Feedback report

Peer learning visit

Genoa, 1-3 February 2012

CASCADE Cities exchanging on local energy leadership

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CONTENTS

Executive Summary

In February 2012, a peer learning visit of five European cities took place in Genoa in the context of the CASCADE project. The visiting cities conducted a review of Genoa's activities in the thematic field of "Renewable Energy Sources and Distributed Energy Generation" (REN and DG). The following indicators were assessed: (A) Local energy leadership and ambitions, (B) Local strategies and policies, (C) Organisational and managerial issues, (D) Stakeholder and citizen involvement, (E) Information, knowledge and awareness and (F) Financing, investments and risks.

As a result of the visit, the visiting team concluded that the Sustainable Energy Action Plan (SEAP) has a very strong political support and impetus in the city. The City Council and local stakeholders emphasised the relevance of the document for the further development of the city. However, it remained inconclusive whether the SEAP has been sufficiently integrated into the day-to-day working procedures of the city administration. To strengthen the energy leadership and the level of ambition the peer learning team recommends:

- to define binding targets for the growth of renewable energy capacities,
- to ensure a solid funding of the SEAP and its actions and
- to increase the impact of pilot projects by embedding them in the city's general strategy.

The SEAP represents Genoa's long-term energy strategy and covers a wide range of issues with respect to climate policy, transport and energy. The Smart City Association, as a partnership with key stakeholders in Genoa and the Urban lab as part of the City Council organisation are considered crucial for the implementation process of the SEAP, especially regarding networks and co-operations involving energy companies, investors, universities, the public and especially the port authority. To improve governance structures the peer learning team recommends:

- to take care of a better mainstreaming of the SEAP in the municipality,
- to better integrate the harbour in the city's strategy to develop higher synergies for all involved parties, e.g. linking the SEAP and the PEAP (Port Energy Action Plan) closer together, and
- to consider the creation of a steering committee superior to all regional city planning actors.

Regarding organisational and managerial issues, Genoa conducts preparatory potential analyses and has developed a monitoring scheme as well as a training program for the staff to calculate the effects of the measures implemented. The peer learning team recommends further improvements to support REN and DG, such as:

- to develop an integrated mapping and vision for the city's energy supply infrastructure,
- to use the monitoring scheme for continuous improvements and fine-tuning of the overall strategy and the measures implemented.

The Palazzo Verde (Green Palace) serves as a good example for raising citizens' awareness. Nevertheless, the peer learning team did not find evidence that either the citizens or professional networks are involved into the energy planning process systematically. Therefore, the recommendations are:

- to intensify exchange and collaboration in networks with external stakeholders (e.g. Smart City Association etc.),
- to extend the cooperation with universities or other institutions (e.g. Urban Lab, CRUIE[1] etc.)
- to increase the awareness of citizens by campaigns or participation processes

A crucial element for the success of the SEAP is to ensure a long-term funding for its implementation. The city was affected by last years economic crisis and therefore has tried to finance projects by third-party funds e.g. EU-funds. To ensure the implementation process of the SEAP, the team recommends:

- to elaborate further opportunities for public-private investments (e.g. fostering ESCOs),
- to continue to acquire additional funding from third parties, and
- to develop a sound financial foundation for the whole SEAP, including costs, expected revenues etc.

To conclude, the City of Genoa has taken a leading role in Italy and Europe with its ambitious SEAP. However, the peer learning team recommended Genoa to continue improving their managerial structures e.g. mainstreaming the SEAP throughout their organisation, their cooperation with the Port Authority and the involvement of both private investors and the general public in the city's strategy. Finally the team encourages the City of Genoa to develop a long-term financing structure for the implementation of actions included in the SEAP.

[1] *CRUIE: Research Centre in Town planning and Ecological Engineering) of the University of Genoa were involved in the preparation process of the SEAP. CRUIE also is a specialist support of ARE - Regional Energy Agency of Liguria Region and both under the guidance of Energy Department of Genoa Municipality.*

1. Introduction

The City of Genoa is the capital of Liguria, a coastal region in north-western Italy. From a topographical perspective Genoa is "sandwiched" between the coast and mountain chains rising almost straight out of the sea and occupying about 70% of the territory. This unique location has strongly influenced both the city's urban development and infrastructure. Genoa counts 611,171 inhabitants on an area of 244 km^2 between the coast and the Apennine Mountains. The city consists of nine city boroughs with 31 districts.

