

Tuesday 26th September

11.15-13.00	Thematic, Design-oriented Working Groups on Energy Futures (thematic groups are not intended for presentation of personal research results, but instead as creative brainstorming and designing sessions on hot topics characterized by special policy interest.
-------------	--

Energy and cleaner production. Innovative designs and technologies

Chaired by:

Cecilia M.V.B. Almeida, UNIP-Universidade Paulista, São Paulo, Brazil

Francesco Gonella, Ca' Foscari University, Venice, Italy

- To what extent may we expect that future technologies combine energy demand increase, transition from fossile fuels to renewables, and GHGs emissions decrease?
- To what extent are they designed to prolong the economic competitiveness of fossile fuels use (see for example the development of fracking technologies)?
- What are expected to be the technologies for the future of energy production, and what those for a transition regime?
- Is cleaner production and energy efficiency compatible with the mantra of economic growth? How are innovative technologies considered in the mainstream narrative of sustainability and sustainable development?

Renewable and nonrenewable energies between growth and de-growth patterns

Chaired by:

Robert A. Herendeen, Gund Institute for Ecological Economics, University of Vermont, VT USA

Barney Foran, Charles Sturt University, Albury, Australia

Challenging the philosophy and impacts of economic growth within a systems and environmental perspective, stimulated societal options such as the steady state economy, the circular economy and now de-growth. The last book by one of this conference's founding fathers, Howard Odum, was *The Prosperous Way Down*. Mostly, the critique of growth centres on its physical impact in a finite world. Given the timeworn realities of the I=PAT equation, most analysts note the slow pace of the Technology factor in containing the ever expanding Population and Affluence factors.

Focusing tightly on "energy and emissions" outcomes, this session seeks key insights in how to transition energy systems in a de-growth economy. We will not revisit the critiques of growth and de-growth since these are well documented. Instead, we will focus on a rapid transition over one human generation (30 years) to countrywide energy systems that are lower impacting, socially equitable and financially feasible. Perspectives must include fossil and non-fossil systems, in affluent and less affluent societies, under growth and de-growth.

In an effort to contain the "how long is a piece of string" problem, we firstly seek discussion of the

de-growth energy transition through six interlinked themes as follows:

1. Societal organisation

De-globalisation, localism, social cohesion, equity, work-sharing, green taxes, public money, four-day working week, circular-economy institutions, sufficiency, consumption perspective, commons, high cooperation, living imaginatively, austerity, long lasting products.

2. Financing options

Material taxes, collective ownership, risk appetite, controlling the bankers, pension funds, present versus future generations, adaptive with learning, capitalism might lead.

3. Rates of implementation

Scale, carrot or stick, best practice everywhere, steady learn as your go, crash and recover, regions that lead by example.

4. Technology mix for more-affluent, less-affluent societies

Heavy transport, metals, cement and chemicals; real EROI of renewables, reliability troughs, fossil for less developed, solar/wind for more developed, offshore wind, Saharan PV.

5. Wicked feedbacks and unknown risks

Jevons paradox, solutions not problems, other planetary boundaries knock on, household dynamics and decisions, limits for critical metals, geopolitical driven shortages.

6. Societal and technological breakthroughs required

Ecological limits dominate, housing and city design, keeping people occupied/distracted, retreat to urban villages, a 'new' economics, return to the mid-1980s, population policies.

Implementing energy efficiency, barriers and solutions. From theory to practice

chaired by:

Mark T. Brown, University of Florida, USA

Silvio Viglia, Parthenope University of Naples, Italy

Energy efficiency is claimed as the least expensive way for businesses to reduce energy demand and emissions, also translating into added benefits of reduced operational costs and risks. Yet, a large gap still exists between the available energy efficiency options and actual implementation by companies, public administrations, and households. Moreover, some evidence exists that energy efficiency measures alone may pave the way to increased total energy consumption (Jevons paradox and rebound effect). Benefits and costs of energy efficiency as well as the existence and importance of implementation barriers need to be properly measured and monitored, using evidence from case study research.

