



Workshop on “**Status and Future of the Geothermal Energy in the Peri-Adriatic Area**”.

Veli Lošinj – Croatia (25-27/08/2014)

The Sustainable Energy Action Plan (SEAP) of the Municipality of Trieste.

The Cooperation in the Field of Innovative Energy Policies and European Best Practices.

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Comune di Trieste

Veli Losinj, 27.08.2014



The Kyoto Protocol to the United Nations Framework Convention in Climate Change (UNFCCC)



- Is an international Treaty that sets binding obligations on industrialised countries to reduce greenhouse emissions.
- Two commitment periods have been agreed so far. For the first commitment period, 38 partners agreed to reduce their overall emissions by at least 5 % below 1990 levels between 2008 and 2012.
- Decision 1/CMP.8 (Doha Amendment to the Kyoto Protocol) established the second commitment period, designed to reduce emissions of participating partners by at least 18 % below 1990 levels between 2013 and 2020.



Europa 20 20 20



- Under the Kyoto Protocol, the 15 countries that were EU members before 2004 ('EU-15') are committed to reducing their collective emissions to 8% below 1990 levels by the years **2008-2012**. EU-15 is well on track to meet this target.
- For **2020**, the EU has committed to cutting its emissions to 20% below 1990 levels. This commitment is one of the headline targets of the Europe 2020 growth strategy and is being implemented through a package of binding legislation.
(20-20-20 targets)



Europa 2050



- The EU has offered to increase its emissions reduction to 30% by 2020 if other major emitting countries in the developed and developing worlds commit to undertake their fair share of a global emissions reduction effort.
- For **2050**, EU leaders have endorsed the objective of reducing Europe's greenhouse gas emissions by 80–95% compared to 1990 levels as part of efforts by developed countries as a group to reduce their emissions by a similar degree.



The Covenant of Mayors (CoM)



- European Commission launched the CoM to endorse and support the efforts deployed by **local authorities** in the implementation of sustainable energy policies. Indeed, local governments play a crucial role in mitigating the effects of climate change, considering that 80% of energy consumption and CO₂ emissions is associated with urban activity.
- Being the only movement mobilising local and regional actors around the fulfilment of EU objectives, the CoM represents an exceptional⁵ model of multi-level governance.



Commitments and Opportunities from joining the Covenant of Mayors



commitments :

- Establish a CO₂ Baseline Emissions Inventory (BEI)
- Develop a Sustainable Energy Action Plan (SEAP)
- Build support from Citizens, Enterprises, the world of Science and Research, other Stakeholders in drafting and implementing the SEAP
- Monitor the implementation of the

opportunities:

- Tool shared and tested among many European cities
- Benchmark for other cities
- Assessment criterion for EU funds assignment



