

Report on Significant approaches to strengthen competitiveness of primary sector

WP3 – act. 3.1 & 3.2



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1. CONTENT

The *Report on Significant approaches to strengthen competitiveness of primary sector* seems to be a synthesis of all the deliverables carried out by partners in the context of various activities planned by the action 3.1 and 3.2 of WP3.

WP3 actions intended to define the modalities through which the Platform of PPs (WP4) will provide support to agricultural and agro-food enterprises in order to reinforce their capacities of being competitive on the market. Through a bibliographic survey, questionnaires and three focus groups we wanted to:

- realize an analysis on economic models, tools and business support programmes which are successful and effective in innovation and competitiveness in other sectors;
- define which of them could be adopted in the agro-food sector;
- define the field of action for the new approaches and services provided by the WP4 Platform.

All PPs realised three focus groups and a transnational survey, but first of all, they were called to achieve a bibliographic survey on the significant economic models, business tools and business support programmes activated in their own areas, by outlining the most successful experiences.

To this aim, on the basis of empirical observations made on the different areas and of the discussions made in the three programmed focus groups, each PP had to self-define the position occupied by their regional area with respect to the type of innovation that is relevant to the platform WP4.

The methodological and bibliographic content of WP3 activity was finalized to draft a conceptual framework about innovation economy and the propulsive factors of innovative behaviors.

This framework outlines the characteristics of *different innovation paths*, and examines *whether they are applicable to agriculture* in different regions of the project APP4INNO.

The general outline of the problem was detailed in relation to the specificities of the different regions that are considered in the project. This applicative work was done through a series of surveys, that were both *bibliographic* (about innovation models in the literature) and *empirical* ones (about relevant experiences and practices).

Besides, a system of distributed *focus groups* on the supply-chain innovative dynamics and relationships (between farmers, distributors, industrial and consumer) has highlighted:

- the delicate relationship between the specific innovations developed at each level of the supply chain and the innovations of the overall system that covers the entire supply chain;
- the weakness of agriculture, in all of the regions, as a result of its historical distance from the processes of industrial modernization. The effects of this distance have been reinforced by the barriers that distribution and food processing still pose to a more direct relationship between agricultural producers and the world of consumption.

2. DEFINITION OF APPROACHES AND METHODOLOGIES TO STRENGTHEN THE COMPETITIVENESS OF PRIMARY SECTOR TO BE PROVIDED BY THE PLATFORM: METHODOLOGICAL AND BIBLIOGRAPHIC SURVEY

2.1 Introduction

Innovation is the main source of value and competitiveness for European economies, which are engaged in a difficult race to reach higher levels of productivity and growth in global markets.

For several reasons, in the past, agriculture has remained quite separate from the general trend toward competitive innovation, which involved mainly the industrial sector and - to a lesser extent, for now - services. With the new century (post-2000) however, this separation became much less important and agriculture began to evolve in order to catch up the general trend of evolution, aligning its development with other sectors.

The analysis to detect and design the *innovation potentials* in agriculture is now increasingly integrated with that of other sectors. In fact, by now, the *value production* in agriculture depends significantly from the *value chains* that link agriculture with the agro-industry (raw material transformation), with the wholesale and retail distribution (relations with the consumer world) and with other services (research, education, logistics, communication, etc.).

Along this trend, some new factors take increasing importance in agricultural value of production:

- 1) a more active role of *consumers*, who assign value to quality, traceability, safety of products, and not just to their price and quantity;
- 2) the special bond that agriculture might have with *sustainability* if it develops production ways that are environmentally friendly, helping – for example - to spread bio-food, to reduce the environmental impact of production processes and to protect environment and landscape from the many dissipative factors that, in the past, have seriously worn them;
- 3) the possibility that farmers organize a set of *new finalizations* of land and of farm activity, for example producing *bio-fuels* or other forms of (renewable) energies, attracting people and activities on the basis of the *superior quality of life*, setting *agro-touristic facilities and services*. It is also possible to design new models of farms, that couple agricultural activities with a growing educational role, about everything that is related to the natural world or the history and local culture. This role could offer a valuable field of experience, especially for children and young people that have experienced the iper-artificial way of life, in our large urban centers.

European policies, too, are moving towards the recognition and promotion of this *more complex and interconnected role* of farmers activity. Thus, the agricultural innovations have become more and more cross-connected between various specializations and finalizations, linking together agricultural and non-agricultural

sectors. So, this kind of innovation links value creation to a *differentiated and integrated system of complementary resources and actors*:

- the *supply chain as a whole*, with its network of critical relations between farmers, food processors, distributors, consumers and vertical integrated big players;
- the *social, economic and financial context* of each region, with its special history, culture, natural environment, educational and research institutions, finance and banking system;
- the *normative, regulatory and bureaucratic frame*, with policies and conditions that can foster, but also - often - stifle innovation in various ways, very different from case to case.

In APP4INNO project this evolutionary change in the nature of agricultural innovation was translated into a methodology that is initially devoted to examine trends and tools of the *innovation in general*, proceeding transversely with respect to different economic sectors.

Within this general framework, the WP3 takes into account the specificities of *innovation in agriculture*, seeing the reasons of uniqueness that characterize agricultural production and its particular sources of value creation.

2.2 A variety of possible innovations

Due to growing competition pressure, over the last few years, innovation is viewed, in almost all European economies, as the primary force that enables each regional and national system to react to the long and deep 2007-12 crisis.

That is the reason why managers, investors, consumers, workers, and policy makers *all speak about innovation*, underlining its necessity, its advantages, and the obstacles that have to be overcome to have substantial results from innovative actions.

But the multiplication of the fans of innovation, that is so chorally and emphatically invoked, has produced a *very large range of meanings* for the same word. This semantic ambiguity has created a bit of confusion around the idea of innovation that is suitable for different contexts of action, and – in particular – in present and future agricultural activities.

As a matter of fact, innovations are not all the same. On the contrary, they are different, and, sometimes, very different from each other. How to measure and frame their set of possible variety?

From the point of view of our project, each innovation was considered for the *potential of economic value* that it is able to produce to the benefit of final consumers, and - backward – of the several producers operating in the supply chain.

Thus, according to this meter of measure, there is *innovation and innovation*: the relevance of a particular innovation for competitiveness and value creation can be very evaluated in its relevant distinctiveness, from case to case. As a first step of the WP3, we identified the variety of innovative ideas and practices that can be detected in the different regions and in the various agricultural and agro-food enterprises to be considered.

Consequently, we asked what innovations are able to generate a significant potential of economic value and which, on the contrary, while being useful and perhaps profitable, only have an effect on the micro level, but become hardly effective on the macro level.

In order to select the innovations with the *greatest potential for value*, the starting point was the recognition that we can observe, in real economy, two very different types of innovation:

- a) a first type of innovation that can be reduced to a more or less complex *adaptation of current behavior* to the exogenous constraints of the crisis, managing, in some way, the slowdown of quantities, prices, market shares and connected profits. In this case innovation induces changes in production programs, organizational schemes and financial and investment plans with the aim to survive and, if possible, to recover the previous business model of the firms. The current target of changes that are designed by each firm is to adapt productive and financial programs to a lower and more uncertain demand;
- b) a second type of innovation that, on the contrary, implies a *shift toward new business models of firms, often associated to remarkable changes in their supply chains and in the structure of social and economic context* (public policies, institutions, human capital, R&D, infrastructures, technological platforms, business services, consumer behavior etc.). In this case, innovations *are connected in a flow of interdependent changes*, enhancing a *general transition* from an old paradigm of production and life to a new, emerging, paradigm.

