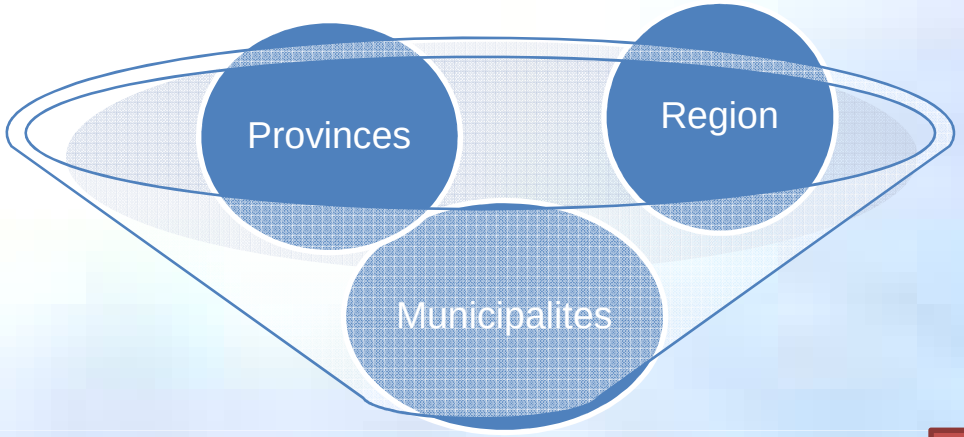
A territorial strategy to support Local Authorities: from the plan to the project

Smart city in smart regions



SMART REGION

-One objective
-Clear roles
-Semplification of procedures
-From the plan to the project

The roles of Local Authorities in a Smart Region

LAs as **owners**	LAs as **promoters**	LAs as **regulators**
3	**1**	**2**

LAs as promoters 1

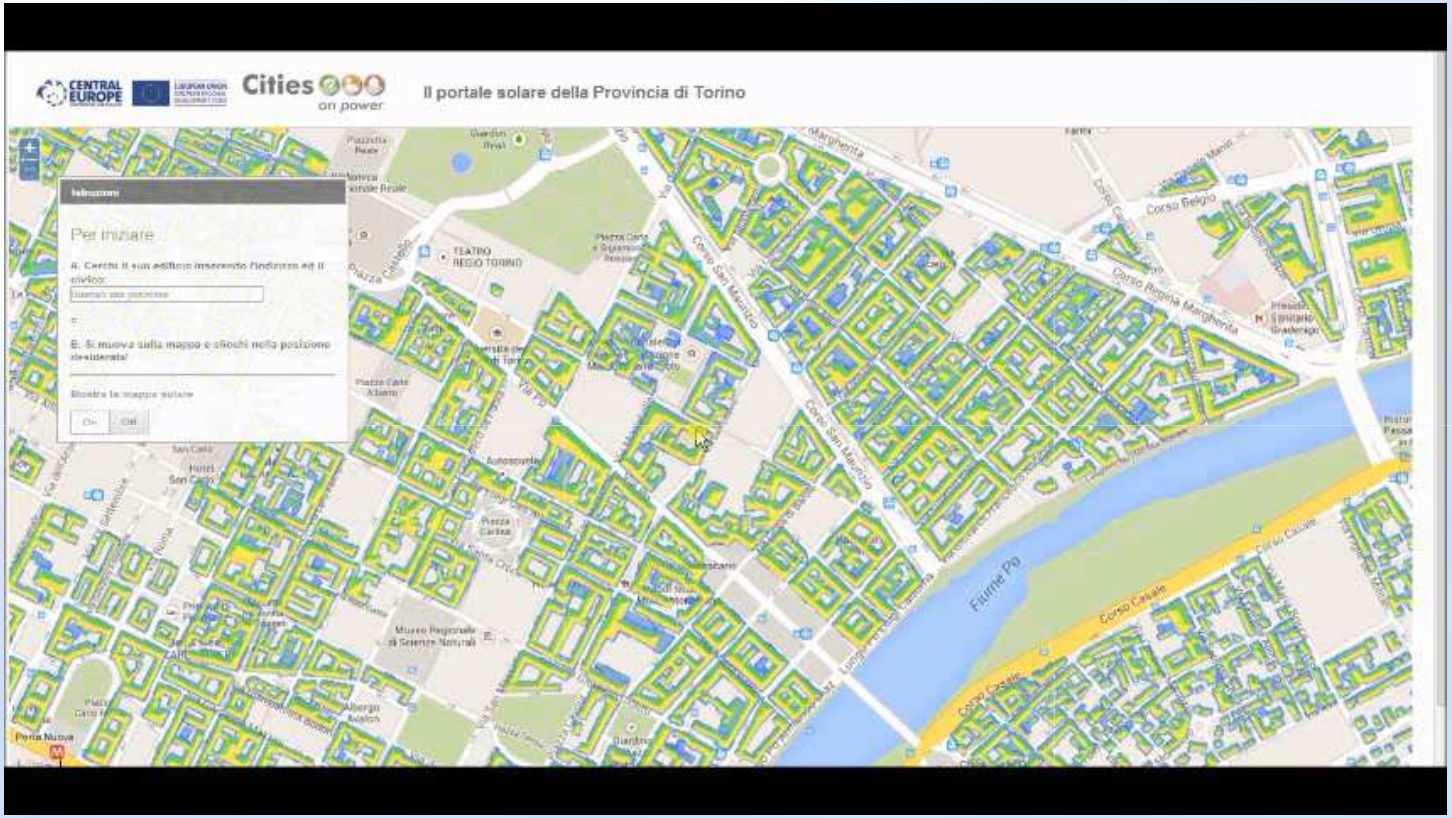
Local Authorities can promote energy efficiency and RES interventions in the private sector

HOW?