The main items of the Energy Policy of the Municipality of Trieste



Background and general principles

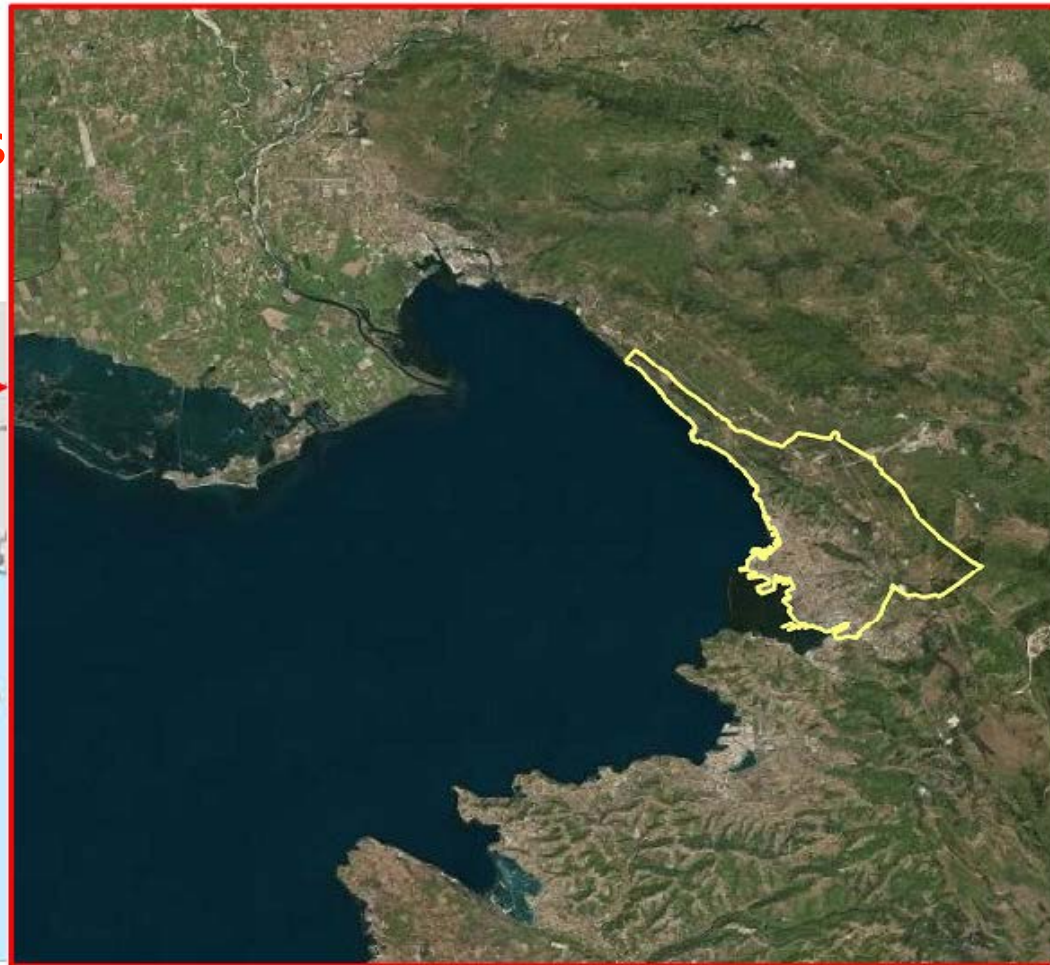
- Knowledge for action (problems and relevant data)
- Pinpoint estimated and verifiable targets (quality of data)
- Knowledge for setting priorities
- Considering the economic context and resources (effective but not onerous actions are first choice: education, training, real good house-keeping practice!!!)
- Find cooperation with and give example to all stakeholders in a local energy alliance
- Coordination and a stimulous for energy-greedy⁷ entities



