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Simona Cristiano, Patrizia Proietti, Marta Striano

CREA – Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria, Roma, Italy

simona.cristiano@crea.gov.it, patrizia.proietti@crea.gov.it, marta.striano@crea.gov.it

Enabling environments for rural innovations: lessons learned from Rural Development Programmes in Italy, 2007-2013

Abstract: *The European Innovation Partnership for Agricultural Productivity and Sustainability (EIP-Agri) aims to foster the competitiveness and sustainability of the agriculture and forestry sectors. In the 2014-2020 rural development programmes (RDPs), Operational Groups are multi-actor projects aimed at building bridges between different actors, in order to speed up the development of farmer-driven innovative projects. The Managing Authorities of the RDPs have a crucial role in setting the scene for enabling and promoting such innovation processes. The aim of this research is to explore the different policy frameworks adopted by the Italian regions to support cooperation for innovation projects in RDPs in the period 2007-2013. These were analysed against the conceptual background outlined by the European Commission and the international literature on the interactive approach to innovation processes (EC, 2013). The study is supported by the use of a mixed-methods approach, based on desk and on field research, qualitative and quantitative methods. The results of this research illustrate (a) the relevance of well-defined policy and programme setting to enable innovative environments; (b) differentiation of innovative processes according to local agricultural systems; (c) project-driven innovation approaches might not support the capacity development on innovation; (d) the importance of networking instruments – such as national networks – particularly in regionalised MSs; and (e) the importance of appropriate monitoring and evaluation tools and methods to follow innovations and their effects.*

Keywords: *evaluation, AKIS, cooperation for innovation, interactive innovation model*

The aim of this research is to explore the different policy frameworks adopted by the Italian regions in supporting cooperation for innovation co-financed by the European Union (EU) through measure 124 of Rural Development Programmes (RDPs) in the period 2007-2013. This is in view of providing an overview of enabling or disruptive factors for setting innovative environments in rural systems as well as capturing possible benchmarks for the next programming period. The conceptual background of this research is the outlined by the European Commission (EC, 2011; 2013) and the interactive approach to innovation processes (Hall et al., 2006; Knickel et al., 2009; Rolling, 2009; Klerkx et al., 2010; 2012; EU SCAR, 2012; 2015; Brunori et al., 2013; TAP, 2016).

Contemporary agricultural and rural development is complex and characterised by socio-economic and environmental interactive dynamics, such as the demand of global markets, urbanisation, agricultural commercialisation, provision of public goods, consumption patterns and food safety standards, climate change, concentration and vertical integration of food production. Addressing this complexity requires more open and responsive innovations in agriculture and rural development which are based on user-centric and multi-actor approaches which focus on effective targeting of needs/opportunities of farmers and achievement of co-ownership through their involvement in effective knowledge sharing and demand-driven development of innovations. Also necessary is the contribution of a broad set of actors, which also belong to other sectors and extend beyond formal science, to make best use of complementary types of knowledge (scientific and practical).

In terms of policy designs and arrangements, the concept of co-creation of innovation calls for a shift from research policies to innovation policies, which emphasise the role of governments to set the stage for context-specific and farmer-driven innovations, by supporting networks and systems through financial and non-financial measures, which are focused on meeting systemic problems and opportunities (Bergek et al., 2010; Moreddu, 2013; EC, 2013; EU SCAR, 2012; 2015). With the concept of the European Innovation Partnership for Agricultural Productivity and Sustainability (EIP-Agri), interactive innovation has become a focal point of the 2014-2020 RDPs and will be undertaken mainly by Operational Groups (OG), which are multi-actor partnerships tailored upon and aiming at tackling certain practical problems or opportunities which may lead to an innovation (ENRD, 2013a; 2013b).

Methodology

This study started in 2012. The methodology applied was inspired by Birner *et al.* (2009) and, as already discussed in our previous research papers, also by focusing on the role of the advisory services in innovation projects (Cristiano

and Proietti, 2015), the actors involved in innovation brokerage functions (Cristiano and Proietti, 2014a), the overview of experiences and pathways of innovations applied in 2007-2013 RDPs (Cristiano and Proietti, 2013) and the reflections on a possible evaluation strategy of EIP-Agri (Cristiano and Proietti, 2014b).

