



D4.1.2

ANALYSIS REPORT PER PIONEER CITY WITH SURVEY RESULTS: *IVANIC - GRAD*

Status

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ENGAGE for energy & climate,
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1 – DESCRIPTION OF THE EVALUATION TOOLS USED

1.1 – TOOL 1

Name of the tool:

UNDP Kalkulator CO₂ (CO₂ UNDP on-line Calculator)

Information required:

The UNDP CO₂ calculator is intended to assist citizens to calculate their greenhouse gas emission footprint. This calculator has been developed with the Greenhouse Gas Protocol and ISO 14064 standard. Using CO₂ calculator we can calculate citizens "carbon footprint", find out what is the total energy consumption in the household in one year and how daily activities produces carbon dioxide and other greenhouse gases. Additionally, we can check out how citizens can reduce energy consumption and thus emissions into the atmosphere, and how to save on utility bills.

Categories covered	Indicator	Unit	Measured or estimates	Primary or Final consumption	Conversion factor used and source if final consumption
Housing	Annual energy consumption (electricity and natural gas)	kWh	Measured	Final	GWP Index
Mobility	Annual kilometres passed and average fuel consumption	Km/l	Estimated	Final	It is automatically calculated by the tool

Weblink: <http://www.undp.hr/show.jsp?page=100914>

Target Group: citizens

Free: Undp CO₂ calculator is free of charge

Developer: UNDP CO₂ calculator is intended to assist UNDP Country Offices, Regional Centres and Headquarters to calculate their greenhouse gas emission footprint. We use it because it is only one available in Croatia and it is very user friendly. Besides calculation of energy consumption and CO₂ emissions, UNDP calculator gives to citizens recommendations for savings. For households we can have exact calculation if we use date from utility invoices and for mobility we use estimated inputs and, we may say, results are indicative.

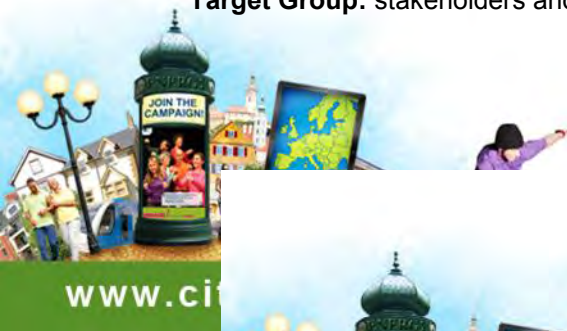
1.2 – TOOL 2

Name of the tool: Display®

Information required: The European Display® is a voluntary scheme designed by energy experts from European towns and cities. The Display tools enables to create energy performance certificates (energy: electricity and natural gas, CO₂ and water ratings)

Weblink: <http://www.display-campaign.org/>

Target Group: stakeholders and public servants/elected representatives



Free: for Energy Cities members

Developer(s): Energy Cities

Comments (advantages/ disadvantages of the tool): City of Ivanić-Grad since 2008 has participated in the Display campaign and monitors energy consumption in all public buildings. In Croatia has not yet developed a tool for energy monitoring and we decided to monitor stakeholders and public servants using Display on line tool. Display online tool is simple to use, takes into account the consumption of electricity, gas and water and calculates CO₂ emissions. Energy Institute Hrvoje Požar has prepared a corrective factor for Croatia, so the results obtained by Display tool are reliable.



2 – MONITORING METHODOLOGY AND STRATEGY FOR ENGAGE

2.1 – MONITORING METHOD

Almost 300 persons are engaged in Ivanić-Grad; 79 of them were monitored to evaluate their energy consumption.

For that purpose, we created a specific form. It contains two groups of data, depending on the engagement. The first group of data monitors energy consumption in households, and the second transportation and mobility.

For households we evaluate consumption of water, electricity, gas and heating. We monitor mobility via number of kilometres travelled and car type. When one is engaged, their average data on energy consumption is collected.

After 12 month, engaged and monitored citizens have been contacted again to collect new data to check whether the Engage campaign leads to real energy savings and reduced emissions of CO₂ in tonnes. The first results were available in March 2012.

