for the mobility, buildings, industry and trade sectors, cross-sector measures, and packages for the Vienna City Administration and its enterprises, allowing the city to provide a good example for others.

The measures for increasing energy efficiency are selected with the following aspects in mind:

- energy savings to be achieved
- long-term cost-benefit ratio for citizens, businesses and the city
- positive impact on value creation in Vienna
- support for the regulatory framework in the energy efficiency domain
- holistic view of the energy system

Source: ma20_SEP30_englisch-2019-10-28_WEB.indd (wien.gv.at)

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Thank you!

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ENERGYCITIES Climate Alliance KOMMUNAL KREDIT PUBLIC CONSULTING EMY AEER Interakcia EEC-DDO UNION OF COMMUNITIES OF ARMENIA NOBLETMEDIA