D4.1.2

ANALYSIS REPORT PER PIONEER CITY WITH SURVEY RESULTS:

RIMINI

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1 – DESCRIPTION OF THE EVALUATION TOOL(S) USED

1.1 – TOOL 1

Name of the tool: CO_2 Calculator

Designed by "AzzeroCO_2" an Italian ESCO (Energy Service Company) created in 2004 by Legambiente Italia and Kyoto Club. They support private companies, public authorities and single citizens to quantify, reduce and compensate CO_2 emissions caused by their activities and provide scientific and technical advice for the definition of energy efficiency strategies. They promote renewable energy sources and sustainable mobility solutions and offer support in the choice and use of materials. In addition, they offer a large portfolio of high quality offset projects to compensate emissions associated with a particular activity by purchasing carbon credits (http://www.azzeroco2.com/company_profile/default.asp?id=790).

Calculation methodologies are developed by IPCC (International Panel Climate Change) and reference data are based on ECOINVENT database. Ecoinvent is a swiss company that since 1997 collect scientific and industrial data on products life cycle (www.ecoinvent.org). The Ecoinvent database contains international industrial life cycle inventory data on energy supply, resource extraction, material supply, chemicals, metals, agriculture, waste management service, and transport services. It's used by around 4'500 users in more than 40 countries worldwide and is included in the leading LCA software tools as well as in various eco-design tools for building and construction, waste management or product design.

This on-line tool allows a complete carbon footprint in terms of yearly CO_2 equivalent Emissions (all f GHG emissions are included) for housing consumption (Electricity and Heating), mobility (car, motorbike, public transport, flights), food and beverage or a single event like a trip or a dinner.

To use the tool is very simple because you need to know only:
- Energy consumption: your monthly expense for electricity and heating (in terms of natural gas or gasoil bills)
- Mobility: type of car or/and motorbike or/and public transport used and distance covered during one year
- Other: Portion of food eated per week and type of bottles used.

Every user can register their carbon footprint periodically or their events and store the data for an historical review. In adddition you can choose to compensate your CO_2 emissions through active compensation project/initiative.

Information required

Categories covered	Indicator	Unit	Measured or estimates	Primary or Final consumption	Conversion factor used and source if final consumption	Comment
Housing	*Annual electricity consumption*	*€*	*Measured*	*Final*	If green energy is used : zero CO_2 emission 0,553 kgCO2eq/kWh*	*Average Cost of a 2 months consumption*
Housing	Annual fossil fuel (NG, Gasoil) consumption	€	Measured	Final	Depends on the fuel	*Average Cost of a 2 months consumption*
Mobility	Use of bike/ walking instead of car	Km	Estimated	Final	Depends on type of car	Global evaluation of one year of mobility
Mobility	Public transport (train, bus, airplane)	Km	Estimated	Final	Depends on the mobility mix	
Mobility	Quality Improve of car or motor bike	Km	Measured	Final	Depends on type of improvements	Better CO_2 emission category or fuel
Other	Food/Recycling	Times per week	Estimated	Final	Depends on type of food, origin and material	

*Conversion factor of the tool based on an average energy consumption of 3.500 kWh/year in 2011.

Renewable Energy Production has been reported or estimated by technical data of the plant (Solar Thermal or Solar PV Plants). We assume an average energy's production of 1.200 kWh/kWp per year for PV plants and 300 kWht/m^2 per year for solar thermal plants.

Conversion coefficient for CO_2 emissions saving in Italy for PV Plants is 0,53 kg CO_2/kWhe and for thermal plants is 0,25 kg CO_2/kWht.

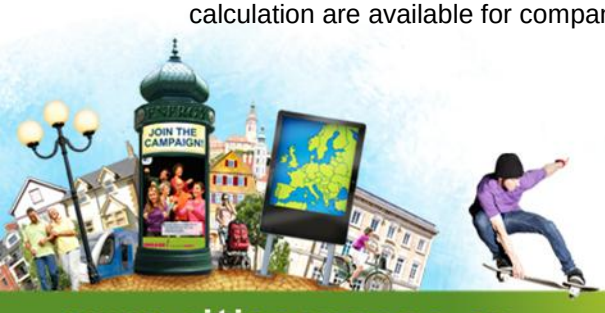
No data has been estimated for use of heat pumps.

Weblink: http://89.97.205.100/AzzeroCO2/calcolatore.jsp or http://www.cityfactor.it/calcolatoreco2

Screenshots of the website are attached in the appendices below.