About Trieste. The first step of knowledge



85 km²
208.000 inhabitants

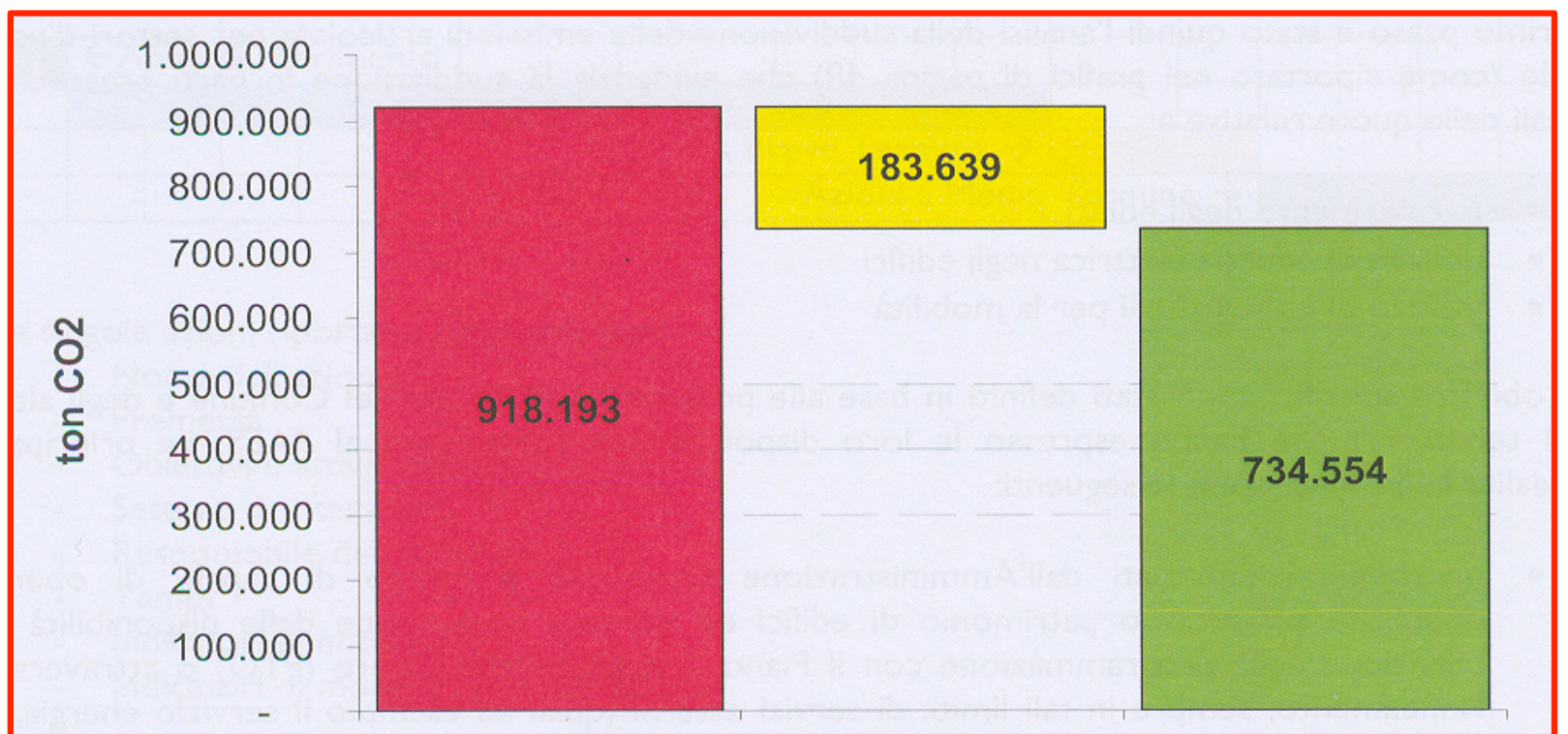




The emission of carbon dioxide (tCO₂ per year) derived from Energy Consumption in Trieste



We need to know how much CO₂ is emitted in order to decide how much we must reduce it up to 2020



Emissions in the reference year

Our goal of reduction

Emissions in 2020



The emission of carbon dioxide (tCO₂ per year) derived from Energy Consumption in Trieste



	tCO ₂	Energia Elettrica	Gas metano	Gas liquido	Olio da riscaldamento	Diesel	Benzina	TOTALE
EDIFICI / IMPIANTI	Edifici, attrezzature impianti comunali	5.615	9.466	-	4.431	2.177	-	21.689
	Edifici, attrezzature impianti terziari (non comunali)	150.368	47.067	-	14.061	8.226	-	219.721
	Edifici residenziali	120.185	210.929	637	-	30.694	-	362.444
	Illuminazione pubblica comunale	10.811	-	-	-	-	-	10.811
	TOTALE PARZIALE EDIFICI / IMPIANTI	286.979	267.462	637	18.491	41.097	-	614.667
TRASPORTI	Parco auto comunale	-	-	-	-	90	316	406
	Trasporti pubblici	-	-	-	-	18.155	-	18.155
	Trasporti privati e commerciali	-	-	-	-	41.140	243.825	284.965
	TOTALE PARZIALE TRASPORTI	-	-	-	-	59.386	244.141	303.526
TOTALE	286.979	267.462	637	18.491	100.483	244.141	918.193	



