



D4.1.2

ANALYSIS REPORT PER PIONEER CITY WITH SURVEY RESULTS:

IVANIC - GRAD

Status	Final
Date of preparation	November 2012
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Grant Agreement number	IEE/09/774/SI2.558357



**ENGAGE for energy & climate,
make the difference for Europe!**

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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 data from utility invoices and for mobility we use estimated inputs and, we may say, results are indicative.

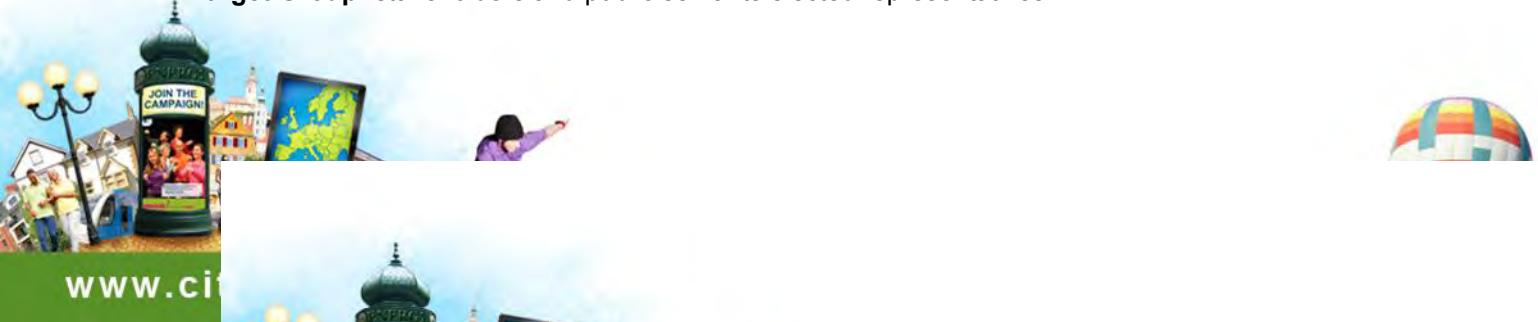
1.2 – TOOL 2

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	<i>Real data (invoices)</i>
Public servants	10	20/03/2011	20/03/2012	<i>Real data (invoices)</i>
Stakeholders	13	21/04/2011	21/04/2012	<i>Real data (invoices)</i>

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): $77,342 \text{ CO}_2 \times 99,8\% = 7.718,731 \text{ CO}_2$
- Energy saved (please indicate the unit): $64603 \text{ kwh} \times 99,8\% = 6.447.379 \text{ kwh}$
- RES produced (please indicate the unit): $3 \times 99,8\% = 299,4 \text{ RES}$

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	25506 kWh	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.



Misli zeleno za bolje sutra

PODRUČJE	OBVEZUJEM SE:
Općina	Obvezujem se da učim ili promovirajem energije u vlastitom domu za x% Obvezujem se napraviti energetski prered u vlastitom domu Obvezujem se kupiti/izgraditi inskluzivno/ekološko kućanstvo
Grijanje / Hlađenje	Obvezujem se u novim domovima postaviti kućnu temperatuру oko 19°C Obvezujem se zamjeniti staru kućnu grijelinu novom, ekološkim sustavom Obvezujem se uporabiti dovoljno "topline" Obvezujem se zimom odjedati toploje i umjesto pogodje grijanje Obvezujem se (ne) poduzeti korake unutar na 24°C (ne manje) Obvezujem se instalirati/izgraditi solarni panel Obvezujem se (jeftinje) ne koristiti akumulatori ventilator
Električna energija	Obvezujem se kupovati preduzeće s energetskog razreda A Obvezujem se učiti o različitim načinima konzumiranja električne energije Obvezujem se uporabiti dovoljno "topline" Obvezujem se smatrat učinak i učinkovitost u svom domu Obvezujem se ugasiti svu elektroniku kada ih ne koristim Obvezujem se učiti očuvanje energije u stand by modu Obvezujem se uporabiti solarni panel Obvezujem se koristiti sredstva za smanjenje potrošnje u prostorijama/urednicicama Obvezujem se koristiti sredstva za izolaciju
Izolacija	Obvezujem se kupiti nekučenom nebitnoj izolaciji i izvještaj Obvezujem se podobilati zelenim akcijama, poduzetnicima, pozovnjacima Obvezujem se poslovati učitevima na prezentacijama
Obnovljivi izvori	Obvezujem se učiniti se i mri "futurologički" učitelj Obvezujem se poslovati istinskoj istakšću za prihvatu petrolne topline vode Obvezujem se instalirati fontanu na imotima
Voda	Obvezujem se sruštiti vremene dugog zadržavanja Obvezujem se sruštiti vješće sruštiti
Mobilnost	Kontrolirati automobile Obvezujem se sruštiti vješće sruštiti Obvezujem se koristiti električni bicikl Obvezujem se priznati učinkovitost bicikla Obvezujem se redovito održavati auto i putne i kuce u smislu očuvanja goriva Kao ideja (predlog), na godišnjem je i mog automobile Obvezujem se koristiti električni bicikl Obvezujem se kupiti električni bicikl Obvezujem se kupiti električni automobil

