

Guangzhou International Award for Urban Innovation Application Form 2012

Please return the Application Form to the Guangzhou Award Secretariat at info@guangzhouaward.org by 30 September 2012.

A. Profile of the Initiative

Name of City/Community:	SALERNO	
Name of Province/State:		
Name of Country/Region:	ITALY	
Geographic Region (Please select and tick one):	Africa (Sub-Saharan)	
	Asia and Pacific	
	East and Central Europe	<input type="checkbox"/>
	North Africa and Middle East	
	North America	
	Latin America & Caribbean	
Title, name and position of person(s) submitting:		
1. Gianfranco Rizzo, Full Professor, Dept. of Industrial Engineering, University of Salerno		
2. Giancarlo Savino, Energy Manager, City of Salerno		
3.		
Basic City Data:		
Population size: 139019 (July 2012)		
Surface Area: 58,96 km ²		
Population Density: 2357,9 people per km ²		
GDP per capita: 32569 (Italy – 2011)		
Other: (please specify)		

B. Background Information:

Title of Slogan of the Initiative (25 words max.):
SustAinabLe EnErgy NOw
Start date of the initiative: February 2009
Tentative end date of the initiative: December 2020
Thematic area(s): Renewable Energy, Rubbish and Recycle, Energy and CO2 Savings

C. Summary of the origins of the initiative:

Describe how the initiative came about and what challenges or issues of sustainable development it is meant to address using the following lead questions as your guide (350 words max).

1. Describe briefly the reason(s) for undertaking initiative including challenge(s) or issues confronting the city/region/community. Include where relevant number of people, enterprises or institutions affected.

Salerno is a mid-size city of about 140.000 inhabitants located in the coastal part of Campania, one of the most densely populated areas in Europe. While a large part of this area, around Naples, has suffered in recent years of serious environmental problems, Salerno has gained excellence in many fields, from contemporary architecture to tourism, from music and art to environment. In order to consolidate and enhance these outcomes and to combine sustainability and quality of life, a very advanced energy plan for the city is being proposed.

2. Describe the goals of the initiative in terms of desired change or outcome and timeframe for achieving the change or outcome (for example, change in policy, strategy, business model, technology, means of implementation, financing arrangements, measuring and evaluating, etc.)

The initiatives aim to reach and to exceed the goals fixed by European Union in terms of reduction of CO₂ emissions, energy savings and renewable energy production, that urge improvements of 20% (with respect to 2005 values) by 2020, in accordance with the directions of Kyoto protocol. These goals are being pursued within the development of a City Energy Plan and within the Sustainability Energy Action Plan.

The initiative consists in two main parts: *i*) an analysis on current energy and emissions scenario with the proposed options/solutions to reduce consumption and pollutants, to be updated regularly, and *ii*) implementation of such proposed activities. The strong and active collaboration between university and research entities and the City of Salerno allows researchers to help policy makers better define energy initiatives (laws, incentives, rules, etc) what would be effective, sustainable and feasible.

3. List the parties and partners to the initiative (specify public, private, non-governmental, individual, etc.) and who is or was the leading partner(s) and the role they each played.

In order to approach such a complex and multi-disciplinary issue, a team composed by diverse entities and expertise has been built, within the City Energy Plan. Main public parties are the City of Salerno – Energy Office, many researchers and departments of the University of Salerno, University of Naples “Federico II” and private entities, such as consultants. Numerous stakeholders are being involved in the development of the Sustainable Energy Action Plan.

4. Describe the resources used for implementing the initiative including funding/financing strategy or arrangements and Include any significant contributions that are not in cash, for example, in human, technical or managerial resources.

The described initiative sees the participation of several parties, and invaluable contribution in terms of technical, managerial and consulting activities by all entities. The City of Salerno and other private partners have so far invested large amount of money for very advanced renewable energy plants. The most significant of them is a

24 kW photovoltaic plant “Monti di Eboli”, the third one in Italy at the date of its construction. Significant economic, human, managerial and technical resources have been also needed to build a large Composting Plant and to organize the Separate Refuse Collection, where the city of Salerno has reached the 70% in few years, the highest rate in Italy for this size of municipalities.

D. Summary of the innovation for the initiative:

Describe the innovation for the initiative using the following lead questions as a guide (350 words max).

1. Describe whether the initiative should be considered evolutionary or revolutionary. Evolutionary would imply that innovation evolved over time based on lessons learned from experience and that the changes or outcomes are cumulative. Revolutionary would imply something quite new or something that has been borrowed from elsewhere but never been tried before in the sector or context in question and therefore bears a certain degree of risk.

