

Innovation and development in agricultural and food systems

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Chapter 6

Innovation, a precondition for the sustainability of localized agrifood systems

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Summary. Small-scale food production and products of terroirs often evoke a traditional image, one of practices frozen in time, transmitted from generation to generation. The reality is however different: analyses show that localized agrifood systems (LAFS) have to innovate constantly in order to cope with internal changes (reduction in the capacity of coordination and collective action) and/or external ones (new constraints, or technical or commercial opportunities). Faced with this need to innovate, some systems are able to increase interactions between local and extra-local actors, leading to technical or organizational innovations. The LAFS concept makes it possible to shed more light on these collective and localized innovation processes than diffusionist schemes do, and to also show the way to support them.

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Small-scale or artisanal food production often evokes a traditional image. Local or terroir products are viewed as having immutable characteristics and as being produced using age-old practices that are transmitted from generation to generation. And yet, studies of these products reveal processes of innovation, occurring over shorter or longer periods: sectors appear and disappear, and production systems adapt to changing technical, regulatory and market environments. What are the determinants of these innovation processes? What are their enabling levers and their retarding obstacles? What analytical frameworks can be used to apprehend them?

This chapter addresses the issue of innovation processes in territory-linked agrifood production. We determine the strengths and weaknesses that result from the collective dimension and territorial anchorage of these processes. The first part of the chapter discusses the 'localized agrifood system' (LAFS) model, situating it with reference to studies on industrial districts and clusters, and clarifies the nature of the innovation processes at work. The second part examines the capacity of this LAFS model to engender and orient development programmes and analyses some of the possible levers for strengthening local dynamics of innovation and the qualification of food products.

28. Using the concept of the localized agrifood system to explain the dynamics of innovation in small-scale production

The study of the dynamics of innovation at work in small-scale or semi-industrial agrifood production reveals two salient facts: these dynamics are collective in nature and they are localized. Collective because they are observable among different small-scale producers, without it being possible to identify the first innovator, assumed by Schumpeter (1934) to have a key role in the innovation. Localized because these dynamics occur only in certain spaces, with traditional practices being more

prevalent in others.

The collective nature of these dynamics of innovation can be explained in the light of evolutionary theories (see Chapter 1) and of industrial economics. These theories help explain the complexity of technological change, technological lock-in²⁰ phenomena, and the resulting technical and organizational routines (Nelson and Winter, 1982). A small-scale producer is not able to break from these routines on his own, i.e. assume all the costs and risks associated with the process of developing a new technology and of producing enough of the new product to establish trading channels. On the contrary, technological change requires a high level of coordination within a group. The iterative process of testing, followed by the necessary corrections, and the trial and error which gradually allows the construction of an innovative technique have to be shared.

The second characteristic, the localized nature of these dynamics of innovation, seems to be more difficult to explain. Given the same environment in terms of technical and market opportunities, why do all production regions not have the same capacity to innovate? Why are some regions more successful in seizing these opportunities or overcoming new constraints? What is the nature of the resources that induce a process of development in certain spaces and not in others? The localized nature of the technical changes observed in agrifood sectors requires us to clarify the nature of actor collectives and their relationships.

28.1. Endogenous cooperative relationships are formed more easily in certain spaces

To understand these technical changes, an analytical framework was built around the model of the localized agrifood system, or LAFS (Muchnik and Sautier, 1998; Muchnik *et al.*, 2007). This LAFS model was inspired by that of the localized productive system (LPS), developed by various French authors (see Courlet (2002) for a literature review) following the emphasis placed on the importance of the 'local' by Italian authors in the context of Marshallian industrial districts (Becattini, 1992). However, because of the nature of the productions in question (small-scale or semi-industrial food production), the LAFS differ in their functioning from more industrialized localized production systems. Indeed, in the LAFS, the territorial anchorage imbues more typicality to the product than in the LPS because of possible effects related to the terroir (when it comes to agricultural production and/or agrifood processing) and because of the potential inclusion of this product in a process of patrimonialization (Fournier and Muchnik, 2012). The analytical framework of LAFS has to necessarily be multidisciplinary, based in particular on economic, geographical, socio-anthropological and technological approaches. It has to include an analysis of the actors, their practices and uses of the territory, across different spatio-temporal scales (Chevassus-au-Louis *et al.*, 2008).

