

**INTRODUCTION**

# Innovation processes in rural areas

Lívia Madureira<sup>1</sup> | André Torre<sup>2</sup><sup>1</sup>University of Trás-os-Montes e Alto Douro (UTAD), Centre for Transdisciplinary Development Studies (CETRAD), Vila Real, Portugal<sup>2</sup>Université Paris-Saclay, UMR SAD-APT, INRA - Agroparistech, Paris, France**Correspondence**

Lívia Madureira, Department of Economics, Sociology and Management (DESG), Centre for Transdisciplinary Development Studies (CETRAD), University of Trás-os-Montes e Alto Douro (UTAD), Quinta de Prados, 5000-801, Vila Real, Portugal.

Email: lmadurei@utad.pt

For three decades now, an increasing part of scientific papers have been dealing with the idea that regional or territorial development is closely linked to the occurrence of dynamic ruptures due to innovative or creative processes. Analyses of regional development based on processes of innovation and regulation, assume that external or internal shocks transform systems and lead to major changes both in economic and social terms. They conclude that innovation, its creation and its dissemination are at the heart of these changes and development processes.

Approaches dealing with the role of innovation in the dynamics of territorial or regional development started to take into account the importance of R&D or innovation in local development. Partly inspired by Schumpeter's work, they relied on the idea that innovations are key to development processes and that R&D efforts and incentives for innovation can play an important role in the setting and success of the dynamics of growth. Then, step by step, the systemic nature of innovation was also considered and a more comprehensive approach has been praised, which emphasizes the role played by innovation transfer and dissemination at the local level (Feldman, 1994). This approach also underlines the importance of face-to-face relations and of expansion phases by setting up of spin-offs and via support of creative efforts (nurseries, incubators, etc.). The engine of development is thus found in the presence of localized spillovers of innovation or knowledge, which spread within the local system and can give rise to competitive local systems such as technology hubs or competitive clusters. According to these claims, technological innovation powers development and differentiates dynamic systems from those that are not.

More recent works highlight the central role played by knowledge and its implications for territorial and regional development in association with innovation processes. According to these studies, development can be understood as the transformation of a set of assets consisting of products poorly developed and exploited by an under-qualified workforce into a set of knowledge-based assets exploited by skilled labour, with information regarded as an essential material (Lundvall & Maskell, 2000). Learning is thus revealed to be essential to the adaptive potential of territories and regions for their development. It is considered a collective, social and geographical process, able to improve individual or organizational understanding and capacities, mainly on the basis of processes of open innovation, involving different types of actors, both locally and at a global scale.

It has to be noticed that these models are often based solely on high-tech activities, oriented by technology and by a market-focused corporate culture, so that they narrow the field of innovation to the most technological dimensions. In this way, they neglect not only incremental and minor innovations but also ignore many territories which do not adhere to high-tech principles but are still characterized by other sorts of vibrant innovation activities (social,

organizational, institutional, etc.), including most of the rural areas. Moreover, these approaches strongly ignore the extent of the potential offered for territorial development by the existence of local products and skills: either part of industrial manufacturing as well as the modernization of traditional crafts, not necessarily involving high-tech activities, these local resources appear as keys to the improved competitiveness of some urban, peri-urban and rural areas.

How to assess about innovation in rural areas, which are often characterized by a lack or a weakness of high technologies? This is the main question asked by this special issue of *Regional Science Policy and Practice*.

A way to cope with this issue, and in particular to include the question of innovation in an analysis that encompasses all territories, including rural ones, is to take into account territorial innovation in all its dimensions. Some theoretical approaches, for example the works on innovative milieus (Camagni, 1995), have investigated the concept of territorial innovation in the most rural or underdeveloped territories based on organizational innovations and on the mobilization of local populations. Their spirit has been maintained and broadened in rural areas, for example with the European LEADER programmes, which are based on local initiatives and intense collaboration between local producers and stakeholders (Dargan & Shucksmith, 2008).