A. Energy desks giving technical, economic and legislative specifications to citizens and enterprises
B. Conferences, meetings, forums (participation concept)
C. Informative documents (brochures, videos, websites,ect)
D. Creation of partnerships (private-private/ public-private)

-Partecipative RES plants
-Purchasing groups
-ect

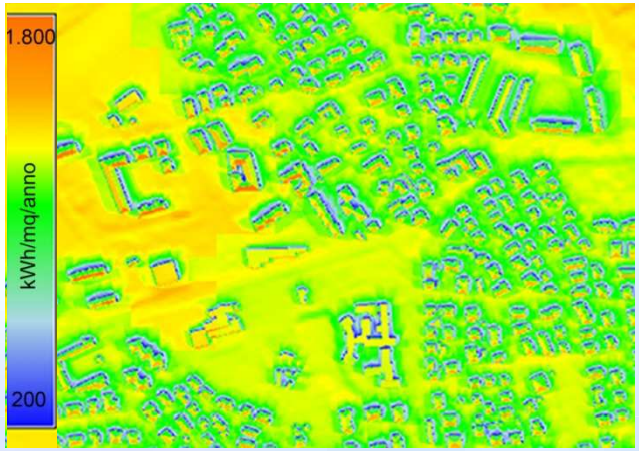
Solar and geothermal maps for citizens

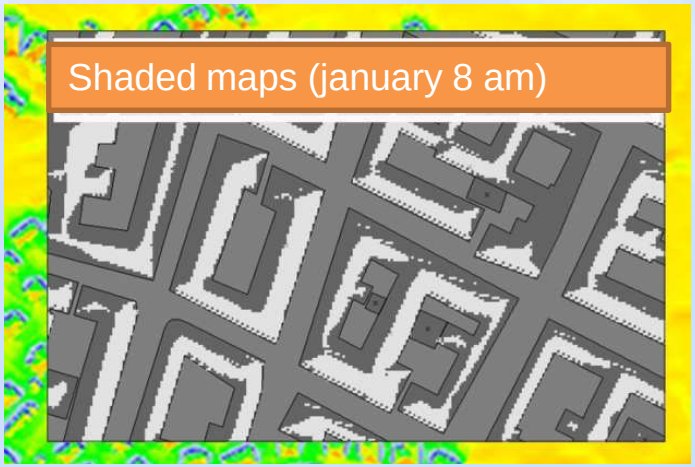


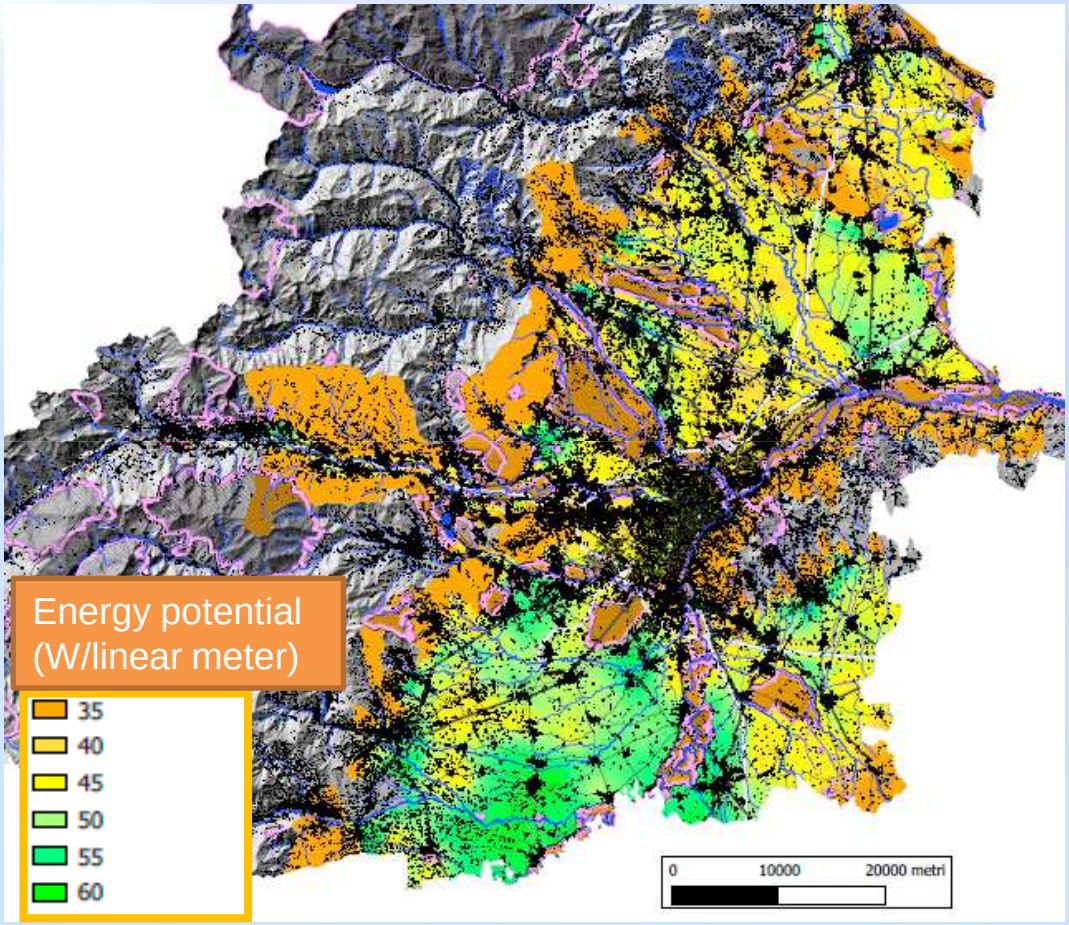
The user can enter some information about its energy consumption, find its building, introduce renewables, make simulations on environmental-economic results