In recent years, Genoa has managed to develop a consistent policy towards sustainable energy and climate protection. In 2009, Genoa signed the "Covenant of Mayors" and submitted its "Sustainable Energy Action Plan" (SEAP) in 2010[2]. It committed itself to a reduction target of 23, 7% of its CO_2 emissions by 2020 compared to 2005. Besides the sectoral energy policies it also elaborated several strategic documents addressing local policies: The programmes PUM (Piano Urbano della Mobilità) and PUT (Piano Urbano del Traffico) singularly focus on the transport sector, and the Municipal Urban Plan PUC (Piano Urbanistico Comunale) addresses planning issues in the building and transport sector.[3]

In 2010/11 the city implemented a programme to provide roofs of municipal buildings for the installation of photovoltaic facilities. A local building regulation addresses both buildings and renewable energies. Genoa has a large district heating power plant (Consorzio AMGA Energia) located at Sampierdarena in the port area. It is operating since 1990 and the only major plant in the city. Referring to the SEAP, one vision is to extend the use of district heating and CHP (Combined Heat and Power) and to increase the importance of district cooling. In this regard, preparatory studies for microsystems of CHP and wind farms are planned.

In institutional terms, the municipal Energy Team the Urban Lab and the Smart City Association support energy and climate policy in the city. The Urban Lab is an organisation, with members of Genoa Mapping Department, young architects and engineers from leading universities. It is promoted by the Municipality, and located under the department of territory, economic and urban development. The Smart City Association is a partnership between the city and key local stakeholders to collaborate on new technologies, energy efficiency and renewable energy.

Within the CASCADE project, Genoa decided to host a peer learning visit focused on the topic "Renewable Energy Sources and Distributed Energy Generation" (REN and DEG).

The peer learning team thanks the City of Genoa for enabling the learning process, and for the attentive hospitality. The memers of the peer learning team have had the opportunity to reflect their own activities by studying the complex process and managerial challenge of setting up a new governance structure at the local level for ambitious climate and energy policies.

2 *City of Genoa (2010). Sustainabe Energy Action Plan (SEAP). Download at: http://www.eumayors.eu/about/signatories_en.html?city_id=492&seap (accessed 02/17 2012) (in Italian and English)*

3 *See website http://www.urbancenter.comune.genova.it/node/755 (in italian, accessed 02/17 2012)*

2. Peer Learning Methodology and Visit

The peer learning methodology is a method that can be used by cities to communicate and critically review each other's sustainability policy, to improve performance and provide suggestions for further progress. It also provides the opportunity to learn and share experiences, practices and ideas with participating cities during peer learning visits. Within the visit, the cities assessed specific energy projects and plans, which the host city is implementing by interviewing stakeholders of Genoa. As a result of these interviews and the subsequent discussions, the visiting cites provided recommendations on possible areas of improvements.

Peer Learning Visit in Genoa

The peer learning visit in Genoa took place between February 1st and 3rd with a preparatory meeting of the supporting team with representatives of the city administration on January 31st.

One main reference document of the peer learning visit was the self-assessment report delivered by the City of Genoa on December 15th. In this document, Genoa conducted an assessment of the state of implementation of its energy policy with a special focus on the promotion of renewable energy sources and distributed energy generation. In order to structure both the self-assessment and the peer learning visit, Wuppertal Institute and Eurocities developed a benchmark for this thematic issue.

Feedbacks to this report were given on December 16th by GOJA Consulting for Environment and Sustainable Development and the Wuppertal Institute. Detailed desk reviews by the peer learning team were delivered by January, 16th.

During the visit, the peer learning team received extensive documentation such as the Sustainable Energy Action Plan of the City of Genoa, information from the city's website, the self-assessment report and the CASCADE city profile. The team conducted 18 personal or phone interviews with main representatives of the city, such as elected members of the City Council, staff of the municipality, representatives of Genoa's port authority and stakeholders from the business and the regional energy sector.[4] Two additional sessions were held during the visit, an introduction to Genoa's energy and climate policy, and a one-day seminar to exchange experiences among the peer learning team.

[4] *The list of interviewees is displayed in the appendix of this report*

The members of the Peer Learning Team were:

City	Team Members
Amsterdam	Jannis van Zanten (City of Amsterdam) Marcel Meiling (NUON, Amsterdam)
Edinburgh	Janice Pauwels (City of Edinburgh Dave Hawkey (University of Edinburgh)
Gateshead	Peter McDermott (City of Gateshead) Jon Mallen-Beadle (The Gateshead Housing Company)
Gijon	Bernardo Veira (Science and Technology Park Gijon) Enrique Jáimez (University of Oviedo)
Venice	Maurizio Tabuso (City of Venice) Simone Tola (A.G.I.R.E. –Energy Agency of Venice)

The peer learning team was supported and facilitated by

- Ralf Schüle and Sophie Arens (Wuppertal Institute)
- Jan Dictus (GOJA Consulting)
- Jorgina Cuixart (EUROCITIES)

The benchmark

The benchmark for the thematic field of "Renewable Energies and Distributed Energy Generation", developed in CASCADE, was the main reference for the peer learning process. It addresses the following issues and indicators:

A Local leadership and ambitions
B Local strategies and policies
C Organisational and managerial issues
D Stakeholder and citizen involvement
E Information, knowledge and awareness
F Financing, investments and risks

3. The assessment

The following chapter the key factors will be described and reviewed with regard to Genoa's policies on rebnewable energies and distributed energy generation. It also illustrates the drawn conclusions and recommendations.