Target Group: We used the tool for all the target groups who proposed to save energy or reduce CO2 emissions. It wasn't used for participants who produce energy from renewable sources (thermal or photovoltaic)

Free/Licence required: The tool is free of charge. Consultancies about CO_2 emission reductions and calculation are available for companies.



Developer(s): AzzeroCO2

It's very simple to be used, a limited amount of data is required. Data information are retrieved from international database regularly updated.

Take into account CO_2 equivalent emissions: not only CO_2, but every greenhouse gas that have an impact on climate.

It is a CO_2 calculator very similar like Carbon Footprint (UK): http://www.carbonfootprint.com/calculator.aspx *available for each country (italy including) and based on average international conversion factor.*

We suggest to use it and a link to the tool will be placed in our official website RiminiAmbiente.

Comments (advantages/ disadvantages of the tool)

Conversion coefficients are not available directly (this information is not free of charge). Only an italian version exists. Use of costs instead of measure of fuel or electricity make it a not exact tool (the cost could depend from several factors and conditions and final results could be variable up to 10%), but it's very simple for final users and precision is enough for the use inside the ENGAGE project.

It also takes in account several engagements connected to lifestyle (like food and travel habits, tailored on italian way of life)

1.2 – TOOL 2

A second tool has been developed for the sustainable competition "Record". It's similar to a CO_2 calculator, but it's based on number and type of specific actions and equipments

Name of the tool: Record Calculator

Information required: It's necessary to know all the equipment of the house and technical actions.

Target Group: It has been used only for first group of citizens and adapted as it is too complicated to be used formonitoringlarge numbers of citizens.

Free/Licence required: Free of charge.

Developer(s): Europa Inform for Municipality of Rimini

Comments (advantages/ disadvantages of the tool): Is not based on real consumptions, but only on average consumptions of equipment and standardised actions. Too much information is necessary to calculate a CO_2 footprint. Coefficient conversions are not updatable.

2 – MONITORING METHODOLOGY AND STRATEGY FOR ENGAGE

Monitoring method

Citizens were recruited mainly during Energy Days, Ecomondo Fair Exhibion and other small events. During these events we choose to collect only personal data, authorisation, pledge and intention to be monitored, because we did not have enough time to explain monitoring and collect energy-related information.

Furthermore citizens interested in monitoring has been contacted and interviewed by a technical operator that asked about its pledge: mobility (use of car/bike/walking), housing (energy consumption and renewable energy production) or other (normally food habits).

The time of the evaluation assumed is between September/October 2011 and September/October 2012. A large part of participants were called for monitoring during October/November 2012 at the end of the first year.

A different method was used for Stakeholders (Associations and Companies): a staff member contacted directly our mailing list of companies (more than 50) involved in the field of sustainability, constructions, services and ask them to engage in the project about make a poster and to be monitored. This activity started in September 2012.

About public servants communication did not work efficiently and only in the last months, through our Public Relation Office, has been involved, but not in right way. They were only interested to be engaged and/or monitored on their personal consumptions and not about what they could change in the work place!

Category of participants	***Number of participants***	***Date of 1st evaluation***	***Date of 2nd evaluation***	***Method: estimation or real data***
Citizens- group1	*15*	*30/10/11*	*30/10/12*	*Real data*
Citizens- group2	*22*	*30/10/11*	*30/10/12*	*Real data*
Stakeholders	*6*	*30/11/11*	*30/11/12*	*Real data*
Public Servants	*14*	*30/11/11*	*30/11/12*	*Real data*

Several participants have been involved only last autumn so we have only one evaluation for them.

Monitoring strategy

During Energy Days (three days) in last October during a city's festival recruiting of people has been a real success and a lot of people participated actively.

We organised a large stand in the sustainable area of the City's festival (nearby photovoltaic and gas boiler installer stands). In our stand has been arranged a photo set and an educational section managed by experts like engineers and teachers, three roll-up banners and a “big strip” promoting directly the Engage project together with leaflets and other demonstrative gadgets.

Other parallel events were organised: a pedibus led by a couple of donkeys (testimonial of the engage campaign), a thermal analysis of building demonstration and so on.