This project is implemented through the CENTRAL EUROPE Programme co-financed by the ERDF

Solar and geothermal maps for citizens







Communication activities

Regulations

Funds

ENERGY FRONT DESK

Energy conservation and technologies for the energy efficiency

Economic and energy advantages dealing with the use of renewable energy resources

INFORMATIVE BROCHURES

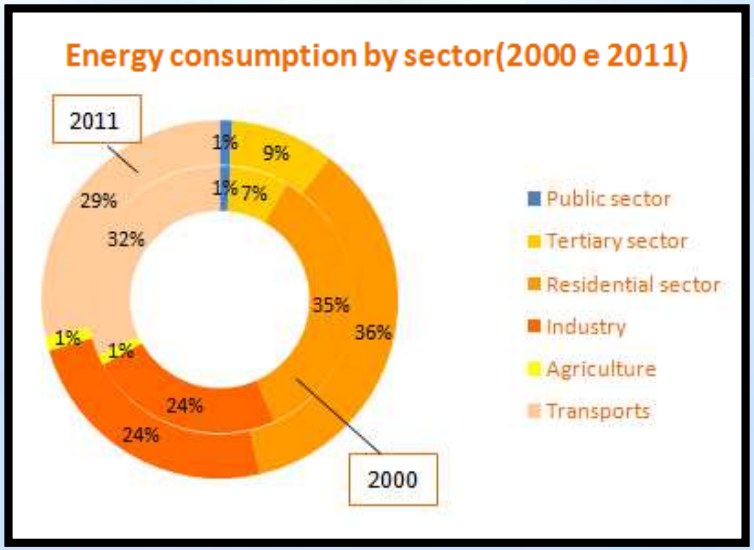
VIDEOS, PUBLIC PRESENTATIONS FOR CITIZENS

LAs as regulators 2

Local Authorities can guide the energy perfomance of :

- **citizens (residential sector)**
- **enterprises (industry)**
- **shops, stores, offices (tertiary sector)**
- **farmers (agriculture)**

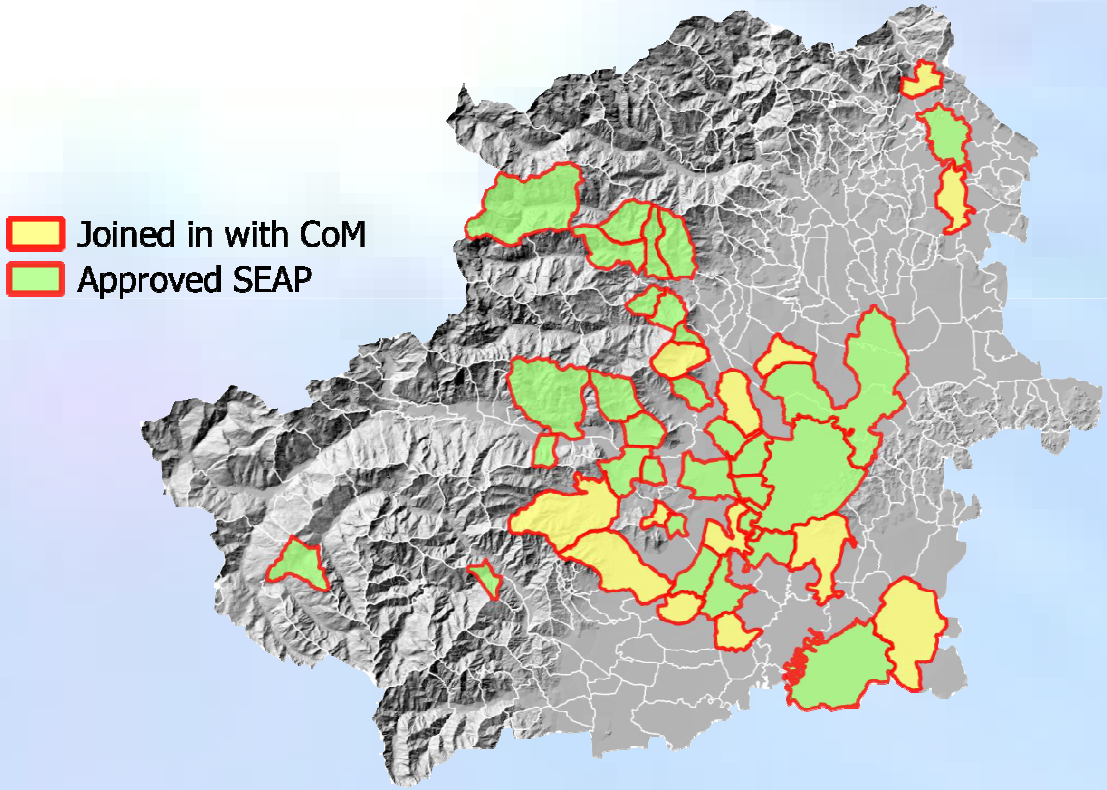
HOW?



