

SAVE THE DATE !

First Announcement

IX Edition of BIWAES 2015 **Biennial International Workshop "Advances in Energy Studies"** *"Energy and Urban Systems"* Stockholm, 4-7 May, 2015

About

Understanding the dynamics of resource use and lifestyles in modern cities, how are they affected by resource diversity, environmental problems, land use change and production patterns, allows to shed light on future energy trends of cities, their size, sustainability and resilience, their interaction with surrounding territories and far away countries, their networking opportunities with other urban systems for enhancement of urban quality of life. Invited Speakers, participant Researchers and a suitable number of junior Scientists will present and discuss their findings on direct and indirect energy demand and use by cities. This will allow to identify and design a roadmap towards a "sustainable energy city platform", by addressing social, economic, environmental aspects of city energetics.

The Workshop will address available energy options, technologies, energy trends and scenarios for cities; identify environmental, social and economic constraints to and consequences of energy uses; design frameworks and urban contexts in relation to energy and resources; highlight stakeholders and policy-makers roles; explore main sectors, critical steps, and improvement potential within a balanced interplay of resources and development. Special sessions will be organized to address topics such as the energy demand in urban sectors (transport, housing, commerce, education and health, tourism, among others); energy efficiency and saving; energy and information development and management; energy and lifestyles; waste to energy conversion; the city of the future: smart cities, transition cities, degrowth cities, no-car cities; effectiveness of energy subsidies policies; water/energy nexus and storage systems.

Where

Auditorium of the Italian Institute of Culture "C.M. Lericci"
Gärdesgatan 14
115 27 Stockholm, Sweden
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Hotels

A list of suggested hotels at small distance from the Italian Institute of Culture will be provided soon in a second announcement, mid October 2014.

Publication of results:

Results will be published in a Book of Proceedings and Special Issues of Applied Energy, Energy, Ecological Modelling, Environmental Accounting and Management.

International Organizing Committee:

Mark T. Brown, University of Florida, USA

Mario Giampietro, Autonomous University of Barcelona, Spain.

Pier Paolo Franzese, Norwegian University of Science and Technology, Trondheim, Norway

Kozo Mayumi, The University of Tokushima, Japan.

Enrique Ortega, State University of Campinas, Brazil.

Jesus Ramos Martin, Instituto de Altos Estudios Nacionales, Quito, Ecuador.

Sudhakar Reddy, Indira Gandhi Institute for Development Research, Mumbai, India

Hans Schnitzer, Technical University of Graz, Austria

Sergio Ulgiati, Parthenope University, Naples, Italy

Web

A Workshop website, with further details, tentative program as well as online registration and submission procedures and fees, will be available very soon at: <http://biwaes.uniparthenope.it>. This will be confirmed in the second announcement, in the first half of October.

Websites of previous editions are available at:

<http://www.chim.unisi.it/portovenere/>

<http://www.societalmetabolism.org/aes2010.html>

<http://www.igidr.ac.in/conf/AES2012/>

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BIWAES - Biennial International Workshop Advances in Energy Studies

"Energy and Urban Systems"
Stockholm, Sweden, 4-7 May, 2015

The event

The BIWAES series started in 1998. The 8th edition was held in Mumbai, India, in the year 2012, in collaboration with the Indira Gandhi Institute for Development Research. Since 1998, the Workshop was organized in Italy (4 times), Brazil, Austria, Spain, India.

This series of Workshops aims at sharpening scientific focus and building a critical mass and collaborative network among scientists researching energy and energy related environmental and economic issues. The goal is gaining new momentum in these years as societal attention once again shifts toward policy debates concerning sustainable use of resources, in particular energy and its relationship to the economies of humanity, development, climate.

The Workshop will bring together the world's best intellectual skills and talents with the aim to perform a critical assessment of the difficult problems of environmental security and development of energy technologies suitable to meet the increasing world energy demand in the next decades, with special focus on urban systems. In addition, this Workshop will address the technological, financial, legal and institutional barriers to a transition to an economy characterized by energy efficiency, increased use of renewable energies, increased matching of supply with use quality, globalization of energy market, higher security of energy supply as well as increased safety of energy generation facilities, transportation devices, energy use.