Our Energy days was a synchronised event at regional level (11 cities organised an Energy & Education Day that emulate Engage campaign in several aspects (Energy's faces the name of the project). Furthermore information:

http://ambiente.regione.emilia-romagna.it/primo-piano/2011/facce-energetiche

Category of participants	***Strategy to get the users to supply the data***	***Staff capacity required***	***Resources***	***Cost of the event***
Citizens	*Energy days*	*3 people: 2 photographers, 1 coordinator*	*1 big stand, 3 banners, flyers, leaflet, brochure, laptop, educational tools*	*1000€*
Stakeholder	Direct mailing/call	1 technician		
Public Servants	Direct mailing/call	2 operator: 1 photographer	Public Relation Office, banners	€ 0,00

3 – POSTER RESULTS

Figure	Citizens	Stakeholders	Public Servants	Total (All categories)
Number of posters produced	257	14	38	309
Number of people ENGAGEd	338	13	34	385
Project poster targets	250	20	25	295
Number of baselines done before the end of October 2011	33	3 organisations representing 3 stakeholders	12	48
Number of complete evaluations carried out	19	5 organisations representing 5 stakeholders	9	33
Project evaluations targets	50	5	10	65

Justification if you don't reach the targets of engagements or evaluations:

Citizens: The poster target for citizens are satisfactory but only achieved 20 complete evaluations because when they were called up one year later they were not willing to supply the data.. We then had to ask other people to be monitored but we could collect only their first evaluation.

Stakeholders: Involving companies was not simple. Only companies involved in the sustainability field or those we already have had contact with were interested to be monitored. For most of the companies making a real engagement wasn't a priority.

Public Servants: Making a real engagement turned out to be difficult for this category, especially linked to the every day life in the work place. Unfortunately at the beginning of the project the internal communication was to get public servants for personal engagements and not for the administration. That is why the majority of the ENGAGEments are personal. No politicians nor executives were involved really in this work!

4 – EVALUATION RESULTS

Figure	Citizens	Stakeholders	Public servants	Total (All categories)
Amount of CO_2 saved (in tonnes of CO_2 equivalents/year)	76	85	0	161
Amount of energy saved (in KWh/year)	25764	6010	353	32127
Amount of RES produced (in KWh/year)	46758	0	264000	310758

Justification if you are not able to present energy savings and/or renewable energy produced results:

CO_2 emissions saving: most part of CO_2 emission saving come from mobility. Public servants save less than 1 ton per year in mobility, but someone increased a lot their activities during 2012 travelling by train.

Energy saving: As last winter has been the coldest of last 30 years, so for citizens is normal that there isn't energy saving for housing that is the main source of saving. We applied a seasonal adjustment to take into consideration this (a corrective factor of 8% used to reduce the winter consumption)

RES production: monitored citizens who produce RE doesn't installed new plant, so only a very long summer season realised an increase of normal production of 8%

4.1 – MONITORING

Figure	Citizens	Stakeholders	Public servants
Number of people who did a baseline	34	6	14
Number of people who did the second evaluation	19	5	9
Percentage of people who completed the evaluation process (= who did the 2 evaluations)	56%	83,00%	79,00%

Comments

As described before, lot of people change is mind and we have to contact other participants in last autumn, so we have reach only 50% of foreseen target. Individual CO2 emissions saving show how are more motivated to improve their carbon footprint citizens and stakeholder, because they receive a direct benefit (health or money saving) in their new way of life.

4.2 – EXTRAPOLATION FOR THE WHOLE POPULATION

City population: 141.000

35 monitored people --> 4000 leverage factor

- CO_2 saved (please indicate the unit): 644.000 ton CO2
- Primary Energy saved (please indicate the unit): 128.508 MWh
- RES produced (please indicate the unit): 1.242.312 MWh

This figures are not acceptable because are more than double of total emissions of the city. So I think is better to consider an equivalent percentage of people who is interested in sustainability (35 on 385) as corrective factor, so leverage factor is 364. So new figures are as follow:

- CO_2 saved (please indicate the unit): 59.000 ton CO2
- Primary Energy saved (please indicate the unit): 11.700 MWh
- RES produced (please indicate the unit): 113.000 MWh

* The average CO_2 emissions of a new passenger car in the EU27 were 140.3 gCO_2/km in 2010.

4.3 – INTERESTING STATISTICS:

Figure	Citizens	Stakeholders	Public servants
% of the monitored population that reduced their CO_2 emissions	55%	80%	33%
% of monitored population that increased their CO_2 emissions	27%	0,00%	22%
% of monitored population that reduced their energy consumption	100,00%	60%	11%
% of monitored population that increased their energy consumption	0,00%	0,00%	0,00%
% of the monitored population achieving to produce RES:	14,00%	40%	11,00%
Average individual % of CO_2 emissions avoided	**15%**	N/A	N/A
Average individual % of primary energy saved	**4%**	N/A	N/A
Figure of the most important CO_2/Energy/RES produced	49 tonnes CO_2/ 20 597 kWh	58 tonnes CO_2/ 50 000 kWh	0.129 tonnes/ 264 MWh renewables

Comments on these statistics

In general we are satisfied by aggregate data: people monitored reduced their consumptions, but not all people reduced their emissions. For building it was quite simple take into account a cold winter or new conditions, but make same thinks in the mobility fields is more difficult.