A. **Local regulative framework (ex. building code)**
B. **Application of national, regional, provincial legislation**
C. **Town planning / Energy planning**
D. **Local tax systems (ex. congestion charge)**
E. **Incentives (ex. volumetric reward for RES installations)**
F. **Prohibitions (ex. old vehicles cannot enter in city centres)**

Covenant of Mayors: the SEAP draft

Province of Torino: ***Covenant of Mayor Coordinator since 2010***



49 Municipalities joined the CoM

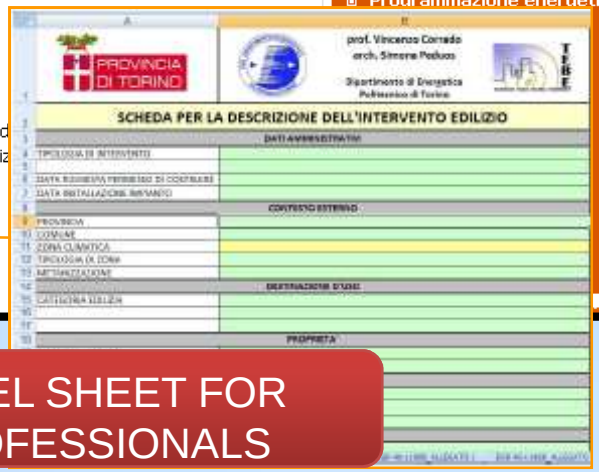
35 SEAPs already approved

26% average CO_2 reduction target

25 new signatories are joining

The energy dossier for the buildings code

ENERGY DOSSIER TEMPLATE



EXCEL SHEET FOR PROFESSIONALS

What is defined in the energy dossier?

-Administrative procedures

-Energy requirements for new/renovated buildings

- Incentives categories

-Technical sheets

-Limits and targets

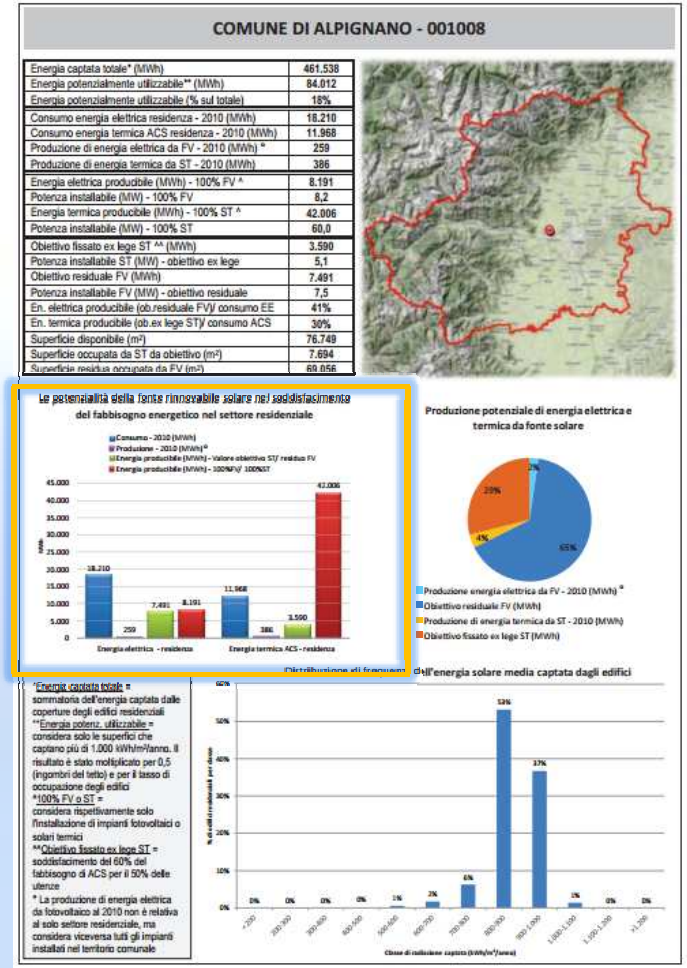
-ect

SEAP_Alps project: the adaptation measures

The tool has been developed to integrate mitigation and adaptation measures in the SEAP draft

The action tool can be used by Municipalities to understand what to do to attain the CO_2 reduction target (100 actions listed) and select the action sheets already filled in (indicators, good practices,ect)

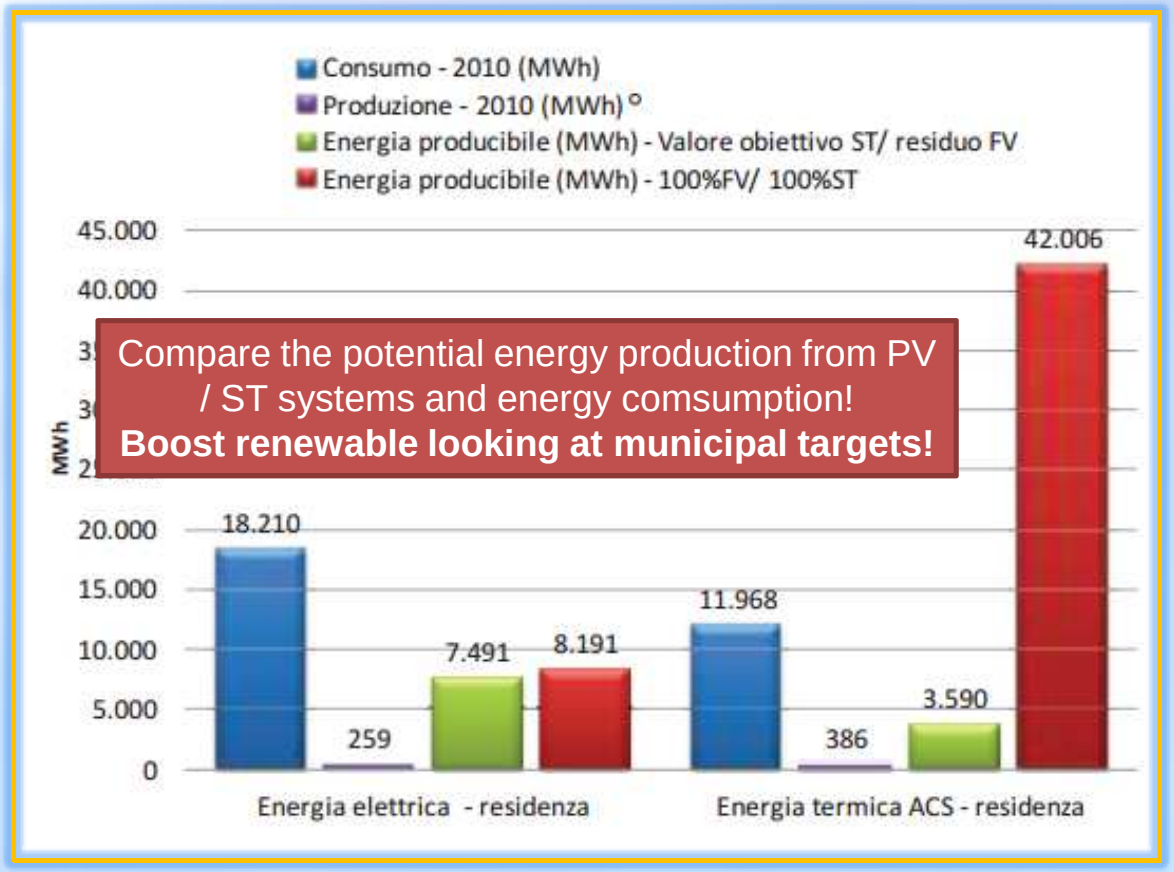
Cities on Power project: the solar dossier