Category of participants	Number of participants	Date of 1st evaluation	Date of 2nd evaluation	Method: estimation or real data
Citizens	55	21/10/2011	21/10/2012	Real data (invoices)
Public servants	10	20/03/2011	20/03/2012	Real data (invoices)
Stakeholders	13	21/04/2011	21/04/2012	Real data (invoices)

2.2 – MONITORING STRATEGY

Category of participants	Strategy to get the users to supply the data	Staff capacity required	Resources	Cost of the event
Citizens	<i>Day of the City</i>	2 people: 1 photographer, 1 coordinator	1 stand, 1 roll up	100€
Citizens	<i>Pumpkin fest, Engage posters exhibition</i>	5 people: 1 photographer, 1 coordinator, 3 interns (1 journalist)	1 big stand, 1 roll up, Engage posters	500€
Public servants and stakeholders	<i>Daily activities with stakeholders and public servants</i>	2 people: 1 photographer, 1 coordinator	1 roll up	50€

In order to simplify administration of ENGAGE, we created an ENGAGE form. On the Engage form we designed space for all relevant information. By signing the Form (when participant join the ENGAGE) participants gave us the right to photograph them, to make their posters and publish it online. Participants who accepted to be monitored, gave us their data on energy consumption and we put it in the Engage form (back side). As one year passed, we contacted again participants (by phone, mail or personal meeting) and we remind them to prepare energy consumption data once again. In the meantime, we invited them to the opening of the ENGAGE poster exhibition when we prepared gifts as a thank you for participating in the Campaign. As evaluation is simple and easy, we were satisfied with the response of the participants, Some of participants decided to be monitored later and we were happy to monitor them.



3 – POSTER RESULTS

Figure	Citizens	Stakeholders	Public Servants	Total (All categories)
Number of posters produced	186	72	23	254
Number of people ENGAGED	199	81	20	294
Project targets: number of people ENGAGED	150	15	20	185
Number of baselines done before the end of October 2011	37	6 organisations* representing 18 ENGAGED stakeholders	11 Entities** representing 12 public servants	54
Number of complete evaluations carried out	30	4 organisations* representing 16 ENGAGED stakeholders	11 Entities** representing 12 public servants	45
Project evaluations targets	30	3	10	43

* Organisations: private companies, firms, associations or NGOs

** Entities: the local authority or its individual departments, public institutions (such as libraries, schools, etc.)

4 – EVALUATION RESULTS

Figure	Citizens	Stakeholders	Public servants	Total (All categories)
Amount of CO ₂ saved (in tonnes of CO ₂ equivalents/year)	28,124	16,418	32,800	77,342
Amount of energy saved (in kWh/year) – Primary energy	33075	25707	5821	64603
Amount of RES produced (in kWh/year)	1	0	2	3

In Ivanić-Grad, a city full of oil and gas resources, in the past, it was not really thought about saving energy. The City of Ivanić-Grad started to implement energy efficiency projects relatively recently (2008). With education-based programmes for citizens, especially children, we achieved positive changes in behaviour. Saving results of people who were involved in the ENGAGE campaign show that the Campaign gave them positive encouragement. The city administration is very pleased with the positive results of the ENGAGE campaign and with the fact that we are able to present the results in real figures: kWh and tonnes of CO₂.



4.1 – MONITORING

Figure	Citizens	Stakeholders	Public servants
Number of people who did a baseline	55	6 organisations* representing 18 ENGAGEd stakeholders	13 entities** representing 13 ENGAGEd public servants
Number of people who did the second evaluation	30	4 organisations representing 16 ENGAGEd stakeholders	11 entities** representing 11 ENGAGEd public servants
Percentage of people who completed the evaluation process (= who did the 2 evaluations)	55%	88%	85%

4.2 – EXTRAPOLATION FOR THE WHOLE POPULATION

City population: 14.544

- CO₂ saved (please indicate the unit): 77,342 CO₂ x 99,8% = 7.718,731 CO₂
- Energy saved (please indicate the unit): 64603 kwh x 99,8% = 6.447.379 kwh
- RES produced (please indicate the unit): 3 x 99,8% = 299,4 RES

4.3 – INTERESTING STATISTICS:

Figure	Citizens	Stakeholders	Public servants
% of the monitored population that reduced their CO ₂ emissions	97 %	67 %	100 %
% of monitored population that increased their CO ₂ emissions	3 %	33 %	0 %
% of monitored population that reduced their energy consumption	97 %	67 %	91 %
% of monitored population that increased their energy consumption	3 %	33 %	9 %
% of the monitored population achieving to produce RES:	3 %	0 %	9 %
Average individual % of CO₂ emissions avoided	17%	N/A	N/A
Average individual % of primary energy saved	9%	N/A	N/A
Figure of the most important CO ₂ measure	4,12 tonnes	15,23 tonnes	21,05 tonnes
Figure of the most important energy saving measure	8998 kWh	25506kWh	2942 kWh



5 – RECOMMENDATIONS AND LESSONS LEARNT

1- If you choose a tool for monitoring and evaluation, choose the one which is simple as possible. If the procedure of collecting and processing data is easy, citizens will easier decide to participate.

2- Tables and forms can significantly simplify the administration of the project. Good preparation allows you further actions without problems.

3- Participants involved in the campaign should be contacted regularly. We remained in contact with the participants in different ways (e-mail, newsletter, phone calls, ...). We also thanked them for their participation, and also reminded them of their obligations (engagements).

6 – APPENDICES

- Evaluation tool (or screenshots if available online)
- Documents given to each category during the campaign
- Etc.



PODRUČJE	OBEVEZUJEM SE:
Općenito	Obevezujem se smanjiti potrošnju energije u vlastitom domu za 10%. Obevezujem se napravit energetski pregled vlastitog doma. Obevezujem se kupiti energijski razred A++ hladnjaču.
Grijanje / Hlađenje	Obevezujem se u svojoj kući održavati vanjsku temperaturu oko 19°C. Obevezujem se zamijeniti stari sustav grijanja novim, ekološkim sustavom. Obevezujem se ugraditi dizalice toplote. Obevezujem se birati odjeću u toplje i umjesto pokriveni, a ljetnje. Obevezujem se birati podne i ljetne odjeće na 24°C (ili manje). Obevezujem se instalirati mostar za regulaciju toplote. Obevezujem se birati ne koristiti električni ventilator.
Električna energija	Obevezujem se kupovati uređaje A energetskog razreda. Obevezujem se ne kupiti energetski učinkovite uređaje opreme. Obevezujem se primijeniti "7 Zlatnih pravila". Obevezujem se smanjiti broj električnih uređaja u svojoj kući. Obevezujem se isključiti uređaje kada ih ne koristim. Obevezujem se ne ostavljati uređaje u stanju by mode. Obevezujem se isključiti svjetlo kada odgođam na stolu i prostorijama u kojima. Obevezujem se koristiti samo trijebe žarulje. Obevezujem se koristiti priključak svjetla koji je više moguće. Obevezujem se koristiti punu periku posuda. Obevezujem se kupovati zeleni energiju. Obevezujem se koristiti senzor za svjetlost u vlastitoj domaćinstvu.
Izolacija	Obevezujem se kupiti izolacijske ploče za strop i zidove. Obevezujem se poboljšati izolaciju zidova, podova, potkrovlja. Obevezujem se postaviti rolete na prozore.
Obnovljivi izvori	Obevezujem se instalirati X m ² fotovoltaičkih solarnih. Obevezujem se postaviti solarnu kolektore za pripremu potopne tople vode. Obevezujem se instalirati katalizator na dimnjaku.
Voda	Obevezujem se smanjiti vrijeme dugog tuiranja. Obevezujem se održati bijelo sapo na zatvorenoj zalijepljenju.
Mobilitet	Kontroliranje automobila. Obevezujem se smanjiti broj vozila u automobilu. Obevezujem se zamijeniti automobil biciklom. Obevezujem se pronaći bicikl u školi, posloj, ne voziti automobilom. Obevezujem se raditi odjeću, ako imam i ako imam bicikl, a ne voziti automobilom. Kod idem na posao, na godišnjicu, na putovanje. Obevezujem se edukirati ekovozilače. Obevezujem se kupiti električni bicikl ili automobil. Obevezujem se kupiti automobil koji ima manju potrošnju goriva.

