

Green growth and sustainable energy low carbon area the program area SLO-ITA

What role do Local Energy Agencies play?

Rajko Leban, GOLEA

**Area Science Park TRIESTE
December 17th, 2014**



energie rinnovabili
e risparmio energetico
per il terzo settore

obnovljivi viri energije
in energetska varčevanje
za tretji sektor



Ministero dell'Economia
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REPUBLIKA SLOVENIJA
SLUŽBA VLADE REPUBLIKE SLOVENIJE ZA RAZVOJ
IN EVROPSKO KOHEZIJSKO POLITIKO





Presentation of agency

GOLEA – Goriška Local Energy Agency, Nova Gorica

- **Founded** in 2006 by Nova Gorica municipality. Co-financed by EU-Intelligent Energy Europe – IEE programme.
- **Mission of GOLEA:** promotion of Renewable Energy Source - RES and Rational Use of Energy - RUE with focus on the energy self-handling region, focus on the sustainable region.
- **Our motto:** creating renewable and sustainable future.



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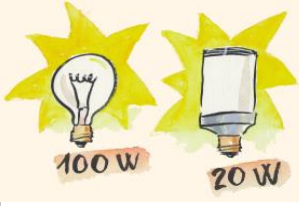


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• Activities of agency:

- making local energy concept studies for municipalities,
- implementing and executing energy management in municipalities,
- making of public lightening studies,
- making investment studies for energy projects,
- energy reviewing (including termovision examination),
- energy auditing,
- energy monitoring and targeting (M&T)
- issuing energy performance certificate,
- energy project management,
- implementing ESCO models of financing.



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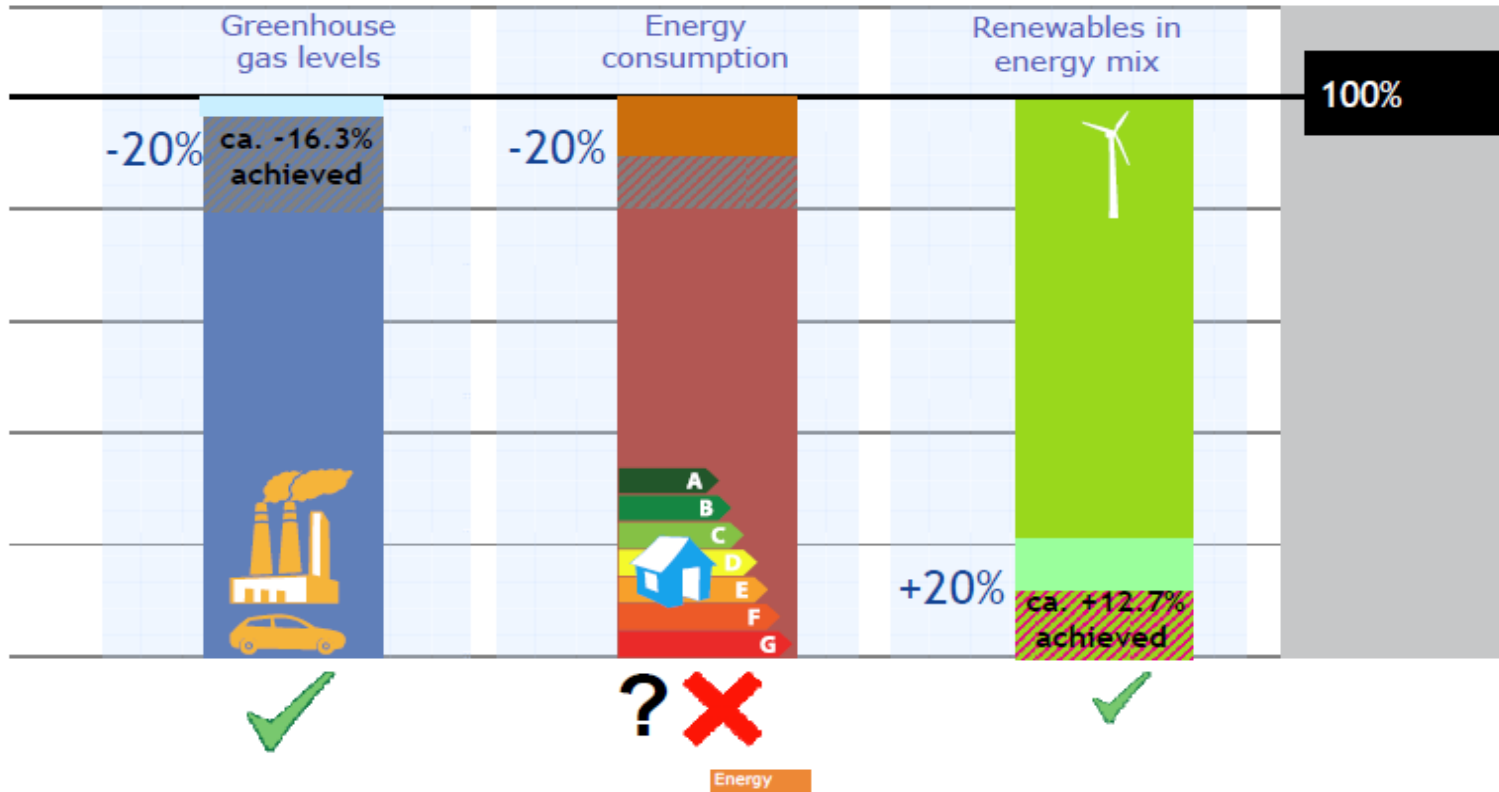
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● The EU 20-20-20 policy: Where are we today?



Energy Efficiency Directive 2012/27/EU



POTENTIAL OF ENERGY SAVINGS IN PRIMORSKA REGION - 23 municipalities

(1) PUBLIC LIGHTING - FUTURELIGHTS

Energy consumption: 21.322 MWh

75 kWh/year-capita

Energy costs: 2.941.429 €

Regulation by up to 44,5 KWh/year-capita

New consumption: 12.651 MWh

New cost: 1.745.248 €

Savings: 1.196.181 €

(1) ENERGY USE FOR PUBLIC BUILDINGS - ENERGYWILLAB, ENRI

Energy consumption: 30.532 MWh

107 kWh/year-capita

Energy costs: 3,2 million €

Reduction only to 20%

New consumption: 24.426 MWh

New costs: 2,55 mio €

Savings: 650.000 €

Reduction to after retrofit: cca 40%

New consumption: 18.319 MWh

New costs: 1,96 mio €

Savings: 1.300.000 €

TOTAL SAVINGS: 2,5 m € / year



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Directive 2012/27/EU of the European Parliament and the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC

- Buy products, services and buildings with high energy standards
- Objective: 3% annual renovation of public buildings with an area of 250 m² (twice the current average)
- National law of obligations scheme (distributors or suppliers of energy) obligation to achieve annual savings of 1.5% of energy sold
- Meters must demonstrate actual energy consumption and time consumption
- The ten-year national plans for the use of thermal energy: transparency, predictability and consistency measures for investment
- Obligation of using waste heat (cogeneration) in new and existing power stations and industrial plants
- The mandatory energy audits for large companies



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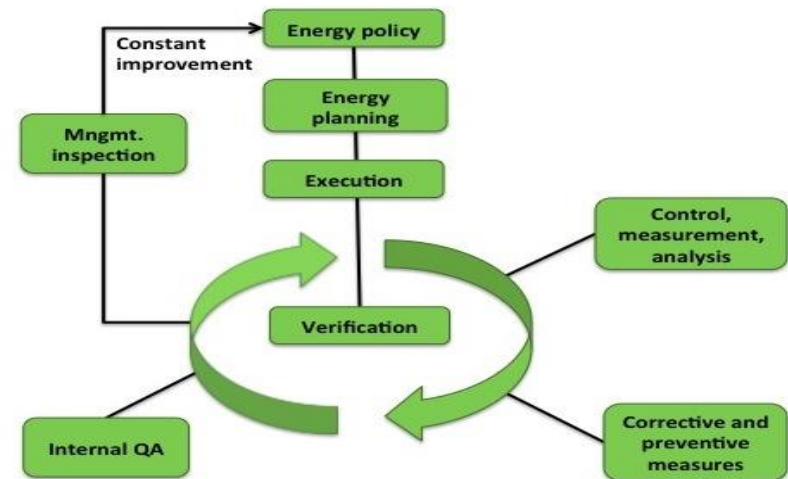
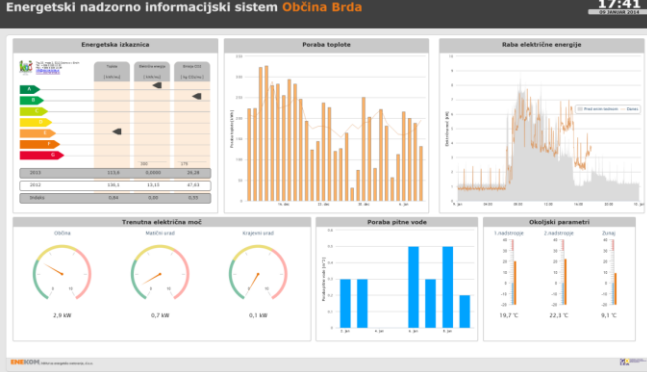


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Article 324 EZ-1 (Energy management system)

- (1) Public sector entities establish an energy management system.
- (2) The Government shall determine the persons and the minimum content of an energy management system, including objectives relating to energy efficiency and renewable energy measures to achieve the objectives of the responsible person and the way of setting targets.
- (3) Government regulations referred to in the preceding paragraph shall also determine the mandatory share of renewable energy sources and levels of energy performance of buildings, public sector entities and measures to increase energy efficiency and use of renewable energy sources in buildings used by public sector entities.