COMUNE DI ALPIGNANO - 001008

Energia captata totale* (MWh)	461.538
Energia potenzialmente utilizzabile** (MWh)	84.012
Energia potenzialmente utilizzabile (% sul totale)	18%
Consumo energia elettrica residenza - 2010 (MWh)	18.210
Consumo energia termica ACS residenza - 2010 (MWh)	11.968
Produzione di energia elettrica da FV - 2010 (MWh) °	259
Produzione di energia termica da ST - 2010 (MWh)	386
Energia elettrica producibile (MWh) - 100% FV ^	8.191
Potenza installabile (MW) - 100% FV	8,2
Energia termica producibile (MWh) - 100% ST ^	42.006
Potenza installabile (MW) - 100% ST	60,0
Obiettivo fissato ex lege ST ^^ (MWh)	3.590
Potenza installabile ST (MW) - obiettivo ex lege	5,1
Obiettivo residuale FV (MWh)	7.491
Potenza installabile FV (MW) - obiettivo residuale	7,5
En. elettrica producibile (ob.residuale FV)/ consumo EE	41%
En. termica producibile (ob.ex lege ST)/ consumo ACS	30%
Superficie disponibile (m²)	76.749
Superficie occupata da ST da obiettivo (m²)	7.694
Superficie residua occupata da FV (m²)	69.056

*Energia captata totale = sommatoria dell'energia captata dalle coperture degli edifici residenziali
**Energia potenz. utilizzabile = considera solo le superfici che captano più di 1.000 kWh/m²/anno. Il risultato è stato moltiplicato per 0,5 (ingombri del tetto) e per il tasso di occupazione degli edifici
*100% FV o ST = considera rispettivamente solo l'installazione di impianti fotovoltaici o solari termici
**Obiettivo fissato ex lege ST = soddisfacimento del 60% del fabbisogno di ACS per il 50% delle utenze
* La produzione di energia elettrica da fotovoltaico al 2010 non è relativa al solo settore residenziale, ma considera viceversa tutti gli impianti installati nel territorio comunale

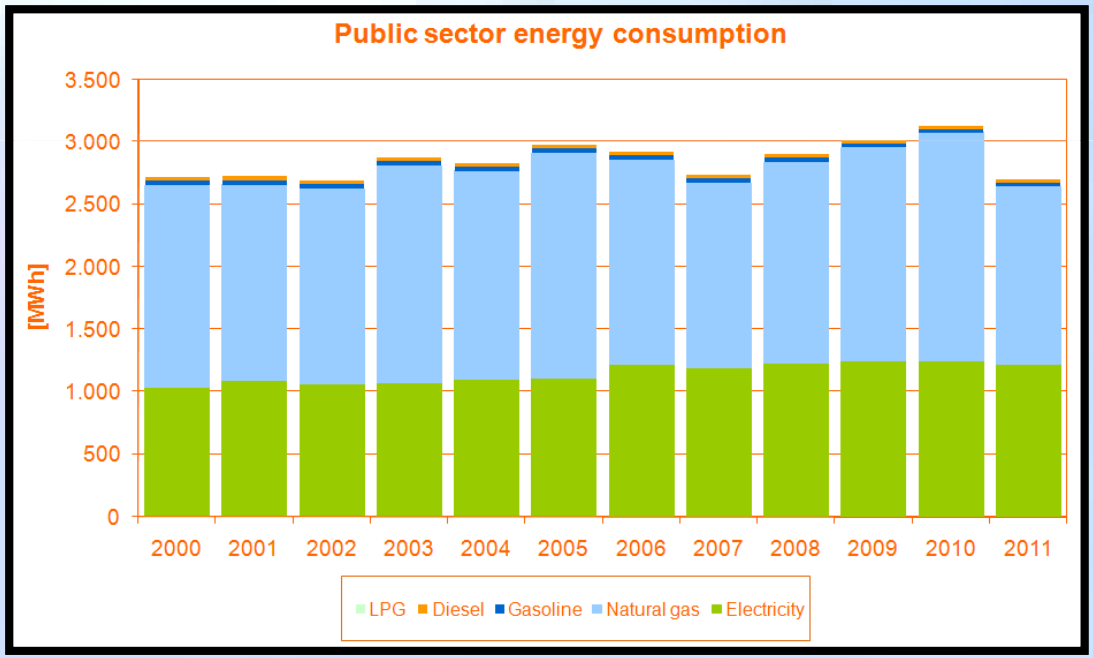


Compare the potential energy production from PV / ST systems and energy comsumption!
Boost renewable looking at municipal targets!