The whole research strategy is illustrated in Table 1 and it is supported by the use of a mixed-methods approach, based on desk and on field investigations, qualitative and quantitative methods. According to the conceptual background, the research is structured around a set of four driving themes (policy and delivery system, innovation drivers and accelerators, role of different actors, innovation at farm level and its effects) and respective research questions and criteria.

The desk research was the basis for the analysis of the regional approaches and policies (RDPs and measure designs, policy-oriented or farmer-needs oriented) and delivery systems (i.e. prizes, selection criteria, advances, financial rates, potential beneficiaries and roles, use of other measures) applied to support cooperation projects for innovation. It was conducted at both programme and project level. The collection of relevant qualitative and quantitative information on projects features, partners, supply chains and financial provisions led to the setting up of a database of all the innovation projects funded (872) under measure 124 of the 2007-2013 RDPs in Italy.

The analyses in the field was based on semi-structured interviews, a questionnaire, focus groups and workshops, which supported the poll of different innovation rural actors, allowing to capture mostly descriptive and relational information on relevant issues: organisational models of cooperation, with a focus on farmer empowering and knowledge exchange arrangements, partnership consensus on roles and functions played by each actors, with a focus on innovation brokerage (Howells, 2006; Klerkx et al., 2009; Koutsouris, 2012) and networking. Especially, the semi-structured interviews and focus groups allowed us to deepen our perceptions and direct experience of the beneficiaries through raising claims, tips and recommendations to the policy makers.

Five case studies were carried out in order to cover the whole research themes for the specific projects and under different regional frames. The research is still ongoing and, with the ex-post perspective, it will deepen on economic and technical effects of innovations at farm level as well as on the capacity development achieved by the rural actors of innovation projects.

Table 1. Themes, analysis criteria and observation techniques and analysis used in the research

Research themes	Analysis criteria	Observation techniques and analysis
Policy designs and delivery systems	<ul style="list-style-type: none"> • Innovation policy and systemic approach to innovation; • Consistency and supportiveness of delivery system; • Targeted to establishing interlinks and/or stable cooperation between research, advice and farming worlds; • Financial and non-financial frames and organisational structures; • Context specific; • Targeted to spreading innovation across farmers/forestry managers. 	<ul style="list-style-type: none"> • Desk analysis; • Semi-structured interviews (25).
Innovation drivers and accelerators	<ul style="list-style-type: none"> • Innovation brokerage; • Farmer empowering; • Networking and cooperation; • Knowledge exchange and dissemination. 	<ul style="list-style-type: none"> • Survey (388); • Focus groups; • Semi-structured interviews; • Workshops.
Roles for innovation design and implementation (project level)	<ul style="list-style-type: none"> • Advisory providers; • Research/innovation bodies; • Producers organisation; • Farmer/forest manager. 	
Innovation at farm level and effects	<ul style="list-style-type: none"> • Relevance of innovation for practical farming; • State of play of innovation and benefits at farm level; • Capacity development on innovation (different actors). 	<ul style="list-style-type: none"> • Semi-structured interviews; • Farm Accountancy Data Network.

Source: own compilation.

Results

The numbers on the implementation of measure 124 show that it was considered an important policy tool for rural development and it had a good response in all the territories. In fact, almost all the Managing Authorities (MA) had to increase their financial allocations to the measure (+18 per cent) during the programming period and, at the end, the total expenditure was EUR 178,683,776 at the national level (19 RDPs).

As a whole, 872 projects were completed and 3.968 partners cooperated for innovation. Among them, 61 per cent were farmers, 27 per cent were represented by universities and research institutes and 12 per cent were represented by other types of organisations, such as advisory services, professional organisations and agroindustry. The innovations involved all the relevant sectors of Italian agriculture, though their distribution clearly reflected the specific regional and local endowments and specialisations. The most interested sectors were: livestock (22 per cent), fruit and vegetables (21 per cent), wine (14 per cent) and cereal crops (12 per cent). In a relevant number of cases, partners represented other sectors: pharmaceutical, bioenergy, fodder industry.