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Article 325 EZ-1 (Local energy agencies)

- (1) One or more local authorities may for the implementation of its functions under this Act, under the jurisdiction of local communities, establish or empower local energy organization.
- (2) The functions provided by local energy organizations carried out in the public interest, are as follows:
Preparation and implementation of local energy concepts,
Tasks related to the establishment and implementation of an energy management system,
Implementation and management of international projects in the field of efficient energy use and renewable energy sources.
- (3) The local energy organizations maintain separate accounts for the funds intended for the performance of tasks in the public interest referred to in the preceding paragraph.



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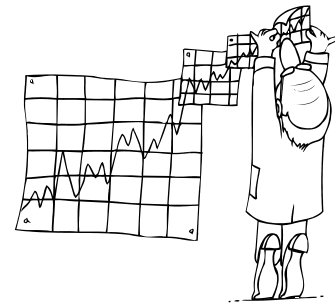


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ENERGY MANAGEMENT SYSTEM AT MUNICIPALITY

- Implementation of pilot energy management system CSRE
- Based on data from monthly energy bills.
- Energy supervisory system data integration (Municipality building Brda).
- Setting first energy performance indicators.
- Evaluation on energy efficiency.
- Encouraging first steps for improving energy efficiency, based on systematic energy efficiency evaluation.
- **Setting strong base for long-term energy savings.**



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ENERGY ACCOUNTING – first step to energy efficiency

Podatke vnosate za

Interval: **Mesec**: časovna točka: **december 2012** Števec: **Poraba**

Naziv	Količina		november 2012	oktober 2012	september 2012
Občina Brda/Osnovne šole/OŠ Dobrovo/OŠ in vrtec Dobrovo/Fakture in meritve/Električna energija/7-003955 Obračun uporabe električnega omrežja - ŠOLA					
Obračunska moč	48,00	kW	60,00	59,00	57,00
Omrežnina VT	5.055,00	kWh	6.733,00	8.094,00	6.833,00
Omrežnina MT	1.404,00	kWh	1.337,00	1.993,00	1.976,00
Strošek - Obračunska moč	250,24	EUR	312,80	307,59	232,81
Strošek - Omrežnina VT	129,56	EUR	172,57	207,45	135,23
Strošek - Omrežnina MT	27,79	EUR	26,46	39,44	30,21
Strošek - Jalova en. zar. VT	11,10	EUR	11,78	0,00	0,00
Strošek - Prispevek po 64. r čl. EZ	27,72	EUR	34,65	34,08	32,92
Strošek - Prispevek po 15. čl. EZ	4,90	EUR	6,13	6,03	5,82
Skupaj	451,31				
Občina Brda/Osnovne šole/OŠ Dobrovo/OŠ in vrtec Dobrovo/Fakture in meritve/Električna energija/7-003955 Obračun dobavljene električne energije - ŠOLA					
Energija VT	5.055,00	kWh	6.733,00	8.094,00	6.833,00
Energija MT	1.404,00	kWh	1.337,00	1.993,00	1.976,00
Strošek - Energija VT	360,52	EUR	480,20	577,26	487,33
Strošek - Energija MT	69,81	EUR	66,48	99,09	98,25
Strošek - Trošarina	19,70	EUR	24,61	30,77	26,87
Strošek - Prispevek po 67. členu EZ	3,23	EUR	4,04	5,04	4,40
Skupaj	453,26				



Knowledge of your consumption and cost of energy and water.



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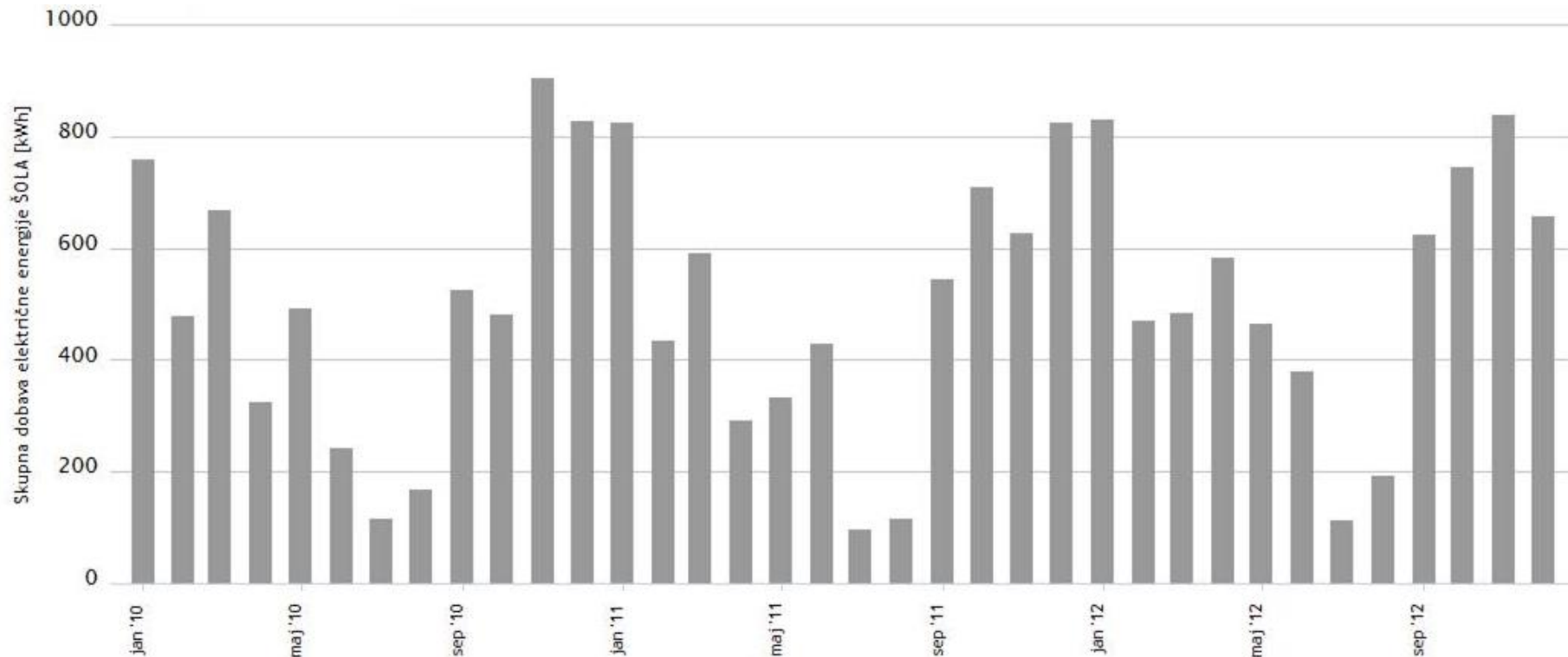
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ENERGY ACCOUNTING – first step to energy efficiency



An analyse on monthly electricity consumption
at Primary school Kojsko
January 2010 – December 2012



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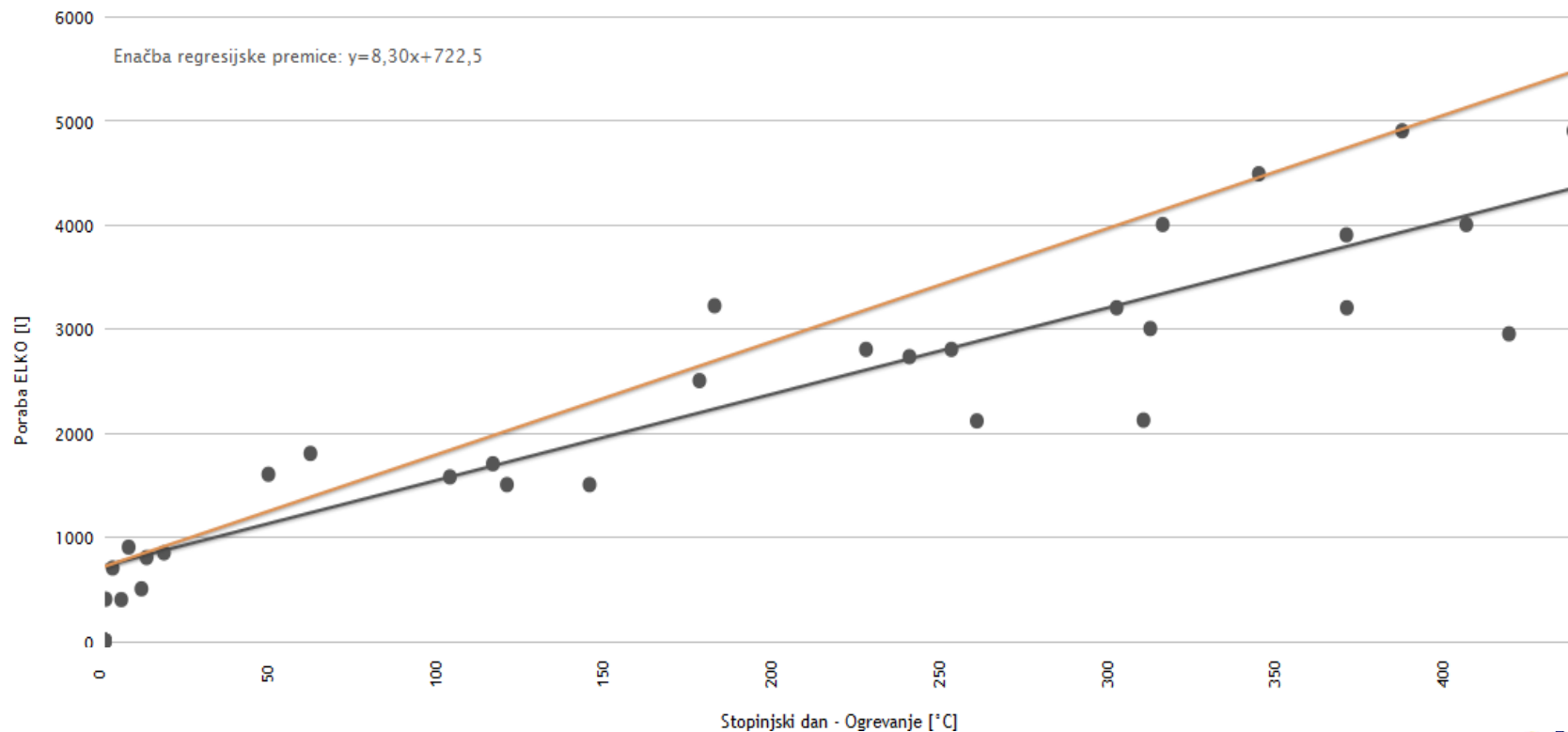
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ENERGY MONITORING & TARGETING – BAT FOR EMS