A - Local energy leadership and ambitions

1) Description of key factors

The legal options for cities differ from country to country. But within the given legal framework cities can be pioneers and even exceed national standards. The related key factors of the benchmark cover the issues addressing the role of the administration in the entire city: political commitment, use of regulatory capacities at local level, consistency of strategy and affinity to innovative projects.

The indicator "Local energy leadership and ambitions" covers the following key factors:

Key Factor	Explanation
A1 - Political commitment	The city has a political commitment towards the promotion of renewable energy and distributed energy generation, which is translated into realistic and achievable targets.
A2 - Use of legislative capacities	The city is fully using its legislative capacities at the local level to set ambitious policies for renewable energy and distributed energy generation exceeding standards at European, national and regional level.
A3 - Long term goals and visions	Upcoming investments in energy infrastructure planned for the near future are consistent with the city's long-term goals and visions. New political agendas do not affect this commitment.
A4 - Implementation of innovative pilot projects	The city has developed or supported innovative (pilot) projects in the field of renewable energies and distributed energy generation by which the city has set an example as a role model for citizens and also for private investors.

(2) Review and recommendations

With regard to the level of "political commitment" of energy and climate related ambitions in Genoa (key factor A1), the review team especially recognised the strong political support for the SEAP by the City Council and identified some of the challenges to implement measures displayed in the SEAP in different sectors.

Since the SEAP was approved unanimously in the City Council (Consiglio Comunale) in 2010, it appeared for the peer learning team that even new elections and new political coalitions would not threaten the general approach or diminish the ambition of the city's energy policy. The SEAP also provides a reference document for additional policies in the building sector (e.g. regulations for new and old buildings) and for the promotion of renewable energies in the city. Members of the City Council, city officers and stakeholders regard the SEAP not only as a sectoral initiative to transform the local energy infrastructure but also as an integrated part of the city's future development with high economic relevance.

Despite these positive conditions in the city, the peer learning team have some doubts whether the SEAP has been appropriately mainstreamed in the municipality. It seems like part of the staff is not thoroughly informed about the implementation process of the SEAP.

The peer learning team also identified challenges and opportunities regarding the use of legislative capacities (A2). Many historical cities, like Genoa, experience the conflict between preserving the city's historical heritage and improving the energy performance of buildings. Nonetheless the team did not see satisfying evidence that Genoa is using all legislative options to enforce a more rapid transformation of the local energy infrastructure. This could especially be observed with regard to building codes (to be exploited stronger than national legislation) and to renewable energies (e.g. lack of mandatory targets at city or sectoral level).

Long term goals and visions (A3) were addressed especially with regard to the financial structure of, and its consistency with, the SEAP. For example, the peer learning team noticed an obvious divergence between the long-term emission reduction targets defined in the SEAP, the approved three years' plan for projects and the annual plan for funding. Exceptions are the Smart City Association and the Palazzo Verde as independent projects, which have a long-term perspective.

The missing financial foundation is one factor, which hinders the attainment of the long-term goals and visions. It is partly granted by the activities planned through the Smart City Association but does not cover all plans or goals of the city in the long term perspective. Regarding financial issues, the peer learning team recognised that the funding of actions is often only approved for one year. A solid financial foundation would be helpful to ensure the full implementation of the plan and the city's progress towards its long term vision and goals.

Since the implementation of the SEAP, Genoa has started many activities and projects. In this regard, the peer learning team has especially recognised the large number of innovative pilot and demonstration projects implemented in the city (A4) e.g. the installation of solar panels on public buildings, energetic refurbishments of old buildings, the installation of small wind turbines etc. However, to increase the impacts of these pilots the peer learning team recommends paying more attention to the dissemination, upscaling and structural embedment of these projects in the city's general strategy.

Key Factor	Assessment and recommendations
A1 - Political commitment	This key factor is fully matched. The city has got a high level of ambition and a strong political commitment. The SEAP is seen an integrated part of the city's future development.
A2 - Use of legislative capacities	This key factor is only partly matched or inconclusive. The peer learning team did not see satisfying evidence that Genoa is using all legislative options to enforce a rapid transformation of the local energy infrastructure. → **Recommendation (1):** Consider defining binding targets for renewable energies at city and sectoral level.
A3 - Long term goals and visions	This key factor is also only partly matched. The financing of projects was often guaranteed for one year only, which might compromise the city long term goals and visions. → **Recommendation (2)**: Ensure a solid financial foundation of the SEAP and its actions and elaborate a funding strategy e.g. by public-private investments.
A4 - Implementation of innovative pilot projects	This key factor is predominately matched since a large number of innovative pilot projects are being implemented. → **Recommendation (3)**: Increase the impact and synergies of these pilots by paying more attention to dissemination, upscaling and structural embedment of these projects in the city's general strategy.