The initiative can be considered both evolutionary and revolutionary. As discussed above, it is a merging of activities aimed at energy and emissions savings. Major actions can be summarized as:

- Street lighting and appliances: use of high efficiency street lamps, incentives for low-impact domestic appliances
- Building energy savings: by means of improved design that takes into account energy losses due to windows, doors, poor thermal isolation, etc.
- Improved design of HVAC (heating, ventilation, and air conditioning) of indoor spaces
- Waters savings: recovery of rainwater and better use of aqueducts.
- Renewable Energy: solar thermal, photovoltaic, biomass, biogas, wind
- Sustainable urban planning: green areas, street lighting, etc
- Sustainable mobility: energy savings by using smart traffic lights, incentives for bicycles, park and ride, car sharing and car pooling, etc
- Cycle of rubbish and recycle
- Solidarity Purchasing Groups to help consumers to achieve and build photovoltaic gazebo on the roofs and to buy and install highly insulating windows and frames in their houses.

Some of these activities/ideas are borrowed from other experiences, but had never been implemented in the area.

The following actions, in particular, can be considered revolutionary, deriving from the innovative research conducted by the proposers at the University of Salerno (<http://publicationslist.org/grizzo>):

- Converting conventional cars into hybrid solar vehicles, using a kit developed and patented at the University of Salerno (<http://www.hysolarkit.com>). A fleet of cars of the municipality of Salerno will be converted using such tool.
- Development and testing of solar thermal plants with seasonal storage for central heating in schools (*).

- Use of methodologies based on Mathematical Programming to assess the priorities of the proposed actions, considering the existing constraints (**).

(*) G.Rizzo (2012), A Model for Simulation and Optimal Design of a Solar Heating System with Seasonal Storage, Proc. of ECOS 2012 Conference, Perugia (Italy), June 26-29, 2012

(**) G.Rizzo, G.Savino (2012), A Linear Programming model for the optimal assessment of Sustainable Energy Action Plans, Proc. of ECOS 2012 Conference, Perugia (Italy), June 26-29, 2012

2. Describe where the innovation is being applied, for example, in policy, strategy, implementation, financing arrangement, technology, governance and administration, planning and design, etc.

The innovation has been applied in policy, in actual implementation of rules and regulations, financial incentives, adoption of new technology, urban planning and design. It is also worth noting that the initiative also sees a strong effort in terms of information, education and dissemination of energy related issues and actions, at diverse levels of education (school: from elementary school to universities) and audience (supermarkets, city halls, etc).

3. Describe whether the innovation was inspired or borrowed from other experiences and how was the linkage with the other experiences made. Similarly, describe whether other parties have benefited or are benefiting from your innovation and how?

As mentioned above, some of the activities are borrowed from other successful initiatives, such as car sharing and car pooling (quite spread in Italy and Europe). Also, the recourse to renewable energy and sustainable solutions is a common plan among cities that are most active in the energy savings field. We can consider some of our activities as “lesson learned”, and are now guiding other municipalities in reaching comparable goals. In particular, Salerno is the first city in Italy (for its range of population) for the cycle of rubbish and recycle (about 70%) and owns the third largest PV plant (24 MW) in Italy (at the time of construction).

4. Describe whether there was or is any obstacles or resistance to the innovation and if so, how it was or is being overcome.

Despite the fact that Salerno is near to an area with serious problems in terms of environmental aspects and quality of life, no major obstacles to the innovation have been met. We believe this is due to different reasons: *i*) proactive involvement of the local municipalities, *ii*) technical soundness of the proposed (and partially implemented) solutions thank to the analysis conducted by partner universities, *iii*) increasing people awareness of energy/pollutant issues, also thank to the strong efforts in terms of information, education and dissemination, and, last but not least, *iv*) a very strong and enthusiastic commitment toward these goals by the Major of Salerno, Vincenzo De Luca, and by his staff.

E. Summary of the desired change or outcome and how it is being measured

Describe how the initiative, and in particular the innovation, is or will be making a qualitative and/or quantitative change and how that change or outcome is being measured (350 words max)

1. What change(s) or outcome have you already achieved or hope to achieve. Please describe the nature of the change or outcome in, new urban quality of life, new levels of social, economic or environmental sustainability including new attitudes and behaviour, improved efficiency, effectiveness, accountability or transparency, etc. Please also describe the scale of the change, for example, primarily local, regional, national or global.

It is worth noting that some of our energy/environment activities are now seen as exemplar in Italy and Europe, for instance:

- Salerno, for its range of population, is the first city in Italy for the cycle of rubbish and recycle (about 70%).
- The City of Salerno has recently completed the installation of a 24 MW photovoltaic power plant, the third largest PV plant in Italy (at the time of its construction).
- The City Energy Plan developed by the municipality and the University of Salerno has gained a national Award for the quality of innovation in urban planning. Moreover, the staff of researchers who coordinate the City Urban Plan have received numerous awards for their projects on sustainable mobility (<http://www.diin.unisa.it/eprolab/awards>, <http://www.hysolarkit.com>).
- It is also worth mentioning that the urban plan of Salerno has been developed under the guide of the famous Spanish architect Oriol Bohigas, who designed the City Plan of Barcelona. Afterwards, Salerno has recently hosted many projects of internationally famous architects, such as Ricardo Bofill, Santiago Calatrava, David Chipperfield, Zaha Hadid, Oriol Bohigas, Jean Nouvel, Dominique Perrault, Raul Ruisanchez, Tobia Scarpa e Maria Aubock, Massimo Pica Ciamarra and Nicola Pagliara. Thanks to these initiatives, Salerno is now considered the “city that hosts the most ambitious project of urban redevelopment in Europe” (El Pais, 07/09/2010, http://elpais.com/diario/2010/09/07/cultura/1283810401_850215.html).
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2. What measurements or metrics are you using to assess the change? Describe who is doing the measuring and who is using the measurements and how.