Definition of characteristic energy use according to energy factor.

Targeted value of energy consumption is set on the basis of the target line.

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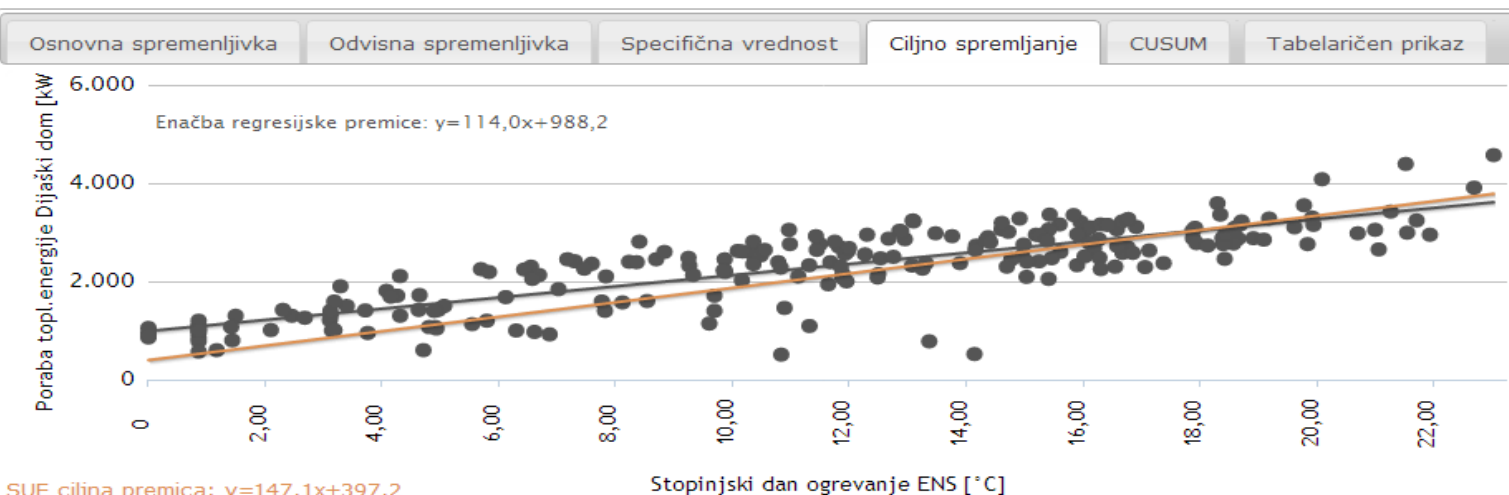


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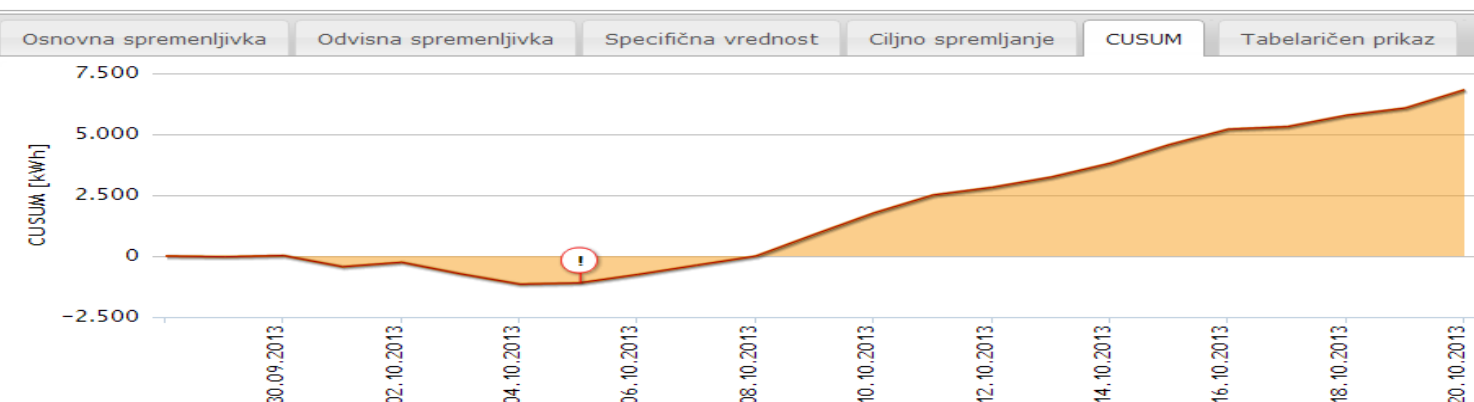


ENERGY MONITORING & TARGETING – CUSUM

M&T diagram:



CUSUM diagram:




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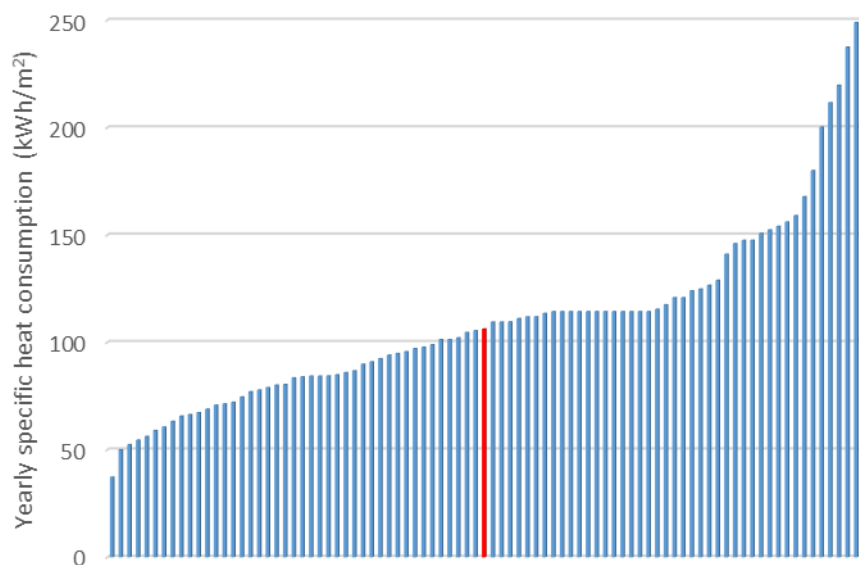
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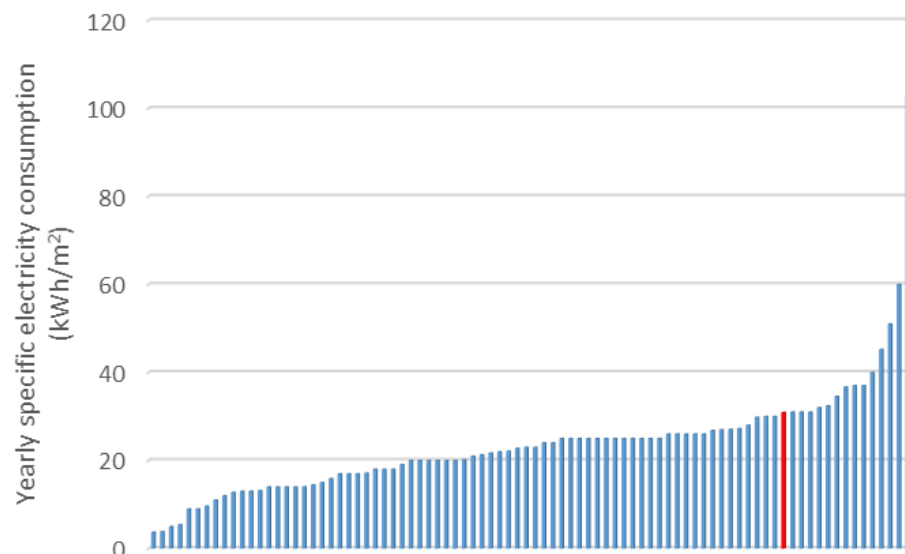
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ENERGY EFFICIENCY COMPARISON