B - Local strategies and policies

(1) Description of key factors

The cluster "Local strategies and policies" addresses the city's local strategies and policies with a special focus on policy integration. The related key factors are:

Key Factor	Explanation
B1 - Comprehensive long term strategy	The city has a comprehensive long-term strategy for energy and climate policy (e.g. SEAP) with established targets and actions for renewable energy and distributed energy generation.
B2 - Integration of REN and DEG with urban development plan	The urban development plan/city master plan takes renewable energies and efficient energy supply systems into account.
B3 - Integration of SEAP with other departments	Energy policies and planning are integrated with activities of other departments (e.g. with planning departments or business development etc.).
B4 - Co-operation at regional level	The city co-operates at national and regional level in specific policies and projects on renewable energy and distributed generation.

(2) Review and recommendations

In Genoa's climate and energy policy, the SEAP represents the main strategic document (B1). It covers a wide range of issues such as transport, energy efficiency, energy infrastructures and waste. The peer learning team acknowledges that the city has just begun to move towards a more sustainable future development. The support by regional or national institutions and the provision of financial support are considered crucial for the success of the strategy.

By means of Council Resolution in 2009 the local government adopted a 10-point masterplan for sustainable growth for Genoa. This masterplan was developed by the Genoa Urban Lab. Within the masterplan the Urban Lab drew a "Green Line" and a "Blue Line": The "Green Line" embraces the hillside built-up area and the "Blue Line" marks the boundary and relationship between the built environment and the sea. Together they entail an implosion of the urban growth of the city and the pursuit of sustainable development within these boundaries. The idea is to restore the ideal balance between the built environment and enhanced quality of life. Transformation districts, which have been identified by the Urban Development Plan, become an opportunity to improve the energy efficiency of the city[5]. This masterplan supports an integrated approach where urban

[5] *City of Genoa (2010). Sustainable Energy Action Plan (SEAP). Download at: http://www.eumayors.eu/about/signatories_en.html?city_id=492&seap (accessed 02/17 2012) (in Italian and English)*

development is linked to the SEAP (B2).

Another important factor for the success of the city's strategy is the harbour area managed by the Port Authority. The peer learning team recognised that the Port Authority regards carbon reduction and renewable energies as an issue of main priority as well. The harbour area has its own energy plan, Port Energy Action Plan (PEAP), and it seemed the Port Authority has generated a lot of competences and capacities to implement this plan. Additionally, a regular technical co-operation between the municipality of Genoa and the Port Authority has been established. However, despite these favourable conditions, the team remained inconclusive about the established links between the SEAP and the PEAP. Despite the historical and institutional separation of the two areas, the harbour has to be better integrated into the city's strategy and both parties should intensify their co-operation in the future in order to better implement the SEAP and PEAP.

Regarding established cooperation of the city on regional and national level, the peer learning team acknowledged:

- the collaboration between large Italian cities on renewable energies,
- the cooperation with other European cities in the European Smart Cities initiative and
- the regional cooperation, which has been established in the context of the regional energy plan.

However, the co-operation between the City of Genoa and other municipalities in the region did not appear to be strongly developed, also due to historic and topographic reasons. The peer learning team considers the intensified regional co-operation to be crucial for improving regional solutions in the fields of energy supply, energy efficiency and transport. The regional energy agency (ARE) should play a stronger coordinating role. The peer learning team recommends to create a steering committee addressing climate and energy issues at regional level.

Key Factor	Assessment and recommendations
B1 - Comprehensive long term strategy	This key factor is predominantly matched. With its SEAP, the city has developed a reference document widely accepted in the city council and the responsible institutions in the city administration. → **Recommendation (1):** To ensure better mainstreaming of the SEAP in the municipality → **Recommendation (2):** The City Council and the Port Authority should strengthen their cooperation in order to develop high synergies and better integrate the SEAP and the PEAP
B2 - Integration of REN and DEG with urban development plan	This key factor is predominantly matched. The SEAP is closely linked to the urban development plan.
B3 - Integration of SEAP with other departments	This key factor remains indefinite since only one interview mentioned a good co-operation among other departments.
B4 - Co-operation at regional level	This key factor is only matched partly. The co-operation between the City of Genoa and other municipalities in the region does not appear to be strongly developed, despite the intensified regional co-operation with the regional energy agency (ARE). → **Recommendation (4):** Consider the creation of a steering committee involving all regional city planning actors

