Challenges in Energy Management for Smart Cities & Project GEN-IUS, supported by ELENA (GENova – Innovative Urban Sustainability)

22 November 2017 - 10:05 to 10:20 **Genova Smart Week – L'energia dell'innovazione, III EDIZIONE 2017** Hub Session: *«URBAN PLATFORM – Innovazione per la trasformazione delle città. Piattaforme tecnologiche innovative per lo sviluppo della città sostenibile»*

> Salone di Rappresentanza di Palazzo Tursi; Genoa, Italy <u>www.genovasmartweek.it</u>

Dr. Diego Calandrino Head of Department of Energy Management Municipality of Genoa





AGENDA

□ Energy Management in Genoa Smart City:

- The EM role to shift from current cities to smarter ones
- Main Work Areas
- Overview of the recent energy-related work

□ Main hurdles within the main Work Areas (WAs):

- WA1 Energy Policy Planning (i.e.: SEAP)
- WA2 Energy Service Contracts
- WA3 Funding
- WA4 Energy Supply Contracts

□ Project GEN-IUS, supported by ELENA (GENova – Innovative Urban Sustainability)

A repeatable energy model: the case-study of "Project GEN-IUS"





ENERGY MANAGEMENT IN GENOA SMART CITY

Shifting to Smart City:

The Smart Wheel of Genoa



(IENC)VA



ENERGY MANAGEMENT IN GENOA SMART CITY

Shifting to Smart City:

UNIVERSIDAD DE BURGOS

PROGRAMA DE DOCTORADO EN EDUCACIÓN





DOCTORANDO:

DIEGO CALANDRINO

DIRECTORES DE LA TESIS: RAQUEL DE LA FUENTE ANUNCIBAY JERÓNIMO GONZÁLEZ BERNAL VALERIA CAGGIANO







Genova Smart Week - III edizione **Novembre**







WA1 – Energy Policy Planning





WA1 – Energy Policy Planning:

SUSTAINABLE ENERGY ACTION PLAN (SEAP)



of Mayors

sustainable enerov

(-EN()



WA1 – Energy Policy Planning:

FIRST ACTION: ENERGY DATABASE AND OPEN GOVERNANCE



Goals

 $(-EN()V\Delta$



WA1 – Energy Policy Planning:



Stakeholder Management:

- Action Plan, transversal to the Directorates of the Municipality and its participating companies;
- Availability of energy consumption data held by the Energy Providers, for the monitoring of the entire city (residential, retails, etc.).



Regulation Barriers:

- Non-clear national rules on treatment of commercially
- sensitive data and privacy rights of the end-users.



Change Management:

- Need for the implementation of an
- Energy Management System (ISO 50001:11) across the organization of the Municipality







WA2 – Energy Service Contracts (Energy Efficiency)











SUSTAINABILITY AND CONSERVATION OF HISTORIC BUILDING HERITAGE

A repeatable energy model: the case-study of "Tursi District"

- **SD** Daneo School
- **PG** Galliera Office
- PA Albini Town Hall
- PT Tursi Museum
- **PB** Bianco Museum
- BR Boliers' Room

Currently, the 5 buildings are connected to the same thermal pipework, while the cooling is decentralized!





2 of these buildings are UNISCO heritage!











WA2 – Energy Service Contracts:



Stakeholder Management:

- Conventional O&M practices on
- public real estate are not
 - compatible with the new energy efficiency services.



We experienced difficulties to find ESCOs within the national market that are offering performance guarantee to public authorities.



Regulation Barriers:

- Non-clear national guidance for the formulation of an **Energy Performance Contract.**
- There's not a settled national legal framework for the implementation of a PPP
 - procurement process (EoI etc.)



Change Management:



Need for acquiring a new set of skills and competences able to deliver Risk Assessment and Public Sector Comparator evaluation within the local authorities







WA3 – Research for funding and Investment Programme Management





WA3 – Funding: 72,8 Millions Euro Investments on energy efficiency in the next 3-to-4 years







Kyoto Fund - Schools: appx. € 1.000.000 loan (rotational fund) to perform 204 Energy Audits for Schools.



ELENA Support: European Local ENergy Assistance for appx. € 1.300.000 grants to support energy efficiency project development for public procurement of ESCo.



N.O.P - Metro: *National Operational Programme* for appx. € **10.500.000** grants to finance energy efficiency measures on Street Lighting, public buildings and Social Housing real estate.

2nd Stream from Third Party-Financing



Public-Private Partnership: appx. € 20.000.000 TPF for the large-scale upgrading of street lighting with LED

Energy Service Company

Gen-IUS Project: Genoa Innovative Urban Sustainability, ESCo public procurement process supported by ELENA for appx. € 40.000.000 TPF for energy efficiency measures on public assets.







WA3 – Funding:



Stakeholder Management:

 Difficulties to find locally the right "critical mass" and competencies to enter into EU grantfathering.



Difficulties to find bankable energy efficiency projects based on the generated cash flow rather than other conventional form of creditworthiness.



Regulation Barriers:

- Current Public debt limits
 imposed from Central
- Government and EU are not allowing for on-balance-shift public investment on energy efficiency measures
 - There's not a settled national legal framework for the implementation of PPP agreements according to the EUROSTAT rules on government accounting.



Change Management:

 Need to shift from conventional public procurement process to a new form able to handle efficiently TPF schemes and PPP proposals







WA4 – Energy Supply Contract and Resource Management





WA4 – Energy Supply Contract:

Energy Supply Management



(-EN()VA



WA3&4 – Energy Supply Contract:

Energy Supply Management





(-EN()VA



WA4 – Energy Supply:



Stakeholder Management:

- End-users do not follow any consumption monitoring campaign, and typically do not participate in training courses that senses them towards a rational use of energy.
- Energy Providers typically do not offer privileged communication channels to Local Authorities.



Regulation Barriers:

- It is not foreseen that public
- administration can buy energy from the Energy Market.



Change Management:

- 八
 - Need for the implementation of an Energy Management System (ISO 50001:11) across the organization of the Municipality.



Need for using energy metering to set Benchmarks and measure KPI.





Project GEN-IUS, supported by ELENA (GENova – Innovative Urban Sustainability)





A repeatable model for energy efficiency services: The case-study of "Project GEN-IUS"





Shifting to Smart Land:



Innovation/Justification for ELENA:







Project Gen-IUS (Genoa Innovative Urban Sustainability)



- ➢ 27 Council of the "Area Metropolitana de Genova" involved (675,325 px);
- Energy Efficiecny measures on 277 public assets;
- ➢ ELENA Financial Contribution of ≈1,3 mln € to technical assistence and tender document preparation for ESCo Contracts;
 ➢ Leverage factor: 1:27;
- Max Duration: $2018 2020 (\leq 3 \text{ anni});$







FINAL RACOMANDATIONS

- Researching for new TPF through EPC/PPP agreements for energy efficiency projects;
- Creating a "Good Practice" PPP Portal to boost the private participation (e.g. FinLombarda, EPEC);
- Full exploitation of the Energy Database and the use of KPI for analytic monitoring;
- Participating in major European Calls for the promotion of urban-environment Energy Districts.



Please, find additional info available on our website:

www.comune.genova.it/servizi/energy%20management





Thank you for your attention

Dr. Diego Calandrino

Head of Energy Management Department

Comune di Genova Il Matitone – 18º piano Via di Francia 1 16149 Genova

dcalandrino@comune.genova.it