The first type of innovations is a direct consequence of external constraints: it does not imply that firms have a subjective attitude to innovate. In the second case, on the contrary, the change cannot go ahead if entrepreneurs, managers, policy makers, distributors and consumers remain inertial, instead of consciously embracing the exploration of new possibilities.

2.3 The historical stratification of different cultures of innovation

The trend which directly moves the focus of competitive firms from the first to the second form of innovation is the shift from the previous *technical and production paradigms*, which we inherited from the last century, to the new innovation features that are characterizing our age.

Innovation has always been the driving force of *modernity*: since the industrial revolution of eighteenth century, economic and social change was led by the different uses of knowledge in production. Many of the forms of organization that even today, we see in the various fields correspond to ideas and habits inherited from previous paradigms:

- a) *Merchant Capitalism* that has emerged at the beginning of modern era, during the nineteenth century;
- b) *Fordism*, i.e. the organized capitalism of the large enterprise and of welfare State, which has prevailed in last century (until 1970);
- c) *Flexible Capitalism* of clusters and SMEs, that emerged in the last decades of the XX century, filling the gaps left by the crisis of Fordism.

Each of these paradigms has experimented and developed its own unique way toward innovation:

- a) *Merchant Capitalism* of the XIX century used the *machines* and the *expansion of markets*. In this way, firms' main innovations aimed to standardize products, substitute labor with machines and, in this way, increase physical productivity. As a consequence of mechanization of many processes, finance became crucial for innovation and competitive surviving, while labor was reduced to be impersonal and executive, and social ways of living were more and more standardized. So, all production and consumption models underwent substantial changes with respect of pre-modern era;
- b) *Fordism* of the twentieth century (till 1970), introduced substantial changes in the direction of innovations. First of all, it extended mechanization to complex operations, creating large systems of specialized machines and developing organizational innovations in the management of companies of large size. Each of these big companies managed a long chain of sequential operations and main innovations of this period were addressed to create this production line: specialization, vertical integration of the supply chain, high standardized volumes and significant investments in brands and marketing. Besides, finance, command and R&S were centralized. So, innovations were programmed from the top of the organizational pyramid and dictated to employees at the base of the pyramid;
- c) *Flexible Capitalism* of clusters and SMEs, in the last decades of the last century, developed innovations aimed to make the organization of business lean and flexible, focusing on core business activities and outsourcing a large part of production and of competences. This fueled the growth of a multitude of small and medium-sized enterprises, as well as self-employed workers (contractors, artisans, consultants, vendors). So, the supply chain was extended well beyond the boundaries of the individual firm. The main innovations of firms took the direction of vertical disintegration. In many supply chains a significant portion of the production has been decentralized to specialized providers. The variety of products sold grew and the life cycle of each model has been greatly shortened. In this paradigm, new spaces were opened for business initiatives of thousands of SMEs, which joined in local clusters, to produce a particular article (chairs, furniture, clothes, shoes, jewelry, tools, etc.) through mutual specialization and interdependence. Users began to have a central role in changing need and sense of products, fostering innovation toward a flexible and interactive response to demand.

All these forms of organization of production and enterprises, however, are losing their previous driving force, due to the emergence of the new paradigm of our time: *Global Capitalism of Knowledge*. In this new paradigm value creation depends on innovations that exploit the power of the *two large waves* that are shaping the way we live and work:

- The *globalization of markets*, which greatly increases the value of business ideas and specialized knowledge, multiplying users and applications of each product in a larger and larger basin of demand;
- The *dematerialization of value*, which takes advantage of the new ICT technologies, meanings, experiences, services.

Contrary to what usually is said and think about it, the global economy does not operate in a flat world, but is, instead, an *economy of differences*. In fact, it creates value by *networking and transferring codified knowledge* (science, technological devices, machines, software, organizational procedures and information packs), in order to

take advantage of the large differences in production costs and in technical, professional, cultural, political capacities that exist in different areas of the world.

Besides, global interconnected economy is an open and large market for good ideas. In this large market, users (final customers, or business clients) can find not only the most efficient answer to their *needs*, but also the more the most seductive stimulus to their *imagination*, as they can demand to global supply chains an interactive and creative support to pursuit their *desires* of welfare, identity and quality of life.

Also for agricultural products, a thick flow of *soft innovation* is now shifting actors' mental landscape from the world of needs to the – vast and unpredictable - world of desires.

Customization, e.commerce and crowdsourcing feed the exploration of new frontiers and possibilities for a variety of producers, while – in many fields - social networks of users builds, through their loyalty, the strength identity and reputation of brands. Therefore, a growing number of innovations are shaped by the interaction (via ICTs) with suppliers and consumers, creating value and competitive advantages in global supply chains.

A variety of networks connects the processes of globalization and dematerialization, serving big multinationals but also a multitude of SMEs. Through extended supply chains, innovations are projected and implemented by *collaborative networks between suppliers and customers*, together with research center, educational institutions, distributors and service structures. Interaction with final consumers is managed by *ICT links* and *social networks*, on the web, aimed to customize, enrich, appreciate the ideas that can result from reciprocal interplay. Technological poles and alliances preside innovation on the scientific-technological frontier. Besides, in each region, a network of connected intelligence links researchers, innovative entrepreneurs, startups, advanced services, education activities that generate and utilize critical embedded knowledge.

Consumer world becomes an active protagonist of social innovation, because it feeds the process of co-creation of products and meanings with an offer that tries to be more responsive to the needs/desires of the users. Moreover, social networks and web communication give rise to many surprising forms of collective intelligence, that are able to progressively change cultural views and habits.

Thus, the innovation fueled by producers is accompanied by an equally important innovation that is promoted by users, whether industrial/agricultural transformers or final consumers (Von Hippel 1976, 2005).

This type of network collaboration of several actors, inside the supply chain, allows each SMEs to specialize in a particular function (its core business) and invest in it, while having access - thanks to the network - to the multipliers of scale required to compete in world markets.

In the logic of the so called "*open innovation*", large networks of enterprises and competences can take advantage of the knowledge and capabilities that are *distributed* among many actors (of large or small size), at the condition that:

- 1) each node of the network must be able to *access* the knowledge of the other, thanks to the fact that it is equipped with a sufficient *absorptive capacity* (human capital, R&D, technical languages and codes). Obviously, the access is conditioned to mutual trust and stable links within the network;

- 2) through accessing to a wide and diversified range of skills, the network of open innovation allows each enterprise to *co-innovate*, developing solutions more creative and flexible than it could do individually. Cooperation habits, shared knowledge and common languages are the tools to be used in order to implement successfully co-innovative projects;
- 3) the network is a big *multiplier of value* for all firms, because each can specialize in a limited range of business and knowledge. Thanks to the network of open innovation, specialized producers can rely on several customer to serve, with the consequent economies of scale. This result requires specific tools as modularity, quality certification, brands, interaction with users, distributors and final customers;
- 4) networked firms can invest in specialized capabilities and share them with the partners of an open circuit of innovation only if they maintain some *control* on the changes and uses of their knowledge in the supply chain. This control in many cases has a fiduciary basis but in others requires formal agreement (licence, franchising, alliance, joint ventures etc.) and collaboration engagements.

In other words, open innovation can be a good idea, but it needs some necessary tools, that cannot be missing: an investment in human capital and R&D, common languages, modularity, brands, joint ventures etc..

In this period of transition, innovations are enhanced by significant changes in the organizational forms of enterprises, while supply chains are changing in order to comply with the new requirements of globalization and de-materialization paradigm.

As a matter of fact, large companies (especially multinationals) are building global supply chains through which they considerably expand their final markets at a world scale. Primary innovations, in their strategies, are the building of direct commercial networks and of appealing brands in different countries, the realization of distributed production chains, through direct investment in many low cost countries, and the implementation of global outsourcing networks, operated by foreign suppliers.