PODRUČJE	OBEVEZUJEM SE:
Bicikl	Obevezujem se birati bicikl za kratke relacije. Obevezujem se manje kupovati stvari biciklom. Obevezujem se biciklom otići na posao. Obevezujem se kupiti električni bicikl.
Javni prijevoz	Obevezujem se na godišnjicu otpustiti bicikl. Obevezujem se koristiti javni prijevoz.
Car sharing / pooling	Obevezujem se koristiti car-pooling ili car-sharing. Obevezujem se poticati na posao s kolegama. Obevezujem se raditi car-pooling ili car-sharing u našoj firmi.
Hrana	Obevezujem se kupovati lokalnu proizvodnju. Obevezujem se kupovati hranu iz moje regije. Obevezujem se jest jagode u sezoni, ne žiti. Obevezujem se koristiti biološki voće i povrće. Obevezujem se koristiti barijeru na putanju. Obevezujem se kupovati namirnice bez animalaže. Obevezujem se posuđivati knjige, DVD-e, CD-e ili drugi materijal. Obevezujem se kupovati i kupovati. Obevezujem se pokloniti ulaznice na koncerte, izložbe, radionice, natjecanja i slično.
Recikliranje	Obevezujem se koristiti reciklirani papir. Obevezujem se štedjeti energiju recikliranjem. Obevezujem se prijaviti otpad i obzvu koju više ne koristim. Obevezujem se koristiti vodu u vodu. Obevezujem se u kupovinu ići s ekološkim i zelenim izborom.
Edukacija	Obevezujem se zaposliti osobu znanu za energiju i učinkovitost. Obevezujem se edukirati djecu kako da štede energiju. Obevezujem se primijeniti "Zeleni nabavu". Obevezujem se manje prijaviti.









List of engagements





Misli zeleno za bolje sutra



Grad Ivanić-Grad | www.ivanic-grad.hr

OBVEZUEM SE GASITI SVE UREĐAJE
KADA IH NE KORISTIM

IEE ENGAGE
IZJAVA O SUGLASNOSTI

U svrhu IEE ENGAGE projekta kojeg je Grad Ivanić-Grad član, a koji promiče povećanje svijesti ljudi prema energetske učinkovitosti i obnovljivim izvorima energije kroz promotivne aktivnosti i u misiji Grada Ivanić-Grada "Misli zeleno za bolje sutra" dolje navedeni daje sljedeće izjave.



Misli zeleno za bolje sutra.



Misli zeleno za bolje sutra.



☒ Prištajem pod punom odgovornošću da se moja slika i izjava koriste u PR kampanji u svrhu promocije IEE ENGAGE projekta u Ivanić-Gradu i na world wide webu.

☐ Ne prištajem na gore navedenu izjavu.

☒ Prištajem pod punom odgovornošću da se prati potrošnja u mojem kućanstvu. Prištajem pratiti potrošnju ispunjavanjem Priloga I.

☐ Ne prištajem na gore navedenu izjavu.

☒ Prištajem da mi Grad Ivanić-Grad šalje obavijesti u digitalnom obliku o svojem sudjelovanju u IEE ENGAGE projektu.

☐ Ne prištajem na gore navedenu izjavu.

Podaci o davatelju izjave:

IME I PREZIME: HRVOJE STRAŠEK

ADRESA: RUDARSKA 10, IVANIĆ-GRAD

E-MAIL: hrvoje@ivanic-grad.hr

KONTAKT BROJ: 099/2839-362

Podaci o maloljetnom članu obitelji, a za kojeg također vrijede dane izjave:

IME I PREZIME: _____

DATUM ROĐENJA: _____

ADRESA: _____

KONTAKT BROJ: _____

Podaci o maloljetnom članu obitelji, a za kojeg također vrijede dane izjave:

IME I PREZIME: _____

DATUM ROĐENJA: _____

ADRESA: _____

KONTAKT BROJ: _____

Podaci o maloljetnom članu obitelji, a za kojeg također vrijede dane izjave:

IME I PREZIME: _____

DATUM ROĐENJA: _____

ADRESA: _____

KONTAKT BROJ: _____




www.citiesengage.eu

U Ivanić-Gradu, dana 17.03., 2011.