Sustainability of Urban Systems

Cities are by definitions places of convergence and divergence, storage and redistribution. Convergence of people, traditions, materials, and energy; divergence of innovation, products, culture, information. Socially and environmentally concerned analysts, planners, managers and policy makers cannot ignore the opportunities that may arise from a sustainable and well managed urban environment. Concepts of "sustainable community", "city metabolism", "transition city", "resilient city", "smart city", among others, by placing the focus on the social dimensions of development, on the ecological and economic aspects at the same time as well as on the innovative technologies and tools that are day-by-day becoming available, are gaining the attention of policy makers, managers and stakeholders. As society moves from fossil fuels towards increased use of renewable energy and materials by implementing "green" technologies, and eco-conscious designs in buildings, neighbourhood services, whole cities infrastructure and organization, also lifestyles change accordingly as a consequence and as a driver of new production and consumption patterns. In this context a sustainable urban community can be defined as an organization of people, institutions, activities and processes aimed at fulfilling the basic needs of the present and future generations,

without disregarding the needs of the other species in the same area, within the constraints posed by the available natural capital and ecosystem services.

Perspectives in urban studies and policies

Concepts of city sustainability are not new. It is not new that the metabolism of complex systems is continuously supported by outside sources. Similarly to human metabolism, cities and national economies are largely dependent on local and imported resources in support of both quantitative and qualitative growth. However, modern cities are experiencing shortages of energy, water, clear air, social relations and cohesion, social inclusion, and ultimately lack of participatory governance of city complexity. Cities must face the challenge of reorganizing their infrastructures and lifestyles to cope with the decreasing availability of resources, highly dependent on markets and environmental conditions. The priority in policy making is to identify suitable policies to reorganize the urban life in the presence of apparently unavoidable shrinking of the resource basis. Such reorganization will have to make cities less energy and material demanding, although still providing high quality standards of life. This cannot occur without investments and without important and shared choices about lifestyles. What is new is that at present 50% of total world population live in cities; that 50% today means about 3.5 billion people (still growing); that the resource basis seems to be insufficient (or perhaps unfairly distributed) to support an acceptable standard of life to a large fraction of urban and rural population; and, finally, that the concentration of resources required to support cities places a huge load on surrounding environment.

What is also new is that for the first time in the history of our planet, modern transportation and communication technologies are generating an interconnected web of energy, resources, culture and information, in cities and throughout the world, capable to spur awareness and support efforts towards sustainable resource use, social cohesion and equity, inclusion and happiness. The opposite may also become true if resources and networking opportunities are not properly used through proactive attitudes and policies.

Justification for the proposed Workshop

Energy and environmental security are major problems facing our global economy. Fossil fuels, particularly crude oil, are confined to a few regions of the world and the continuity of supply is governed by dynamic political, economic and ecological factors. These factors conspire to force volatile, often high fuel prices while, at the same time, environmental policy is demanding a reduction in greenhouse gases and toxic emissions. Yet increased growth and demand for welfare by developed and developing countries are placing higher pressure on energy resources. In particular, a large fraction of “new consumers” in developing countries, mainly concentrated in megacities, already reached a purchasing power high enough as to be able to access to commodity and energy markets worldwide, thus boosting energy consumption and competition for all kinds of resources. Such a trend, although in principle may represent a progress towards diffuse welfare and wealth as well as much needed equity, is at present contributing to a rush for the appropriation of available resources which are directly and indirectly linked to energy and may contribute to planetary instability if it is not adequately understood and managed.

Efficiency, Sustainability and Equity

A coherent energy strategy is required, to address energy supply and demand, security of access, development problems, equity, market dynamics, by also taking into account the whole energy lifecycle including fuel production, transmission and distribution, energy conversion, and the impact on energy equipment manufacturers and the end-users of energy systems. Issues of energy efficiency

and rebound effect must also be taken into proper account. In the short term, the aim should be to achieve higher energy efficiencies and increased supply from local energy sources, in particular renewable ones. In the long term, redesign of life styles, further increase of alternative energy sources and shift to a more suitable and efficient mix of energy carriers are expected to contribute to solve or alleviate the problems generated by declining availability of fossil fuels. National economic accounting procedures are needed, that capable to consider resource depletion and environmental degradation, and address questions concerning growth, carrying capacity, sustainability, and inter- and trans-generational equity.

Increased efficiency (in buildings, in transportation devices and infrastructure, as well as in production sectors) is a priority which cannot be disregarded. It can be achieved by dealing with several aspects, among which:

- a) decentralization of energy production, by generating heat and electricity locally by means of small/medium scale conversion plants, in order to save on energy transportation infrastructure, make use of locally available resources (biomass, residues, small energy storages). Accurate planning may prevent from losses of efficiency compared to large scale plants as well as from environmental damage, thanks to easier management.
- b) Adequate matching of supply to use, both in terms of quantity and quality. This specially applies to thermal energy demand, which can be easily and safely be met by means of solar thermal and biomass devices in order to meet local demand from household sector and small and medium agricultural and industrial enterprises.
- c) So called “Zero Emission Technologies and Systems” based on clustering of local production systems in order to ease exchange of energy and unused resources, preventing them from becoming waste heat and matter to be disposed of. Making more with less, a new science and innovation based strategy, in order to generate non-linear business cycles, with reuse and recycling patterns for energy and matter savings.