Even though the LAFS model is thus distinct from that of the localized productive system, the studies concerning them do, in common, approach innovation processes directly at the level of systems of actors. Innovation in small-scale agrifood production is thus attributed to interactions emerging within systems 'made up of production and service entities (agricultural production units, agrifood companies,

²⁰ The phenomenon of technological lock-in refers to the fact that when a technology has become dominant and entrenched, it is difficult to replace it, even by a more efficient or powerful one.

commercial enterprises, service companies, restaurants, etc.) linked by their characteristics and their functioning to a specific territory' (Muchnik and Sautier, 1998).

In a localized agrifood system or a localized industrial production system, the actors enter into subcontracting relationships, exchange information through consultation networks, create projects of common interest, etc. These types of interactions supplement the simple competitive relationships that naturally exist between a region's agrifood producers. These relations of 'coopetition' (cooperation and competition) in areas of geographical concentration of activities of a similar nature then strengthen the dynamics of innovation, a phenomenon that Porter (1998) illustrates with the notion of cluster. In the LAFS model, the perception of the collective interest can help cooperation largely overshadow competitive relationships.

A localized agrifood system, like a localized productive system or an industrial district, can thus be seen as the coupling of a production system with an innovation system, with the latter being both sectoral (Geels, 2004) and regional (Asheim *et al.*, 2011). Recent analyses of these innovation systems make it possible to re-examine the processes of innovation at work in a LAFS.

It remains to understand where this capacity for cooperation comes from in lateral relationships which, logically, should be purely competitive, and why it finds stronger expression in certain spaces than in others. The nature of the proximity that unites the actors appears to be a key point. While there is geographic proximity between actors in every production area, interactions can also be facilitated by organized proximity (Pecqueur and Zimmermann, 2004). The latter is achieved through common norms and values, and/or memberships of the same networks, organizations or communities. In industrial districts, this organized proximity is seen to pre-exist but in localized production systems and LAFS, it has to be constructed explicitly and progressively through interactions.

The potential role of geographical and organized proximity in innovation systems has long been recognized. It leads, first of all, to a minimization of transaction costs, with mutual knowledge and sharing of common values reducing the risk in exchanges. Such proximity also promotes innovation by making it easy to share and combine tacit knowledge and codified knowledge. Finally, this proximity makes it possible to build up social capital, which then accelerates the dissemination of innovations (Van Rijn *et al.*, 2012).

Because of this geographical and organized proximity, local actors can construct institutions, in the sense given to the term by North (1994), over the long term, which then govern their interactions via formal and informal organizations. These progressively established rules of the game guarantee the reciprocity of commitments in processes of collective action (notably by establishing sanctioning mechanisms) and slowly engender relationships of trust (Ostrom, 2010). This trust between actors leads to social learning, which is a key element of an innovation system's effectiveness (Sol *et al.*, 2013; Stuck *et al.*, 2016).

Finally, geographical and organized proximity strengthens territorial solidarity. Over the long term, the actors living in these spaces start behaving like they belong to a community, in some cases toning down or suppressing individualistic or opportunistic behaviours. The interest of the individual can be perceived as no longer

taking precedence or, in any case, as being strongly dependent on that of the community. This phenomenon, highlighted by the work of Becattini (1992), removes many of the barriers that hinder cooperation, collective action and ultimately (collective) innovation processes in certain spaces. The individual does not necessarily feel obliged to protect his know-how, his inventions, or his information if their dissemination strengthens his community.²¹ In the face of a collective long-term vision that is being formed, he is more likely to build specific assets collectively (Gallaud *et al.*, 2012).

On the basis of the theoretical advances on innovation systems, the LAFS model thus makes it possible to better understand the emergence, in certain spaces, of deeper cooperation relationships that ultimately lead to innovation processes. An institutional and organizational mechanism develops and transforms these spaces into territories. This mechanism is the main specific strength and asset of LAFS (Cerdan and Fournier, 2007).

28.2. External contributions

However, these endogenous dynamics cannot fully explain innovation processes, either within LAFS or, more generally, within innovation systems. A LAFS's strength originates also from its ability to capture ideas, innovations and new practices from outside, and to combine them with its own practices to reinforce or renew innovation processes. Relationships that local economic actors maintain with other companies, research centres, and support organizations are often essential to stimulate innovation processes. Several authors have noted the importance of building innovation platforms that reach beyond merely local systems (Schut *et al.*, 2016; Hounkonnou *et al.*, 2012).