C - Organisational and managerial issues

(1) Description of key factors

With regard to energy and climate issues it is necessary to overcome the traditional disciplinary separation of organisational structures in municipalities in order to develop integrative solutions. Therefore, these factors especially address organisational and managerial issues with a special focus on monitoring:

Key Factor	Explanation
C1 - Establishment of an organisational structure	Within city administration, an organisational structure for managing climate and energy issues is established.
C2 - Support of REN and DEG in administrative procedures	The city administrative procedures facilitate the development of projects and activities in the field of renewable energy and distributed energy generation.
C3 - Analysis of potentials	Potentials for emissions reductions and renewable energies are analysed and provide the data basis for the local strategy and for the implementation of the right combination of measures/technologies.
C4 - Monitoring and evaluation	Data about the progress made in the implementation of energy policies and projects is regularly (yearly) monitored by the city council.

(2) Review and recommendations

Regarding the "Establishment of organisational structures" (C1) and the "Support of REN and DEG in administrative procedures" (C2), the peer learning team recognised the specific co-ordinating role of the municipal Energy Team with a clear cross cutting remit to implement the SEAP. The co-ordinating role of the Energy Team has the potential to develop an integrated mapping and an integrated vision for energy supply infrastructure in the city. Additionally, the Urban Lab (with members of Genoa Mapping department, young architects and engineers from leading universities)[6], in combination with the energy team of the city, is able to support the horizontal co-operation and to anchor the SEAP within the city administration. However, the team got the impression that the SEAP does not seem to be mainstreamed strongly enough throughout the whole local administration. Not all actors in the city administration seem to know the formal responsibilities assigned in the SEAP.

6 *Urban Lab is part of the City Council organisation, under the department of territory, economic and urban development.*

Other managerial and administrative issues only played a secondary role during the peer learning visit and therefore their assessment remained inconclusive.

In Genoa, preparatory "Analysis of potentials" (C3) have been conducted in two fields of action: In the public buildings sector in which about two hundred schools were prioritised for refurbishments; and in the port area, where potentials for renewable energies have been analysed systematically. Limited opportunities for installing solar panels in the old city centre were mentioned as one hindering factor.

The peer learning team acknowledged the city's efforts on the development of a monitoring system (C4). During the preparation of the SEAP, specific indicators for each action have been identified to monitor the state of implementation of measures. Besides a centralised building management system covering all schools and about 50% of other municipal buildings in Genoa, the staff in the City Council received training on calculating the effects of measures with regard to energy consumption and emissions.

In order to improve the city's climate and energy strategy, the team recommends not only to collect data for the evaluation of the effects of the SEAP, but also to use the established monitoring scheme for continuous improvements and fine-tunings of the overall strategy (C4).

Key Factor	Assessment and recommendations
C1 - Establishment of an organisational structure	The key factor is matched as Genoa has established an Energy Team in the administration.
C2 - Support of REN and DEG in administrative procedures	This key factor is predominantly matched by the establishment of an Energy Team, co-ordinating the city's climate and energy policies. → **Recommendation (1)**: Develop an integrated mapping and an integrated vision for energy supply infrastructure in the city.
C3 - Analysis of potentials	This key factor is predominately matched since several preparatory analyses have been conducted.
C4 - Monitoring and evaluation	This key-factor is predominately matched. A monitoring scheme seems to be established. → **Recommendation (2)**: Use the established monitoring scheme for continuous improvements and fine-tunings of the overall strategy and the measures implemented.

D - Stakeholders and citizens involvement

(1) Description of key factors

There is a need to involve professional stakeholders and citizens in order to promote renewable energies and a sustainable urban development. Partnerships, professional networks and information campaigns are approaches to involve social groups into the city's strategy on renewable energy sources and distributed energy generation and to motivate them to invest in these.

Key Factor	Explanation
D1 - Partnership with utility	The city has established a robust partnership with the energy utility.
D2 - Establishment of professional networks	There are established professional networks and/or economic clusters with local investors and producers in the field of renewable energies and distributed energy generation.
D3 - Involvement of citizens and companies	Citizen and companies ("end-users") are systematically involved in the implementation of the overall strategy in the field of renewable energies and distributed energy generation.

(2) Review and recommendations

The municipality established a broad spectrum of co-operation and networks with other energy and climate related actors. Especially initiatives like the Smart City Association and the coordinating role of the City's Urban Lab show that Genoa recognises the importance of involving (external) stakeholders in integrated policies. The co-operation between the city and local energy companies (main company: ENEL distribution S.P.A.) (D1), for example, was especially highlighted in context of the local Smart City Association.