Certainly, the cooperation for innovation experienced allowed the development and introduction of innovations at farm (90 per cent), agro-food (6 per cent)

and forestry (4 per cent) level. Particularly, the types of innovations introduced regarded the new and meliorated food products (fruit and vegetables, milk and cheese chains), techniques and processes for the waste and water reduction and management and renewable energies, new varieties and protection of plants (floriculture and forestry plantation), animal health and safety (livestock and agro-food industry), food preservation and packaging (food industry). Besides, the intervention encouraged the development of cohesive economic relationships among different agricultural and rural actors. Its implementation was strongly supported both by the representatives of producers and by the research sector, who saw a chance to finance their activities, at a particular moment of funding shortage.

Despite the novelty of the measure and the lack of experience of all the actors involved, in many cases these projects were a success. In fact, the study shows that most of the innovations were effectively implemented at farm level and the farmers feel satisfied. Moreover, these experiences seem to be influential in empowering farmers and enhancing their culture of innovation through boosting changes in the entrepreneurial behaviours and strengthening their innovative/adaptive capabilities (Cristiano and Proietti, 2013).

Owing to the long-term return on investments of such innovation projects, further research will be done in order to assess long-term effects, such as an increase in the socio-economic and environmental performances of farmers, of the global competitiveness of the value chains or the consolidation of trends in entrepreneurial innovative behaviours.

Policy and delivery system

Policies play a key role in creating an enabling environment for innovation in agriculture and rural areas, by reducing information asymmetries and encouraging collaborative behaviours aimed at reducing the cognitive gap and sustaining innovative processes. In the case of measure 124, the policy approach attracted the interest of research in rural development policy, by improving farmers' access to research results and triggering new relational dynamics between the research and the entrepreneurial world aimed at satisfying innovation needs of farmers. Despite this, the design of the Italian 2007-2013 rural development policy and the programme settings failed to create a collaborative environment. Firstly, the managing authorities showed a lack of strategic vision on rural development and, above all, on innovation policy. Moreover, they lacked a 'systemic approach' to the agricultural knowledge and innovation system and had difficulty in recognising all its actors and the roles they play. This, together with Italian historical dynamics, did not lead to the sharing of a common vision on rural development and innovation. Quite the opposite, it shaped divergent interests, thus creating a strong competition to get public funding. In particular, the delivery system raised a clear division between research and advisory, as the last was excluded from support under

measure 124. On this basis, the RDPs were unlikely to promote the activation of synergies and complementary actions between all the actors, as well as the implementation of integrated and coordinated innovation processes.

Also, the lack of an ad-hoc needs assessment on innovation brought to the implementation of an extensive bottom-up approach in projects supported under measure 124. In very few cases, later on during the programming period, the managing authorities gave some indications on themes related to climate change, but this mostly as a consequence of the health check of the EU's Common Agricultural Policy (CAP), which had specific requirements on the matter. On the one hand, this was good because almost all the innovations were applied for addressing specific needs of the farms. On the other, it led to a wide fragmentation into many similar, small projects. This, together with a lack of dissemination and coordination, certainly reduced the policy impacts, as innovations involved only single farms or small groups of them, rather than being defined and shared at supply chain or regional level.

From this point of view, it must be emphasised that the administrations expressed a clear attempt to promote an integration among different types of interventions and actors involved in innovation projects. This occurred, particularly, through the integrated use of measure 124 with other RDP measures, within the integrated supply chain projects. These latter, in line with some literature (Alston and Gray, 2013; Moreddu, 2016), have been instrumental to broaden the whole spectrum of relevant partners, strengthen the scale of the innovation and establish stable cooperation across the supply chains.

The role of local systems on innovation paths

An important finding of this research is the fundamental role demonstrated by local systems in enabling innovation processes. This is mainly because of the existing networks and trustfulness among rural actors as well as of the local specialisations and the common interests and understanding on specific needs/problems/opportunities for development. Interactions between producers, research institutes and local governments play an important role in the development of innovation processes and may result in different outcomes, both on innovative dynamics and their efficiency.