All data doesn't take in account how many people live in the house or how many people travel in average together, so some results could appear not really true, like data extrapolation.

About figures most significant, they respect the choices of actors:

Citizens prefer to be engaged on mobility (a very big problem in our city in terms of car parking and traffic jam) so the performance in CO2 emissions saving is for a man who use the bike and train intead of a diesel car for a year to go at work realise a very important result.

Stakeholders prefer to save emissions through installations of new plants and building insulation or buying certified green energy when is not possible to install PV panels.

Public servants take part normally only in “very light!“ engagements regarding mobility between their home and working place. Only one engagement is very important and regards improvements of RES production: 11 new plants for a total of 140 kW peak power have been installed on 11 schools thanks to a regional grant and national incentives.

5 – RECOMMENDATIONS AND LESSONS LEARNT

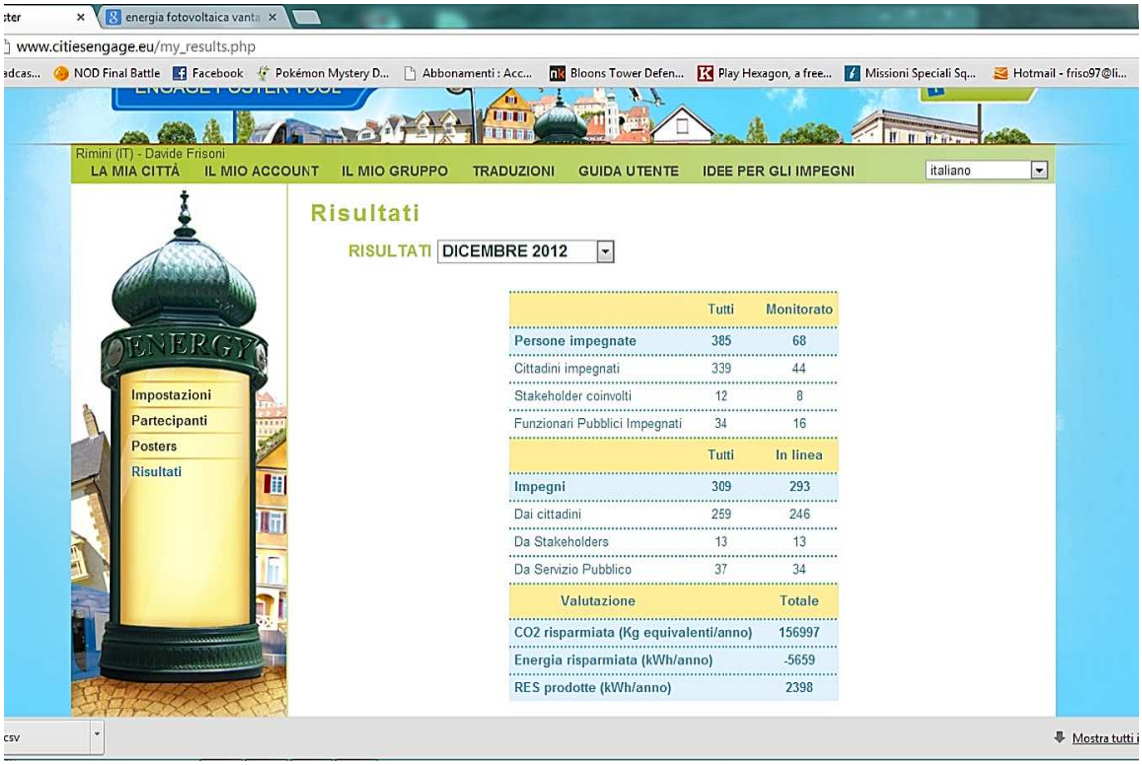
1- Involving people in sustainability is very hard work: a large number of citizens are interested to participate and reduce CO_2 emissions, but only few understand that it is necessary to do it without expecting a real economic and immediate return. We tried to stimulate a real participation in the monitoring campaign via offering gadgets, leaflets on sustainability and public events, but at this time people continuously receive calls by energy companies to change their supplier, so some older people refused permission to collect their energy data. Only people who know the energy subject well and receive benefits from RES and energy saving were really interested in the campaign at the beginning.