The rules for collective action and institutional mechanisms can be considered as factors explaining an important part of innovative territorial dynamics in non-urban areas (Torre & Wallet, 2016). In this respect, innovation is viewed as a social construct conditioned by the geographical context in which it occurs; rooted in practices, and therefore necessarily located in the space. The issue of territorial innovation is also addressed by the emerging fields of social and solidarity-based economy and sustainable development. New concepts have to be taken in consideration like social innovation (Brandsen, Evers, Cattacin, & Zimmer, 2016) which describes a set of corporate innovative practices in response to social needs which have been little met or unmet and/or implementing processes to incorporate an approach for social transformation over time. A few insights are also devoted to the complex question of institutional innovation (Hargrave & Van De Ven, 2006).

The seven papers offered by this special issue, although might look at first sight a disperse collection of papers, when read carefully present a coherent set of contributions, and propose clear answers to the question of the characteristics of innovation in rural areas. Together they provide an outstanding contribution to help social scientists and politicians in the fundamental task of integrating the loose ends that have insofar kept innovation in rural areas and in the agricultural sector, as well as its interconnections, an overlooked issue both by regional and innovation studies, and by innovation policies.

Three fundamental and so called paradigms underlie the all set of papers, which are: the "new rural paradigm" (OECD, 2006, 2014); the "place-based development" (Barca, McCann, & Rodríguez-Pose, 2012); and, the "knowledge economy" (Foray, Mowery, & Nelson, 2012). The insights brought in by this special issue on innovation processes in rural areas and agricultural sector located in diverse socio-geographical contexts, analysed with different theoretical and methodological frameworks, confirm that these paradigms aren't sufficiently integrated to cope with the transformational agenda demanded by the society. This agenda made of global societal challenges, such as climate change, food safety or inequality, entails major changes in dominant socio-technical regimes towards sustainability and social inclusiveness. These changes cannot be accomplished leaving (again) rural areas and the agricultural sector behind, actually they regained a central role in these novel challenges posed by society to science and policy.

Specific contributions brought in by this special issue deserve to be underlined having in mind the abovementioned transformational agenda are the following:

- Some papers findings (Chevalier & Vollet; Rantamäki & Kattilakoski) reinforce the importance of novel territorial governance approaches to tackle institutional capture (institutional failures) and/or social capital scarcity to foster social innovation dynamics both territorial (LEADER programme) and community-driven (remote rural Finish areas).

- Papers by Gamito and Madureira and Ferreiro and Sousa highlight that to deepen the “new rural paradigm” and to couple it with the place-based development to foster innovation in rural areas, the innovation concept has to be broadened and the territorial and sectoral spheres need to be overlapped.
- Others papers (Torre et al., Ramos-Sandoval et al., Losada et al.) make evident that the AKIS (agricultural knowledge innovation systems) concept, in spite of its importance by acknowledging the systemic nature of innovation in agriculture, fails to recognize the influence of territorial context in agricultural innovation. This problem creates an institutional failure that hinders policy to acknowledge the potential of exploring geographical and particularly organized proximities that can be mobilized to get closer dual socio-technical farming systems and to reorient them to meet societal demands required by the aforesaid transformational agenda.
- Findings helpful to know how to reinforce the link between knowledge economy and the place-based development approaches, enhancing innovative territorial development build on innovative agroforestry or farming systems are given by Ferreiro and Sousa, Losada et al., and Torre et al.

Transversal to all the papers is the prevalence of institutional failures, of different nature and scope, constraining innovation process in rural areas. This finding calls for policy attention to institutional innovation. Novel institutional arrangements seem to be the key to intertwine organizational, sectoral and territorial dynamics in rural areas, given the traditional divorce between the rural development, agricultural, and social welfare policies.