Yearly specific heat consumption



Yearly specific electricity consumption

Primary school Dobrovo energy efficiency in comparison to similar Slovenian buildings



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PRIMARY SCHOOL MOST NA SOČI – ENERGY LABEL

OŠ Most na Soči

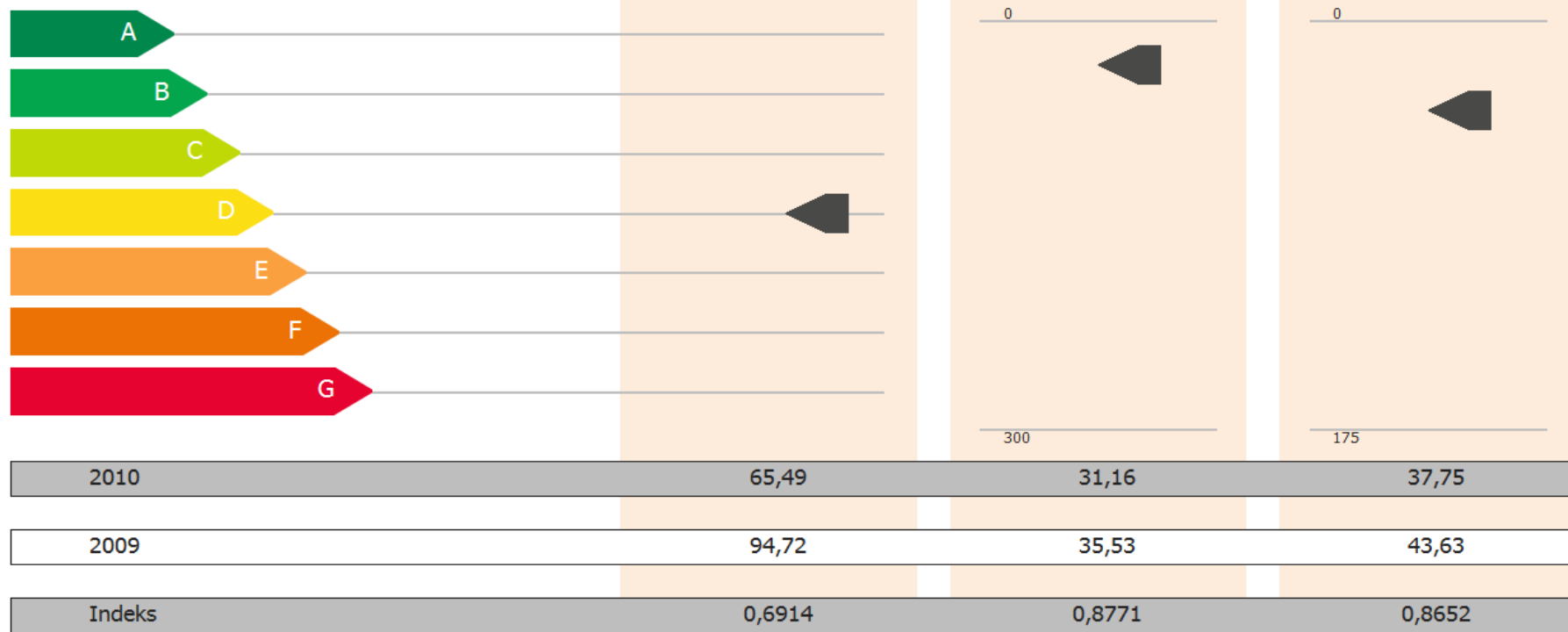
2010

Izberi

Merjena energetska izkaznica



Most na Soči 18a
Tel: +386 5 3841 560
Fax: +386 5 384 15 70
nfo@os-mostnasoci.si
<http://www.os-mostnasoci.si/>



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IN EVROPSKO KOHEZIJSKO POLITIKO



MUNICIPAL BUILDING BRDA – ENVIRONMENTAL LABEL



Trg 25. maja 2, 5212 Dobrovo v Brdih
Tel: +386 5 335 10 30
Fax: +386 5 335 10 39
info@obcina-brda.si
www.obcina-brda.si

Environ.certificate

Občinska stavba Dobrovo

Comparison

☐ Display

Choose interval

Year

From 2011



Elektrika

2011/ 2010

Consumption

14,715 kWh

Cost

2,069.49 EUR

Price

140.64 EUR/MWh



Index

0.94

Toplota

2011/ 2010

Consumption

76,960 kWh

Cost

7,741.39 EUR

Price

100.59 EUR/MWh



Index

0.83

Voda

2011/ 2010

Consumption

151.1 m³

Cost

269.67 EUR

Price

1.79 EUR/m³



Index

0.98

Skupaj

2011/ 2010

CO2 Emissions

25,593 kg CO₂

Cost

10,080.55 EUR



Index

0.86



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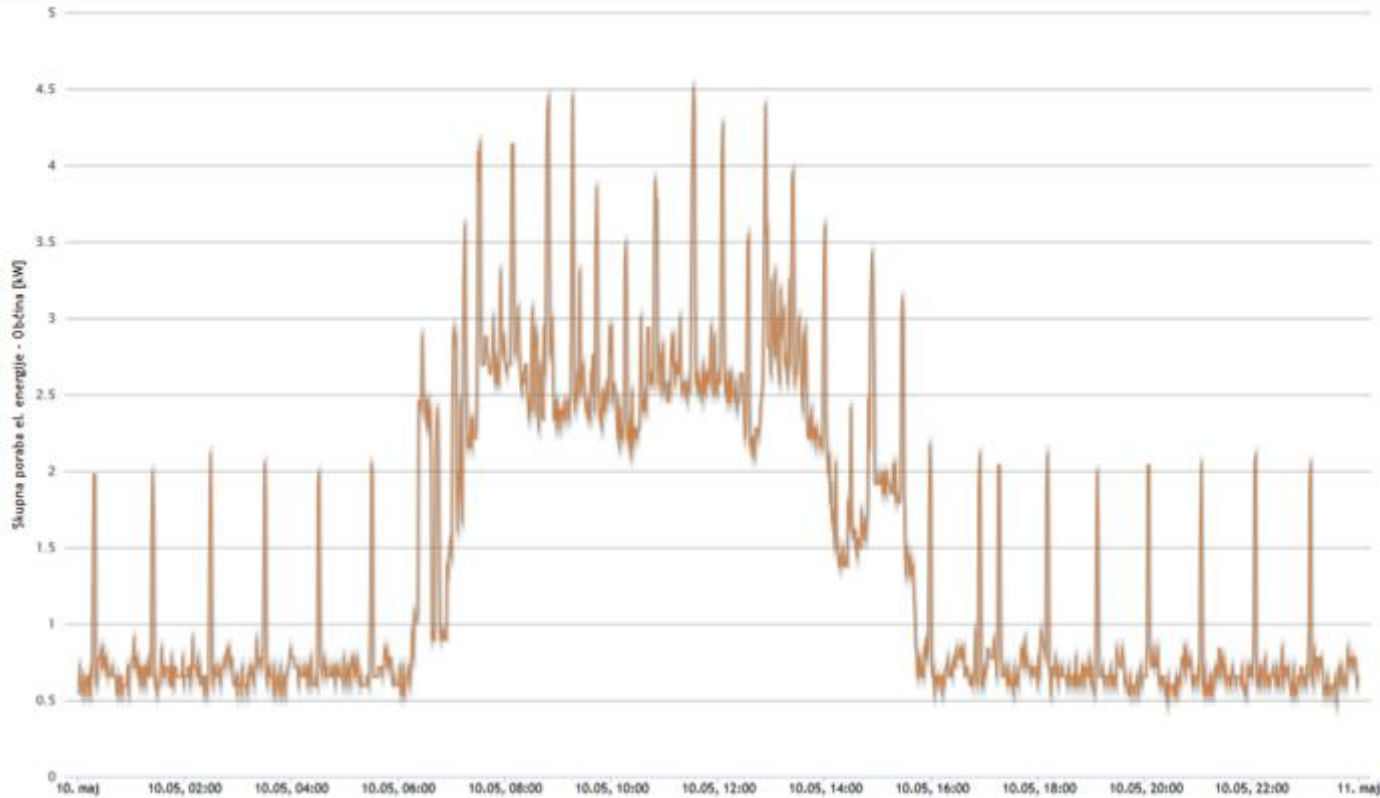


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ENERGY METERING – IMPROVED VIEW ON ENERGY CONSUMPTION

Municipality building Brda 10.5.2013



**Smart grids
on energy
efficiency**

Integration of on-line energy metering system.