2- Politicians and management of public administration is fundamental to apply on large scale actions. Unfortunately from this side we have less cooperation than expected: we trusted that the councillor and city board would understand importance of the campaign and take in account to act with this campaign. Only the energy office defined some objectives because they receive a regional financing, but other colleagues didn't take in account to be engaged in a project to reduce emissions. The Majority of public servants prefer to be engaged on mobility and not in activities that concern their daily work.

3- Stakeholders involved in the campaign first of all have to understand that the municipality is really busy to reduce their internal consumptions, but during this year other problems needed to be solved and sustainability is not the priority for most part of them. It is our work to explain that this step could be the right way to exit the crisis reducing energy costs. Like for citizens, if stakeholders do not understand that it is an advantage to save CO_2 emissions (less energy costs, a better life quality and a good media to promote company sustainability) it is not possible to collect data: companies and associations who agreed to monitor their consumptions are normally energy related companies, but in general if they understand the spirit of the campaign, we receive right data for monitoring

The main lesson we learnt is, in any case, that we have to promote monitoring system because normally people do not know how much they spent on energy: we hope that people will be now more informed on energy costs and that is necessary to do everyone something for Environment.

6 – APPENDICES


www.citiesengage.eu/my_results.php
Rimini (IT) - Davide Frisoni
LA MIA CITTÀ
IL MIO ACCOUNT
IL MIO GRUPPO
TRADUZIONI
GUIDA UTENTE
IDEE PER GLI IMPEGNI
italiano
ENERGY
Impostazioni
Partecipanti
Posters
Risultati
Risultati
RISULTATI DICEMBRE 2012
Tutti Monitorato
Persone impegnate 385 68
Cittadini impegnati 339 44
Stakeholder coinvolti 12 8
Funzionari Pubblici Impegnati 34 16
Tutti In linea
Impegni 309 293
Dai cittadini 259 246
Da Stakeholders 13 13
Da Servizio Pubblico 37 34
Valutazione Totale
CO2 risparmiata (Kg equivalenti/anno) 156997
Energia risparmiata (kWh/anno) -5659
