**Roberto Zoboli**

**Why eco-innovation is different (or is it?)**

The lecture will address some selected issues in the current economic research on eco-innovation. After locating eco-innovation in a macro dynamic framework, the specific or non-specific nature of eco-innovation will be discussed by looking at: (i) the drivers of eco-innovation, and in particular the role of policies vs markets in spurring eco-innovative dynamics, in particular at the level of adoption/diffusion; (ii) the barriers faced by firms in undertaking eco-innovation strategies; (iii) the role of complementarity between different types of eco-innovations and between eco- and non-eco innovations at the firm level; (iv) the role of consumers in eco-innovation diffusion; (v) the case of the ‘circular economy’ as a system-level, diffusion-based eco-innovative transition, and the critical role of organisational innovation in it.

Suggested readings

*Surveys*

Allan, C., Jaffe, A. B., & Sin, I. (2014). Diffusion of Green Technology: A Survey. Motu Economic and Public Policy Research Working Paper n. 14-04.

Barbieri N., Ghisetti C., Gilli M., Marin G. and Nicolli F., 2016, A Survey of the Literature on Environmental Innovation Based on Main Path Analysis, Journal of Economic Surveys, 30(3) 596–623.

*Evolutionary/systemic approaches*

Antonioli, D., Mancinelli, S., & Mazzanti, M. (2013). Is environmental innovation embedded within high-performance organisational changes? The role of human resource management and complementarity in green business strategies. Research Policy, 42(4), 975-988.

Cecere, G., Corrocher, N., Gossart, C., & Ozman, M. (2014). Lock-in and path dependence: an evolutionary approach to eco-innovations. Journal of Evolutionary Economics, 24(5), 1037-1065.

Ghisetti, C., Marzucchi, A., & Montresor, S. (2015). The open eco-innovation mode. An empirical investigation of eleven European countries. Research Policy, 44(5), 1080-1093.

Inigo E.A., Albareda L., 2016, Understanding sustainable innovation as a complex adaptive system: a systemic approach to the firm, Journal of Cleaner Production, 126, 1-20.

*Determinants and effects*

Ambec, S., Cohen, M. A., Elgie, S., & Lanoie, P. (2013). The Porter hypothesis at 20: can environmental regulation enhance innovation and competitiveness?. Review of Environmental Economics and Policy, 7(1), pp.2–22.

Costantini, V., & Crespi, F. (2013). Public policies for a sustainable energy sector: regulation, diversity and fostering of innovation. Journal of Evolutionary Economics, 23(2), 401-429.

Del Río, P. (2009). The empirical analysis of the determinants for environmental technological change: A research agenda. Ecological Economics, 68(3), 861-878.

Ghisetti, C., & Quatraro, F. (2013). Beyond inducement in climate change: Does environmental performance spur environmental technologies? A regional analysis of cross-sectoral differences. Ecological Economics, 96, 99-113.

Horbach, J., Rammer, C., & Rennings, K. (2012). Determinants of eco-innovations by type of environmental impact—The role of regulatory push/pull, technology push and market pull. Ecological Economics, 78, 112-122.

Jaffe, A. B., & Stavins, R. N. (1995). Dynamic incentives of environmental regulations: The effects of alternative policy instruments on technology diffusion. Journal of Environmental Economics and Management, 29(3), S43-S63.

Porter, M. E., & van der Linde, C. (1995). Toward a new conception of the environment competitiveness relationship. The Journal of Economic Perspectives, 97-118.