Chevalier and Vollet contribution stem from findings of ineffectiveness of the programme LEADER+ (2000–2006) to promote innovation and networking between different sectors of rural economy. Their main goal was to analyse if the LEADER programme for the period 2007–13 overcame that institutional failure. The authors gathered data and monitored the activity of six local action groups (LAGs) in France, Lithuania and Spain, build on a comparative analyses to assess their effects on social and territorial innovation determinants, comprising: dissemination and learning, and enhancing relational proximities between different actors and sectors. The authors observed that in some cases those effects were constrained by the dependence of the LAGs from supporting structures or by the dominance of actors captured by national or local arrangements serving elites interests. Hence, according to the authors' findings, the LEADER is an innovative approach to territorial governance that to be successful in fostering social and territorial innovation entails institutional innovation at local and national level. Multilevel governance has to translate into novel national, regional and local arrangements, which enable the emergence of “shared decision-making bodies, integration of civil society actors into strategic political thinking, and a strong local territorial engineering to serve innovation”.

Ferreiro and Sousa focus either on governance and innovation dynamics in rural areas by studying a specific multi-actors horizontal and territorial-based (rural located) sectoral network. This network goal is to enhance innovation in cork sector. Cork is a non-wood raw material produced in South of Portugal in rather unique worldwide agroforestry extensive systems. The cork industry is led by a corporate entrepreneurial sector encompassing leading Portuguese companies at the global level respecting industrial product and process innovation related with cork processing and development of cork-based novel products. The authors employed social network analysis (SNA) to understand this network structure regarding its governance, role played by institutions, and innovations achieved. They conclude that it configures a complete regional innovation system (RIS), both in terms of actors and institutions involved and their interactions, challenging the idea that rural territories tend to present incomplete RIS. This paper brings in an additional contribution by showing how, in a particular case study, paradigms of place-based development and knowledge economy build on R&D can overlap and shape rural innovation processes, highlighting the multidimensional character of innovation, both in nature (technological but as well as organizational), and scope (entrepreneurial but either territorial).

The paper by Gamito and Madureira was motivated by the scarcity of empirical evidence on the innovation patterns and dynamics of profit and non-profit organizations in rural areas. The authors claim for a broader definition of innovation regarding the conventional one established by the Oslo manual (OECD, 2005) enabling the capture and assessment of small-scale and low intensity R&D innovations, given the importance of micro-enterprises (with less

than 10 workers) and of non-profit organizations to the sustainability and vitality of rural areas. By being not accounted for the innovation statistics, their innovation patterns and dynamics, and how it can be enhanced and scaled-up, remain largely invisible to innovation policies, aside specific initiatives such as *LEADER*. To cope with this institutional failure of lacking data on rural innovation, the authors design a comprehensive indicators system, the RIIS (Rural Innovation Indicator System) built on a multidimensional concept of innovation, an inclusive universe of innovators, and comprising the assessment of innovation processes, along with conventional measurement of inputs and outcomes of innovation. By applying RIIS in the Portuguese case, the authors uncovered unknown innovation patterns and dynamics in its rural areas and shown how RIIS can be implemented through an innovation questionnaire and how the data generated can feed an innovation scoreboard enabling to identify, assess and monitor innovation in rural areas.

Torre, Polge, and Wallet bring in evidence on how the concept of proximities (Torre & Rallet, 2005) shapes new modes of innovation, in particular by hybridization between dual socio-technical systems. The authors employed SNA to understand the relations between farmers from dual dairy farming systems coexisting in the same territory of Brazilian Amazon: large-scale corporate agriculture, and, familiar small-scaling farmers. Each farming system corresponds to different innovation patterns. Corporate farms rely on conventional medium technological innovations built on agrochemical complex with negative impacts in the environment and biodiversity, whereas small-scale farmers implement medium-low tech innovation and agro-ecological practices, along with social and organizational innovation through actors networking and collaborative relations. However, their systematic use of slash and burn practices hinders the classification of their innovation systems as sustainable. Hence, this duality on socio-technical production and innovation modes offered a fertile terrain to explore how hybrid innovation processes can be developed by the proximities and relational networking between farmers belonging to different dual "worlds." The authors conclude that although geographical proximity facilitates innovation dissemination, the organized proximity relations play the key role on stimulating hybrid innovation modes. And they recommend that local policies should promote novel arrangements, that is, institutional innovation, that bring together existing organized proximities with the aim to enhance eco-efficiency of regional dairy farming.