In addition, a LAFS's capacity for innovation is highly dependent on the nature of the interactions between producers (farmers, artisans, and small and medium enterprises) and consumers. Local markets, which benefit the LAFS, at least initially, allow physical meetings between these various actors and rapid feedback from consumers to producers, enabling a co-construction of LAFS innovations. These interactions provide a framework for the processes of innovation for products with high symbolic value forming part of the local heritage, characteristics that innovations must not dilute (Chabrol and Muchnik, 2011). Subsequently, markets for LAFS products can expand, but the local component consisting of consumers, diasporas and connoisseur communities are likely to continue to play a role in orienting innovations. Consumers are thus involved in innovation processes that lead to new terroir products (Prévost *et al.*, 2014). On a more general level, the importance of interactions in innovation systems between the product's producers and its users has been emphasized by Geels (2004). Torre and Tanguy (2014) argue that it is the existence of 'gatekeepers', who provide the connection between the industrial districts and the world market (because they know both very well), that is the source of these systems' strength.

The interactions between the innovation system associated with a LAFS and its environment are thus decisive. In a more recent article, Geels (2014) considers it necessary to analyse a triple nesting of enterprises: in an external environment,

²¹ Marshall had already described this phenomenon in his work at the end of the 19th century, writing about the 'industrial atmosphere' of industrial districts, within which 'industrial secrets cease to be secrets. They are in the air itself.'

economic as well as socio-cultural, and in their industrial regimes, corresponding to specific sectoral dynamics.

In summary, thus characterized, the LAFS model makes it possible to build an analytical framework of the evolutionary trajectories of agrifood production systems (Muchnik *et al.*, 2007). The ideal innovative LAFS is characterized by these relationships of cooperation and competition allowed not only by a strong local institutional mechanism, these multiple proximities and this territorial anchoring, but also by the relationships that the system's actors are able to establish with the outside world (Boucher, 2004; Fournier, 2002).

28.3. A process of innovation in fits and starts

The innovation process in LAFS is however not linear; it takes place in fits and starts, as can be seen from the example of cottonseed oil mills in Bobo-Dioulasso (Box 6.1).

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Box 6.1. Cottonseed oil mills in Burkina Faso: organizational innovations at the service of technical innovations

Bobo-Dioulasso, the second-largest city in Burkina Faso, has experienced remarkable growth over the last decade in small and medium enterprises (SME) specializing in the production of edible cottonseed oil and oilcakes for animal feed. This cluster of companies joined an older industrial base, consisting of an industrial cotton ginning company (SOFITEX) dating back to the 1980s and two industrial cottonseed crushing companies (SN-CITEC and SOFIB) which, for a long time, had operated without competition.

At the end of the 1990s, the first small oil mills were set up by technicians from the industry and from companies that manufacture spare parts for industrial oil mills. The local manufacture of copies of imported presses (Chinese and Indian) led to the emergence of very small enterprises (VSE) to take advantage of the market for oilcake for animal feed. The oil was then sold to street food makers and artisanal soap factories.

In the early 2000s, these VSEs began proliferating. They acquired imported presses and increased considerably their production capacity and the number of employees, and started turning into SMEs. They then shifted production to higher-quality refined oil, packaged under their own brands, and began competing with industrial companies.

As these SMEs became active, competition between them and SOFITEX over cottonseed procurement became more intense. The SMEs then formed a professional group (GTPOB) to lay claim to an appropriate amount of cottonseed supply. The government officially recognized this group and fixed seed quotas for each party. This organizational innovation thus made it possible to secure supply over the long term.

The creation of this professional group, by bringing together the sector's actors, had other positive impacts: emergence of new skills and capacities in oilseed crushing, creation of related activities of equipment maintenance and spare-parts manufacturing, emergence of local capabilities in equipment manufacturing and maintenance, etc.

