Energy Economics and Wellbeing

Antonio Caló, Ioannis Chamilos, Eva Pongrácz

Introduction

Wellbeing is commonly described in terms of health, comfort, and happiness [1]. As humans spend 80-90% of their life indoors, any policy regarding wellbeing and quality of life needs to take into consideration the built environment. At the same time, a comfortable built environment is an energy-intensive one, currently using 25% of the total world energy consumption and generating 20% of the GHGs emissions (See Figure 1). In this framework it is, therefore, necessary to find sustainable energy solutions to reduce the environmental impact while maintaining a comfortable atmosphere. Defining green cities, supporting waste-to-energy solutions and assessing the potential of decentralized energy solutions are, among others, two of the crucial elements needed to be addressed for the achievement of a sustainable development strategy in the North.

Eco-cities

As a result of a rapid economic and technological growth, human settlements, and especially cities in the industrialized world, have substantially changed their face and the way they interact with their inhabitants and the natural environment. Fundamental principles and ideas together with the current available technologies can define eco-cities and unfold the path to a sustainable future [3]. The graphic depiction below (Figure 2) presents the concepts of an eco-city among major areas of activities.

Smart energy grids

Smart energy grids allow suppliers and consumers to have a two-way communication monitoring in real-time the grid condition (i.e. the electricity production, consumption and distribution). The advantages and the potential of developing these kind of networks include:

- Dynamic energy grid control
- Anticipation and mitigation of power peaks or power quality
- Efficient response to changing grid conditions
- Support of renewable power sources with irregular power generation
- Development of energy saving policies
- Interactive and participatory role of consumers

The transition from a highly centralized energy network to a decentralized one is a transition that aims to rethink the energy industry business model: from growth through quantity to growth through quality. Enabling distributed power generation it is possible to effectively initiate a process of democratization of the energy market through participation.

Further research

The potential of these innovative concepts in Northern Periphery environmental conditions will be assessed. It will be particularly important to understand the possibilities, socio-economic impacts and benefits that a new way of thinking about energy production and distribution can offer. This will include evaluating the scalability and adaptability of current technologies to contribute, ultimately, to a sustainable energy development strategy in the region.

References


Acknowledgements

The research will continue as part of the Northern Periphery Programme financed Micro Wade to Energy Business. Micro energy to rural enterprise (MicrE) project and the Green cities and settlements ENPI proposal.