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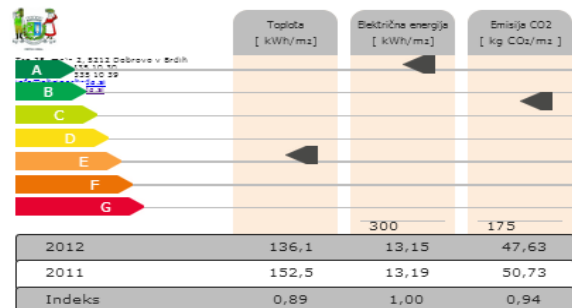


ENERGY MONITORING SYSTEM – MUNICIPALITY BUILDING BRDA

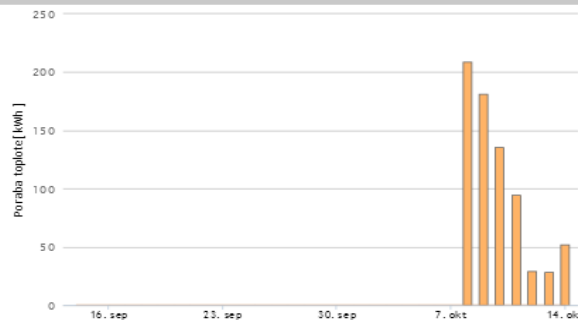
Energetski nadzorno informacijski sistem **Občina Brda**

14:16
14 OKTOBER 2013

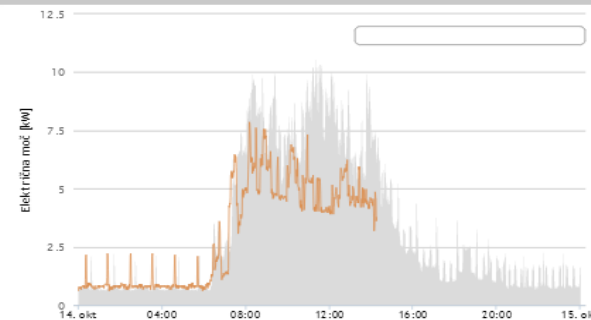
Energetska izkaznica



Poraba toplote



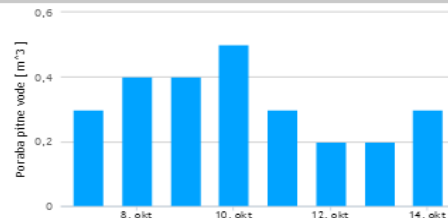
Raba električne energije



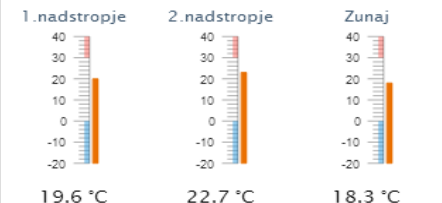
Trenutna električna moč



Poraba pitne vode



Temperature



ENEKOM, Institut za energetska svetovanje, d.o.o.

CEA

http://dashboard.enekom.si/? Code=GOBRD_GOLEA%20Ob%C4%8Dina%20Brda



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ENERGY REFURBISHMENT OF PUBLIC BUILDINGS

APPLY - NOVEMBER 2012 - Ministry of Infrastructure and Spatial Planning

MUNICIPALITY	BUILDING	AMOUNT of the GRANT (€)	ENERGY SAVINGS (MWh)
ILIRSKA BISTRICA	HOME AT VIDEM 1.	823.007,25 €	919
NOVA GORICA	CENTRAL KINDERGARTEN and KINDERGARTEN MOJCA 5.	355.643,87 €	297
BRDA	PRIMARY SCHOOL DOBROVO 30.	574.865,73 €	296
KOPER	KINDERGARTEN SEMEDELA 44.	271.424,63 €	105
KOPER	PRMARY SCHOOL PRADE 98.	566.347,72 €	210
PIRAN	PRIMARY SCHOOL PIRAN 51.	812.096,44 €	371
*CERKNO	PRIMARY SCOOOL CERKNO 67.	1.121.732,49 €	461
DIVAČA	PRIMARY SCHOOL DIVAČA 110.	602.632,40 €	226
DIVAČA	and SUBSIDIARY SENOŽEČE 81.	311.002,17 €	119
TOLMIN	SCHOOL CENTRE TOLMIN 98.	2.310.854,57 €	1.071
Secondary School for Forestry	and Wood Technology POSTOJNA (2011)	954.537,64 €	356
UNIVERSITY of LJUBLJANA	FACULTY of ECONOMICS (January 2013)	1.607.127,61 €	1.177
TOGETHER		10.311.272,52 €	5.608 MWh

REDUCTION OF GREENHOUSE EMISSIONS - CO₂: 1.499 tons



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ENERGY REFURBISHMENT OF PUBLIC BUILDINGS

PRIMARY SCHOOL DIVAČA – Investment: 843.182,73 €, subsidiary 602.532,40 €, savings 226 MWh/year




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GO
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 **enri**

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POSREDOVANJE MED DRŽAVAMA

Investicija 843.182,73 €, subvencija 602.632,40 €, prihranek energije 226 MWh/leto

ENERGY REFURBISHMENT OF PUBLIC BUILDINGS

APPLY - MARCH 2012 - Ministry of Infrastructure and Spatial Planning

MUNICIPALITY	BUILDING	AMOUNT of the GRANT (€)	ENERGY SAVINGS (MWh)
IDRIJA	PRIMARY SCHOOL IDRIJA 66,61	440.712,45 €	536
KOPER	PRIMARY SCHOOL DUŠANA BORDONA 64,13	404.372,74 €	350
KOPER	KINDERGARTEN KEKEC 64,13	191.019,52 €	137
KOPER	KINDERGARTEN MARKOVEC 63,91	292.944,12 €	166
KOBARID	PRIMARY SCHOOL KOBARID 63,5	343.833,49 €	357
MIREN-KOSTANJEVICA	PRIMARY SCHOOL BILJE 63,44	106.479,18 €	78
ŠEMPETER-VRTOJBA	PRIMARY SCHOOL VRTOJBA 62,45	198.072,53 €	157
TOLMIN	PRIMARY SCHOOL PODBRDO 62,05	232.949,63 €	218
TOLMIN	MEDICAL CENTRE TOLMIN 61,64	117.301,64 €	105
RENČE-VOGRSKO	PRIMARY SCHOOL RENČE 60	258.828,85 €	234
PIRAN	KINDERGARTEN MORNARČEK PIRAN and KINDERGARTEN SEČOVLJE 60,81	331.377,49 €	220
KANAL	KINDERGARTEN DESKLE 52,86	163.179,62 €	72
AJDOVŠČINA	KINDERGARTEN BY HUBLJ 47,22	155.657,30 €	64
ILIRSKA BISTRICA	PRIMARY SCHOOL DRAGOTIN KETTE	334.077,52 €	352
TOGETHER		3.570.806,08 €	3.046 MWh

REDUCTION OF GREENHOUSE EMISSIONS - CO₂: 792 tone



energie rinnovabili
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per il terzo settore

obnovljivi viri energije
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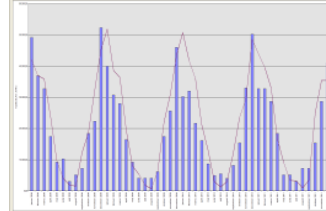
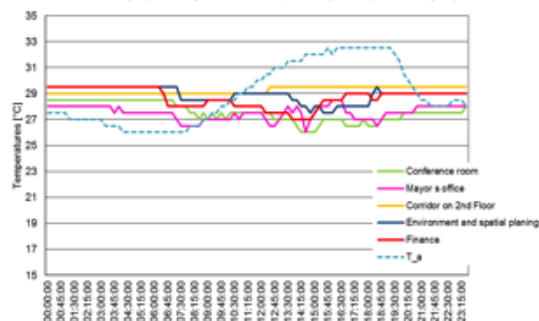
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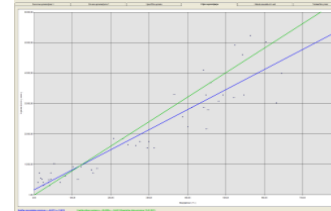
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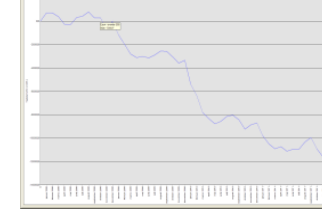
Working day with high ambient temperature [Monday 22. of August]



ENERGY USE



M&T DIAGRAM



CUSUM DIAGRAM

PILOT PROJECT IN BRDA - IMPLEMENTATION



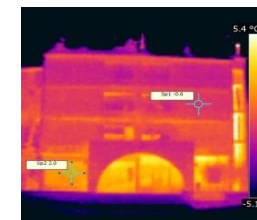
Energy audit, proposals to reduce energy costs

Energy management

Energy monitoring and targeting (M&T)

implement proposals to improve insulation
(co-financing by project MARIE)

Implement ESCO financing model



MEDITERRANEAN BUILDING
RETHINKING FOR ENERGY
EFFICIENCY IMPROVEMENT

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PILOT PROJECT IN BRDA – IMPLEMENTATION

- Preparation of ESCO tender dossier: March 2014
- Opening session: 30.6.2014
- Signing of Contract: 30.9.2014
- Beginning of works: 1.12.2014
- Completion of works 31.03.2015



INVESTMENT	ESCO	MUNICIPALITY	TOTAL
MUNICIPALITY BUILDING	288.967,71 €	- €	288.967,71 €
SCHOOL Dobrovo	40.000,00 €	549.529,55 €	589.529,55 €
SCHOOL Kojško	10.000,00 €	107.866,31 €	117.866,31 €
TOTAL	338.967,71 €	657.395,86 €	996.363,57 €
VAT	74.572,90 €	144.627,09 €	219.199,99 €
TOTAL INCLUDING VAT	413.540,61 €	802.022,95 €	1.215.563,56 €

št.	id	naziv	ANNUAL SAVINGS
1	OB1	MUNICIPALITY BUILDING	7.704,72 €
2	OB2	SCHOOL Dobrovo	35.769,18 €
3	OB3	SCHOOL Kojško	4.829,96 €
TOTAL			48.303,85 €

DISTRICT HEATING ON FOREST BIOMASS

MUNICIPALITY	PROJECT
MIREN – KOSTANJEVICA	MIREN (realized)
BOVEC	BOVEC
KOBARID	Joinery Peter Koren Kobarid (realized) Primary school KOBARID
AJDOVŠČINA	AJDOVŠČINA
KANAL	Primary school KANAL, Primary school DESKLE
TOLMIN	Business zone Na Logu - Tolmin (realized) Retirement home Podbrdo (realized) TOLMIN
KAMNIK	ŠMARTNO



In project of district heating systems on forest biomass we used ESCO model of ESC – Energy Supply Contracting.