LAs as owners 3

Local Authorities own:

- **buildings** (offices, schools, social buildings,hospitals)
- **street lighting systems**
- **public vehicles**



Municipality of San Maurizio C. (10000 inhabitants)

An energy management tool: Enercloud

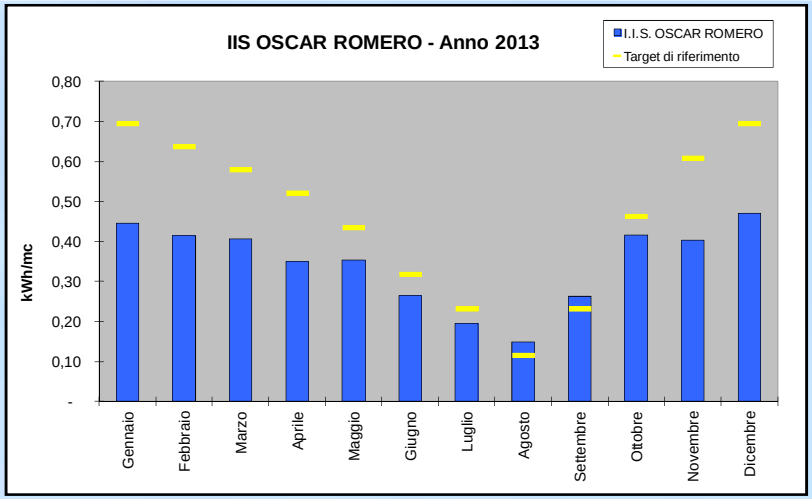
2011	Consumi (kWh)	Consumo (kWh/mq)	Target (kWh/mq)	Target +15%	Target +30%	Spesa per eccesso cons.
gen	5.395,00	1,77	2,78	3,20	3,61	€ 0,00
feb	5.215,00	1,71	2,52	2,90	3,28	€ 0,00
mar	5.228,00	1,71	2,35	2,70	3,06	€ 0,00
apr	2.806,00	0,92	2,17	2,50	2,82	€ 0,00
mag	3.313,00	1,09	1,83	2,10	2,38	€ 0,00
giu	2.832,00	0,93	1,57	1,81	2,04	€ 0,00
lug	1.424,00	0,47	1,30	1,50	1,69	€ 0,00
ago	630,00	0,21	1,04	1,20	1,35	€ 0,00
set	2.984,00	0,98	1,48	1,70	1,92	€ 0,00
ott	3.567,00	1,17	1,74	2,00	2,26	€ 0,00
nov	5.565,00	1,82	2,43	2,79	3,16	€ 0,00
dic	5.190,00	1,70	2,78	3,20	3,61	€ 0,00
Totale	**44.149,00**	**14,48**	**23,99**	**27,59**	**31,19**	**€ 0,00**

2010	Consumi (kWh)	Consumo (kWh/mq)	Target (kWh/mq)	Target +15%	Target +30%	Spesa per eccesso cons.
gen	5.774,00	1,89	2,78	3,20	3,61	€ 0,00
feb	5.756,00	1,89	2,52	2,90	3,28	€ 0,00
mar	5.286,00	1,73	2,35	2,70	3,06	€ 0,00
apr	3.065,00	1,00	2,17	2,50	2,82	€ 0,00
mag	3.345,00	1,10	1,83	2,10	2,38	€ 0,00
giu	2.207,00	0,72	1,57	1,81	2,04	€ 0,00
lug	1.428,00	0,47	1,30	1,50	1,69	€ 0,00
ago	593,00	0,19	1,04	1,20	1,35	€ 0,00
set	4.800,00	1,57	1,48	1,70	1,92	€ 0,00
ott	7.174,00	2,35	1,74	2,00	2,26	€ 161,44
nov	5.689,00	1,87	2,43	2,79	3,16	€ 0,00
dic	5.375,00	1,76	2,78	3,20	3,61	€ 0,00
Totale	**50.492,00**	**16,55**	**23,99**	**27,59**	**31,19**	**€ 161,44**

- I consumi attendibili superano in almeno un mese il target +30%
- I consumi attendibili superano in almeno un mese il target +15% ma non superano in nessun mese il target +30%
- I consumi attendibili non superano il target +15% in nessun mese

The system provide a benchmark evaluation (traffic light)

Benchmark analysis:
"Oscar Romero" High School (Turin)