In 2011, GTPOB had 44 members and reported a turnover of more than 4 billion FCFA (about 6 million Euros). It was experiences like this that led Burkina Faso to reorient its industrial policy more towards competitiveness clusters and localized production systems. In recent years, however, Bobo-Dioulasso's oil production sector has had to contend with the entry of many new actors mainly because the professional organization has been unable to regulate the workforce. In 2017, in this city alone, there were nearly a hundred SMEs. Not only is cottonseed supply seeing renewed tensions, but the cottonseed oil market is experiencing stiffer competition. New strategies are already emerging and some mills are diversifying to sesame or soya bean.

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The analysis of innovation processes shows the different phases that exist in a LAFS's life cycle. The various types of local innovation and production systems – LAFS, localized production systems, and clusters – all face the same threat in case their innovations are successful: an increase in competition due to the entry of new actors. While localized production systems and clusters are protected to some extent from the risks of rapid expansion by high entry barriers (difficulties in acquiring technologies, size of initial investments, etc.), this is rarely the case for LAFS. The relatively easy possibilities of expansion of these systems then create a life cycle composed of distinct phases:

- initially, the innovation concerned is produced by a small number of producers, closely linked by geographical and organized proximity, participating in relationships of trust or even cooperation; this innovation is able to differentiate local production;
- if this local activity generates significant profits for the producers, the LAFS spreads rapidly since the entry barriers consist mainly of know-how, which is easy enough to acquire locally, and of a small initial investment; this extension leads the LAFS to include actors who are less and less close, who have only the practice of the same activity in common with the innovation's community of origin;
- as long as the activity continues to provide strong margins, the number of producers continue to increase and the spatial expansion continues; past a certain stage, this growth may lead to a commoditization of the product, a fall in prices, or even a situation of overproduction; new innovations are then needed, but these are more difficult to achieve at the LAFS's scale, due to the large number of actors, their lack of proximity and the increasingly competitive relationships between them; without collective innovation processes, this phase is characterized by a decline in the LAFS; the decrease in, or even the disappearance of, profits causes a reorientation of the actors towards other activities and/or the consolidation of enterprises;
- at this point, the actors at the origin of the LAFS have to innovate again in order to reintroduce a specificity into their product or in their mode of production or wait until the fall in production makes prices rise again (Fournier, 2002).

Although this life cycle (emergence, growth, decline, potential recovery) is not specific to LAFS, it nevertheless shows the difficulty of maintaining a process of innovation over time, as well as the sometimes ephemeral nature of territorial

dynamics (Fournier *et al.*, 2005).

Following the reduction or the disappearance of the increased income from the initial innovation, new innovation processes are nevertheless able to emerge, thanks to the existing proximity between the actors, the trust that exists between them, the cooperative relationships and activities, the institutions in place, etc. (Courlet, 2002). Thanks to the initial innovation process(es), the territory now has a legacy 'consisting of the memory of successful past situations of coordination, the trust between the actors that results, as well as specific cognitive resources that are virtually complementary (able to be combined to solve future production problems)' (Colletis and Pecqueur, 2005). This can then lead to a new form of qualification of the product, or even new products and/or new know-how, potentially leading to a new LAFS configuration (new networks or even new actors, including the possibility of withdrawal of some initial actors).

There therefore exist LAFS, localized production systems or clusters 'that win'²², i.e., that are able to sustain a capacity for innovation and are able to innovate continuously to face new competition (Courlet, 2002; Porter, 1998), while other systems disappear. In this context, is it possible for support organizations to intervene to strengthen coordination between actors and to build up their capacity for collective action and innovation?

29. What sort of support can be provided to actors in localized agrifood systems?

There are two possible postures that can be adopted for supporting the dynamics of innovation in localized agrifood systems (LAFS):

- we can, first of all, assume that innovation systems can only originate from endogenous dynamics, i.e., that innovation processes are essentially based on coordination between actors connected by different forms of historical proximity; it may thus seem difficult, if not impossible, to attempt to (re)construct this proximity and these interactions through an exogenous intervention (Martin and Sunley, 2003);
- another posture, adopted by many support organizations, is to attempt to (re)build or reinforce the mechanisms for enabling and fostering collective action at a local level; to this end, we can rely on the theoretical frameworks for analysing collective action (Ostrom, 2010) to support the (re)construction of institutions that can promote coordination between actors and enable them to activate new common resources (Boucher, 2004).

