
Innovation as driving force towards a smart and sustainable territorial development

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Abstract

Within the economic literature, economic growth is mainly driven by innovations and/or advances in technology as well as human capital and institutions. However, as an economy grows, environmental degradation and climate change are likely to have deleterious effects on natural and human systems, economies and infrastructure. Climate change threat, potentially produced by greenhouse gases (GHG) in the atmosphere, has led to an increasing number of analyses of the relationship between technological change and the environment focusing on environmental policy. New technologies may create or facilitate increased pollution, or may mitigate or replace existing polluting activities. Thus, discussions of environmental economics and policy have become increasingly permeated by issues related to technological change. Environmental impact of social and economic activity is profoundly affected by the rate and direction of technological change. New technologies may create or facilitate increased pollution, or may mitigate or replace existing polluting activities.

Technological changes involve various and relevant transformations not only in the economic production system and its dynamics but also in cultural and social concerns. Improving skills and knowledge of citizens and increasing interconnection of institutions of a territory represent a wished by-product of technological change. Moreover, territorial development relates to the capability of promoting attractiveness and originality of the territory itself in an innovative manner, based on its own and specific resources and traditional knowledge (Storper, 1997).

The competitiveness Porter's diamond identifies as regional competitive advantage factors some territorial aspects such as raw materials, production variables – labour and physical capital – and infrastructure endowments. However, all these characteristics may no longer be considered as necessary and sufficient elements to explain the recent trends of territorial growth paths. Thus, new determinants are needed to consider the territory according to its complexity and an upgrading of Porter's diamond is the starting point of this analysis. Aspects such as innovations, institutions, natural and cultural goods, identity, landscape, life quality and so on should be included in the competitiveness diamond to better understand the attractiveness of a territorial system. However, traditional factors continue to play an important role for territorial development but the interaction with immaterial factors such as learning and knowledge and collaboration and cooperation between citizens and political institutions will modify their relevance within territorial endowments. Starting from this perspective the aim of this analysis is to consider which role the innovation could play to

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foster a smart and sustainable territorial development and how this, in turn, can influence firms and institutions efficiency. Using a static comparative analysis, it is examined which is the best actor between public institution and private sector (represented mainly by entrepreneurs) who should be the first mover in promoting technological innovation and in adopting green-technologies with positive external effects on the quality of the environment. From a normative point of view, we suppose that the technological solutions are within the Eco Management and Audit Scheme (EMAS).

Considering that technological innovation is an increasing function with respect to time, a firm, which operates within an EMAS framework, constantly innovates. In the medium-long period, this kind of firm will show a trend of production and process quality similar to the innovation adoption function, characterized by an S-curve. Likewise, the environmental quality curve influenced by firm and public institution choices as well as external shocks is decreasing in the short period while it follows a sinusoid curve in the medium-long period. The analysis considers two different situations: institutions or firms as first mover. The conclusion is that if institutions are the first movers then firms take more advantage into adopting innovative and environment-friendly solutions. Finally, according to EU-2020 strategy, this view is based on the integration of planning choices at different levels of government for reaching the best equilibrium between environment and firm quality.

Keywords: Innovation, Technological change, Environment, Environmental policy, Institutions, Regional Competitiveness, Smart and Sustainable Development