RES prodotte (kWh/anno) 2398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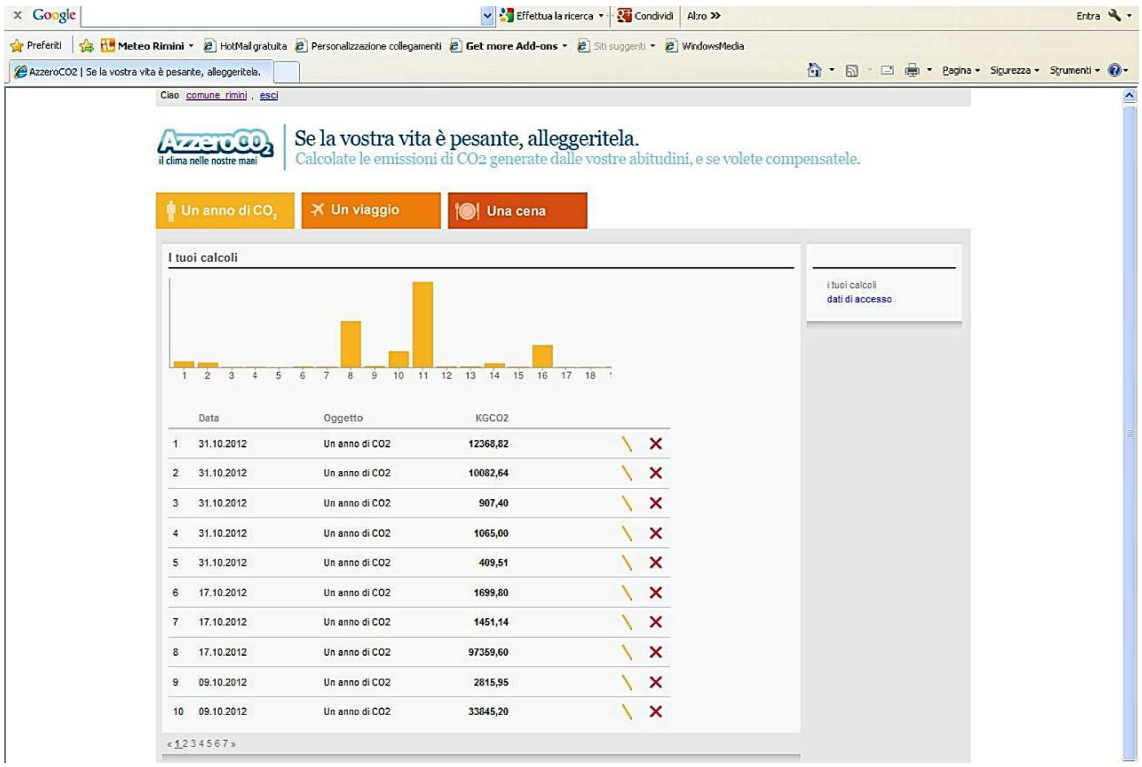
CO2 Reduction
Offsetting
Plant UK trees
Kenya Tree Planting
Calcolatore Impronta ecologica
Lingua: italiano
Benvenuto!
Casa
Voli
Auto
Moto
Bus & Treno
Secondaria
Risultati
Benvenuti sul calcolatore di impronta ecologica più avanzato del Web!
Innanzi tutto, dicci dove abiti: perché?
Perché creare un account?
Nazione: Italy
I calcoli relativi all'impronta ecologica sono generalmente basati sulle emissioni dei 12 mesi precedenti
Inserire il periodo cui fa riferimento il presente calcolo (opzionale):
da
a
Salva
Qundi, selezionare la scheda appropriata in alto per calcolare la parte del proprio stile di vita cui si è più interessati, ad esempio i viaggi in aereo.
Oppure, consultare ognuna delle schede suindicate per calcolare la propria impronta ecologica totale.
Dopo il calcolo, sarà possibile compensare/neutralizzare le emissioni attraverso uno dei nostri progetti a misura di clima.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Condividi
Altro
Entra
Preferiti
Meteo Rimini
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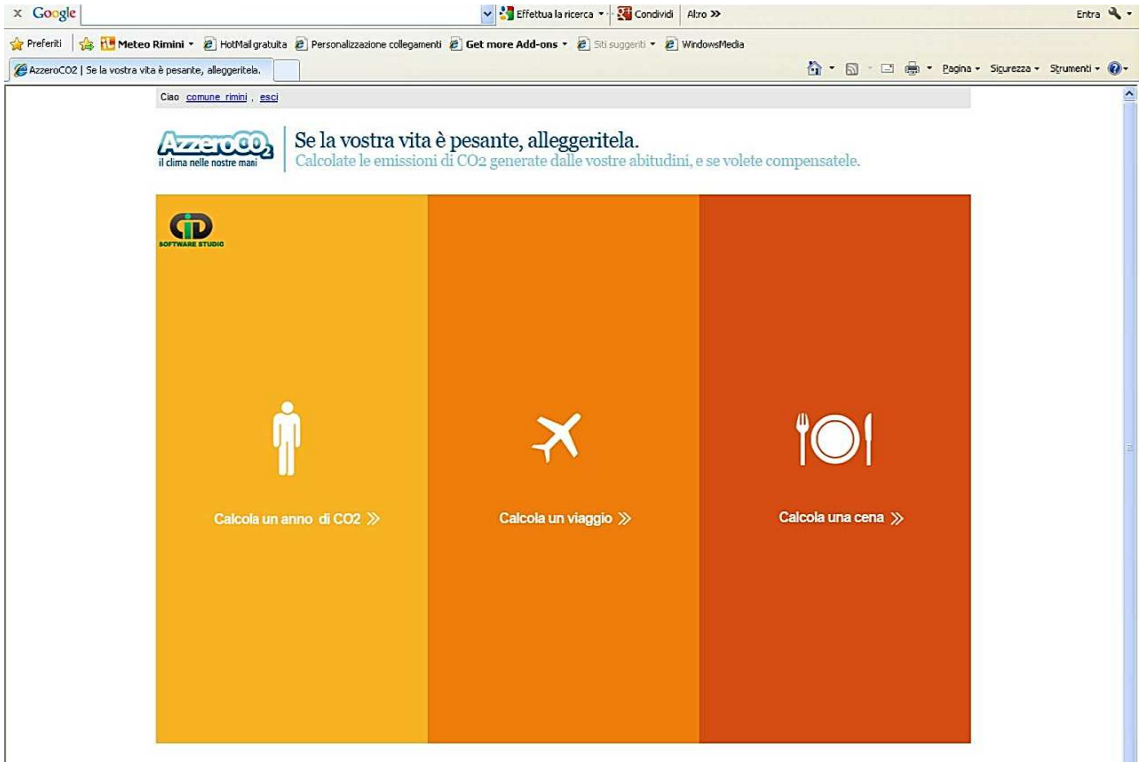
Personalizzazione collegamenti
Get more Add-ons
Siti suggeriti
WindowsMedia
AzzeroCO2 | Se la vostra vita è pesante, alleggeritela.
Pagina
Sicurezza
Strumenti
Ciao comune_rimini , esci
Se la vostra vita è pesante, alleggeritela.
Calcolate le emissioni di CO2 generate dalle vostre abitudini, e se volete compensatele.
Un anno di CO2
Un viaggio
Una cena
I tuoi calcoli
i tuoi calcoli
dati di accesso
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
Data Oggetto KGCO2
1 31.10.2012 Un anno di CO2 12368,82
2 31.10.2012 Un anno di CO2 10082,64
3 31.10.2012 Un anno di CO2 907,40
4 31.10.2012 Un anno di CO2 1065,00
5 31.10.2012 Un anno di CO2 409,51
6 17.10.2012 Un anno di CO2 1699,80
7 17.10.2012 Un anno di CO2 1451,14
8 17.10.2012 Un anno di CO2 97359,60
9 09.10.2012 Un anno di CO2 2815,95
10 09.10.2012 Un anno di CO2 33845,20
« 1 2 3 4 5 6 7 »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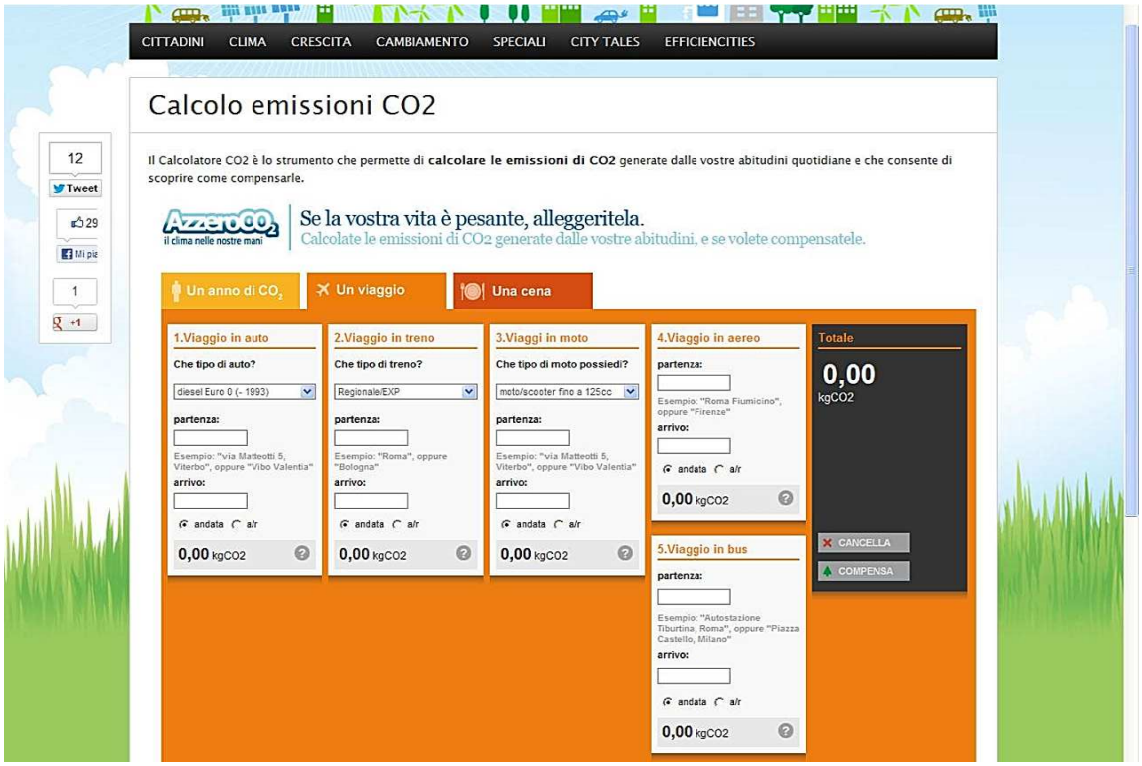
Calcolate le emissioni di CO2 generate dalle vostre abitudini, e se volete compensatele.
SOFTWARE STUDIO
Calcola un anno di CO2 »
Calcola un viaggio »
Calcola una cena »