The city created a Smart City Association in which key stakeholders of the city collaborate on new technologies, energy efficiency and renewable energy. The original promoters are, besides the Municipality of Genoa, the University of Genoa (Chief Department of Engineering) and the main energy company ENEL Distribution SPA (Technical Director). The founders cooperate in order to achieve important targets in the field of a Strategic Energy Technology Plan. Besides private and public companies, also three non-profit organisations joined the Association lately (S. Egidio Community, Scout Movement and Music for Peace). It is also in progress to found a Smart People Association to collect several requests from citizens. These initiatives can serve as an important vehicle for involving further external stakeholders in the development of the city's climate and energy policy (D2). Additionally, a co-operation with the university addresses the refurbishment of school buildings. The team recommends intensifying the exchange and collaboration with external stakeholders via networks

Regarding the involvement of citizens, the team had the possibility to visit and see the activities of the Palazzo Verde targeting public awareness and involvement. However, the peer learning

team has seen no evidence that citizens and other local stakeholders (shopkeepers, house owners, etc.) are involved in the implementation process of the SEAP systematically (D1,D2,D3).

Key Factor	Assessment and recommendations
D1 - Partnership with utility	This key factor is matched. A co-operation with the local energy utilities has been established.
D2 - Establishment of professional networks	This key factor is partly matched. Only a few examples of professional networks were mentioned. → **Recommendation (1)**: Intensify exchange and collaboration in networks with external stakeholders (planners, companies, craftsmen etc.)
D3 - Involvement of citizens and companies	This key factor is predominately not matched. With one exception, there was no clear evidence of a proactive involvement of 'end users'. → **Recommendation (2):** Implement a proactive involvement of "end users" by means of active consultations and participation processes. Those actions could be framed by one label, which enhances the public perception of the city's sustainability activities. → **Recommendation (3):**Establish a consultation process for renewable energy installations in the private sector.

E - Information, knowledge and awareness

(1) Description of key factors

Even though information and knowledge is a rather "soft" factor, it is the basis for stakeholders and the general public to contribute to the city's strategy on renewable energy sources and distributed energy generation. There are a number of stakeholders, who have to be motivated, such as energy suppliers, utilities, planners, craftspeople, knowledge institutions, building and housing companies, the financial sector and the public in general.

This indicator covers the following key factors:

Key Factor	Explanation
E1 - Competences and training of staff regarding REN and DEG	Relevant municipal staff is knowledgeable and adequately trained to deliver renewable and energy production projects.
E2 - Strategy to increase skills of market actors	The city has a consistent strategy to increase skills and knowledge of planners, engineers, investors and other external actors.
E3 - Activities to increase awareness and social acceptance	The city works towards increasing awareness and social acceptance of renewable energies and distributed energy generation among citizens and key stakeholders.
E4 - Strategy to communicate results, benefits and opportunities of REN and DEG	The city has a consistent strategy to communicate the results, benefits and opportunities of local projects on renewable energies and distributed energy generation to stakeholders and the general public.

(2) Review and recommendations

Regarding cluster E (information, knowledge and awareness), the peer learning team especially appreciated the existence of the Green House (Palazzo Verde) and the public campaign that was held around its opening (E3). The team perceives Palazzo Verde as a good example for raising public awareness and social acceptance of environmental topics (E3). Other similar activities of the city, e.g. concerning waste management and individual consumption (e.g. decrease of plastic waste production) show that long experience exists in communicating environmental issues to the general public.

Referring to the key factor "Competences and training of staff regarding REN and DEG" (E1), training courses for the municipal staff on monitoring the SEAP were mentioned. However, other aspects of the SEAP implementation such as financing, use of new technologies or project development should also be covered in these trainings.

With regard to SMEs and other private investors, Genoa has recognised that energy efficiency and the further integration of sustainable energy supply infrastructures will noticeably contribute to

the economic development of SMEs in the city. However, although ARE (Regional Energy Agency) offers courses for engineers and architects, the team has not find evidence of a consistent strategy to increase skills and knowledge of local stakeholders, e.g. of planners, architects, engineers, craftsmen etc. The training programme to promote efficient installations (e.g. for boiler installers) is seen though as an important starting point (E2). One of the team's recommendations is to implement a continuous training of its employees, stakeholders and professionals to raise skills on energy efficiency and renewable energy production and consolidate awareness of the potentials and the effects of their own actions towards reaching Genoa targets for CO_2 reductions.

The peer learning team recommends improving existing activities related to public relations and education by means of a systematic communication plan. This would help to raise the public awareness on all the activities Genoa is undertaking to implement the SEAP. For example, the refurbishment of schools and the installation of renewable energy facilities could be made part of the school's curricula.