On the other side, small and medium-sized businesses are engaged in strategies that aim to upgrade quality and reputation in their market. Many of them are creating global networks that allow each producer (a particular firm or place) to differentiate and specialize, in order to strengthen distinctive qualities that can be recognized and appreciated by a larger number of potential users in international markets.

2.4 Innovation in economic models: the signs of aging

As we see, the nature and logic of innovative behavior changed considerably during the different periods of modernity. And this evolution of the innovations, in real economy, implied a parallel development of different theoretical representations of the phenomenon.

As we said, the innovation that occurred within the Merchant Capitalism in the nineteenth century was due mainly to the propagation of machines and the replication of knowledge embedded in them. But machines require a substantial capital investment to be built and put into operation. So, the productivity of machines was attributed to the capital needed to buy them, rather than to innovation and to knowledge embedded in them. Innovation, in other words, was reduced, in fact, to an effect of capital accumulation. If accumulation grows, the number and power of the machines increases and, with him, grows the resulting productivity.

In fact, only at the beginning of the XX century, innovation is explicitly taken into account by the theory, in a way that is clearly distinct from that of increasing returns of capital accumulation. In its initial formulation, due to J. Schumpeter (Schumpeter 1912), innovation arise from all the choices that generate a differential profit (with respect to the condition of competitive equilibrium of the market).

Innovation calls into question a “productive factor” of new type, very different from labor and capital: entrepreneurship. In a firm that operates on the market, entrepreneurship can be defined as the attitude of some people to experiment with new solutions or tools that go beyond the “optimal” equilibrium already internalized into market prices.

The (entrepreneurial) innovator is not the (technical) inventor. The behavior of the innovator is not dictated by technology (or technical), but by the pursuit of a differential profit that can have many different forms (new organizational structures, a change in materials, the search for new markets, etc..). However, even in this initial formulation, innovation was not easily reducible to the logic of neo-classical economic theory which, since then, remained the main stream of political economy.

In fact, following neoclassical approach, the Schumpeterian theory of innovation works as a disturbing factor of the market and price equilibrium. Schumpeter himself was quick to neutralize that disturbance, providing that the differential profits due to innovation were only temporary: an exogenous turbulence that market adjustment would have reabsorbed over time, through imitation and competition. So, if the differential profit due to innovation is reset during the time, every time the play start again, as the Schumpeterian innovation is a memoryless process . A process in which those who have innovated the first time have no particular advantages, in respect of the other, once it comes to making a second innovation.

Thus, at the beginning of XX century, innovation was a double-face phenomenon: *endogenous changes* were dependent on capital accumulation (i.e. intensified mechanization), while *exogenous changes* were due to people entrepreneurship. This second type of innovation was unpredictable, but - once it has occurred – its effects were a differential profit (for the innovator) in the short run, and a productivity gain for general economy (through imitation and lowering price) in the long run.

It was a precarious solution. How could be possible to insert an exogenous variable (the unpredictable entrepreneurial innovation) in a deterministic system - the equilibrium economy - in which all behavior ought to be perfectly predictable, in order to achieve - in fact – a stable and calculable solution?

But there was no time to think about how to overcome this weak point in equilibrium markets. Just as Schumpeter wrote about his concept of innovation, Frederick Taylor and Henry Ford were developing a revolutionary new paradigm of production (the Fordist factory), that could easily do without equilibrium markets. If anything, for the new paradigm, the problem is the *control* of innovation: how to ensure that no (exogenous) innovation could have de-stabilizing effects on oligopoly agreements and alliances.

In other words: innovation must be (somehow) made endogenous, in order to maintain the stability of oligopolistic order. There were two ways to accomplish this task:

- internalizing innovation through *proprietary R & D*;

- differentiating firms on the basis of their *economies of scale*.

Both were followed.

The first path "domesticated" innovation making it dependent on *R & D investments*. Since corporations were the strongest investors in this field, there was a good chance that they were also those with the greatest capacity for innovation. So, it was very improbable that innovation (through R&D) would significantly alter the hierarchy of standing oligopoly positions. Even J. Schumpeter - in his late age (Schumpeter 1942) - seems, at some point, to accept this point of view. Remaining reluctant, however: because a perspective that makes the power of leadership not yet controllable, limits competition and hampers the physiological working of classical capitalist engine.

The second way of neutralizing the destabilizing power of innovation was found through the *entry barriers*, created by the greater *economies of scale of leading enterprises*.

Economic theory of markets and competition was adjusted in this sense, to take account of the stabilizing power of selective entry barriers, in connection with the presence of economies of scale. In fact, a successful innovation creates a not controllable scale advantage for the first comer, because the higher sales resulting on the markets allow him to invest more funds in R&D, having – in the same time – a greater rate of return, in comparison with the late comers. So, the competitive model that it follows creates that the distance between the leader and the followers cannot be reduced. So, the oligopolistic equilibrium is usually maintained in favor of larger competitors, which could be – by definition – also the more innovative players.

Moreover, during the golden age of Fordism (1950-70), the static theory of economies of scale was progressively changed in the dynamic theory of the (continuous) *growth of the firm* (Penrose 1959, Marris 1964). In this view, there is no limit to the growth of firm size, because each firm has many reasons (managerial, economic, financial) to assume growth as its primary goal.

The consequent trajectory is that leader enterprises are stable and sure in their positions of control, along their growing trajectory. Innovation does not disappear from view, but is transformed into a *routine* of innovative (normal) behavior (Simon 1955, 1982; Nelson e Winter 1982), so that the general rule of market system becomes the maintaining of stability (Galbraith 1967).

Innovation thus becomes a *dependent variable* that is activated from time to time whenever it is necessary to correct eventual deviations, in order to *maintain the stability* (in the vision that is inspired by the *system theory*) or to *fill the gap* created by the uneven evolution of the markets (from the perspective of the *evolutionary theory*).

As the story progressed, the situation changed abruptly in the real economy. Since the early seventies, the *growing complexity* (variety, variability and indetermination) of economic and social world sharply contrasts with the *rigidity* of the Fordist system of centralized control in large organizational pyramids. But when – after 1970 - the control goes into crisis, because it becomes impossible or too expensive, they lose credibility also the two key principles of Fordism mature: the *stability* principle (which proves impossible) and the *indefinite growth* of big business (which turns into downsizing).

The growth of complexity was recovered after the seventies, mainly through two new main adaptation of previous practice and theory:

- a) the discovery of the irreducible *individuality* of the enterprise;
- b) the enhancement of the unique *local contexts* in which these enterprises are organized and operate.

The first concept (the individuality of single firms) is quite obvious in the seventies, after half century of Fordism. But it is not at all new. Already for a long time, Fordist large firms could not be considered to be standard firms, tending to a common "one best way". Each of them was instead endowed with a specific position, history, strategy.

It was an obvious fact for the practice, but this was not enough to penetrate in the theory, since even in the fifties and sixties theories of oligopolistic market were built considering "the firm" (in general), as if the firms were interchangeable with each other. In this sense, managerial thought, based on practical experience, had achieved this result long before than theoretical market economy. Simon's concept of limited and procedural rationality (Simon 1976, 1982) and Chandler's comparison of different strategic and organizational trajectories (Chandler 1962, 1964, 1977) are based on the idea that large systems follow specific and different evolutionary paths, that have to be examined case-by-case, in their distinctive difference.

Michael Porter is the author who has most emphasized the fact that the market is not an empty and standardized space, but is inhabited by firms that

- are irreducibly different from one another, with regard to experience, capabilities and strategic vision;
- are irreducibly linked to their specific context by an history of relations, communications, engagements, resources.