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PODRUČJE	OBVEZUJEM SE:
Bicikl	Obvezujem se da učim biciklistički kod za kratke relacije Obvezujem se način isporučivanja obaviti biciklom Obvezujem se biciklističku opreku Obvezujem se kupiti vlastni bicikl
Javni prevoz	Obvezujem se na godišnji časovanim vješću Obvezujem se koristiti javni prevoz
Car sharing / pooling	Obvezujem se koristiti car pooling ili car sharing Obvezujem se putovati u našu s kolegama Obvezujem se razmijeti car-pooling ili car-sharing u našoj sekciji
Hrana	Obvezujem se kupovati lokalne proizvode Obvezujem se kupovati hrana iz moje regije Obvezujem se jesti jeloće u sezonu, ne zimi Obvezujem se kupovati hrana u sezonu, ne počinje Obvezujem se koristiti baterije na punjenje Obvezujem se kupovati hrana bez ambalaže Obvezujem se poslovati "kupi u zgradi i id uči u čitalištu nevne i krozop je radije nego kupovati"
Recikliranje	Obvezujem se koristiti i reciklirati sagrij Obvezujem se koristiti reciklirati i reciklirati Obvezujem se koristiti reciklirati i obaviti koga više ne koristi Obvezujem se učiti o recikliranih i obnovljivim materijalima
Edukacija	Obvezujem se učiniti izobuku zasnovanu na energetiku udjelovitošt Obvezujem se educirati člana kada da stede energetiku Obvezujem se provoditi "Zelenu radionicu" Obvezujem se manje printati

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List of engagements

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ENGAGE - Analysis report with survey results - 8

Engage form (image rights, front side)

 **Misli zeleno za bolje sutra**

OBVEZUJEM SE GASIĆI SVE UREBAZE
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 energetskoj učinkovitosti i obnovljivim izvorima energije kroz promotivne aktivnosti i u misiji Grada Ivanić-Grada "Misli zeleno za bolje sutra" dolje navedeni daje sljedeće izjave.

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

Ne pristajem na gore navedenu izjavu.

Pristajem pod punom odgovornošću da se prati potrošnja u mojem kućanstvu. Pristajem prati potrošnju ispunjavanjem Priloga I.

Ne pristajem na gore navedenu izjavu.

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

Ne pristajem na gore navedenu izjavu.

Podaci o davaljelu izjave:
IME I PREZIME: HRVODE ŠTRAŠEK
ADRESA: RUDARSKA 10, IVANIĆ - GRAD
E-MAIL: hrvode@ivanic-grad.hr
KONTAKT BROJ: 099 / 2831 - 362

Podaci o maloletnjem članu obitelji, a za kojeg također vrijede dane izjave:
IME I PREZIME: _____
DATUM ROĐENJA: _____
ADRESA: _____
KONTAKT BROJ: _____

Podaci o maloletnjem članu obitelji, a za kojeg također vrijede dane izjave:
IME I PREZIME: _____
DATUM ROĐENJA: _____
ADRESA: _____
KONTAKT BROJ: _____

U Ivanić-Gradu, dana 17.03. 2011.