The effectiveness of external support has been demonstrated in many cases of European industrial districts, with this support making it possible to perpetuate territorial dynamics and cooperation between actors (Schmitz and Musyck, 1994). However, the creation and use of tools for development based on analytical concepts such as clusters has come in for some criticism. How to define the actors who are part of the system and those who are not, what spatial perimeter to use, which activities to include, what types of support to implement (Martin and Sunley, 2003)?

Aware of these difficulties, but also of the wider issues involved, researchers and

²² Reference to the book *Les régions qui gagnent [The regions that win]* (Benko and Lipietz, 1992).

practitioners²³ have chosen the LAFS model to construct an intervention framework. This model represents an alternative to diffusionist models that accord too little weightage to economic actors in innovation production. It emphasizes the existence of collective strategies at a territorial scale, the capacity of actors to come together around these strategies, the benefits of cooperation between them and with support organizations, and, finally, the LAFS's ability to produce innovations that differentiate local production and its competitiveness in national and international markets. This model then makes it possible to identify levers for action to overcome situations that block collective action and to reorient the trajectories of local agrifood production systems by strengthening the dynamics of collective innovation and the product's local qualification (Muchnik *et al.*, 2007).

Several types of actions are possible to strengthen a LAFS, including technical, organizational or institutional support for capacity building of actors and for enhancing coordination between them.

Technology transfers, often attempted by support organizations to reinforce innovation, do not always produce the expected effects (i.e. the adoption of the proposed technique by local actors) but the combination of local knowledge with other types of knowledge can lead to innovations based on local adaptations of these exogenous techniques. An apt example of such an adaptation is the Gloria dairy basin in Brazil. Training in good practices imparted to artisanal cheese producers, which constituted the bulk of the external intervention system, did not directly lead to the expected effects. However, the subsequent informal exchanges between these cheese makers were based around the information acquired during the training, which helped to reinforce the dynamics of innovation regarding processing methods (Cerdan and Sautier, 2002). This process of combining local knowledge with external knowledge can be supported just as effectively by means other than traditional training, such as study tours, exchanges of know-how, etc.

Technology-centred support is, however, not enough. It is also necessary to (re)establish a system of coordination between the actors and a capacity of collective action, and to promote the (re)deployment of local organizational and institutional mechanisms. There are three main ways to do so.

A first type of action is the setting up of producer organizations, which is a natural way to reinforce this coordination and to cope with new challenges, as can be seen in the example of cottonseed oil production in Bobo-Dioulasso (Box 6.1). This example also shows that the legitimization of these organizations by external actors is an important factor in raising their effectiveness (Ostrom, 2010). However, producer organizations are not always able to resolve problems concerning collective action, especially when they have been set up at the initiative of development organizations, or, as we see from the Bobo-Dioulasso example, when a jump in membership weakens their capacity of coordination.

A second type of action consists in reinforcing the coordination between actors through a stronger territorial anchoring so that public and private organizations can intervene in support of these territorial dynamics which are more inclusive than a LAFS's. In many examples, this incorporation of a LAFS into a broader strategy of

²³ This community is structured at the national level in France (creation of a LAFS scientific interest group, or SIG), then at the European level (LAFS European research group, or ERG) and at the international level (with the constitution of a LAFS network in Latin America).

territorial development has been an important factor in its (re)energization. In the case of rural cheese dairies of Cajamarca in Peru (Boucher, 2004), the LAFS's territorial anchoring was strengthened by the creation of an organization of cheese producers and other territorial actors (other agrifood businesses, service providers, non-governmental organizations, local authorities and representatives of public institutions, etc.). From an economic point of view, this anchoring provided producers with new opportunities for imparting value to their products by including them in a basket of goods and services (cheese, honey, biscuits, ham, artisanal chocolate, agro-tourism, etc.) promoted collectively (advertising of the territory's attractions, gastronomic tours, etc.).

In order to produce results, this territorial coordination of a territory's different sectors through the constitution of a basket of territorialized goods and services does not necessarily require the formalization of a new organization, but does require the involvement of public and private actors (Hirczak *et al.*, 2008) and a long-term perspective.