Conversion factors and Emission factors



L'analisi complessiva del consumo di energia nel territorio comunale si può realizzare convertendo i diversi vettori disponibili in energia primaria, misurata in "tonnellate equivalenti di petrolio" (tep) secondo i fattori di conversione⁸ seguenti:

- Gasolio 1 t = 1,08 tep
- Olio combustibile 1 t = 0,98 tep
- Gas di petrolio liquefatto (GPL) 1 t = 1,10 tep
- Benzina 1 t = 1,20 tep
- Gas naturale 1000 Nm³ = 0,82 tep
- Energia elettrica in media o alta tensione 0,23 tep/MWh
- Energia elettrica in bassa tensione 0,25 tep/MWh

Vettore energetico	Fattore di emissione	
Energia elettrica (FEE)	0.471	tCO ₂ / MWh _e
Energia elettrica da fonti rinnovabili (fotovoltaico)	0	tCO ₂ / MWh _e
Energia elettrica da rifiuti (termovalorizzatore)	0.330	tCO ₂ / MWh _e
Gas metano	0.202	tCO ₂ / MWh
Gasolio	0.267	tCO ₂ / MWh
Benzina	0.249	tCO ₂ / MWh
GPL	0.231	tCO ₂ / MWh
Olio combustibile	0.279	tCO ₂ / MWh



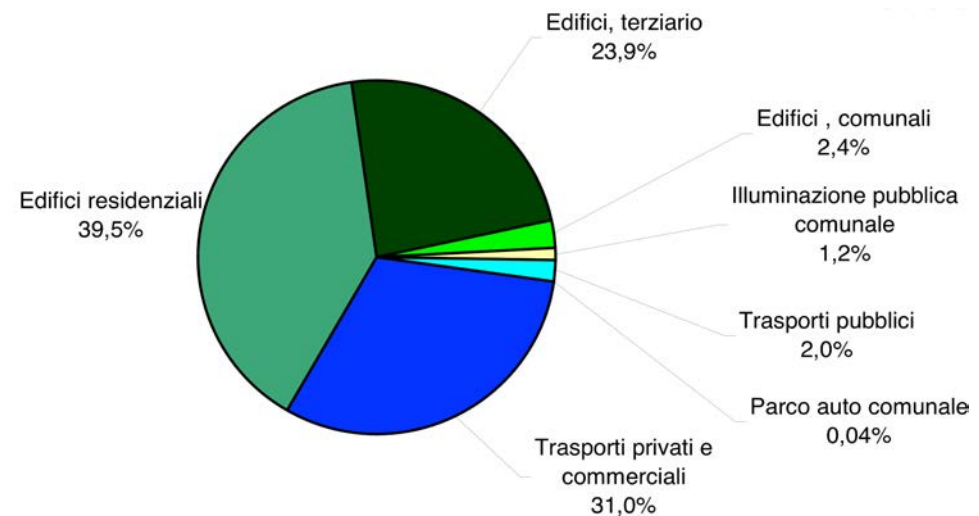
Energy Consumption in Trieste by end use (as tCO₂)



We need to know how and where energy is used in order to decide how to reduce emissions

Total: 918.000 t CO₂
(NO INDUSTRY !!)