Vlastoručni potpis: Štrašek

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I. PODACI O POTROŠNJI

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

PRIRODNI PLIN	<input checked="" type="checkbox"/>
LOŽ ULJE I LI NAFTA	<input type="checkbox"/>
UGLJEN	<input type="checkbox"/>
DRVO	<input type="checkbox"/>
STRIJEA	<input type="checkbox"/>

PROSJEČNI MJESEČNI RAČUN ZA STRUJU: 150,00 kuna
PROSJEČNI MJESEČNI RAČUN ZA GRUJANJE (ZIMI): 950,00 kuna

258,62
369,76
628,38 / 12 = 7.540,16 kWh/1 year 2014

2) MOBILNOST
VRSTA GORIVA U OSOBNOM AUTOMOBILU:

BENZIN	<input checked="" type="checkbox"/>
DIESEL	<input type="checkbox"/>
AUTOPLIN	<input type="checkbox"/>

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

Ukupno 7.203 t CO₂
Mjesto i datum:
Ivančić - grad
17.03.2011.
Vlastoručni potpis:
Šimek

II. PODACI O POTROŠNJI NAKON GODINU DANA

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

PRIRODNI PLIN	<input checked="" type="checkbox"/>
LOŽ ULJE I LI NAFTA	<input type="checkbox"/>
UGLJEN	<input type="checkbox"/>
DRVO	<input type="checkbox"/>
STRIJEA	<input type="checkbox"/>

PROSJEČNI MJESEČNI RAČUN ZA STRUJU: 140,00 kuna
PROSJEČNI MJESEČNI RAČUN ZA GRUJANJE (ZIMI): 700,00 kuna

241,38
284,79
528,97 / 12 = 6.349,64 kWh 2014

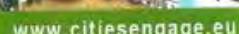
Ukupno 6.981 t CO₂
Mjesto i datum:
Ivančić - grad
06.04.2012.
Vlastoručni potpis:
Šimek

2) MOBILNOST
VRSTA GORIVA U OSOBNOM AUTOMOBILU:

BENZIN	<input checked="" type="checkbox"/>
DIESEL	<input type="checkbox"/>
AUTOPLIN	<input type="checkbox"/>

PROSJEČNA MJESEČNA KILOMETRAŽA: 700,00
OSOBNOG AUTOMOBILA: _____
PROSJEČNA POTROŠNJA GORIVA (l/100km): 7,5 l

Ukupno 5.250 t CO₂
Mjesto i datum:
Ivančić - grad
06.04.2012.
Vlastoručni potpis:
Šimek







Kalkulator CO₂

Ukupna emisija (u tonama CO₂)

7.203

Uvod

Prijevoz automobilom

Avio-prijevoz

Kućanstvo (struja i grijanje)

1. Prosječni mjesecni račun za struju
(u kn)

150

Ukupno kWh mjesecno

258.62

Emisije na kWh (u kg)

0.0005

Godišnje emisije za struju (u tonama CO₂)

1.55

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

900

3. Vrsta energenta za grijanje

Prirodni plin

Ukupno mjesecno 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

UNDP

Uvod Prijevoz automobilom Avio-prijevoz Kućanstvo (struja i grijanje)

1. Prosječni mjesecni račun za struju (u kn)	Ukupno kWh mjesecno	Emisije na kWh (u kg)
140	241.38	0.0005
Godišnje emisije za struju (u tonama CO ₂)		
1.45		
2. Prosječni mjesecni račun za grijanje zimi (u kn)	3. Vrsta energenta za grijanje	Ukupno mjesecno utrošeno energenta za grijanje
700	Prirodni plin	287.59
Jedinica energenta	Emisija po jedinici energenta (u kg)	Godišnja emisija za grijanje (u tonama CO ₂)
kubični metar	0.0019	2.73
Ukupna emisija od struje i grijanja (u tonama CO ₂)		
4.18		





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