The following points will be a starting point for a larger discussion:

1. Maximizing energy efficiency may not always be the best strategy, in that processes are not only driven by energy.
2. Other resources are crucial, such as water and rare earths, to quote some. Simultaneous and appropriate minimization of a set of input resources, including energy, is needed.
3. Minimization of impacts, which are not linearly linked to energy consumption, should not be disregarded.

4. Efficiency maximization most often affects process time, in so decreasing power output.
5. Resources and energy used are not only characterized by amounts, but also by their environmental quality and renewability. These factors affect the quality and the yield of the process and call for a deeper and more comprehensive understanding of the interplay of input and output flows.
6. How to prevent energy efficiency to become the unintended driver of increased consumption?
7. Can energy efficiency support and translate into energy equity and development?

Tuesday 27th September

Stakeholders and energy planning

Chaired by:

Hans Schnitzer, Technical University of Graz, Austria

Kateryna Pereverza, KTH, Stockholm, Sweden

The working group aims at discussing roles and involvement of stakeholders in energy planning. Participants will co-design the sessions together. The initial list of questions to help in guiding and structuring the discussion includes:

- Creating common ground: How to approach the "stakeholder" concept? What are the well-known practices of energy planning?
- Mapping stakeholders: Who are stakeholders to be involved in energy planning? How to identify stakeholders? How to characterise stakeholders? How to be involved as a stakeholder?
- Building on experience: Benefits, challenges, and opportunities for stakeholder involvement in energy planning.

We invite all interested in exploring the potential of participatory approaches and advancing the energy planning practices to join the session and contribute with their knowledge and experience!

Internet of things and the energy sector in urban and industrial systems

Chaired by

Marco Molinari, KTH, Stockholm, Sweden

Raffaele Montella, University of Napoli Parthenope, Italy

Internet of Things is one of more persistent topics in the Gartner hype cycle of forthcoming technologies in the last years. Nevertheless IoT Platforms are still climbing the hype hill, the underlying technology is now a day rock solid pervading almost everything around urban and industrial systems.

The working group aim is to discuss about how connected devices can improve the living

sustainability contributing to make our environment a better world.

The chairs will introduce the discussion showing their experiences in the discussion field with a really short presentation far away from a muscle strong scientific talk, but working as spinning wheel for the coral discussion about, but not limited to, the following topics:

- The use of Internet of Things in urban, natural areas and marine environments;
- Data transfer protocols strategies in Internet of Things crowdsourced data;
- Instrumenting building resources for energy management;

We invite all interested in exploring the potential of participatory approaches and advancing the Internet of things related with the energy sector in urban and industrial systems to join the session and contribute with their knowledge and experience!

We strongly encourage the participants to prepare a really light support to their discussions using Google Slide in order share it in a common workspace to cooperate in a comfortable and productive environment and drawing the path to future research project achievements and scientific works.

Socio-economic variables in designing local energy policies

chaired by:

Joaquim Spangenberg, SERI, Sustainable Europe Research Institute, Germany

Maddalena Ripa, UAB, Autonomous University of Barcelona, Spain

General statements about the socio-economic variables in this field are almost impossible, as (1) the local social and economic situations are too different, and (2) the legally or constitutionally defined competencies of local authorities vary too widely. Nonetheless, the following dimensions may guide a discussion:

- Socio-economic factors in local energy demand management, from housing via mobility to land use and nutrition;
- Socio-economic variables in local energy supply, from distant heat and electricity provision with mandatory connection to one or the other grid determined by a local government zoning plan, like in Denmark, via incentive systems (e.g. for renewable energy produced by or in the community), to free choices including purchase or self-production by solar cells, fire wood collection and the like;
- Socio-economic variables in local energy transmission, referring to the role of local end-user distribution systems for energy carriers provided from outside the local community and at prices it cannot influence such as oil, in some CEE countries coal.

While different options are possible alongside each of the dimensions, not every combination of them is feasible and/or viable and/or desirable, not least due to their shared socio-economic factors. Thus at a second look patterns may be emerged which could be called local energy policy models. Conference participants interested in a search for such patterns and their implications for the conceptualisation and implementation of EU energy policies are welcome to contribute with their local experiences to the workshop.