Field investigations show that innovations can be produced mainly within network activities in which different actors have strong and interdependent connections (business relations, knowledge flows, sharing of experiences and material factors, financial transactions etc.). The greater is the number of relationships available to the farmers, the greater are the opportunities for learning and, thus, for implementing innovation. Innovations often develop thanks to the geographical proximity of certain actors and factors. The study showed that some local actors (local administration, cooperatives / consortia / producers' associations, advisors or professional organisations), due to their representativeness, the local consensus and the trust that they achieved among

the farmers were able to aggregate specific needs of local supply chains, facilitating the dialogue with the research and informing the potential beneficiaries on the opportunities to invest in innovation. In several cases, the managing authorities tried to foster such enabling conditions by including the local innovation/research centre and/or a cooperative/consortia into the partnership as eligibility criteria for applying to the measure.

The innovations implemented under measure 124 seem to have been relevant for practical farming. Although universities and research centres played a significant role in promoting and developing innovations, in many cases with a leader role in the partnerships, the innovations are intertwined with farmers' specific knowledge and their needs (economic, organisational, market etc.), thus generating a positive impact at farm level.

Strengths and weaknesses of project-driven innovation

Cooperation for innovation co-financed under measure 124, as with the EIP-Agri OGs, was addressed at finding an innovative and practical solution to solve a farmers' problem or exploit an opportunity. The projects were focused on innovative investment projects tailored for farmers participating in the partnership, largely based on a multi-actor approach. Being these features, they definitely were relevant for practical farming. Indeed, the case studies illustrated that innovations were effectively tailored to farmers' needs, and their expectations were satisfied. However, the study shows that such benefits hardly went beyond the partnerships' boundaries, without specific actors who support the widespread use through the supply chains or territories. Moreover, such project-driven innovations not necessarily support the growth of innovative entrepreneurship neither, in general, the capacity of the system to innovate. In fact, a number of intangible outputs, such as mutual trust among the stakeholders involved in the projects, brokerage skills or social capital, can be lost by the end of the project and may not necessarily be reused to set up other partnerships and projects afterwards.

Use of networking instruments

In the case of regionalised innovation systems as in Italy, the use of networking instruments applied at both national and local levels has been of great utility, especially for two main reasons: the novelty of EU innovation policy and the effective cooperation and exchange of information with the AKIS. Particularly, for the first point, at national level, the National Rural Development Network supported the common understanding of the EU innovation policy, the designs of regional policies and programmes and the exchange of experiences among the administrations.

Networking activities, including dissemination, helped to bridge the communication gaps and were consequently the real engine of innovation (Brunori et al.,

2013). They allow innovation to be scaled up, so reducing fragmentation and maximising the utility of public investment. Moreover, networking activities are instrumental to dialogue and knowledge sharing between actors, development of learning processes, dissemination of innovation and application in practical farming, both internally and externally to the partnership. Indeed, their use within the implementation of measure 124 was very limited. The supported partnerships were the result of spontaneous combinations of local actors and factors. Generally, there was a lack of actors/structures able to act as an interface between research and entrepreneurs, or to support the processes of problem solving or developing new ideas.

Dissemination activities promoted by MAs were carried out mostly through final project seminars, without achieving an effective knowledge sharing, in terms of replications and spin-offs of the projects. When other networking instruments were used (e.g. study visits or workshops), the interactions between farmers helped to increase trust and awareness on the usefulness of the innovation, beyond the simple exchange of information. Moreover, such on-going interactions are instrumental to the setting up of long-term relationships, which are likely to convey information and knowledge even beyond the end of the project, thus inducing new ideas and emulative behaviours among the farmers.

Monitoring and evaluation

The most important result of this study is that the importance of appropriate monitoring and evaluation approaches and arrangements for improving the rural development intervention is emphasised in the case of interactive innovations applied in multi-actor projects, such the ones implemented under measure 124 and the forthcoming OGs.