Calcolo emissioni CO2
Il Calcolatore CO2 è lo strumento che permette di calcolare le emissioni di CO2 generate dalle vostre abitudini quotidiane e che consente di scoprire come compensarle.
Azzero CO2 il clima nelle nostre mani
Se la vostra vita è pesante, alleggeritela.
Calcolate le emissioni di CO2 generate dalle vostre abitudini, e se volete compensatele.
Un anno di CO2
Un viaggio
Una cena
1.Consumi energetici
Qual è l'importo delle tue bollette a bimestre?
energia:
energia verde
gas:
gasolio:
0,00 kgCO2
2.Viaggi in auto
Che tipo di auto possiedi?
diesel Euro 0 (- 1993)
Quanti km percorri all'anno?
0,00 kgCO2
2.Viaggi in moto
Che tipo di moto possiedi?
moto/scooter fino a 125cc
Quanti km percorri all'anno?
0,00 kgCO2
2.Viaggi in treno
Pendolare
Occasionale
0,00 kgCO2
2.Viaggi in aereo
Quanti viaggi all'anno?
nazionale
europeo
extraeuropeo
0,00 kgCO2
2.Viaggi in bus
Pendolare
Occasionale
0,00 kgCO2
3.Alimentazione
Quante porzioni la settimana?
carne locale
carne importata
frutta e verdura locali
frutta e verdura importate
latticini
pesce mediterraneo
pesce oceanico
pane/pasta
0,00 kgCO2
3.Bevande
In tutto quante unità la settimana?
bottiglie 1,5 litri plastica
bottiglie 0,75 litri vetro
bottiglie 0,5 litri plastica
0,00 kgCO2
Totale
0,00
kgCO2
CANCELLA
COMPENSA
12
Tweet
29
1
+1