Finally, a third type of action involves recourse to geographical indications (GIs), which are frequently presented by their proponents as a tool for territorial development. In theory at least, they should be able to impart strength to a LAFS and to have a strong influence over its life cycle. Geographical indications limit the LAFS's spatial expansion and strengthen its actors' capacity of collective action. They do this through the creation of formal organizations (for managing the geographical indication), the increased alignment of strategies that is induced by the geographical indication's specifications, and the reduction in competition between the actors due to the new markets that the geographical indication is liable to open up (Fournier, 2008). The example of coffee production in Kintamani (Box 6.2) illustrates a case in which a geographical indication strengthens a LAFS and makes an innovation process sustainable.

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Box 6.2. Production of Kintamani coffee in Bali: when a geographical indication sustains the dynamics of innovation

Farmers have been growing coffee on the island of Bali (Indonesia) since the 19th century. Until the 1990s, they used the simple dry method to process the coffee and thus obtained coffee of ordinary quality. Wet processing (including fermentation to produce coffee that is more aromatically complex) was then introduced in the Kintamani region, a mountainous area in the island's northeast. This method was first adopted by a private company sourcing coffee cherries from small growers. Starting in the 2000s, it was also adopted directly by the small growers, thanks to a Balinese government support programme that offered processing equipment and training to producer organizations.

The creation of this new sector for a high-quality product, which progressively accounted for 20% of local Arabica production, was a breakthrough innovation for the area. In addition to the adoption of the wet-processing technique, the sector required the establishment of new organizations and was forced to target new markets. Its growth has been achieved through the establishment of a local innovation system bringing together growers and their organizations, researchers, development actors and buyers (some of whom have provided equipment and expertise to producer organizations).

These interactions, especially between the producer organizations, have to be maintained, both for mastering the processing technique and for identifying relevant markets. Existing cooperation arrangements were significantly enhanced by the decision, in 2001, to apply for a geographical indication for Kintamani coffee. This move was an initiative of research centres and the provincial government. This *ad hoc* mechanism further strengthened the cohesion between producers.

However, the coordination between the growers has been put to the test several times. In 2006 and 2007, overproduction created a crisis of large unsold inventories. In such contexts, cooperation between actors often takes a back seat, but the Kintamani coffee growers were able to maintain their information exchange networks (on techniques and markets) and their collaborative strategies. The geographical indication was registered in 2008. A few years later, in 2012, in a fresh context of falling prices, this cooperation even increased, with the different producer organizations setting up a cooperative to centralize coffee sales.

Even though Kintamani's coffee growers have historically been very close to each other, in particular because of the numerous opportunities for meetings and exchanges provided by the many religious ceremonies they participate in, the geographical indication has played an important role in reinforcing this proximity and the resilience of this LAFS by creating an organizational mechanism that induces constant interactions between actors.

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The flip side of the role of geographical indications in innovation processes must, however, also be underlined. While they can, under certain conditions, reinforce coordination between actors, they can also in of themselves reduce the possibilities of innovation. The codification of technical practices in the form of specifications constrains their evolution. Some geographical indications can thus create 'museums of production' in which innovation becomes problematic (Bowen and De Master, 2011). Furthermore, geographical indications do not always reinforce the process of territorial development, as their purpose may differ. In countries new to geographical indications, some of them have indeed been used solely to pursue the growth of the sector concerned on the basis of a list of modernizing specifications that do not take into account territorial specificities, and that have remained independent of the territory's trajectory (Durand and Fournier, 2017).

30. Conclusion: a model for thinking and acting

The localized agrifood system (LAFS) model makes it possible to understand the innovation processes taking place in small-scale or semi-industrial agrifood production. The fundamental importance of the collective dimension and localized organizational and institutional mechanisms has been demonstrated, as well as that of relationships with actors outside of the system. The different phases of a LAFS's life cycle have been highlighted, showing that a LAFS's sustainability is not guaranteed, nor that of the innovation systems associated with it. Indeed, LAFS appear to be fragile and complex. In order to survive and flourish over time, they need to maintain a strong cohesion between their actors, but this cohesion can be threatened by the success and attractiveness of dynamics of innovation and the expansion of production systems.

The LAFS model can thus inspire development programmes aimed at strengthening

the dynamics of innovation through technical support (especially through exchanges of knowledge and know-how) and/or organizational support (setting up, strengthening or legitimization of producer organizations; assembling baskets of goods and services; registration of geographical indications, etc.). Development organizations have a limited ability to really influence essentially endogenous territorial dynamics, but it is possible for them, through these different actions, to (re)build a framework that is conducive to collective actions.