**Roberto Zoboli** is Full Professor of Economic Policy at Catholic University of Milan, Italy, where he lectures on Economic Policies for Resources and the Environment. His main fields of research are environmental and resource economics, economics of innovation, environmental policy analysis. He worked in private research institutions (Nomisma S.p.A. 1983-1990; the Economic Studies Department of Montedison S.p.A. 1991-1993; Cariplo Foundation for Scientific Research 1994) before joining the Italian National Research Council as Research Director (1995-2007). At the CNR he has been director of institute in 1999-2001 and he is presently Associate Researcher of IRCrES-CNR (Institute of Research on Sustainable Economic Growth, National Research Council), Milan Unit. He has the scientific responsibility of European and national research projects, including the Italian partnership in the international consortium ETC/WMGE (*European Topic Center on Waste and Materials in the Green Economy*, 2014-2018) for the EEA (European Environment Agency) and the IRCrES participation to the FP7 project EMInInn - *Environmental Macro Indicators of Innovation* (2011-2015). He is currently leading the Catholic University’s participation to the H2020 project ‘green.eu’- *European Global Transitional Network on Eco-Innovation, Green Economy and Sustainable Development* (2015-2018), and the IRCrES participation to the H2020 project ISAAC - *Increasing Social Acceptance and Awareness of biogas*. He is leading the joint CNR-INGV-SEEDS project ‘The economic evaluation of natural disasters in Italy’ (2014-2017) for Fondazione Generali (insurance). He is co-founder of SEEDS, the inter-university research centre on ‘Sustainability, Environmental Economics and Dynamics Studies’ ([www.sustainability-seeds.org/](http://www.sustainability-seeds.org/)). He published several works on the economics of eco-innovation and waste economics in international journals.

**Selected publications on eco-innovation**

Marin G., Marzucchi A., Zoboli R. (2015), SMEs and barriers to Eco-innovation in the EU: exploring different firm profiles, *Journal of Evolutionary Economics*, 25:671-705 (cit GS: 3).

Cainelli G., Mazzanti M., Zoboli R. (2013) Environmental performance, manufacturing sectors and firm growth: structural factors and dynamic relationships, *Environmental Economics and Policy Studies*, 15:367–387 (cit GS: 14).

Cainelli G., Mazzanti M., Zoboli R. (2011), Environmental innovations, complementarity and local/global cooperation: evidence from North-East Italian industry, *Int. J. Technology, Policy and Management*, 11(3/4), 328-368 (cit. GS: 34).

Cainelli G., Mazzanti M., Zoboli R. (2011), Environmentally-oriented innovative strategies and firm performance in services. Micro-evidence from Italy, *International Review of Applied Economics*, 25(1), 61-85 (citations GS: 40)

Antonioli D., Mazzanti M., Zoboli R., 2010, Environmental innovation drivers and economic performance in industrial systems, in Mazzanti M. And Montini A. (eds.), *Environmental efficiency, economic performances and environmental policy*, Routledge, London, p. 11-42.

Mazzanti M., Zoboli R. (2010), The Environment as a Driver of Innovation and Economic Change, *Economia Politica*, XXVII(2), 237-245.

Mazzanti M. Zoboli R. (2009), Embedding Environmental Innovation in Local Production Systems: SME strategies, networking and industrial relations, *International Review of Applied Economics*, 23(2), 169-195 (cit.GS: 66).

Mazzanti M., Zoboli R. (2009). Environmental efficiency and labour productivity: Trade-off or joint dynamics? A theoretical investigation and empirical evidence from Italy using NAMEA. *Ecological Economics*, vol. 68; 1182-1194 (cit. GS: 73).

Mazzanti M., Zoboli R. (2008). Complementarities, Firm strategy and Environmental Innovations: Empirical evidence for a local manufacturing system. *Environmental Sciences*, vol. 5(1); 17-40 (cit. GS: 35).

Mazzanti M., Zoboli R. (2006). Economic Instruments and Induced Innovation: The European Policies on End-of-Life Vehicles. *Ecological Economics*, vol. 58-2; 318-337 (cit. GS: 114).

Mazzanti M., Zoboli R. (2005). What drives environmental innovation? Empirical evidence from a district-based manufacturing system. *Economia Politica*, vol. 3-XXII; 399-438 (cit. GS: 31).