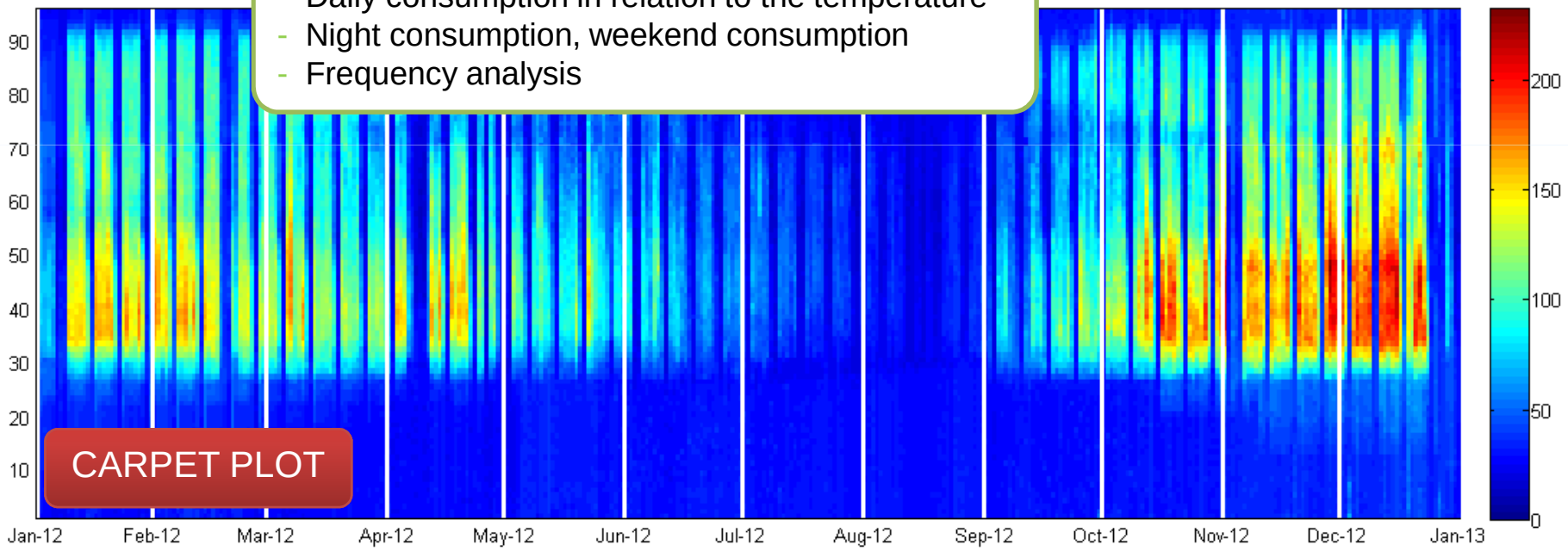


The Municipality enter some information about its buildings or public lighting systems (geometry, meters, energy consumption data from bills)

From the energy bills analysis to the renovation

For some buildings (among the most energy-consuming ones), could be done a deeper analysis with consumption's data on a ***quarter of hour*** basis (requested directly to the distributor)

- Daily consumption in relation to the temperature
- Night consumption, weekend consumption
- Frequency analysis



An Action Plan for Public Investments

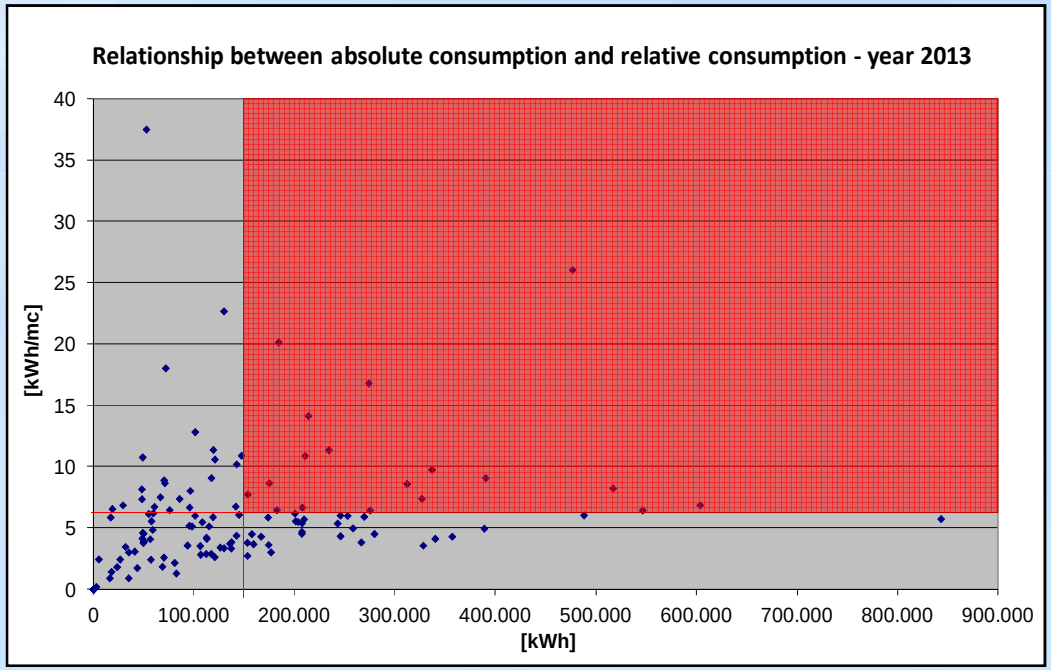
Discovering the energy consumption of public buildings