In the 2007-2013 RDPs, monitoring arrangements were very minimal and focused on the financial inputs and physical outputs. Also, evaluation was focused only on economic and environmental effects of innovation at farm level, while there is no evidence of any investigation on the achievements on innovative capacity development at the levels of rural actors and of the local systems. In this regard, according to some recent literature, appropriate monitoring and evaluation (M&E) strategies should be systemic, concurrent, multilevel and commonly recognised. Systemic M&E strategies would reflect better the newly holistic approaches and multi-actorial models to innovation. Specifically, the different innovation policies and systems, local specificities and transversalities to policies and sectors need to be analysed. Their influence on pathways of innovation should be adequately tracked as well.

Moreover, the study found that there is a need for on-going and multi-level M&E strategies which embrace programmes and projects as well, across their entire period of implementation (Cristiano and Proietti, 2014). In fact,

as it is, the applicable M&E framework for the CAP is not properly tailored upon the needs of policy makers and practitioners for on-going feedback and reflexive processes on the implementation of respective programmes and projects. Also, concurrent M&E strategies should contribute to encouraging co-learning processes through facilitating collective knowledge building, experience sharing and adaptive learning by the partnerships and across the rural innovation systems (Klerkx et al. 2010; TAP, 2016). In this regard, M&E strategies should focus on ‘how’, enabling and disabling factors, innovations are processed and achieved, and on ‘which conditions’ the innovation policies and partnerships are well functioning; by which mechanisms and actors the innovation is implemented at farm level and across the supply chains. Also, the ‘effects’ analysis should aim to assess the medium-long term outcomes/effects of the innovation actions on rural systems, farms and value chains (Ricciardulli, 2012).

Finally, commonly-recognised M&E strategies and indicators, at least in the EU, would allow comparison and benchmarking, which could help ongoing adjustments at the policy level, on programme settings and delivery systems, and of the projects, on multi-actor approaches and innovation processes (Technopolis, 2012).

Discussion

Well-defined as well as targeted policies and programme setting are crucial in fostering an enabling environment for innovation. Policy should ensure smooth communication between all the actors involved in innovation processes, as well as the activation of synergies and complementary actions rewarding cooperative behaviours. To this aim, all the local actors should take part in the expression of innovation strategies. This could give major consistency to the project, set up linkages among actors, ensure dissemination along the supply chain. Moreover, there is a need for a strategic vision that allows a switch from fragmented project-led innovation to a developmental agricultural system. Particularly, there is a need for a systemic approach to AKIS in order to highlight the functional relationships between the various actors and components, so as to foster the systemic capacity to innovate.

A second point to consider is that different local systems produce different innovation paths. Geographical proximity plays a significant role when there are no interface structures specifically created to build bridges between research and the local production system. The presence of these last is helpful to identify the most appropriate knowledge in order to meet the real needs of farmers, whether they are located nearby or not. In that case, the innovation approach is driven by the farmers’ demands, and the effects, by definition, have an impact on the local system. In addition, these structures allow interaction between research and local producers independently from the presence, on the territory, of a research institution.

Networking instruments are needed in order to integrate knowledge, support structures and / or other supporting organisations effectively (Hall et al., 2006; Klerkx et al., 2009, 2010; Brunori et al., 2013; Hermans et al., 2015). Particularly, they allow a switch from fragmented project-led and / or policy-led innovations to a developmental agricultural system. According to this, the local AKIS can be organised as learning platforms and take on the responsibility for fostering innovation across the supply chains. Networks also have an important role in influencing innovation processes and shaping policies for innovation, being also able to create value chains that transcend geographical boundaries.

Finally, a focus on monitoring and evaluation of innovation processes would be needed. For the managing authorities it can be a propitious moment to coordinate, exchange experiences, activate synergies and receive return information. The utilisation-focused and reflexive approaches can support prompt adjustment of intervention and the development of programme management and of rural actors' skills (Klerkx et al., 2012). The early involvement of these last in ongoing evaluation processes can foster the scale up of innovation and the enhancement of innovation system capacities.

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