Complexity arises from this unique combination and integration of individualities that are temporarily connected by various competitive markets.

The *theory of competitive advantage* (Porter 1985) identifies the competitive *position* of the company as a function of a set of variables that enhances the differentiation among the pursued strategies and possible innovations.

The firms, says Porter, is not an indivisible unit, but is structured in a value chain that includes different functions. Similarly, its overall *value system* connect different external actors, linking the firm to suppliers, customers, and consumers.

The other way to catch the complexity of post-1970 economy is the intuition that value chains are embedded in (unique) *local contexts*. Innovation stems from the interaction between firms and local contexts that supply entrepreneurial culture, human capital, social knowledge, industrial "atmosphere", financial sources, and localized resources and identities.

Since the seventies, the discovery of local contexts gives rise to another story of innovation, in two senses.

First of all, small and medium-sized firms become the protagonists of production and innovation, because the local system makes them available the additional resources necessary for their specialization.

Secondly, this new attention for territorial context reveals the role that, in value creation, have eco-systems that overlap personal intelligence to the impersonal structures of technology, finance and manufacturing standards.

In Italy these localized theory make visible the so-called "distretti industriali" (from Marshall "industrial districts"). Giacomo Becattini (Becattini e Rullani 1996, Becattini 2001, Becattini, Bellandi e De Propris 2009) e Sebastiano Brusco (Brusco 1982) create a body of literature on how to live, work and innovate in a local context that is rich of entrepreneurial culture, social knowledge, local rules and institutions.

But the idea of *local specialized clusters* is some evidence in all countries (Piore, Sabel 1984, Porter 1989). This changes the perspective from which the innovative processes are viewed. The innovations are not yet self-made by a single entrepreneur or a single firm, but descend from social interaction and collective intelligence, including certain peculiar qualities of the territory or of men and firms who live in it.

The economic models of innovation theory are still changed in the last twenty years, when the Global Capitalism of Knowledge, the new paradigm of our times, began to emerge, with its special features.

The accelerated development of the so-called "new economy" during the nineties (Kelly 1994, 1998, Benkler 2006) and the fall of the Berlin Wall inaugurated a different way of thinking.

Local clusters and "distretti industriali", that were previously thought of as *self-contained systems* (their open side was only aimed at exports) have now become part of the global economy. Clusters maintain some of the previous activities and functions, but only in the case they have some local advantage over other locations, in the global supply chain.

Multinational companies too are changing their attitude toward their subsidiaries and suppliers that are scattered in many different countries of global economy. The trend is to give more relevance and autonomy to local units and clusters, and to interact with them in order to find a shared way to innovation and efficiency. Value production has to be thought as the co-creation of a shared value (Porter, Kramer 2011), by a set of different "partners" of global value chain. Innovation stems from collaborative behavior and from a common assumption of responsibility.

The distance that globalization and de-materialization establish with the past has fostered the emergence of the concept of *paradigm*, understood as a coordinated system of value production that uses materials of the past but by placing them in a new order, looking at the future.

In the theory of the long waves and of the *technological paradigms* (Freeman 1984; Dosi 1982; Di Bernardo, Rullani 1990), a new paradigm arises from a radical innovation that create a great potential, generating a flow of derived innovations in the long period. Each paradigm has a trajectory that is defined by this expected potential, but the full exploitation of this potential requires that the coherence of the system is gradually built, over time.

The paradigm system is an engine that works by mobilizing all its parts: not only the technology, not only the research, but also the connective resources that govern its coherence, the consumer behavior, the ideas that drive through the collective intelligence, the rules institutions that organize it. This ordering and building process proceeds from an initial state of disorder (mis-matching) toward a trajectory of increasing coherence among the different parts (Freeman, Perez 1988). The trajectory is a path to generate a flow of derived innovation at the four levels we have considered; eco-system, supply chain, products and processes.

When innovation is viewed in this way, the attention is on the *potential of value* that can be extracted by an extended network of firms and other operators, if they are willing to join each other in order to play this evolutionary game.

If an innovative idea has a potential value that is three or four times greater than the value that it produces in its current applications, this means that - from the point of view of the employed knowledge - the exploration of the new through *generative knowledge* matters, but less - perhaps - than the *propagation of replicable knowledge* (products, devices, solutions) that can be put successfully in place. Therefore, the core of this value engine, in our century paradigm, is the extraordinary energy of *replicative knowledge* (Rullani et. al. 2012).

Innovations are fuelled by the sharing some links and networks that allow enterprises to access an extended range of replicative and generative knowledge, at a low cost and in a short time (Nonaka, Takeuchi 1995). The present knowledge economy, through these economies of access, can innovate better and more than previous paradigms. And can multiply the value created by each good idea or solution (Foray 2000; David, Foray 2003).

Consumers and users have an active and dynamic role in this type of competences (Von Hippel 2005) and can contribute with their experiences to define the application and services del the product (social networks, reputation, crowdsourcing etc.) (Lundwall 1985). Value production stems from knowledge replication, but also by the possibility that producers and consumers realize a process of *worldmaking*: a world that is created through the sharing of some driving idea about life style and work sense (Rullani 2004, 2010).

2.5 Developing the full potential of each innovation: a long and complex path

As a matter of fact, in a growing number of cases, successful innovations catch the energy of the changing waves that are associated to the emerging paradigm. They are linked to a trajectory, that connects - over time - the successive applications of the same breaking innovation (Dosi 1982, Dosi, Freeman, Nelson, Silverberg, Soete 1988).

Previous types of innovation are weakened, new types of innovation are reinforced. Summarizing It follows that:

- A) each innovation should not be considered by itself, separately from their context, but *must be situated in the specific space and time* to which it belong;
- B) the *potential value* that it can gradually create, over the years, depends on its ability to catch the energy of context transformation. The potential of innovation associated to old declining paradigms of XX century is notably less than that which can catch the growing energy of the transition toward the

- new emerging paradigm (the Global Knowledge Capitalism);
- C) with regard to innovation difficulties and results, *geographical contexts* matter. In fact, they can be very different from each other and, generally, do not change at the same speed over the years. So, in our project, it is necessary to carefully examine the situation of the specific sector and country (or region) in which innovations should be promoted through the use of the platform WP4.

In this way of seeing things, innovation can be defined as “a systemic, interactive and evolutionary process”. Networks of organizations, together the institutions and policies that affect their innovative behaviour and performance, play a crucial role as they bring new products, new processes and new forms of organization into economic use (Nelson and Winter 1982, Nelson 2008, Lundvall 1992, Edquist 1997).

2.6 Agricultural sector: the (possible) advantage of the latecomer

Agricultural innovation creates its value through a complex ecology, whose center of gravity is the agro-food chain. This chain can be defined (Saccomandi 1999) as the “set of economic, administrative and policy actors” that, directly or indirectly, participate in the path that an agricultural product follows, from its production to its utilization, as well as the complex of interactions generated by actors’ activities steering the mentioned path.