- Residential buildings 39%
- Tertiary buildings 24%
- Private vehicles 31%
- Municipality of Trieste 4%
- Public transport 2%



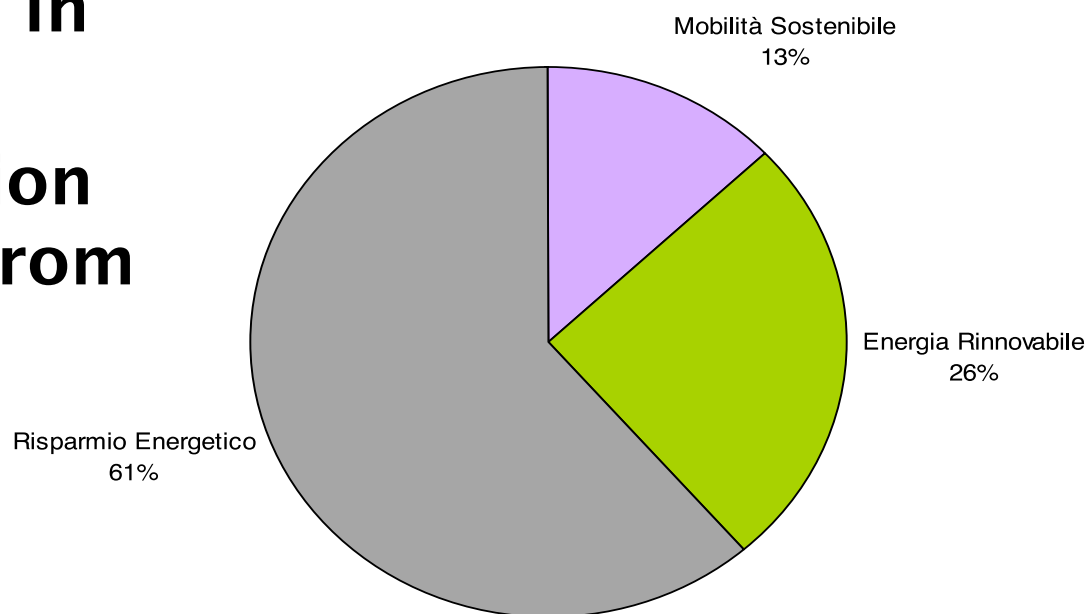


Priorities in our “Sustainable Energy Action Plan – SEAP”



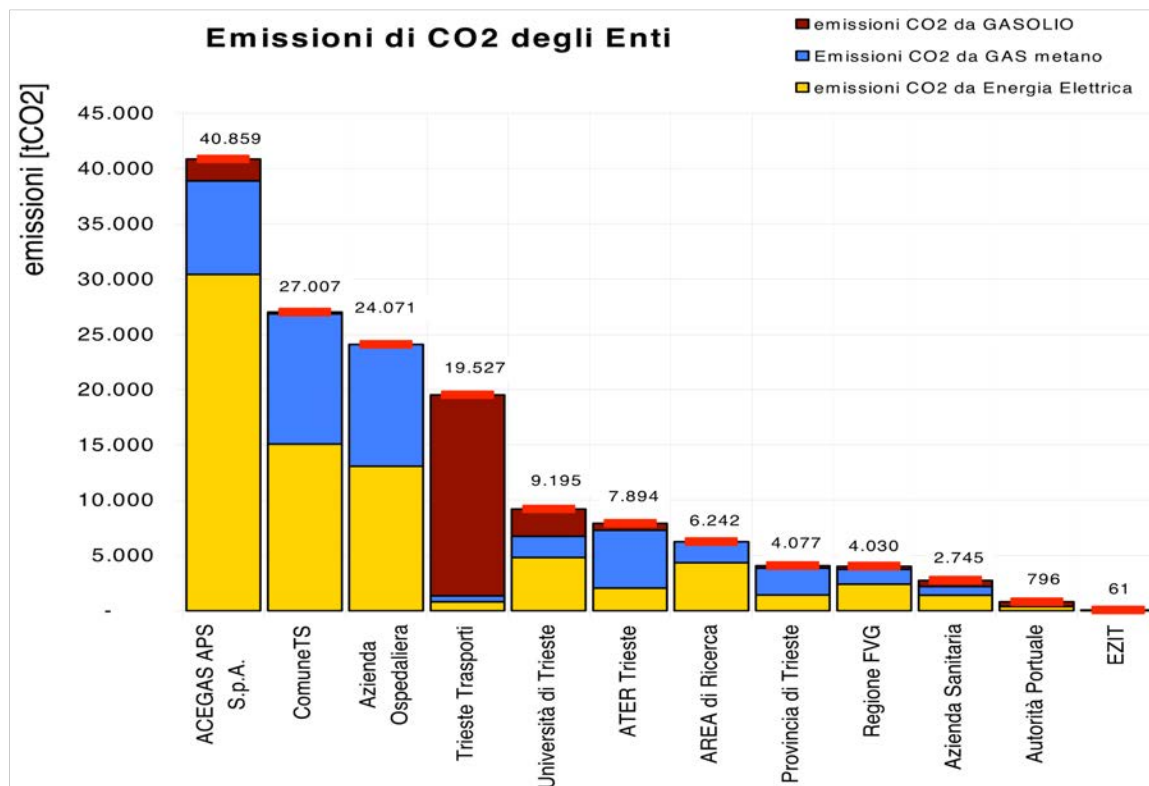
- Priorities are defined analyzing Energy consumption and Potential for action, taking into account all constraints. **The SEPA of Trieste has fixed 24 Actions to reach the 20–20–20 goal. The Actions deal with:**