Key Factor	Assessment and recommendations
E1 - Competences and training of staff regarding REN and DEG	This key factor is partly matched. The city conducted a training with municipal staff to monitor implemented measures of the SEAP. But a consistent strategy to increase skills and knowledge of municipal staff should be elaborated further.. → **Recommendation (1)**: Develop a consistent strategy to increase skills and knowledge of all actors e.g. within networks (see also key factor D2). One aspect of the SEAP implementation such as financing, use of new technologies or project development could be covered in these trainings.
E2 - Strategy to increase skills of market actors	This key factor is not matched yet, but the training programme to promote efficient installations (e.g. for boiler installers) is seen as an important starting point. → **Recommendation (2)**: Implement a continuous training of local stakeholders and professionals on energy efficiency and renewable energy production in collaboration with educational institutions.
E3 - Activities to increase awareness and social acceptance	This key factor is predominately matched. Experience exists in communicating environmental issues to the general public (e.g. Palazzo Verde).
E4 - Strategy to communicate results, benefits and opportunities of REN and DEG	There is no conclusive evidence with respect to this key factor. → **Recommendation (3)**: Consider issuing a professional public information campaign on energy and climate issues in the city or the region.

F - Financing, investments and risks

(1) Description of key factors

The final cluster of factors focuses on financial and investment issues. What resources has the city made available for investments and maintenance of renewable energy sources and distributed energy generation? What activities haven been developed to reduce investment risks and to initiate additional private investments?

Key Factor	Explanation
F1 - Provision of financial capacities	The city administration has capacity (financial and personnel) to implement its energy and climate ambitions.
F2 - Raising additional funding	The city raises additional funding to promote renewable energy and distributed energy generation and/or uses new ways of financing.
F3 - Support of private investments in REN and DEG	The city administration supports investments in the field of renewable energies and distributed energy generation.
F4 - Activities by the city to reduce risks	Risks of investments in renewable energies and distributed energy generation have been reduced by the city's activities.

(2) Review and recommendations

The city administration plays a strong role in developing, improving and implementing the SEAP and its related activities. The financial crisis affects the city's capability to invest in sustainable energy infrastructures. The peer learning team was very impressed by the fact that Genoa has been very successful in receiving external (EU) funding for projects (F2). And currently, the city is seeking European funding, e.g. through the Smart Cities initiative, in order to maintain capacities to act. Also regional funding could be used for energy related projects in the city. As a public owned organisation, the Regional Energy Agency (ARE) is able to issue credits for the public sector and to provide financial support for the city. Additionally, at measure level, the team has seen good examples of sound financing strategies for individual projects (school buildings) (F3).

However, the peer learning team also identified challenges for the financial basis of the SEAP:

- A sound financial foundation of the whole SEAP, including costs, expected revenues, risks, etc could not be identified (F4).
- There is a risk of overrating the potential of energy service companies (ESCOs) to fund a large number of projects in the city. Energy Service Companies are considered important to initiate private investments; therefore, the City should actively look for ESCOs and promote their development. At the same time, since the actual potential of the ESCO market is not clear yet, the city should also look into other innovative financing instruments to leverage

private investments for instance PPPs, revolving funds, green loans or guarantee schemes.

Key Factor	Assessment and recommendations
F1 - Provision of financial capacities	This key factor is not matched. One of the reasons for this is a lack of resources within the municipality, also caused by (inter-)national financial crisis. → **Recommendation (1):** Ensure a solid financial foundation of the SEAP and its measures e.g. by public-private investments
F2 - Raising of additional funding	This key factor is fully matched. The city already has participated in several European projects in order to maintain capacities to act. → **Recommendation (2):** Continue to acquire additional funding from third parties (e.g. EU or national funds)
F3 - Support of private investments in REN and DEG	This key factor is partly matched. There are good examples of sound financial strategies in individual projects. Furthermore the ARE is able to issue credits for the public sector and to provide financial support for the city. → **Recommendation (3)**: ESCOs should be actively promoted by the city. At the same time other financing schemes should be further explored.
F4 - Activities by the city to reduce risks	This key factor is not matched. → **Recommendation (4)**: Develop a sound financial foundation of the whole SEAP, including costs, expected revenues, risks.