Innovation policy and promotion in agriculture has considerable specificities compared to other sectors of modern economy. For various reasons:

- 1) the traditional CAP model has so far selected patterns of behavior and operational structures based on parameters of choice that were far from innovation and competitiveness. Since the CAP has taken a decisive turn towards innovation and competitiveness (Lisbon Strategy, 2000; Gothenburg Agenda, 2001) we need to fill a relevant gap between the prevailing entrepreneurial or political culture and the new demands/opportunities for innovation. All the new goals of CAP (dynamic knowledge economy, sustainability, environmental values etc.) have to be attained through the growth of innovative and competitive production systems;
- 2) in farming, tradition and the continuity of familiar lifestyles have more weight, than in the case of industrial and tertiary sectors. Consequently, in the agricultural sector, the presence of *inertial* companies is generally greater than that found in the other sectors of the economy (in the agricultural system of Veneto region arrives at nearly 60%) (Veneto Agricoltura 2012, par. 2.4);
- 3) in many countries farm sector is more fragmented and dispersed than are other sectors. Moreover, they generally have weak contacts with research structures, final markets and consumer behavior that are crucial for enhance changes in their supply chains. Hence, the role of associations, local communities, research and education centers, financial structures and policy makers is very important to promote innovations and new behavior styles of individual firms
- 4) farmers generally have a very limited power of initiative and influence on their supply chains (upstream and downstream), in comparison with other players in the sector (agro-food industry, other manufacturing operators, large distribution, retailers, big and small users, policy makers). Therefore, it is quite natural that they take *an adaptive and not proactive*, in order to face the major changes induced by the present transition. For the same reason, agro-industry and large distribution firms have significant opportunities to influence the choices of farmers with whom they come in relation;

- 5) soil chemical composition, water regime, sun exposure and climatic factors, distance from population centers and channels of communication make unique and scarcely imitable every place and every process of agricultural production. Therefore, in assessing the possible innovations in agriculture, it is necessary to consider the fact that agricultural production techniques may be less standardized than what happens in other sectors of the economy. This can be a disadvantage when farmers plan to apply the techniques of mass production, but may instead be an advantage if they choose to develop quality products, distinctive brands (of single firms or areas), special processes and customized products. The uniqueness of agricultural production makes it difficult to imitate and therefore more rentable in markets other than those of mass production.

These features make the dynamics of the agricultural system of the innovations quite different from that present in other areas .

Small-scale farmers are in most cases marginalized due to their difficulties of access to smart technologies (including irrigation), and good quality seeds. Lack of access to capital markets, credit and information about both growing conditions and markets are also domains that marginalize small-scale producers (Scoones et al. 2009; Dixon et al. 2001).

Consequently, in the agricultural sector are still prevalent inertial or adaptive behavior. But even when we are dealing with innovative decisions and behaviors, the major role is played by innovations that are weakly connected to the emerging paradigm of our time (the global capitalism of knowledge). It is rare that an agricultural firm consciously programs a growth path that leads towards the advantages of globalization and dematerialization, which characterize the transition in progress.

As a matter of fact, the most frequent innovations are linked to machinery, and to the use of technological devices that are produced by big suppliers. An increase in mechanization of processes, the availability of new fertilizers and seeds, or some non-usual customer order trigger innovations that, however, strictly depend on exogenous sources.

Often innovation practices are limited to adapting farm behavior to this line of *hard innovation*, ignoring almost completely the opportunities of (possible) *soft innovation*: new ideas and applications, product customization and customer services, quality upgrading, supports for marketing and sales, immaterial investment on communication and brands, co-innovation with customers and suppliers, etc..

From this point of view, agriculture appears as the *latecomer* in the innovation evolutionary process that characterizes the modern economy. It fairly internalized the techniques of the early modernity (machines), but – with few exceptions – it had limited experience of Fordism and of Flexible Capitalism, the two dominant paradigms of the twentieth century.

Many of the innovations that are now emerging in agriculture are mainly intended to recover the gap compared to the classical models of innovation. So, they are often suited to forms and ideas consistent with old paradigms, that already started on the decline and – consequently – nowadays have a very limited strength in value creation and open competition.

For the latecomer, the prospect of retracing every step of a path that others have already done, can be daunting: it may still be a run-up that is done late and at reduced speed.

But the latecomer – agriculture, in our case - may adopt a *different perspective*: the one that allows him to skip the previous steps and to develop innovation that are able to catch the energy of the transition in progress.

The access key to enter this new perspective is a *valuable investment in the globalization of source and sale markets and the de-materialization of services and experiences for the customer*. For example, an agricultural firm could invest in building networks of collaboration in the supply chain (upstream and downstream) and develop an interactive relationship with the consumer world, thanks to new ideas and meanings summarized in a brand. Last but not least, it could expand his market of sales through trans-national channels, employing ICT for e-commerce sales and upgraded reputation.

This switch is difficult because it is necessary to jump the gun. But it can make the difference. In this choice, the latecomer can have some advantage with respect to leaders and other followers: he has not to get rid of the culture and pre-existing assets of the previous paradigms. Therefore, he could realize - if it dares enough – a faster and less expensive evolutionary leap to the new.

2.7 Innovation follows the general paradigm wave, but it still remains a situated process

As we have said, innovation happens in a context that is localized in space and time. It is, thus, a form of "situated learning" (Lave and Wenger 1991). If innovation is a "situated" phenomenon (in time and space), WP4 platform, which aims to promote it, ought to approach the specific characteristics of each territorial context and get closer to existing companies. In other words, tools and policies of WP4 platform can correctly work only if they will adhere to the wide variety of existing conditions.

In the survey that will be done in WP3, it is therefore essential to position and differentiate the various situations encountered, depending on the ability of various firms (places, sectors) to generate innovations and on the peculiar obstacles that innovative strategies encounter in specific regions and specific enterprises.

On the basis of empirical observations made on the different areas and of the discussions made in the three programmed focus groups, each PP must self-define the position occupied by their regional area with respect of the type of innovation that is relevant to the platform WP4.

In particular, each group will need to:

- 1) distinguish, within the regional average, between the most innovative firms (places, sectors) and the less innovative or completely inertial ones, evaluating the different positions that result from this analysis;
- 2) examine the interdependence in innovative practices that exist between different links and actors of the various supply chains connected to agricultural activities, highlighting those who can be considered the most dynamic players and those who obtain the maximum in the distribution of surplus value produced by their chain;

- 3) outline the role of the distribution and consumption behavior in relation to the main innovations that can be observed in local agro-industrial supply chains during the last three years;
- 4) analyze the role of human capital (entrepreneurship, technical skills, research and education, practical skills and crafts) and supply chain relationships (multinational corporations, testing and certification, small and medium enterprises, local clusters, large distribution chains, small retailers etc..) in creating the conditions for innovation;
- 5) consider the efficiency of the connective resources available to the agro-industrial supply chains (logistics, wholesale and retail markets, communications systems, territorial brands, quality certification, technology interaction with the consumer etc.);
- 6) examine the relationship between the magnitude of the market (and, in particular, of the export market) and degree of innovation of business behavior at different levels of the supply chain;
- 7) evaluate the potential of some innovations that have been carried out by local companies innovative during the last three years, considering either the direct effects or the successive flow of derived innovations that may be drawn or generated by the ongoing transition to the new paradigm of production;
- 8) indicate the obstacles that exist today, for firms (places, sectors) for the development of innovative new ideas, their experimentation and the full use of their potential over time;
- 9) identify the handicaps which, if not removed, can prevent certain firms (areas, sectors) to win the inertial resistance to innovation or to overcome existing obstacles;
- 10) consider the tools and policies that have so far proven to be useful in overcoming the barriers to innovative firms or to remove handicaps, widening the range of companies in innovative practices.

2.8 Value creation: innovation is a flow, not a single act

The essential function of innovation - that the platform WP4 must support - is the creation of value by the productive supply chains to the benefit of a plurality of users (consumers, local communities, government). However, only a part of the total value generated by an innovation is created in the (single) firm that experimented and introduced it. Most of the value is in fact created through:

- horizontal diffusion, as the innovation is licensed to other firms or is imitated by competitors;
- vertical alignment of the various functions and stages in the supply chain, which over time change in order to reflect more accurately the needs of the new product or process introduced by the innovator;
- gradual adjustment of *the overall external system* (consumption, distribution, research, education, professional skills, services, logistics, infrastructure, local culture, institutions, rules and standards of conduct etc.). All these functions can progressively adapt to the opportunities and needs of the innovation process that takes shape around them.