Classification of buildings according to EP index

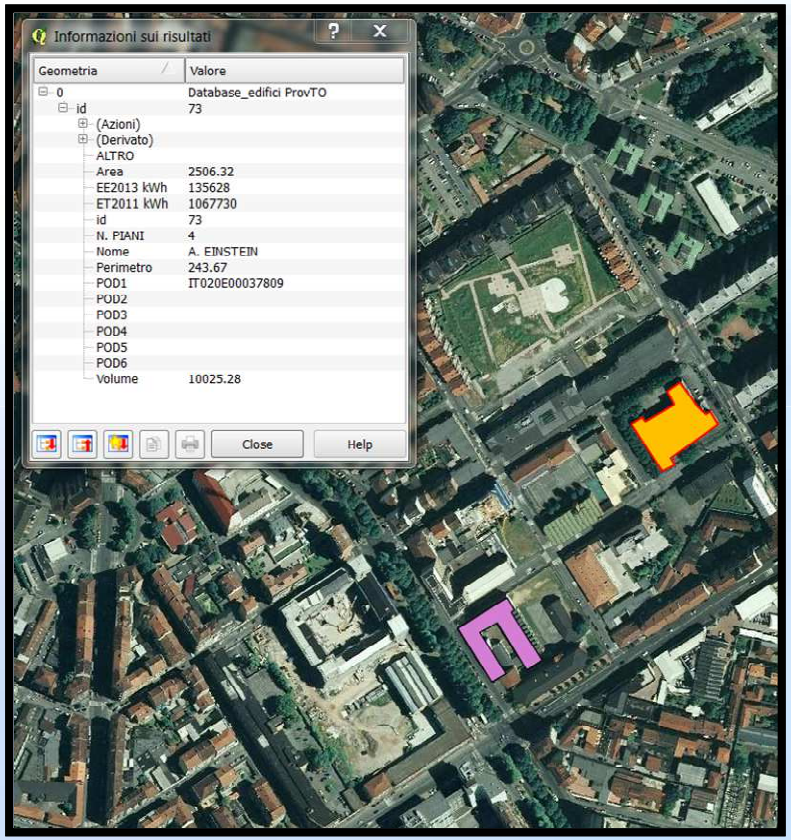
Buildings with greater energy consumption (absolute, specific)

Identification of interventions on energy efficiency

Annual Investment plan depending on priorities and financial resources



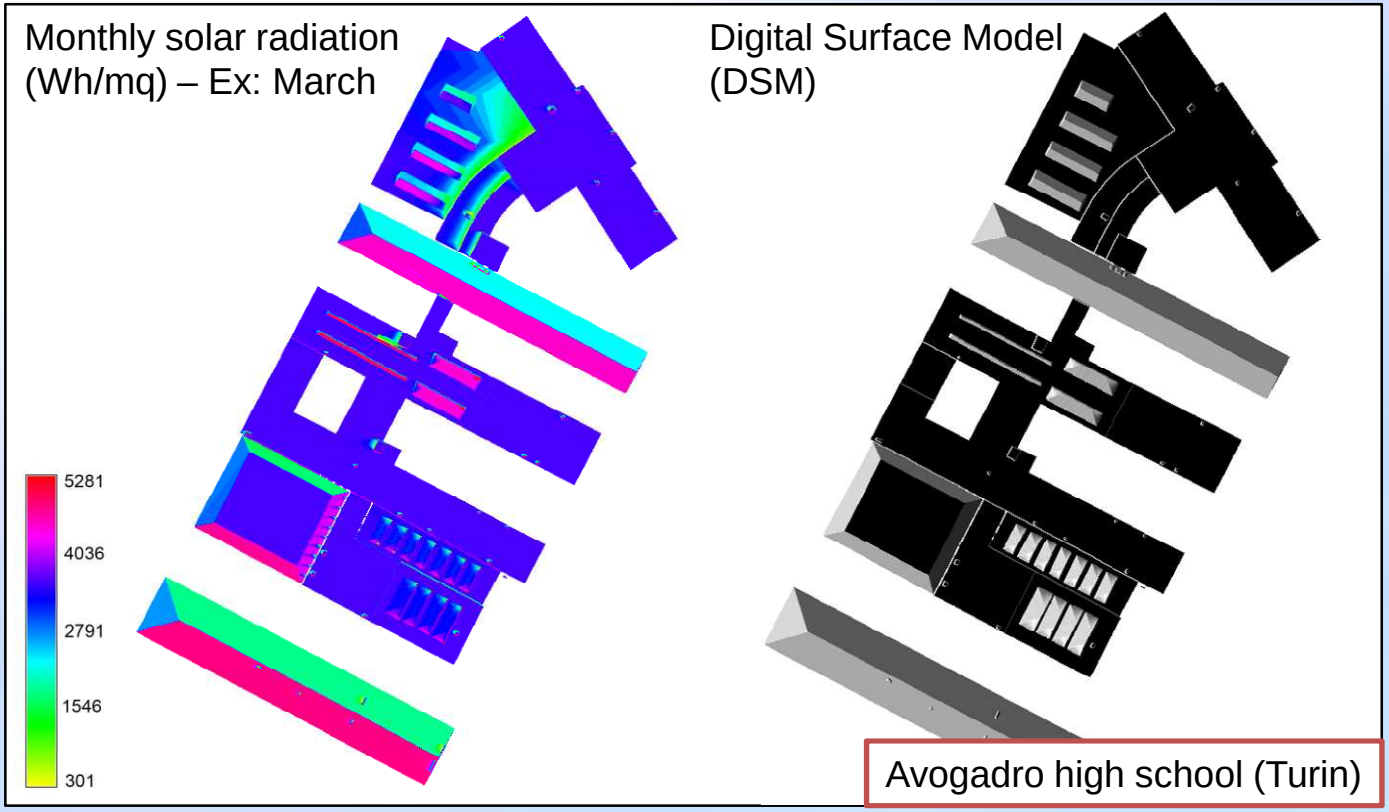
2020 Together project: investments on buildings



Target: 59 buildings, 1200 street lighting
Investments expected: 10M€ with 500.000 € of technical assistance
Leverage factor: nearly 20

The project will collect buildings or street lighting systems with a bad energy performance and bundle them for a big tender open to ESCOs. The project will be focused also on the exploitation of parallel incentives, like white certificates (already existing in Italy) or ERDF funds managed at a regional level

Solar analysis on public buildings



Avogadro high school (Turin)

Open source softwares:
QuantumGIS
Grass GIS

Survey on selected buildings on potential *installation of PV systems*, followed by a cost-effectiveness analysis (comparison with market conditions, incentives and energy demand of the building)