Vlastoručni potpis Štrašek







Misli zeleno za bolje sutra

I. PODACI O POTROŠNJI

1) PODACI ZA VREDNOVANJE POTROŠNJE U KUĆANSTVU
VRSTA ENERGENATA U KUĆANSTVU ZA GRIJANJE:

PRIRODNI PLIN	X
LOŽ ULJE ILI NAFTA	
UGLJEN	
DRVO	
STRUJA	

PROSJEČNI MJESEČNI RAČUN ZA STRUJU: 150,00 kuna
PROSJEČNI MJESEČNI RAČUN ZA GRIJANJE (ZIMO): 989,00 kuna

$258,62$
 $269,76$
 $628,38 \cdot 12 = 7.540,56 \text{ kWh/year}$

2) MOBILNOST
VRSTA GORIVA U OSOBNOJ AUTOMOBILU:

BENZIN	X
DIESEL	
AUTOPLIN	

PROSJEČNA MJESEČNA KILOMETRAŽA OSOBNOG AUTOMOBILA: 833
PROSJEČNA POTROŠNJA GORIVA (l/100km): 7,5

Ukupno 7.703 t/CO₂
 Mjesto i datum: Ivanic-grad
 17.03.2011.
 Vlastoručni potpis: Stariček

II. PODACI O POTROŠNJI NAKON GODINU DANA

1) PODACI ZA VREDNOVANJE POTROŠNJE U KUĆANSTVU
VRSTA ENERGENATA U KUĆANSTVU ZA GRIJANJE:

PRIRODNI PLIN	X
LOŽ ULJE ILI NAFTA	
UGLJEN	
DRVO	
STRUJA	

PROSJEČNI MJESEČNI RAČUN ZA STRUJU: 149,00 kuna
PROSJEČNI MJESEČNI RAČUN ZA GRIJANJE (ZIMO): 709,00 kuna



$241,38$
 $287,79$
 $28,91 \cdot 12 = 346,92 \text{ kWh}$

2) MOBILNOST
VRSTA GORIVA U OSOBNOJ AUTOMOBILU:

BENZIN	X
DIESEL	
AUTOPLIN	

PROSJEČNA MJESEČNA KILOMETRAŽA OSOBNOG AUTOMOBILA: 709,00
PROSJEČNA POTROŠNJA GORIVA (l/100km): 7,5

Ukupno 7.981 t/CO₂
 Mjesto i datum: Ivanic-grad
 06.04.2012.
 Vlastoručni potpis: Stariček

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Kalkulator CO₂

Ukupna emisija (u tonama CO₂)

7.203

[Uvod](#)

[Prijevoz automobilom](#)

[Avio-prijevoz](#)

[Kućanstvo \(struja i grijanje\)](#)

1. Prosječni mjesečni račun za struju (u kn)

150

Ukupno kWh mjesečno

258.62

Emisije na kWh (u kg)

0.0005

Godišnje emisije za struju (u tonama CO₂)

1.55

2. Prosječni mjesečni račun za grijanje zimi (u kn)

900

3. Vrsta energenta za grijanje

Prirodni plin

Ukupno mjesečno utrošeno energenta za grijanje

369.76

Jedinica energenta

kubični metar

Emisija po jedinici energenta (u kg)

0.0019

Godišnja emisija za grijanje (u tonama CO₂)

3.51

Ukupna emisija od struje i grijanja (u tonama CO₂)

5.06

Calculation tool: UNDP CO₂ calculator for citizens (household)



Calculation tool: UNDP CO2 calculator for citizens (mobility)



Kalkulator CO₂

Ukupna emisija (u tonama CO₂)

5.981

Uvod

Prijevoz automobilom

Avio-prijevoz

Kućanstvo (struja i grijanje)

1. Prosječni mjesečni račun za struju (u kn)

140

Ukupno kWh mjesečno

241.38

Emisije na kWh (u kg)

0.0005

Godišnje emisije za struju (u tonama CO₂)

1.45

2. Prosječni mjesečni račun za grijanje zimi (u kn)

700

3. Vrsta energenta za grijanje

Prirodni plin

Ukupno mjesečno utrošeno energenta za grijanje

287.59

Jedinica energenta

kubični metar

Emisija po jedinici energenta (u kg)

0.0019

Godišnja emisija za grijanje (u tonama CO₂)

2.73

Ukupna emisija od struje i grijanja (u tonama CO₂)

4.18





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