In fact, even if the innovation is born within a single firm, we must consider the fact that the creation of value is implemented in a much larger eco-system, which includes suppliers, customers, workers, consumers, services, institutions, etc.. This eco-system includes not only the stakeholders that can have some influence over the firm but also all the actors that provide resources, investing, make commitments and ask, in turn, to meet tacit or formal commitments toward the neighbors.

The division of labor provides the advantages of specialization, while creating mutual interdependence. So, in the course of time, each part of the system changes its structure and its function to meet the presence of the others, in order to exploit the synergies of the system. This is the way they can build genuine *ecologies* in which each specialized part is transformed so as to have functions and skills integrated with those of the other parts.

When one of the components of this eco-system introduces an innovation of some importance, its effect is to create - almost initially - a situation of mis-matching because the behavior of one of the pieces of the puzzle changes without the others are aligned. At this early stage, there is usually a gap of coordination: for example, consumers may lack in the ability to recognize the new product and to consume it in the right way; the logistics may be not suitable to deliver a new product on time and within right ways; certification of its quality may lack; local specialist suppliers may be unable to produce the components and services required, etc. ..

When this happens, an important part of the *potential value* from innovation remains latent, and may not result in an immediate increase in utility for the end user, and corresponding benefits for the firms of the supply chain, in terms of higher revenues and profits.

In response to this initial mis-matching, the eco-system begins over time to align its functions and re-formulate its vertical supply chains, as they go along horizontal diffusion processes for license, share or imitation. Slowly the potential value that was initially latent emerges and, through this adaptation process, the initial innovation is displayed in all its relevance.

2.9 Changing business models

This scheme helps to assess the relative importance of innovations that are taking place in the various regions of the project INNO A4. Besides, it gives some indications about the most valuable innovations that are possible or under experimentation. The same schema highlights, for each type of innovation, which are the more suitable tools to be selected and promoted in the platform WP4.

The main idea it suggests is that innovation becomes a self-generating phenomenon if its realization and propagation changes the business models of the innovators and the connected productive system.

The business model of each company defines the conditions that generate and defend the competitive advantages of each enterprise, resulting in a profit enough to make sustainable the investments made for its building, over time.

Innovation can durably influence the business models of the involved firms if the induced flow of its effects imply a major transformation of the competitive advantages over other firms.

In this regard, it is necessary to distinguish innovations in two classes, depending on whether they are:

- radical, that open new perspective in a certain field, leading to some radical change in production and consumption practices;
- incremental, that extends the scope of previous innovations making a few changes of detail.

Radical innovations are few and difficult to realize. They have an extended life cycle and, in the course of time, often generate many derived innovations of lower extent whose final effect is a substantial change in the business models of many enterprises of the supply chain.

However, most of the entrepreneurial ideas innovations are only incremental: they can be projected and realized through a limited investment and risk, but have a scope and a duration that are also limited, without any substantial change of the business model of the innovator and of the value system around.

The result of a flow of interconnected innovation can be very different according with the position that a specific innovator has in the flow of subsequent applications and imitations, stemming from an original and early breakthrough, occurred in some other part of the world (Mytelka 2000). From this point of view it may be useful to distinguish among innovations that are:

- new to the world
- new to the market
- new for the enterprise

If an innovation is new to the world (an idea or solution that is absolutely original all over the world) its potential can be very great, but this perspective is mainly about the future. On the contrary, if an innovation is new only for a specific enterprise (but well known to the others) its potential is low, even if the innovator (or the imitator) can remedy a gap or gain some profits in the short run.

In our transition, the ideas and solutions that can be considered radically “new to the world” are few and fewer still are the ideas and solutions that can have this quality within territorial and sectorial contexts that have some element of delay or backward on the progress of the frontier of global innovation. But, even in these cases, it is necessary to compete with projects that can go beyond the mere imitation of what the market and the world already know. In order to successfully compete in the new paradigm of our century, it is possible also proceed by focusing on many innovations that are new only for the enterprise, but – also in this case – it is very useful to search in some additional element a source of differentiation or novelty, with respect to the market and/or to the world. For example, the late innovator could concentrate its efforts on a particular niche of the market or on some requisites of quality, that are new for the market or, in certain cases, for the world (high performance, regional roots, territorial or entrepreneurial brand, strong reliability, customized design and services, special distribution channels or devices, new symbolic meanings, communitarian links and identity etc.).

This differentiation strategy can be applied to:

- *the process*
- *the product*

- *the supply chain*
- *the eco-system.*

Almost always process innovations are standard form of hard innovation (mechanical tools, fertilizers, pesticides, packaging etc.). Differentiation – with respect to the market or to the world - may intervene if using customized machinery, chemicals or processes, in order to increase efficiency in the particular production context or to improve quality, that can be then certified or made visible to the customer. Only in few cases, this type of hard innovation is so relevant to introduce substantial modifications in the business model of the firm.

More important, from this point of view, is the differentiation that occurs through the introduction of new products or the substantial modification of the previous ones. In this case, also the required processes are involved, but the innovation mainly concerns the quality level of the product and/or its semantic projection (brand, communication, consumer-producer interaction).

The transformation of a business model is fostered if the innovative enterprise actively involves its counterparts of the supply chain in the new business model implementation. For example, it could co-innovate with some of their supplier or service providers, and, on the other side, collaborate with its customers, distributors or finale customers in the definition of the new product and its meaning requirements.

In this process, there is often a transfer of functions and activities between the different actors of the supply chain: some skills and processes can be moved from one enterprise to another, certain activities can be outsourced or foreign markets can be approached by some direct investment abroad. Besides, new suppliers or new customers may be involved in the transformation.

This change of functions performed by the various parts of the chain, usually changes the *competitive position* and the *bargaining power* of each of the enterprises involved. In fact, its position and bargaining power can come out strengthened or weakened by the transformation. The acquisition or loss of bargaining power on the part of a certain firm depends essentially on the increase or decrease in the degree of its *substitutability* with other possible competitors.

It is very probably that the transformation of supply chains result in a corresponding change - in a more or less important degree – of the critical relation that innovative firms have with their local or trans-territorial eco-system (the fourth level of the differentiation mentioned above).

As we have said, an innovation is not a single act but emerges in a complex eco-system that includes the resources, cultural habits and existing services of the context of business activity. This happens either locally, in the region where the innovation arises, or at a national/global scale, in trans-territorial network that contributed to the innovation itself.

The eco-system that supports the rising of innovations (in processes, in products, in supply chains) includes R&D centers, educational facilities, laboratories for testing and measurement, certification bodies, logistics infrastructure and communication. Moreover, it provides some very important sources for innovation, as innovative culture, entrepreneurship, ideas and meanings stemming from communities and associations, creative abilities, public investment and support, general rules defined by public institutions.

2.10 Driving ideas: the power of innovation leverage

When some kind of innovation arises from one of the three levels already mentioned (process, product, supply chain), the resulting flow affects some parts of the surrounding eco-system, and changes some of their previous conditions. In many cases the weakness and heterogeneity of these effects break the eco-system order, but only temporarily. Evolutionary adaptation generally restores the lost coherence.

But in a limited number of cases, the innovation breakthrough is so strong and durable to permanently destabilize the eco-system structure. It happens when the innovation is moved by the propelling force of a *driving idea*, that is endowed with a great potential of transformation and attraction. A driving idea generally proposes a new lifestyle or a new way to produce and work, and – owing to the strength of this perspective – the breach inflicted on the previous order leads to canalize and attract a lot of convergent innovations and adaptations.

