



INVITED SESSION SUMMARY

Title of Session:

Energy Smart Cities and Communities: from performance indicators to real district-scale examples

Name, Title and Affiliation of Chair:

Francesco Causone, Assistant Professor, Politecnico di Milano, Department of Energy
Salvatore Carlucci, Professor, NTNU, Department of Civil and Transport Engineering

Details of Session (including aim and scope):

Today, 54% of the world's population lives in urban areas, a proportion that is expected to increase to 66% by 2050, accounting for 60 to 80% of global energy consumption and around the same share of CO₂ emissions. Projections show that urbanization combined with the overall growth of the world's population could add another 2.5 billion people to urban populations by 2050¹. Currently, 75% of EU and 81% US population already live in urban areas², whereas, according to a United Nations report, the largest urban growth by 2050 will take place in Asia and Africa.

Mass urbanisation presents one of the most urgent challenges of the 21st century. Quality of city life and the attractiveness of cities as environments for learning, innovation, doing business and job creation are now key parameters for success in the global competition for talent, growth and investments³.

All these services substantially rely on energy availability and on the reduction of harmful emission as consequence of energy use. Key challenges for Smart and Sustainable Cities are therefore to provide solutions to significantly increase cities' overall energy and resource efficiency through actions addressing the building stock, energy systems, mobility, climate change, water and air quality. Such actions should bring profound economic, social and environmental impacts, resulting in a better quality of life (including health and social cohesion), competitiveness, jobs and growth⁴.

Although many Smart Cities projects started in the last decade, little coordination exists among them, and almost no common and shared definitions has been proposed on what is a smart city and especially on **what make a city smarter in terms of energy** (energy efficiency and management). An energy smart city cannot be, in fact, just the sum of many uncorrelated energy efficiency measures, but it should aim to develop an integrated and coordinated system for energy issues in the urban environment.

The session will focus on energy issues in smart cities, with the scope to share real, sustainable, cost-effective and replicable **district-scale solutions at the intersection of energy and transport**, enabled by ICT. The session wants also to discuss about **energy indicators, monitoring, analysis and evaluation methodologies of energy performance of smart cities**, with the aim to start defining a common and shared approach to such a complex topic.

Challenged topics include:

- Real district-scale examples of effective energy smart city solutions
- Examples of energy efficiency measures for transport and buildings in urban environments
- Example of innovative energy management systems and networks for smart cities
- ICT solutions enabling energy smart applications for smart cities
- Energy indicators for the smart cities
- Monitoring and evaluation of the energy performance in smart cities and communities
- Innovative analysis for the definition of energy/exergy smart cities
- Example of user-driven and demand-oriented city infrastructure and services
- Innovative, locally adapted, systemic urban energy solutions inspired and supported by nature.

¹ <https://www.un.org/development/desa/en/news/population/world-urbanization-prospects.html>

² <http://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS>

³ <http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/index.html>

⁴ <http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/index.html>

Main Contributing Researchers / Research Centres (tentative, if known at this stage):

Website URL of Call for Papers (if any):

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