Bibliography

Asheim B.T., Smith H.L., Oughton C., 2011. Regional innovation systems: theory, empirics and policy. *Regional studies*, 45(7), 875-891.

Becattini G., 1992. Le District Marshallien : une notion socio-économique. *In: Les régions qui gagnent* (Benko G. and Lipietz A., eds). PUF, Paris, 35-55.

Benko G., Lipietz A. (eds), 1992. *Les régions qui gagnent*, PUF, Paris.

Boucher F., 2004. Enjeux et difficultés d'une stratégie collective d'activation des concentrations d'agro-industries rurales, le cas des fromageries rurales de Cajamarca au Pérou. Doctoral thesis, Versailles Saint-Quentin-en-Yvelines University, 436 p. + annexures.

Bowen S., De Master K., 2011. New rural livelihoods or museums of production? Quality food initiatives in practice. *Journal of Rural Studies*, 27(1), 73-82.

Cerdan C., Fournier S., 2007. Le système agroalimentaire localisé comme produit de l'activation des ressources territoriales. Enjeux et contraintes du développement local des productions agroalimentaires artisanales. *In: La ressource territoriale* (Gumuchian H., Pecqueur B., eds), Economica, Anthropos, Paris, 103-125.

Cerdan C., Sautier D., 2002. Réseau localisé d'entreprises et dynamique territoriale. Le bassin laitier de Gloria (Nordeste Brésil). *In: Systèmes agroalimentaires localisés. Terroirs, savoir-faire, innovations* (Moity Maizi P., De Sainte Marie C., Geslin P., Muchnik J., Sautier D., eds), Études et recherches sur les systèmes agraires et le développement, 32, Inra, Paris, 131-144.

Chabrol D., Muchnik J., 2011. Consumer skills contribute to maintaining and diffusing heritage food products. *Anthropology of food* (online), 8, <<http://journals.openedition.org/aof/6847>> (retrieved 1 July 2018).

Chevassus-au-Louis B., Génard M., Glaszmann J.-C., Habib R., Houllier R., Lancelot R., Malézieux É., Muchnik J., 2008. L'intégration, art ou science ? *In: Partenariats, Innovation, Agriculture*, 3 June 2008, Paris, Inra-Cirad international symposium.

Colletis G., Pecqueur B., 2005. Révélation de ressources spécifiques et coordination située. *Revue économie et institution*, 6-7, 51-74.

Courlet C., 2002. Les systèmes productifs localisés. Un bilan de la littérature. *In: Le local à l'épreuve de l'économie spatiale. Agricultures, environnement, espaces ruraux* (Torre A., ed.), Études et recherches sur les systèmes agraires et le développement, 33, Inra, Paris, 27-40.

Durand C., Fournier S., 2017. Can Geographical Indications Modernize Indonesian and Vietnamese Agriculture? Analyzing the Role of National and Local Governments and Producers' Strategies. *World Development*, 98, 93-104.