Three metrics will be used to assess the improvements due to our proposed actions:

- Energy savings
- CO₂ savings
- Renewable energy production.

These three point represent the goals required by the European Union for the municipalities adhering to the Covenant of Majors (http://www.eumayors.eu/index_en.html).

Measurements and analysis are being conducted and regularly updated by the City of Salerno with support from the University of Salerno. Energy consumptions are assessed both via bottom-up approach, based on detailed data recruitment and analysis, and via top-down approach, using mathematical models. The methodology is presented in the City Energy Plan (http://www.dimec.unisa.it/PEC_Salerno). Moreover, an innovative methodology

based on Linear Programming has been recently proposed to assess the priorities of actions for municipalities, considering constraints in resource availability. The results have been presented at the ECOS12 Conference in Perugia.

3. Describe any specific tools or methods that were developed or applied to improve the chances of attaining the desired outcome or change, for example, new working methods, new data and information, new incentives or disincentives, new means of communications and knowledge, etc.

The City of Salerno has tackled the problem of improving energy use and environment quality from diverse directions. The series of implemented and underway actions include incentives for citizens/industries that employ “green” solutions, strong efforts in terms of information dissemination and education, and new analytical tools (developed with the University of Salerno) that serve as support for urban planning and energy management.

4. How does the initiative and its intended change(s) or outcomes contribute to a new image or reputation for your city or community?

The City Energy Plan, developed in last years with the participation of many experts from university, has been awarded in 2010 for being the most advanced in Italy as for urban solutions. Salerno is the first city in Italy (for its range of population) for the cycle of rubbish and recycle (about 70%) and owns the third largest PV plant (24 MW) in Italy (at the time of construction).

This, and all other activities underway or in planning, are making the city of Salerno a well-known model to mimic in the fields of energy savings and environmental awareness.

F. Detailed description of the initiative and innovation

Choose any of the above headings or a particular aspect of the initiative that you wish to highlight and that you think best describes the reasons why the innovative aspect(s) of the initiative could be of benefit to other cities, regions, communities or parties (400 words maximum).

We wish to highlight the following initiatives, that could be exported almost in all other cities:

1. 24-MW Photovoltaic Eboli Power Plant

Owned by the City of Salerno, at Eboli has taken form one of the third largest solar farm in Italy: an installed capacity of 24 MW, divided into three fields, with the use of more than 100 thousand panels that extend over 42 hectares. Main key facts:

- annual production of about 33 GWh. It is worth noting that the total energy consumption for public street lighting is about 25 GWh) and an expected life of 20+ years.
- CO2 savings are estimated at about 14 Million kg CO2
- savings of 6100 TOE (Tons of Oil Equivalent)

- total investment of about 120 Million Euros

2. Reconversion of conventional cars to hybrid solar vehicles. This goal can be achieved by substituting/integrating the rear wheels with in-wheel motors, by installing photovoltaic cells on the roof, an additional battery and an additional control system (http://www.hysolarkit.com/How_does_it_work.php). This innovation, developed and patented at the University of Salerno, can be tested on a fleet of the municipality of Salerno. It would allow to achieve most of the benefits of hybrid and solar vehicles (fuel consumption and CO2 emission reduction of about 20%, for typical urban use) without requiring expensive reconversion of the car fleet.

3. Organization and active diffusion of Solidarity Purchasing Groups to help consumers to achieve and build photovoltaic gazebo on the roofs and to buy and install highly insulating windows and frames in their houses.

G. Descriptive material in annex to the document (Optional)

These are materials destined to allow members of the Technical Committee to have a rapid visual or graphic view of your initiative. Additional material can be submitted in DVD or CD formats. Please do not exceed the specifications below; anything that exceeds these specifications will not be forwarded to the Technical Committee or Jury. Please provide, where possible, the following:

· **2 photos that best illustrate the initiative (.jpeg at 72. dpi, 500 x 700 px maximum) preferably embedded in one (1) A4 page**

· **1 graphic that best illustrates the initiative (.pdf format, 72 dpi, A4 size max)**

· 1 map that best illustrates the initiative (.pdf format, 72 dpi, A4 max)

· 1 chart that best illustrates the initiative (.pdf format, 72 dpi, A4 max)

· 1 technical drawing reduced to fit A4 format

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