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ENERGY RECONSTRUCTION OF PUBLIC LIGHTING

MUNICIPALITY	TENDER	AMOUNT of the GRANT (€)	ENERGY SAVINGS (MWh)
AJDOVŠČINA	UJR	116.953,39 €	589
AJDOVŠČINA	PETROL URE	25.675,43 €	97
KANAL	UJR	83.629,25 €	262
<u>BRDA</u>	<u>PETROL URE + ESCO</u>	<u>175.249,20 €</u>	<u>292</u>
<u>MIREN – KOSTANJEVICA</u>	<u>UJR + ESCO</u>	<u>46.511,40 €</u>	<u>133</u>
NOVO MESTO	UJR	435.492,84 €	1.522
TOGETHER		883.511,51 €	2.895 MWh

REDUCTION OF GREENHOUSE EMISSIONS - CO₂: 1.620 tons

UJR – tender of Ministry of infrastructure and Spatial Planning

PETROL URE - tender of Petrol as a great eco-taxpayer

Energy reconstruction of public lighting in Municipalities Brda and Miren-Kostanjevica ruled through ESCO EPC – Energy Performance Contracting



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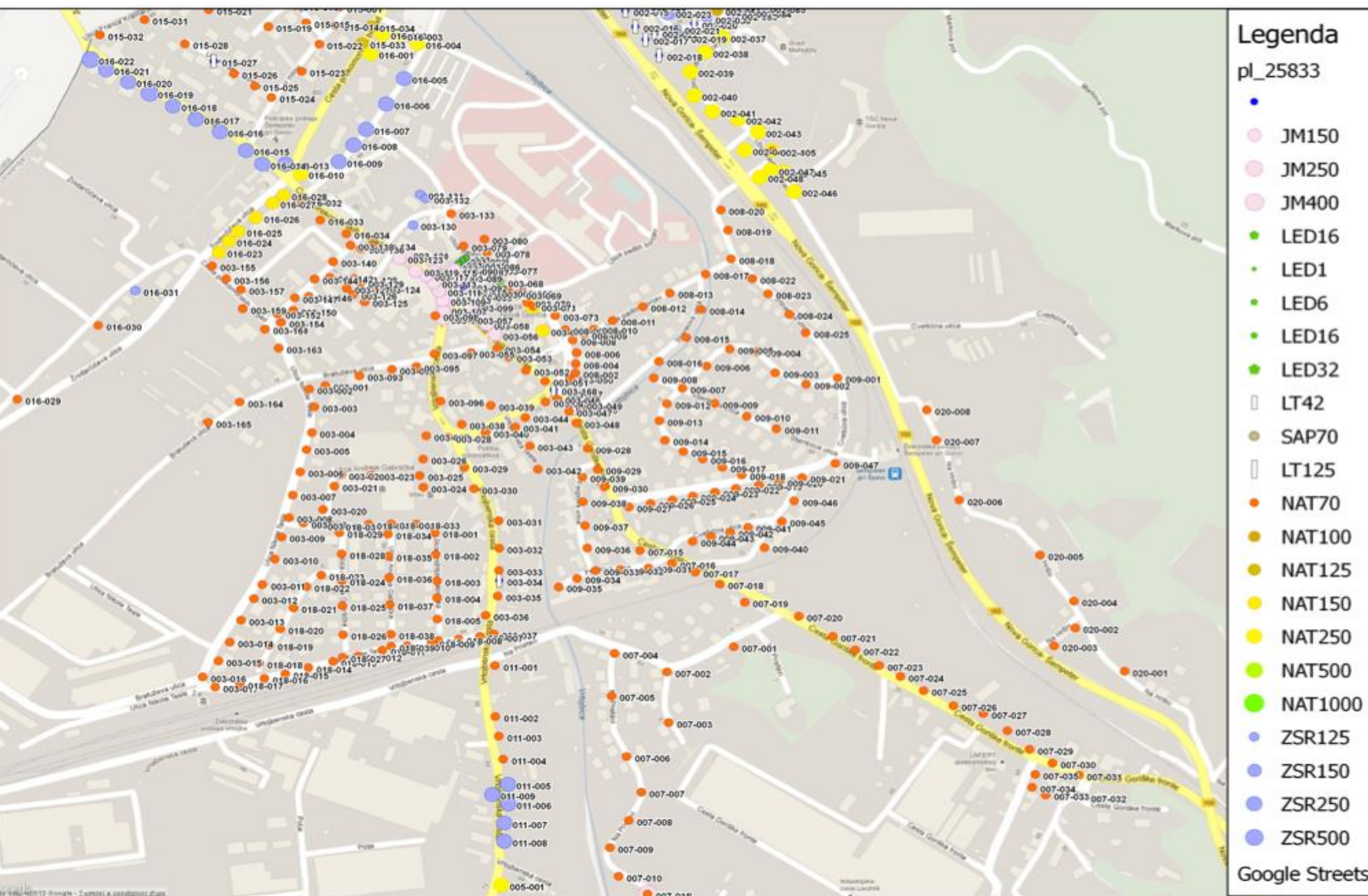
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FUTURELIGHTS – PUBLIC LIGHTING ŠEMPETER - VRTOJBA



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Projetk sofinancira Evropski sklad
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FUTURELIGHTS – ACHIEVED SAVINGS

MUNICIPALITY ŠEMPETER-VRTOJBA SLO:

Energy savings: 234,17 MWh

Costs savings: 26.015,17 €

MUNICIPALITY TOLMIN SLO:

Energy savings: 104,44 MWh

Costs savings: 12.532,27 €

MUNICIPALITY PORTOMAGGIONE I:

Energy savings: 128,00 MWh

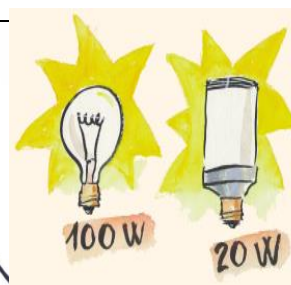
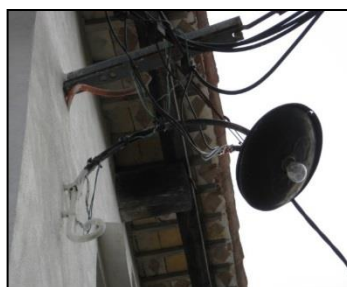
Costs savings: 21.760,00 €

MUNICIPALITY DOBERDOB:

Energy savings: 128,00 MWh

Costs savings: 21.760,00 €

FUTURELIGHTS



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enri

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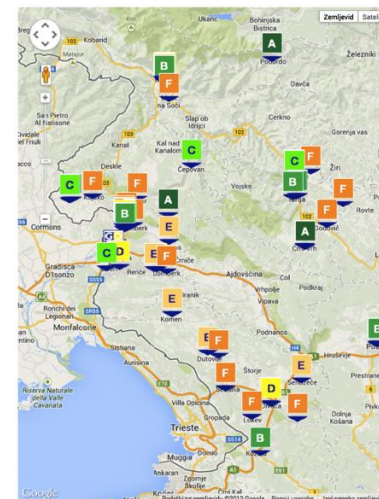
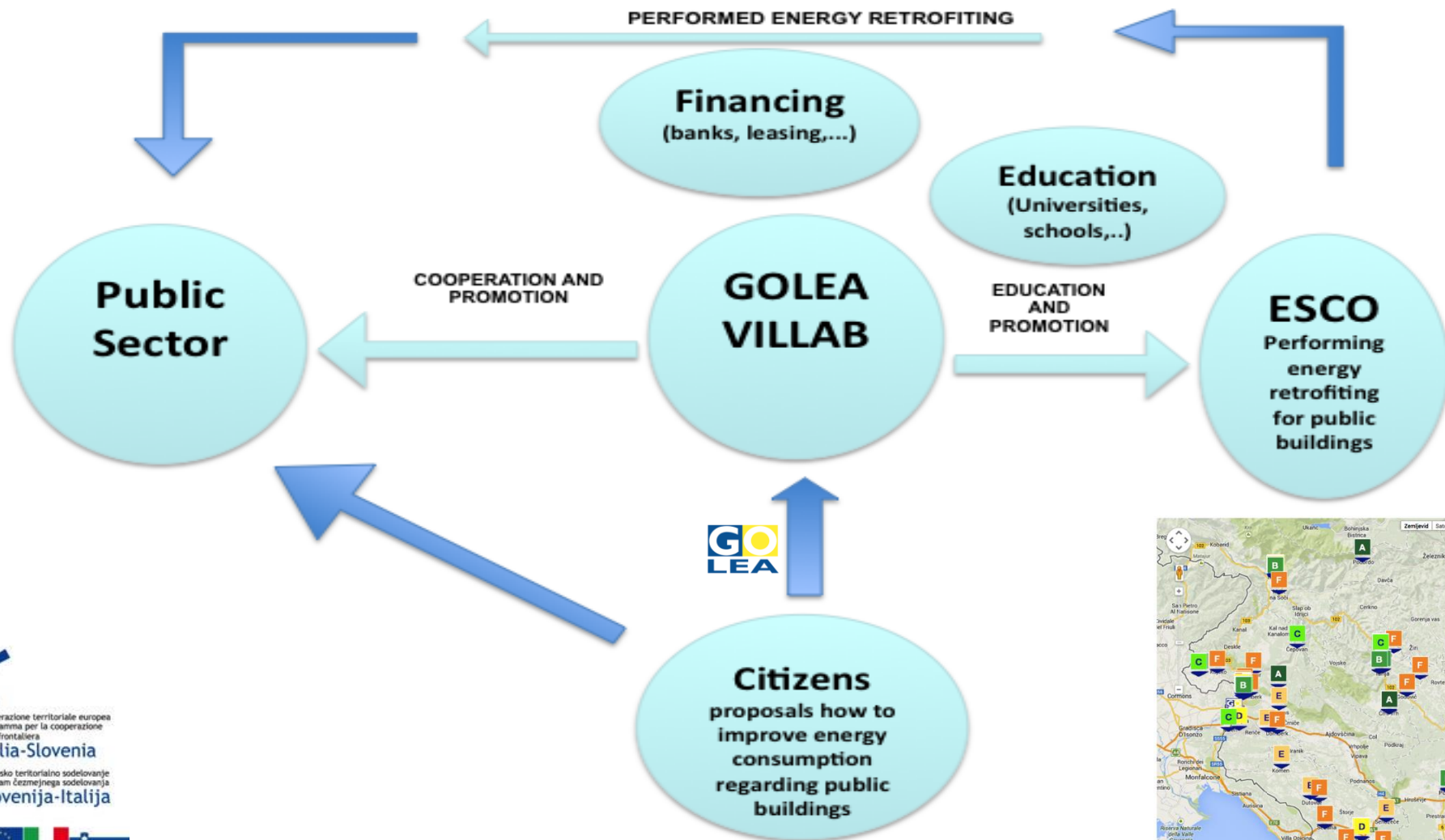
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VIRTUAL LABORATORY OF ENERGY EFFICIENT PUBLIC BUILDINGS - VILAGO



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ENERGY ViLLab
LIVING LAB FOR SUSTAINABLE DEVELOPMENT

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<http://vilago.golea.si>

PROCEDURES for PUBLIC PRIVATE PARTNERSHIP – PPP

1. To find the public interest by representative body of Municipality (art. 11 ZJZP).
2. To make the investment documentation for the PPP model (art. 8 ZJZP).
3. To implement procedure by representative body (art. 31 ZJZP).
4. To adopt the Act on PPP by representative body of Municipality.
5. To prepare and publish the tender and the tender documents.
6. To select the concessionaire (ESCO).
7. To sign the contract ESC (Energy Supply Contract) or / and EPC (Energy Performance Contract)

ZJZP – Zakon o Javno Zasebnem Partnerstvu – The law of PPP in Slovenia

MUNICIPAL BUDGET			
REVENUES		EXPENDITURES	
Investment			
x. Energy refurbishing	100	Energy refurbishing	100
x.1 Grants	49		
x.2 Concession Fee	51		
		402. Expenditures for goods and services	
		4025. On-going maintenance	
		Services for contractually guaranteed savings	



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Example:

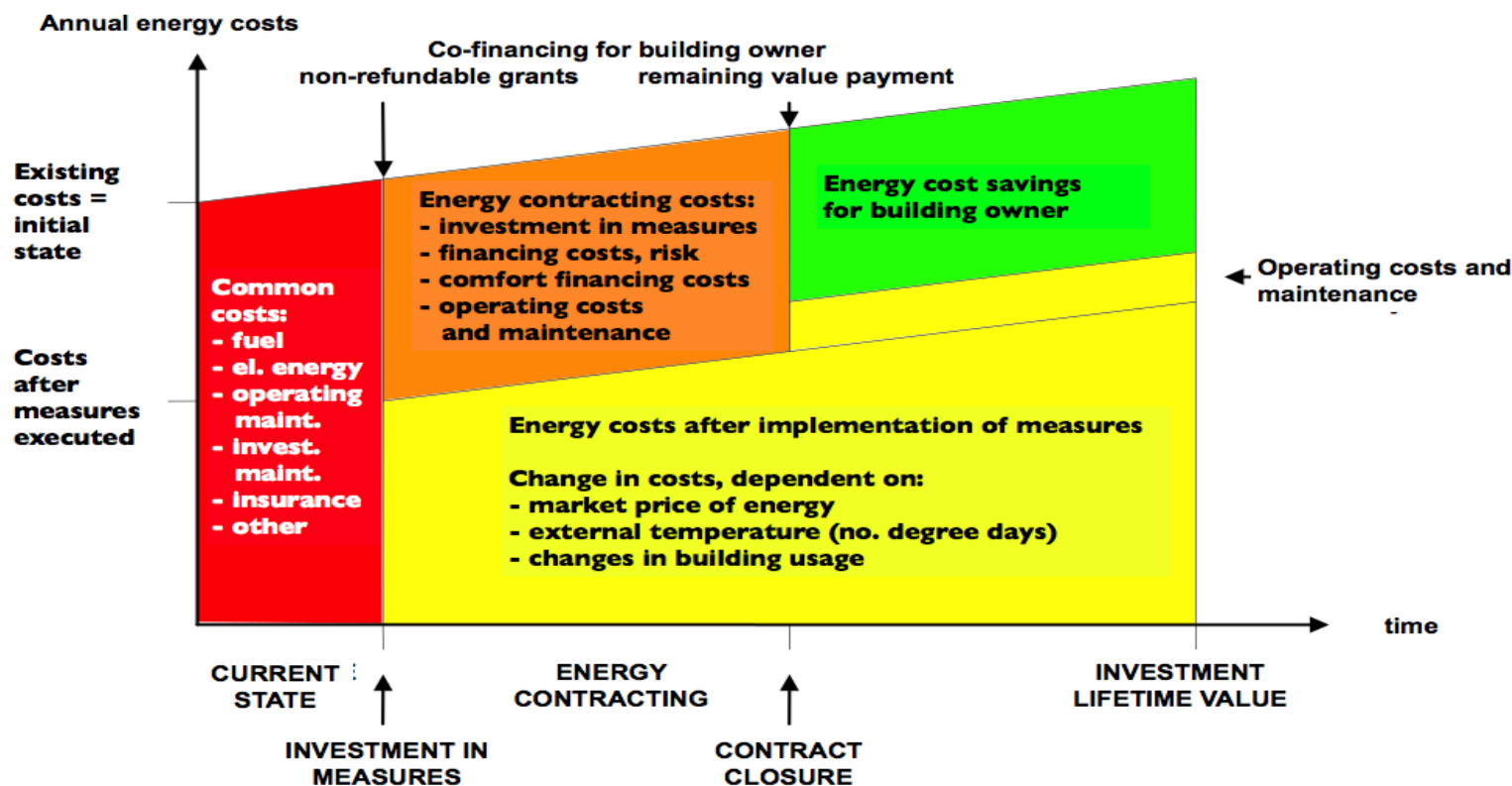
$$SUM = (RP \times C + RV) \times F$$

$$F < 1!!!$$

service

SUM – annual payment for user (Municipality) (€)
RP – the reference energy consumption (MWh)
C – the price of energy in the reference year (€/MWh)
RV – the reference costs of maintenance and / or