- **Energy saving in buildings**
- **Local production of electricity from renewables**
- **Information, Education, Training**



Need for Cooperation

The main Energy Consumers have been identified and involved in the SEAP



The 12 largest public institutions in Trieste are responsible for up to 14% of total CO2 emissions, therefore they have been involved in SEAP, in order to:

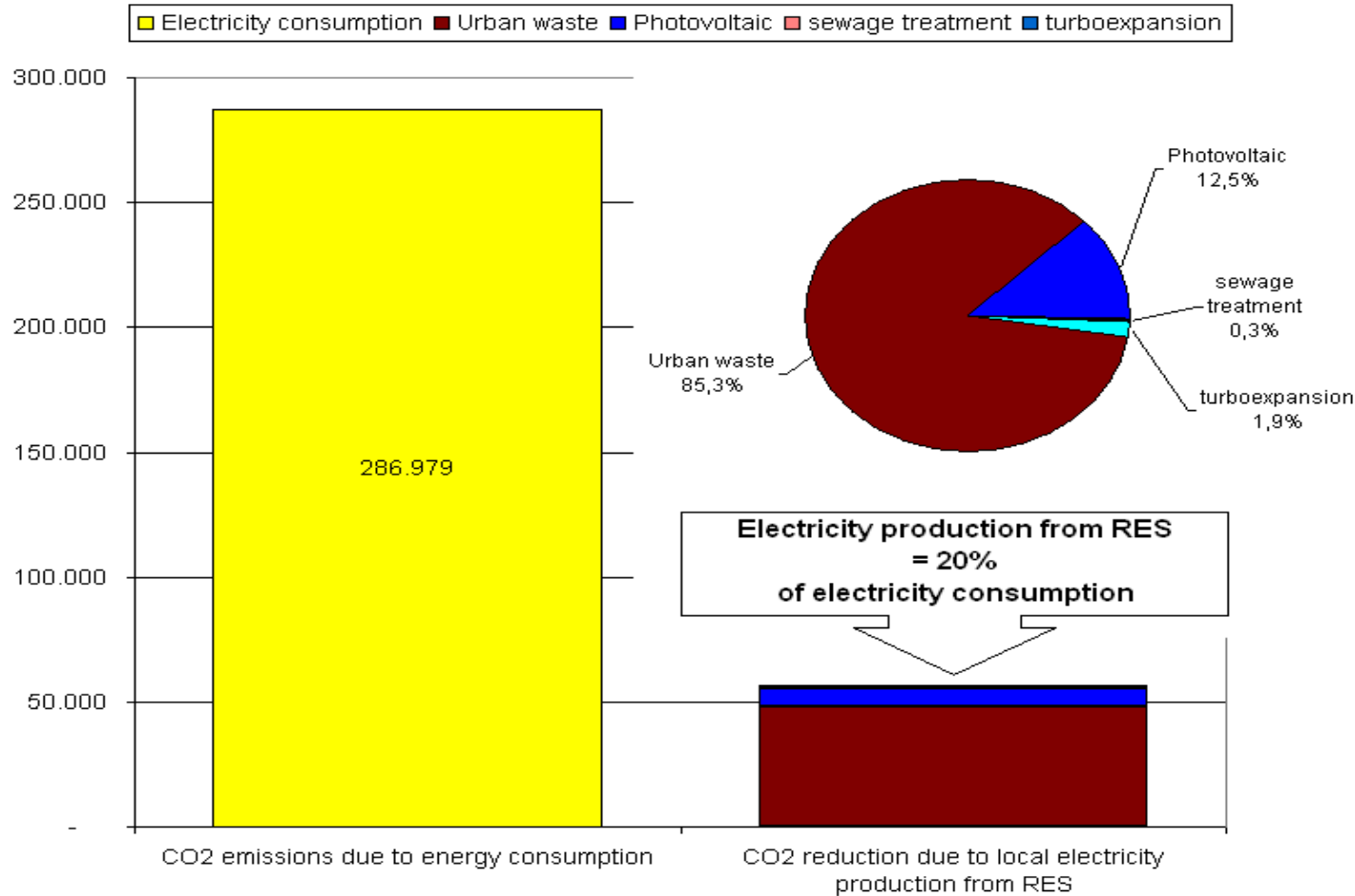
- provide data
- take action
- monitor implementation