The contribution of Ramos-Sandoval, Álvarez-Coque, and Mas-Verdú was raised by the literature review evidence of barriers and slowness in converting scientific knowledge into innovation, particularly in the case of small-scale farmers. The authors argue that research and development services (RDS) play a key role in intermediating science with the farmers' innovation. They have conducted a survey of farmers randomly selected in the region of Valencia in Spain, where small and medium-sized farmers are predominant. Data were gathered and statistically modelled to test the authors' hypothesis stating that farmer's access to RDS is enhanced by "entrepreneurial attributes (market orientation and learning orientation) as well as by their innovation capabilities defined by an innovative attitude and human capital." Their findings suggest that small and medium-sized farmers with strategic and innovation capabilities, and a high level of formal education, have a higher willingness to make use of RDS, namely in comparison to large farmers. These findings are quite relevant to know how RDS effectiveness can be improved both in the context of the regional AKIS (agricultural knowledge and innovation systems) and the EIP-AGRI (Agricultural European Innovation Partnership). They highlight the role of higher education system not only as training high educated individuals but as well as developing their entrepreneurial abilities.

Losada, Gómez-Ramos, and Rico place their research in the context of smart rural development, in the sense of Europe 2020 Strategy (EC, 2010), encompassing competitiveness of the agricultural sector, sustainable management of natural resources, and more balanced territorial development. Authors employ a participatory sustainability evaluation framework to assess in a multi-actor perspective an innovative and sustainable process build on circular economy paradigm to enhance eco-efficiency and low carbon in the wine sector of the Uclés DO (denominated origin) region, in Spain. This is according to the authors a small DO in the Spanish context corresponding to a rural area facing socio-demographical decline. This paper similarly to the one of Torre, Polge, and Wallet, brings in a situation of sectoral and territorial coexisting of dual socio-technical systems, the grapevine growers innovation uptake risk-

averse and the wineries which are innovation risk-takers. Wineries' competitiveness depends on wine differentiation in competitive globalized markets, while, grapevine growers, also annual crops producers, depend on the EU agricultural subsidies because of low prices obtained by their undifferentiated products. This duality translates into different acceptance of the innovation by the two groups, although the wineries also demand for short-term economic benefits. To cope with grapevine growers' low involvement with the innovation and wineries demand for short-term gains, the authors propose a "collaborative business model", i.e., an organizational innovation, enabling public support to the investment and a distribution of innovation benefits by the two groups.

Rantamäki and Kattilakoski provide insights on how social innovation can be developed to address welfare problems of rural communities resulting from public finances decline and welfare state withdraw in the remote rural areas of Finland. Authors focused on two case studies, the municipality of Sievi and the village of Ullava, both located in Centre-West of Finland, facing different welfare problems as a result of different socio-demographical structures related to dual dynamics in rural areas, which are transversal to many regions of North of Europe. Sievi is a young community populated by families with small children that come from the city to work on hi-tech industry looking for a countryside style lifestyle. Their problem was supply shortage for care services to families with young children that has been partially solved by collective action entailed by the local community involving local institutions. In the case of Ullava, depopulation and ageing left local people without access to basic services, leading the local community to create a services cooperative which contributed to job creation for long-term unemployed local individuals. Both cases highlight the ability of local communities to entail in collective action, the importance of local institutions, evidencing place-based approaches to social innovation involving institutional innovation which translates into territorial innovation build on multilevel governance. Nonetheless, the authors underline that these community-driven innovations cannot replace the State in welfare services provision due to their limited resources which is a constraint derived from the welfare state withdrawal and the public funding cuts.

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