

## **BEYOND ECO-EFFICIENCY: THE ECOLOGICAL ECONOMICS OF SUSTAINABILITY-DRIVEN ENTERPRISES AND NETWORKS**

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Abstract:

For reaching sustainability goals, marginal changes in eco-efficiency will not suffice. Instead the economy can only use a fraction of current energy and resources, while taking better care of communities. In this transition sustainability entrepreneurs and firm networks play a key role. We analyse the co-evolutionary mechanisms between firms and larger systems in creating a (more) sustainable economy. The proposed panel makes an attempt to integrate theories of the firm and entrepreneurship innovation literature with that of ecological economics.

An Ecological Economic Theory of the Enterprise – A co-evolutionary complex systems approach (J von Gabain, S Stagl)

Recent literature within ecological economics has shown to gain interest in investigating socio-economic phenomena from a co-evolutionary and complex systems perspective (Kallis and Norgaard 2010). However, beyond seminal work by Potts et al (2010), there has been little attempts for integrating theories on entrepreneurship and firms with recent insights from ecological economics (and related) research. This is needed for a better understanding of organizational design challenges and opportunities for a more sustainable co-evolution of an economy embedded in an eco-social system. From a theoretical perspective, we analyse what roles entrepreneurs and firms play within an ecological economic approach? This also demands for a research on an understanding of the co-evolutionary mechanisms between firms and larger systems in creating a (more) sustainable society (Loorbach et.al. 2009). Further, we aim to highlight challenges for future socio-technological innovation that is embedded in the current growth paradigm (that is experiencing a self-organisation towards increasing use of energetic and material metabolism, increase of metabolic complexity); challenges for enterprises and networks to achieve sustainability (can a single firm achieve sufficiency or is it first the network of stakeholders that allows for such achievement?); What role do non-market institutions play in such a process? To what extent should theory not only highlight the internalization of negative externalities to markets, but also focus on the opportunities of creating positive externalities beyond the market?

Sustainability entrepreneurship – concepts and real cases (S Stagl, P Morlacchi and J von Gabain)

The paper starts from four challenges in relation to business and the environment: (1) environmentally and socially exploitative nature of the production mode; (2) lack of value added beyond consumption and profits; (3) blind spots in perceiving system-level implications such as rebound effects; and (4) the need for creating new realities and for experimentation as well as for moving beyond it. Within the larger question, how can we innovate and interact in order to reach a critical mass of people and energies to create a sustainable world?, we pursue the following research question: What are the key conceptual ideas for making business sustainable? We start the analysis by

comparing and learning from existing areas of work on different forms of entrepreneurship (e.g. business entrepreneurship, social entrepreneurship, environmental and institutional entrepreneurship) and sustainability in order to lay out clearly in what sense “sustainability-entrepreneurship” can generate sustainable business or even better sustainability through business. Candidate conceptual ideas at the cross-road of the theory and practice of entrepreneurship and sustainability are: value creation, organizational form as ‘container’ and business model as ‘creation of value’; imagination, generation of diversity (not just variety), experimentation, effectuation, perpetual reasoning and mimicking; shaping institutions and forming new rules of the game and political economy; operating in a multilevel framework; and adopting long-term and inter-generational thinking. The paper will apply the conceptual ideas to two case studies, one from the food sector and the other from the health sector.

#### The Systemic and Collaborative Potential of the Precautionary Principle for Design For Sustainability (C Cucuzzella)

This paper is a contribution to the general theory of design thinking, for the specific context of sustainability. In the prevalent demand for a sustainable development, the main objective of this research is the construction of a theoretical model of design thinking that contextualizes current forms of sustainability evaluation tools (which are primarily preventive) in order to articulate and highlight their limited perspective and application for design for sustainability. It analyses the basis of these standard (preventive based) tools for design in in four dimensions: ontological, methodological, epistemological and teleological. Indications of potential counter-productive effects of these tools for design thinking confirm the need for a theory of qualitative judgement for sustainability.