Appendix 1: List of Interviewees

Anna Corsi, Head of Urban Lab, City of Genoa
Paolo del Gaudio, President Genova Reti Gas
Giuseppe Di Luca, Autorità Portuale, Environmental Technical Department
Paola Girdinio, University of Genoa, Head of Department of Engineering, Smart City Association
Mirco Grassi, Manager Department of Architectural Projects, City of Genoa
Roberto Ionna, Mobility manager, City of Genoa
Mario Merello, Manager, Energy Department, City of Genoa
Anna Moreno, ENEA Italy, Head training Department
Pinuccia Montanari, Assessor Energy Policy Plan, City of Genoa
Stefania Pesce, Lega Ambiente
Pier Paolo Rossidivita, ARE
Gloria Piaggio, European Projects Manager and Genoa Smart City Coordinator, City of Genoa
Carlo Sacco, AMIU Technical Manager Waste Plant, City of Genoa
Sonia Sandei, Enel, Head Business development Nord Ouest of Enel Green Power
Giovanna Sissa, Researcher, Milan
Michele Solari, Environmental Consultant
Roberto Tedeschi, Director of Housing Department, City of Genoa
Pietro Ugolini, Director CRUIE, University of Genoa

Appendix 2: Summaries of case studies

Initiatives presented during the peer exchange seminar, Friday 3 February 2012

Heat & the City (Edinburgh, United Kingdom)

Heat & the City is a research collaboration between the Universities of Edinburgh and Strathcllyde Glasgow, exploring different ways to make the transition to low carbon energy. What makes this project interesting is the fact that it does not focus on classical recipes like government legislation, household behaviour or new smart technologies. Instead, it focuses on possibilities to achieve this transition through change at municipal community level.

Central to the project is 'district heating'. This is a way of low cost and low carbon heating, with the possibility of extracting energy from waste. Furthermore it is subject to community participation and control, which allows it to improve the social density within the municipalities, given the social responsibilities of local authorities.

Today, different projects have been realized based on the results of this intensive research collaboration. There is the 'Aberdeen Heat & Power', the 'Birmingham District Energy Company' and 'Thamesway Energy Ltd' in Woking for example. And even though the organizational structures of these different energy companies might differ, they all focus on making the transition to renewable and low carbon energy at a local community level.

Organisation: Heat & the City project, University of Edinburgh
Contact person: Dave Hawkey, Research Fellow
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Gijon's Triple Helix Model

The Triple Helix Model in Gijon (Spain) is the story of a fruitful collaboration between 3 important actors: government (national government, the Asturias region and different city councils), industry (more than 70 companies) and research (more than 100 research teams). Such collaboration between Gijon City Council and the University of Oviedo has led to various successful examples in different urban policy fields:

In mobility for example, a whole network of electric vehicle charging stations has been installed. Concerning energy efficiency in buildings, new ways to heat recently constructed buildings are being deployed, using either biomass from regional supplied wood pellets or geothermal energy from coalmine water. Furthermore, the city has established an air quality monitoring system with black carbon sensors. Last but not least, Gijon is now implementing a large carbon capture and storage project which will contribute significantly to mitigating the effects of climate change.

These are examples of how collaboration betweens government, industry and research can trigger innovation and become a driving force for sustainable policies at local level.

Organisation: University of Oviedo and Gijon City Council
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Gateshead Warm Zone, Gateshead, United Kingdom.

In 2005, Gateshead Council was designated as one of the UK's Warm Zones. This is a national scheme offering free or discounted home insulation to tackle fuel poverty and promote a greener urban environment. Examples include cavity wall or loft insulation, hot water tank insulation 'jackets', the installation of energy efficient lighting or replacement of central heating systems.

Gateshead Warm Zone team also offers residents advise on improved energy-efficiency and social security benefits available to cover costs. Furthermore, they provide training for housing and estate officers to raise awareness of reducing fuel poverty and enhancing energy efficiency.

With 33% of carbon emissions coming from homes, many of which are in need of energy efficiency improvements, the measures will help Gateshead in developing a cleaner urban environment.

Organisation: Gateshead Council
Contact person: Peter McDermott, Energy Conservation Officer
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Venice's Wave Motion Energy Project

In cooperation with two private investors, the City of Venice is implementing a pilot project aiming at producing 100% green electrical energy form wave motion in the Venetian Lagoon. When generating wave motion energy at the sea, one should know that when waves get nearer to the coast, they start to lose energy due to friction effects, breaking on the seashore. Therefore, the biggest potential for energy generation lies in well-exposed and deep water, far from the shore. Given these circumstances, the Wave Motion Energy Project in Venice has installed two completely different prototypes: the Giant and the Wave Energy Module.

The Giant, installed in deep water, directly transforms the waves' energy potential into electricity. It has a quite logical system, consisting of a power generator fixed to the bottom and a float, which is driven by the waves' motion. Expected energy production: about 12.000 kWh/year.

The Wave Energy Module is a different system which can be installed in more shallow waters. It consists of a central steel structure, containing a power generator. Floats are linked to this generator by steel mechanical arms which transfer the energy to a traditional revolving generator and transforms it into electricity. Expected energy production: about 35.000 kWh/year.

The prototypes were installed in December 2011 and will be monitored during the first year to verify the system potential for energy generation.

Organisation: AGIRE – Agenzia Veneziana per l'Energia and City of Venice
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