CITTADINI
CLIMA
CRESCITA
CAMBIAMENTO
SPECIALI
CITY TALES
EFFICIENCITIES
Calcolo emissioni CO2
Il Calcolatore CO2 è lo strumento che permette di calcolare le emissioni di CO2 generate dalle vostre abitudini quotidiane e che consente di scoprire come compensarle.
Azzero CO2 il clima nelle nostre mani
Se la vostra vita è pesante, alleggeritela.
Calcolate le emissioni di CO2 generate dalle vostre abitudini, e se volete compensatele.
Un anno di CO2
Un viaggio
Una cena
1.Viaggio in auto
Che tipo di auto?
diesel Euro 0 (- 1993)
partenza:
Esempio: "via Matteotti 5, Viterbo", oppure "Vibo Valentia"
arrivo:
andata
a/r
0,00 kgCO2
2.Viaggio in treno
Che tipo di treno?
Regionale/EXP
partenza:
Esempio: "Roma", oppure "Bologna"
arrivo:
andata
a/r
0,00 kgCO2
3.Viaggi in moto
Che tipo di moto possiedi?
moto/scooter fino a 125cc
partenza:
Esempio: "via Matteotti 5, Viterbo", oppure "Vibo Valentia"
arrivo:
andata
a/r
0,00 kgCO2
4.Viaggio in aereo
partenza:
Esempio: "Roma Fiumicino", oppure "Firenze"
arrivo:
andata
a/r
0,00 kgCO2
5.Viaggio in bus
partenza:
Esempio: "Autostazione Tiburtina, Roma", oppure "Piazza Castello, Milano"
arrivo:
andata
a/r
0,00 kgCO2
Totale
0,00
kgCO2
CANCELLA
COMPENSA
12
Tweet
29
1
+1


Calcolo emissioni CO2
Il Calcolatore CO2 è lo strumento che permette di calcolare le emissioni di CO2 generate dalle vostre abitudini quotidiane e che consente di scoprire come compensarle.
Azzero CO2
il clima nelle nostre mani
Se la vostra vita è pesante, alleggeritela.
Calcolate le emissioni di CO2 generate dalle vostre abitudini, e se volete compensatele.
Un anno di CO2
Un viaggio
Una cena
Gli invitati
Quanti commensali?
1.Le portate
In tutto quante porzioni di...
carne locale
carne importata
frutta e verdura locali
frutta e verdura importate
latticini
pesce mediterraneo
pesce oceanico
pane/pasta
0,00 kgCO2
2.Le bevande
In tutto quante unità di...
bottiglie 1,5 litri plastica
bottiglie 0,75 litri vetro
bottiglie 0,5 litri plastica
0,00 kgCO2
3.Le stoviglie
Che tipo di piatti?
tradizionali riutilizzabili
plastica
biodegradabile / riciclabile
Che tipo di bicchieri?
tradizionali riutilizzabili
plastica
biodegradabile / riciclabile
Che tipo di posate?
tradizionali riutilizzabili
plastica
biodegradabile / riciclabile
0,00 kgCO2
Totale
0,00
kgCO2
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