F – a factor of Division achieved savings



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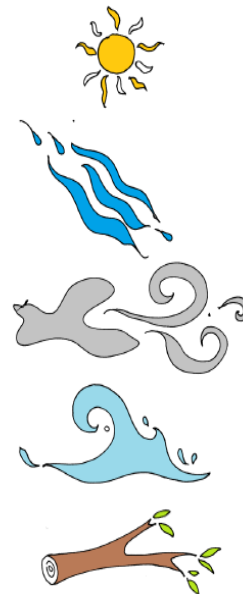
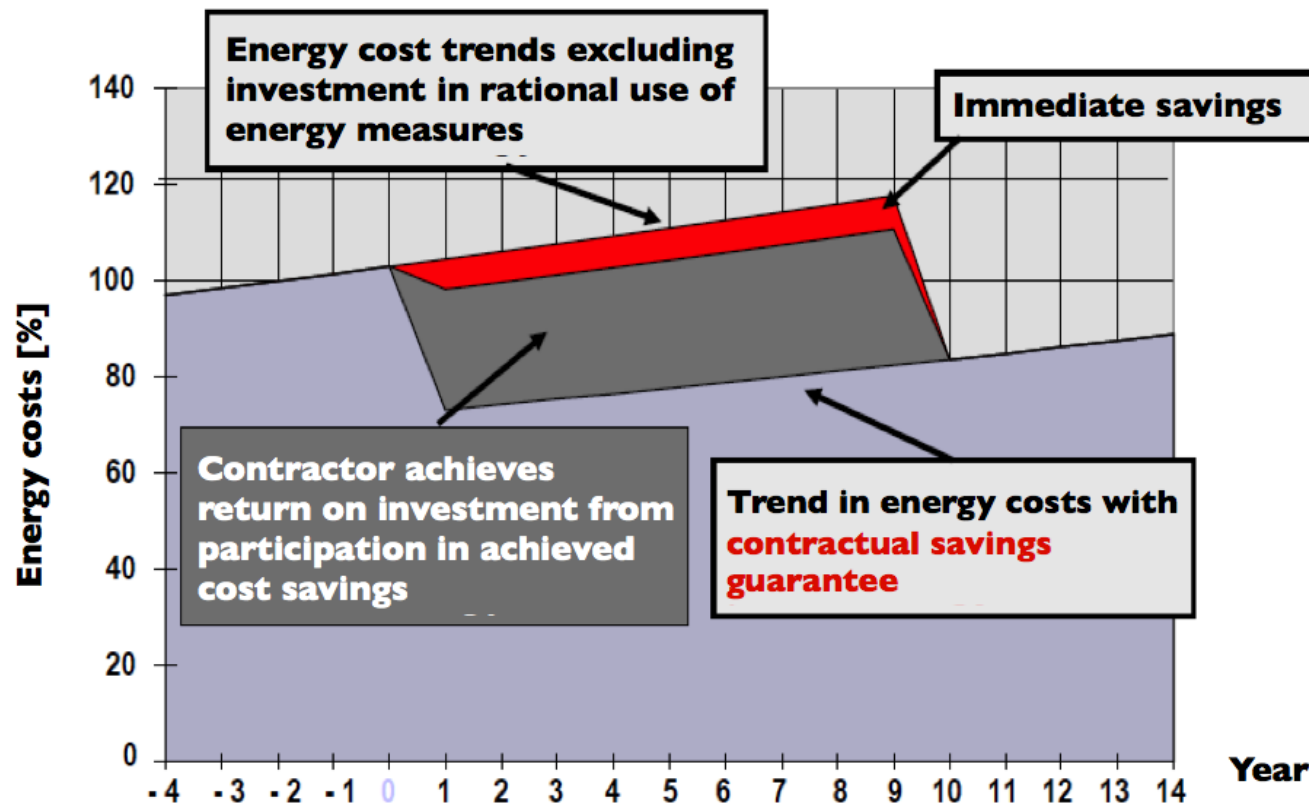


ESC - Energy Supply Contract

or / and

EPC - Energy Performance Contract

$SUM = (RP \times C + RV) \times F$ $F < 1 !!!$
annual payment for client (Municipality)
should be reduced



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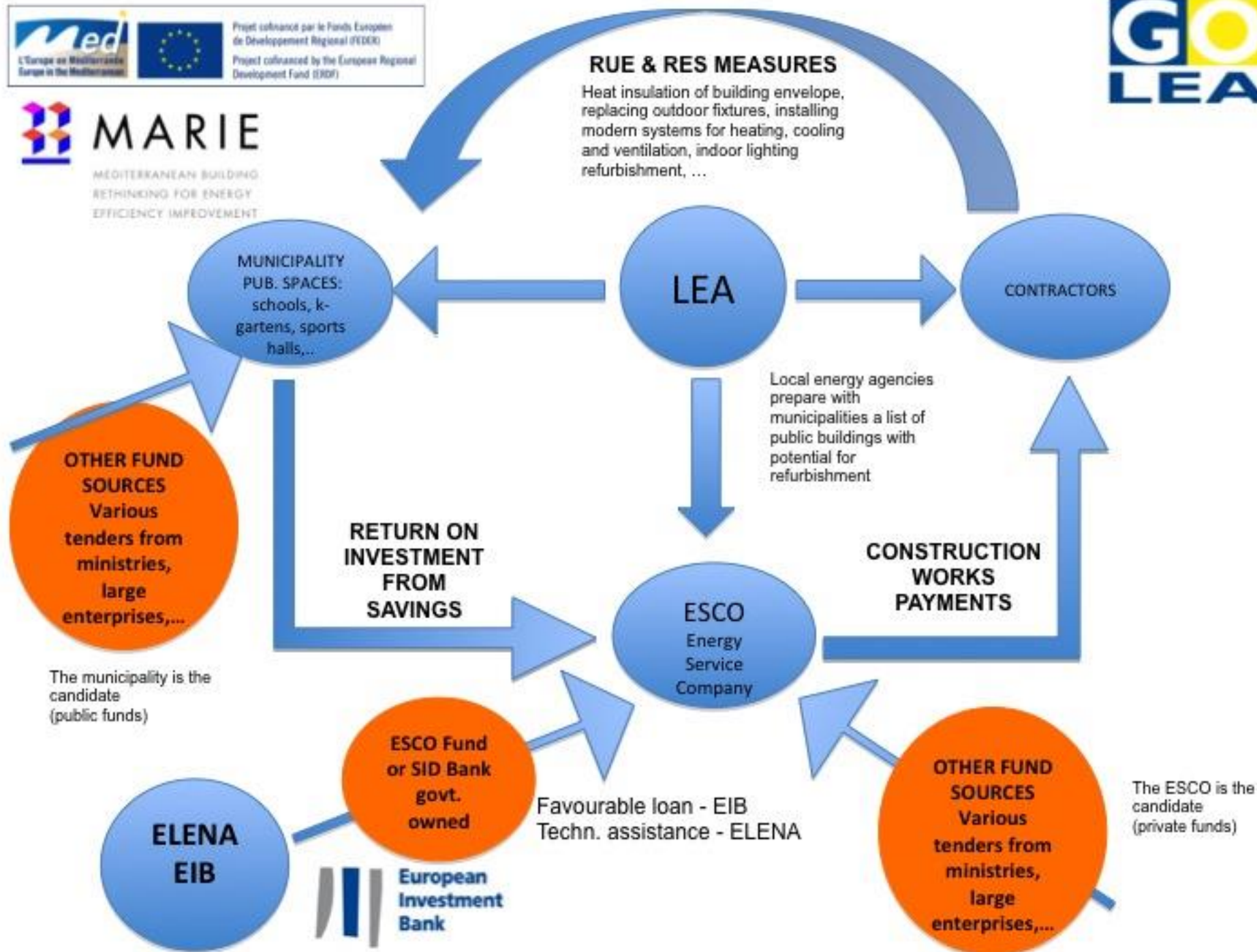


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RUE & RES MEASURES

Heat insulation of building envelope, replacing outdoor fixtures, installing modern systems for heating, cooling and ventilation, indoor lighting refurbishment, ...



ELENA CONCEPT

ELENA Technical Assistance
EU co-financing up to 1/25 inv. value

Preparing projects

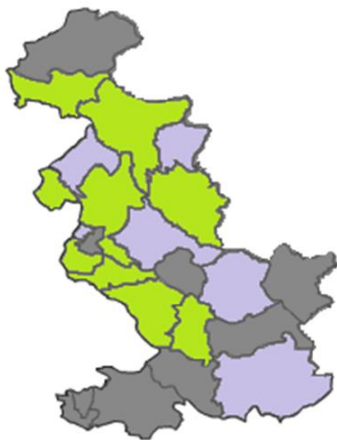
**Implementation of RUE and RES
projects in public sector**
(municipalities, towns, etc., min. €50 million)

ESCO

Gold award for innovation

for GOLEA's energy information system
CSRE and VILAGO project

June 2014



Zlato priznanje

Za inovacijo

Vzpostavljane energetskega informacijskega sistema ciljnega spremljanja rabe CSRE v primorskih občinah
ter vzpostavitev virtualnega laboratorija javnih stavb z visoko energetske učinkovitostjo - VILAGO

prejmejo

Rajko Leban, Nejc Božič, Primož Ladava

mag. Bogomil Kandus (ENEKOM, Inštitut za energetske svetovanje, d.o.o.)

Jaka Dolenec (ENEKOM, Inštitut za energetske svetovanje, d.o.o.)

Erika Osterman (ENEKOM, Inštitut za energetske svetovanje, d.o.o.)

GOLEA Goriška lokalna energetska agencija

Nova Gorica, junij 2014

Predsednik komisije za inovacije
Matej Stres

Predsednik območne zbornice
Miloš Šturm



WHAT ROLE DO LOCAL ENERGY AGENCIES PLAY?

LOCAL ENERGY AGENCIES:

- are an energy manager to municipalities, which lead energy accounting and propose and advise municipalities on energy efficiency and renewable energy project as independent expert,
- preparing project to improve the energy efficiency, also of the ESCO model, such as the EPC - Energy Performance Contracting or and ESC – Energy Supply Contracting.

CONCLUSION:

- based on Directive 27/2012/EU on energy efficiency implemented EMS - Energy Management System and prepared energy efficient projects,
- upgrade projects EnergyViLLab, ENRI,.. implemented „smart city“ model, where participate SME as ESCO, public sector, citizens, non-governmental organizations, institutes and agencies, financing sector,...
- sustainable energy projects implemented (RUE – MODEF and EE FUTURELIGHTS measures)
with focus on the energy self-handling communities, regions, ...
focus on the sustainable communities, regions,...



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CREATING SUSTAINABLE FUTURE



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