Renewable Energy Production



CO2 emissions due to consumption and production from RES



20% from renewables

Limited PV potential (12,5%)

Main "renewable" energy resource is urban waste



Environmental Sustainability is more than “energy saving”



- A waste-to-energy plant may create a conflict in a sustainable development policy:

- **Positive impact:** urban Waste is a renewable Energy source according to Italian law → the Plant provides 85% of local electricity production from renewable energy sources



- **Negative impact:** pollution, separate collection of urban waste in Trieste stands regularly below standards set by Italian law.



Environmental Sustainability of industrial processes



Energy consumption is a good general indicator for environmental sustainability, BUT other indicators must be taken into account to manage specific issues.



The 'Ferriera di Trieste', located in a densely populated area of the city, is an obsolete iron plant. For many years it has been the subject of controversy because of its emission of pollutants.



Natural Energy Resources



Natural energy resources and the characteristics of Trieste define our potential for local “clean” energy production

- **Sun:** good potential for solar and photovoltaic
- **Geothermy** (could be very important)
- **Wind:** Trieste is well knowk for “bora”
 - High speed gusts (up to 160 km/h)
 - Low average speed
 - **NOT suitable for wind turbines**
- **Biomass:**
 - High population density
 - Not enough biomass for energy conversion





Why Geothermic Energy?



Trieste is on the Sea and **we must learn to use, first of all, the heat of the seawater**, as other cities on North Europe (!!!) already do.

For this reason the Municipality of Trieste

- is deeply interested in demonstrating the technical and economical Feasibility of using seawater to produce high efficiency thermic and refrigerating Energy, first of all for its Buildings, getting rid of local airborne Pollution and lowering Costs of production and management
- will take officially, as soon as possible, the political Resolution of supporting University of Trieste, AREA di Ricerca and other Partners, selecting the Buildings



Why Geothermal Energy?



In few words we recognize the advantages of Geothermal Energy that allow:

- to get important Savings compared with the Combustibles used first
 - to reduce pollutant Emissions
 - to use a high percentage of renewable Energy
 - to simplify the bureaucratic procedures of Authorization and Control (e.g. against Fire and Overpressure),
- and that can help us to improve our good Governance in Energy Efficiency.



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Thank You for Attention

Veli Losinj, 27.08.2014