Sometimes a driving idea results from main innovation that occur at the first three levels (process, product, supply chain). But in a number of cases, a driving idea is shaped and carried out by visionary people or by movements of collective intelligence, that imagine new possibilities and can propagate them through the actions of many opinion leaders. As it propagates, the driving idea changes economic preferences and makes a new wave of demand and of corresponding offer to arise.

Driving ideas, in the last years, have shaped large industrial sectors as fashion, jewelry automotive, fitness, etc.. But also in the agro-industrial sector driving ideas created a thick flow of resulting innovation in process and products: for example, bio-food, bio-fuel or the well-known Slow Food movement.

Many of existent firms and systems are now extracting the potential of successful driving ideas of the past; and are facing the pressure of driving ideas enhanced and exploited by the competitors. In order to develop high potential innovation it is necessary that the producers and regions that joined in APP4INNO fuel the creation of new driving ideas, linked to their specific history, culture and economic capabilities.

In fact, driving ideas are fundamental levers to re-design eco-systems and to incubate many connected innovation at the other three levels (process, product and supply chain).

Consequently, the WP3 empirical surveys on innovation paths and focus group activity tried to:

- *detect the driving ideas* that are already active in the agricultural regions of the project;
- *assess the critical points* that ought to be managed to release the strength of possible innovation ideas in APP4INNO regions;
- *indicate the tools and services* through which WP4 platform could support existing innovation processes or develop new ones.

3. THE ASSESSMENT OF INNOVATION PATHS THROUGH EMPIRICAL SURVEYS (ACT.3.1) AND FOCUS GROUPS (ACT. 3.2) IN THE VARIOUS REGIONS OF APP4INNO

3.1 How we tried to “situate” innovation models in the different regions of APP4INNO

Models and paths of innovation have different probabilities of success depending on their degree of correspondence with the territorial and social context in which they develop. And, in APP4INNO project, this contextual framework of potential innovation are very different.

It was therefore necessary, in WP3 activity, to "situate" the general reasoning carried out so far in the different regional contexts in which innovations should be promoted and supported.

To achieve this result, we proceeded in two ways:

- a) each PP of APP4INNO project did a survey on empirical models of successful innovation for its region. The survey observed situated innovation models in agriculture, but also in the industrial or service sector, in order to capture any local deviations from the trans-territorial standard;
- b) each PP organized three focus groups, that involved the main actors of agriculture innovation processes of its region. These meetings highlighted, in each region, the problems that farmers face in dealing - respectively - to distributors, food processors and consumers.

The differences between the regions are important and cannot therefore be flattened in a trans-regional average of dubious value. Instead, they should be documented and kept in their uniqueness, both in terms of specific models of innovation and in terms of problems of (poor) collaborative interaction in the supply chain.

In this Report, we simply summarize some convergence lines between PPs' evaluations, with respect to the role played by their different contexts. But we reserved a space, in the Report, for some critical differences that some PPs may indicate as differential elements of a certain weight that affect their regions. A more detailed documentation of regional characteristics can be found in the materials that each PP, under the project, has produced about its specificity.

3.2 Methodological framework for implementing act 3.1 through a Transnational Survey

The surveys focused on the specific conditions under which economic models, tools and business support programs can be used in the local context by each PP.

Besides, each PP ought to test the possibility of locally implementing joint ventures and other business agreements, business incubators, tools for supporting the enterprises, start-up processes fostered by incentives and grants etc.. . The special features of each local context may also affect the possibility to transfer to agriculture and agro-industry some of the models and the tools that are considered suitable for the most dynamic and advanced sectors in the area.

These assessments were given by each PP, on the basis of their knowledge of the issues related to innovation and uniqueness of their local context, taking into account the studies and the existing researches on this issue, and - in particular - the most successful experiences reported in the area.

This assessment had also to be complemented by an *empirical survey* that ought to focus on the ideas and experiences of local actors, among those that are considered significant for the development of innovation in the region.

In the selection of the sample of firms and agencies to be interviewed, it must be taken into account that the survey was aimed primarily at highlighting the features of the context and the patterns of innovation in different areas, *not only in agriculture but also in other sectors* (manufacturing and services). Only after having highlighted the general characteristics that innovations have in the (particular) regional context of each PP, it is appropriate to ask *how to transfer this model of innovation* into agriculture and agro-industry, in order to take into account the specificities of regional context in defining the more suitable innovation path of this sector.

The survey was based on a set of interviews (*10-15 interviews*), distributed in this way:

- 4-5 interviews with innovative firms of sectors other than agriculture and agro-industry (i.e. manufacturing or services);
- 4-5 interviews with innovative firms of the agricultural and agro-industrial sector;
- 4-5 interviews with *service agencies and organizations for the promotion of innovation* (research centers, development agencies, incubators for startups, or other significant actors who are present and active in the local system, both in the agricultural sector and in other sectors).

At the end of the interviews each PP drew up a report which highlights the main results of the survey and his (subjective) assessment of the issues addressed.

Points to keep in mind about innovation

First of all, in the survey, each PP had to examine *two types* of quite different innovation that can be observed or potentially viable in each territory:

- a) an *adaptive innovation* that is induced by the - more or less complex - *adaptation* of firms to some exogenous changes or constraints (chiefly, in this moment, the changes and constraints due to the 2007-12 crisis);
- b) a *self-generated innovation* that, on the contrary, implies a creative act of invention and proposal, and - in the more successful cases - induces a shift toward new business models of firms, in order to exploit their expected potential.

In this second case, the starting point of individual innovation is often a remarkable change in the supply chains and in the structure of social and economic context (public policies, institutions, human capital, R&D, infrastructures, technological platforms, business services, consumer behavior etc.). Hence, the different individual innovations that can be observed in a supply chain or in a territorial context are connected in a flow of interdependent changes, enhancing a general transition from an old paradigm of production and life to a new, emerging, paradigm.

The first type of innovations (a) is a direct consequence of external constraints: it does not imply that firms have a subjective attitude to innovate. In the second case (b), on the contrary, the change cannot go ahead if entrepreneurs, managers, policy makers, distributors and consumers remain inertial, instead of consciously embracing the exploration of new possibilities.

WP3 aims are better achieved if the innovations to be promoted are not only those *adaptive*, but - mainly - the *self-generated* ones. Only in this case, in fact, each innovation produces other transformations, and feeds an evolutionary chain that propagates and generalizes the initial change.

In fact the innovations that are most important for our purposes are those which seem to result of individual acts on the surface but that, in fact, are part of a flow of transformations that runs deep, and that goes forward in time up to the emergence of a *new paradigm of production*, that is a new way of producing, consuming and living.

