Governance in complexity: Assessing promises of a sustainable future.

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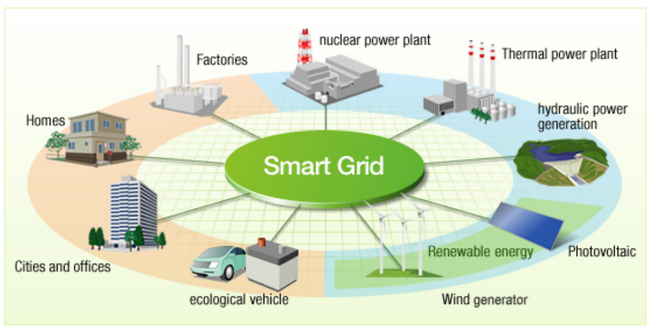
INTRODUCTION

More and more in sustainability studies, it is recognized that there is a serious problem to be faced when generating quantitative data to be used in decision-making (Funtowicz and Ravetz 1990; Porter 1995). Sustainability problems are complex issues, which require the simultaneous consideration of multiple scales of analysis and of the plurality of perceptions, needs and capabilities present in society. The project addressed this challenge through an academic collaboration between:

- Quantitative analysis of societal metabolism based on a complexity theory approach, as developed by the research group of the Autonomous University of Barcelona
- Research on research, where science is the object of study, with a specific focus on the science-policy interface. Science studies is the field of expertise of the Centre for the Study of the Sciences and the Humanities at the University of Bergen

The development of smart grids and their promises for a sustainable future is used as a case study given the high level of uncertainty that surrounds this technology and the urgent need for sustainable energy systems. The automated management of electricity grids is both a way to deal with the uncertainty implied by the challenge of integrating renewable energy sources in the energy system, and a source of uncertainty with respect to the privacy issues raised by the collection of information on private electricity consumption habits.

The focus on future visions makes it possible to unpack the social and institutional assumptions that underpin the development of emerging technologies, raising the following questions: Who will benefit from the development of smart grids? Who will be excluded? How is the social order consolidated or challenged by technological innovation?



Future visions of smart grids
Source: http://www.hitachi.com/environment/showcase/solution/energy/smartgrid.html

Electricity grid in Rio de Janeiro, Brazil
Picture by Zora Kovacic

OBJECTIVES

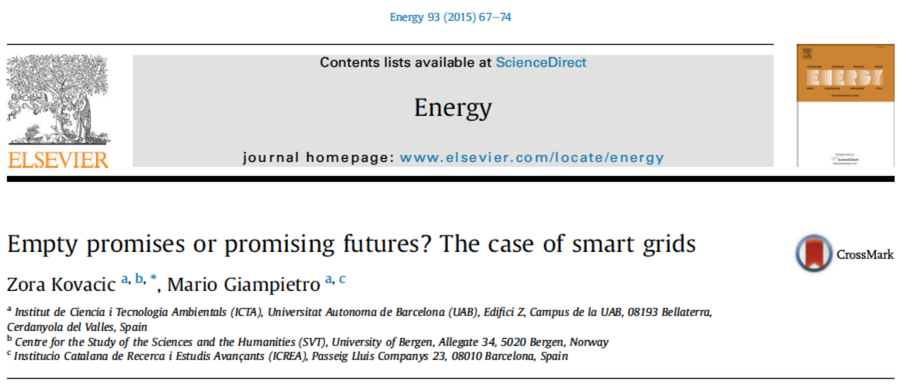
- Develop a quality assessment methodology that combines complexity theory, post-normal science and uncertainty analysis
- Apply the methodology to the emerging technology of smart grids
- Actively participate and present in the seminars of the host institution
- Set the basis for long term collaboration between the two institutions by identifying common interests, possible joint research topics and opportunities for staff exchange and co-supervision of Ph.D. students

Bergen Summer Research School 2014, Panel "Approaches for the characterization and management of uncertainty and quality of knowledge". Picture by Ingrid Foss-Ballo.

RESULTS

Academic publications

- Publication of the paper: Kovacic, Z. & Giampietro, M (2015). Empty promises or promising futures? The case of smart grids. *Energy,* 93: 67-74.



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Empty promises or promising futures? The case of smart grids

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Institutional relations

- Professor Jeroen van der Sluijs from the Centre for the Study of the Science and the Humanities, University of Bergen, was invited to be part of the tribunal for the Ph.D. thesis defense of Zora Kovacic at the Universitat Autònoma de Barcelona, held on April 10th, 2015.
- The joint Ph.D. supervision of a new student by Roger Strand (University of Bergen) and Louis Lemkow (Autonomous University of Barcelona) has started as of January 2016.

Research collaboration

- The two partners jointly applied for two Horizon 2020 projects, under the calls H2020-EURO-SOCIETY-2014 and H2020-WATER-2014-2015
- The project "Moving towards Adaptive Governance In Complexity" (MAGIC), submitted under the call H2020-WATER-2014-2015 has been approved, and is expected to start in June 2016

Long-term collaboration

- The European Centre for Governance in Complexity was legally established in October 2015, as a joint initiative of the Centre for the Study of the Science and the Humanities, University of Bergen, and the Institute of Environmental Science and Technology, Autonomous University of Barcelona. The board is composed of: Roger Strand (University of Bergen), Silvio Funtowicz (University of Bergen) and Zora Kovacic (Autonomous University of Barcelona). The Centre is hosted at the UAB Campus, Modul A, Parc de Recerca.

REFERENCES

Funtowicz, S. O., & Ravetz, J. R. (1990). *Uncertainty and quality in science for policy*. Springer.

Porter, T. (1995). *Trust in numbers: The pursuit of objectivity in science and public life.* Princeton University Press.

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