How these strategies for energy efficiency can be put in practice, what is the cost for their implementation and what kind of incentives/regulations are needed for large scale acceptance requires multidisciplinary debate and expertise and cannot, however, be further delayed.

The international context

This Workshop again falls within an international situation where energy again appears to be a fundamental driving force of economic and political strategies as well as planetary stability. After years of claimed unimportance, energy-related issues such as (1) the availability of new energy sources and viable technologies, (2) the disparity in access to energy sources, (3) the role of energy in our societies (energy societal metabolism), (4) the energy support to the life of our cities (where about half of world population is going presently living) and (5) the energy demand for food security all over the world, are again "hot" problems, that humans have to face within a sustainability framework (ecologically sound production and consumption patterns associated to socially acceptable life styles), in terms of policies, technological development and economic processes.

Urgent issues of energy security call for increased reliance on local resources, with special focus to the role of agriculture for biomaterials and bioenergy supply as well as to development of cost effective solar & wind technologies for electricity production. The use of thermal solar modules and devices should also be explored in depth, since a large part of energy demand occurs locally in the form of low and medium temperature heat. Energy security also calls for diversification of import supplies both in terms of quality and nature of energy resources (oil, natural gas, coal, etc) and areas from which resources come from. How such a diversification can be achieved and what are safe and effective infrastructures for this to happen is matter of urgent debate.

Stakeholders' behaviour

Concerned scientists and policy-makers cannot disregard the need for increased awareness of the energy problem among stakeholders (population, business communities, energy companies) in order to lead to redesign of societal structures and metabolism towards low energy life style and attitudes. How this can be achieved is not an easy matter, since the present trend relies of past habits of low cost energy use and lack of sufficient awareness of environmental problems. It is evident that education must play a significant role in this regard.

Living within environmental boundaries

According to the global need for addressing issues of access, safety, equity and diversification of resource use, special attention needs to be paid to:

- *Understanding of Environmental Constraints*

The environment is both a source and a sink. It represents a source of energy and resources used in the economies of humans and a sink for by products of economic processes. Energy use is more likely to be curtailed as the result of ecological considerations than as the result of actual resource exhaustion. In fact, although there is partial disagreement regarding the ultimate limitation of resources (i.e. the amount of resources that are actually available and the energy and economic cost of their exploitation), there is wide consensus worldwide about present exploitation of nature as a sink for waste release. As a consequence, there is an urgent need for incorporating environmental constraints into scientific research and policy actions.

- *Multidisciplinary integration of approaches*

It is obvious that there is still a need to evaluate new technologies. Much more effort is needed to reach quantitative and reliable conclusions regarding new technologies and energy sources. It is necessary to evaluate the feasibility and environmental effects of new technologies as much as possible during their developmental stages. Heated discussions occurs worldwide about the use of different approaches, methods and tools and the domain in which the results of the various methods and tools are valid. Each of these methods reflects differences in perspectives, different questions, different goals, and different system boundaries. Rather than being a problem these differences are a strength, as the approaches are complementary and insights derived from the different approaches can be combined to increase insights into the complexities of reality and to generate policy within that reality.

- *Tools supporting decision making.*

Much needed are system modeling tools, decision support software, and techniques of multi-criteria evaluation leading to policy. Yet these approaches are still not at a level of maturity where they could be used by decision makers. We are still in the suggestion phase, still at the stage of trail observations and evaluations with an emphasis on indicators and normative standards that might lead to decision support tools. Much research and testing are still needed.

Expected Attendance

The Workshop has never been intended as a traditional Conference, but instead as a broad discussion and collaboration venue among natural and social scientists, policy makers, entrepreneurs, environmentally and socially concerned stakeholders and their organizations. The number of participants is purposefully kept below 100 units, in order to promote and develop very interactive and productive working sessions, towards agreed upon conclusions and recommendations for energy policy.

In general, we limit to:

- 20-30 speakers selected among the most renowned energy experts worldwide;
- 30-40 senior scientists and managers from the country where the workshop takes place and abroad
- 20-30 young researchers, post-doc fellows, PhD students worldwide.

In so doing, the event is at the same time a high level symposium aimed at reaching an updated understanding of the present energy situation and future perspectives and a productive exchange of methods, knowledge and information among local researchers and perspective future scientists. In the past editions this translated into increased networking among experienced and young scientists, implementation of new collaborative links, submission of projects to Institutions and agencies for funding, increased mobility of young scientists towards prestigious universities and research centers.