- Fournier S., 2002. Dynamiques de réseaux, processus d'innovation et construction de territoires dans la production agroalimentaire artisanale. Études de cas autour de la transformation du gari de manioc et de l'huile de palme au Bénin. Doctoral thesis, Versailles Saint-Quentin-en-Yvelines University, 325 p. + annexures.
- Fournier S., 2008. Les indications géographiques : une voie de pérennisation des processus d'action collective au sein des Systèmes agroalimentaires localisés ? *Cahiers Agricultures*, 17(6), 547-551.
- Fournier S., Muchnik J., 2012. El enfoque « SIAL » (Sistemas Agroalimentarios Localizados) y la activación de recursos territoriales. *Agroalimentaria*, 18(34), 133-144.
- Fournier S., Muchnik J., Requier-Desjardins D., 2005. Proximités et efficacité collective. Le cas des filières gari et huile de palme au Bénin. In: *Proximités et changements socio-économiques dans les mondes ruraux* (Torre A., Filippi M., eds), Éditions Inra, Paris, 163-180.
- Gallaud D., Martin M., Reboud S., Tanguy C., 2012. Proximités organisationnelle et géographique dans les relations de coopération : une application aux secteurs agroalimentaires. *Géographie, économie, société*, 14(3), 261-285.
- Geels F.W., 2014. Reconceptualising the co-evolution of firms-in-industries and their environments: Developing an inter-disciplinary Triple Embeddedness Framework. *Research Policy*, 43(2), 261-277.
- Geels F.W., 2004. From sectoral systems of innovation to socio-technical systems: Insights about dynamics and change from sociology and institutional theory. *Research policy*, 33(6), 897-920.
- Hirczak M., Moalla M., Mollard A., Pecqueur B., Rambonilaza M., Vollet D., 2008. Le modèle du panier de biens. *Économie rurale*, 6, 55-70.
- Hounkonnou D., Kossou D., Kuyper T.W., Leeuwis C., Nederlof E.S., Röling N., Sakyi-Dawson O., Traoré M., van Huis A., 2012. An innovation systems approach to institutional change: smallholder development in West Africa. *Agricultural systems*, 108, 74-83.
- Martin R., Sunley P., 2003. Deconstructing clusters: chaotic concept or policy panacea? *Journal of Economic Geography*, 3, 5-35
- Muchnik J., Requier-Desjardins D., Sautier D., Touzard J.-M. (eds), 2007. Dossier Systèmes agroalimentaires localisés. *Économie et Sociétés*, Série Systèmes alimentaires, AG, 29(9), 1465-1565.
- Muchnik J., Sautier D., 1998. Systèmes agroalimentaires localisés et construction des territoires, document de travail, ATP SYAL, Cirad-Tera, Montpellier, 46 p.
- Nelson R., Winter S.G., 1982. *An Evolutionary Theory of Economic Change*. Belknap Press, Harvard University Press, Cambridge (Mass.), 454 p.
- North D.C., 1994. Economic Performance Through Time. *American Economic Review*, 84(3), 359-368.
- Ostrom E., 2010. Beyond markets and States: polycentric governance of complex economic systems. *American Economic Review*, 100(3), 641-72.
- Pecqueur B., Zimmermann J.B. (eds), 2004. *Économie de proximités*. Hermès,

Lavoisier, Paris, 264 p.

Porter M., 1998. Clusters and the new Economics of Competition. *Harvard Business Review*, Nov-Dec, 77-90.

Prévost P., Capitaine M., Gautier-Pelissier F., Michelin Y., Jeanneaux P., Fort F., Javelle A., Moity-Maïzi P., Leriche F., Brunschwig G., Fournier S., Lapeyronie P., Josien E., 2014. Le terroir, un concept pour l'action dans le développement des territoires, *VertigO, la revue électronique en sciences de l'environnement* [online], 14(1), <<http://journals.openedition.org/vertigo/14807>> (retrieved 1 July 2018).

Schmitz H., Musyck B., 1994. Industrial Districts in Europe: Policy Lessons for Developing Countries? *World Development*, 22(6), 889-910.

Schumpeter J.A., 1934. The theory of economic development: an inquiry into profits, capital, credit, interest, and the business cycle. New Brunswick, New Jersey: Transaction Books. (*Translated from the 1911 original German, Theorie der wirtschaftlichen Entwicklung.*)

Schut M., Klerkx L., Sartas M., Lamers D., Mc Campbell M., Ogonna I., Kaushik P., Atta-Krah K., Leeuwis C., 2016. Innovation platforms: experiences with their institutional embedding in agricultural research for development. *Experimental Agriculture*, 52(4), 537-561.

Sol J., Beers P.J., Wals A.E., 2013. Social learning in regional innovation networks: trust, commitment and reframing as emergent properties of interaction. *Journal of Cleaner Production*, 49, 35-43.

Stuck J., Broekel T., Revilla Diez J., 2016. Network Structures in Regional Innovation Systems. *European Planning Studies*, 24(3), 423-442.

Torre A., Tanguy C., 2014. Les systèmes territoriaux d'innovation : fondements et prolongements actuels. In: *Principes d'économie de l'innovation* (Boutillier S., Forest J., Gallaud D., Laperche B., Tanguy C., Temri L., eds), Peter Lang, Business and Innovation collection, Brussels.

Van Rijn F., Bulte E., Adekunle A., 2012. Social capital and agricultural innovation in Sub-Saharan Africa. *Agricultural Systems*, 108, 112-122.