Four waves of innovations, in the succession of techno-economic paradigms: mechanization, increasing size, local clustering, global knowledge

In the history of modernization we could observe the succession, in the course of time, of different techno-economic paradigms, each of which is associated with a particular wave of innovations:

1) *mechanization*, namely the use in the production of machines and other artifacts in science and technology (chemicals, artificial energy, new materials, etc.). The mechanization is a form of hard innovation that imposes its technological (replicative) code to products, workers, consumers and the environment in which production is carried out (the factory). This type of innovations leads to the development of standard products, replication, and extensive market research, to increase the volumes produced and sold;

2) the increasing size of the firms, through the *creation of large and very large companies*, which - inspired by the Fordist model - allow for the competitive advantage of *economies of scale* in terms of production flows (volume), supply chain (vertical integration) and market relations (using the bargaining power of size). The innovations that follow this paradigm point to the creation of complex organizations that specialize and plan all the molecular operations of a production cycle, bringing them under the control of a single command center (financial ownership or professional management);

3) the development of *local clusters* formed by many small businesses, who work together using the *territorial proximity* as the main means of communication and relationship. During the period 1970-2000, in Italy we saw the rapid development of industrial districts, i.e. of territorial clusters specialized in various sectors of the so-called made in Italy (food, textile clothing, furniture, mechanical devices, etc.). In other countries, at the same time, we witnessed the transformation of large companies, that considerably increased the outsourcing from external

suppliers (as opposed to the rule of vertical preached by Fordism). Large firms changed their methods of organization in order to become more lean and flexible. The typical innovations of this paradigm (flexible capitalism) were those incremental and easily imitated in local clusters. Flexibility assigned a driving role to the personal intelligence of entrepreneurs, which was the main resource that generated the ability to customize and rapidly respond to customer demand. Hence, flexibility and creativity of decisions were achieved with limited investment in knowledge and intangible resources (R & D, human capital, brands, distribution networks, etc..).

Factory mechanization (with market capitalism), *large size* (during Fordism), *local clusters and outsourced supply chains* (at the age of flexible capitalism) are successive waves of the modernization process. They have occurred over time, during the two and a half centuries of modernity (from the Industrial Revolution onwards).

But if we consider the different countries and sectors of our economy, we realize that *the timing of this evolution are not the same*. In some countries and in some sectors (including agriculture), the evolution from one model of innovation to others was less rapid and by no means exhaustive.

So, in many of these cases, the current modernization continues to proceed through *mechanization*, that - being unfinished - has to make many more steps forward.

The same applies to other models of innovation, as *increasing size* (Fordism) and *local clustering* (flexible capitalism). They may seem outdated models of innovation in some countries and in some sectors, but may actually still have a potential to be expressed in others.

So, when we refer, in particular, to agriculture or agro-industry, we have to keep in mind that there may be a remarkable - and untapped - *potential for innovation* in processes such as increased mechanization, growing firm size, or local clustering.

In our *APP4Inno-WP3* survey, an initial assessment of each PP will need to address this issue, expressing a reasoned judgment on the possibility of hooking the country's development - with regard to agriculture and agro-industry - in (well known) production models such as mechanization, increasing size, and local clustering. Or other.

Today, in fact, there are other possibilities for innovation to be taken into account. As a matter of fact, present models of life and production must face the emergence of a new paradigm: the *global capitalism of knowledge*. A paradigm based on a strong frame of trans-national relations and on the intensive use of mass media and of ICTs in the daily life of all of us.

Surfing strategies: how to capture the energy of global and immaterial innovation waves

In the emerging paradigm of our century, value creation depends on innovations that exploit the power of the *two large waves* that are shaping the way we live and work:

- the *globalization of markets*, which greatly increases the value of business ideas and specialized knowledge, multiplying users and applications of each product in a larger and larger basin of demand;

- the *dematerialization of value*, which takes advantage of the new technologies, meanings, experiences, services. Customization and crowdsourcing exploit the ideas and desires of a variety of users, while – in many fields - social networks builds identity and reputation of brands.

Therefore, a growing number of innovations are shaped by the interaction (via ICTs) with suppliers and consumers, and precisely this interaction is the driving force that creates value and competitive advantages in global supply chains.

In short, the most effective strategy to innovate successfully in the emerging paradigm is that of *surfing the two big waves* that have been mentioned above. But it is not easy, because it requires a major change in the existing production chains, in the business models of firms, and in the skills and knowledge to be used.

First of all, firms and workers must learn to practice networking. A variety of networks connects the processes of globalization and dematerialization, that are going on without interruption on a global scale and that serve big multinationals but also a multitude of SMEs.

Through extended supply chains, innovations are projected and implemented by *collaborative networks between suppliers and customers*, together with research center, educational institutions, distributors and service structures, following the logic of the so-called *open innovation*.

Interaction with final consumers is managed by *ICT links* and *social networks*, on the web, aimed to customize, enrich, appreciate the ideas that can result from reciprocal interplay. Technological poles and alliances foster innovation on the scientific-technological frontier. Besides, in each region, a network of connected intelligence links researchers, innovative entrepreneurs, startups, advanced services, education activities that generate and utilize critical embedded knowledge.

These are the innovation waves to which the firms and local systems must engage. But each firm and each local system will do it in its own way, in order to exploit the value of its *difference* from other.

Innovation as a situated process

These differences are the central issue of our local surveys. On the basis of empirical observations made on the different areas and of the discussions made in the three programmed focus groups, each PP must self-define the (peculiar) position occupied by his regional area with respect of the type of innovation that is relevant to the platform WP4.

In particular, each PP's survey need to:

- 1) distinguish, within the regional average, between the *most innovative* firms (places, sectors) and the *less innovative* or *completely inertial* ones, evaluating the different positions that result from this analysis;
- 2) analyze the *different links and actors of the various supply chains* (some of which connected to agricultural activities), highlighting those who can be considered the most dynamic players and those who obtain the maximum in the distribution of surplus value produced by their chain;

- 3) outline the role of the *distribution* and *consumption behavior* in relation to the main innovations that can be observed in the different local sectors, with a particular reference to some agro-industrial supply chains during the last three years;
- 4) analyze the role of *human capital* (entrepreneurship, technical skills, research and education, practical skills and crafts) and supply chain relationships (multinational corporations, testing and certification, small and medium enterprises, local clusters, large distribution chains, small retailers etc..) in creating the conditions for innovation;
- 5) consider the efficiency of the *connective resources* that available in the local context, an in particular to the agro-industrial supply chains (logistics, wholesale and retail markets, communications systems, territorial brands, quality certification, technology interaction with the consumer etc.)
- 6) examine the relationship between the *magnitude of the market* (and, in particular, of the export market), the *size of firms* and the *degree of innovation* of business behavior at different levels of the supply chain
- 7) evaluate the *potential of some innovations* that have been carried out by local companies innovative during the last three years, considering either the direct effects or the successive flow of derived innovations that may be drawn or generated by the ongoing transition to the new paradigm of production;
- 8) indicate the *obstacles* that exist today, for firms (places, sectors) for the development of innovative new ideas, their experimentation and the full use of their potential over time;
- 9) identify the *handicaps* which, if not removed, can prevent certain firms (areas, sectors) to win the inertial resistance to innovation or to overcome existing obstacles;
- 10) consider the *tools and policies* that have so far proven to be useful in overcoming the barriers to innovative firms or to remove handicaps, widening the range of companies in innovative practices.

Each survey concluded with a **summary** in which the PP summarizes:

- a) the *points of leverage* on which policy and decision makers can act to develop innovation in all sectors and in particular in agriculture and agro-industry;
- b) the *tools and routes* that are considered most effective for promoting innovation in different sectors, particularly in agriculture and agro-industry;
- c) the *practical rules, suggestions and measures* that ought to be indicated in WP3 Operational Manual, for the practical purposes of WP4 Platform.

Some suggestion given to the PP for the interviews (to a business actor)

Each interview of the survey has to be conducted on the basis of a track (of questions and replies) that is not made according to the scheme of a statistical questionnaire but rather as a function of the assessments and suggestions to be obtained.

Below are listed some data and questions that can be used as a track for the interviews of the survey. The list is designed to interviews with business firm.

If the interview is directed to another (non-business) agency, data and questions should be adapted to the case.

DATA (FOR FIRMS)

(Year of reference: status and activities of your firm during 2012)

PRELIMINARY DATA

Date of the interview

Firm name

Sales in 2012 (000 euros)

Foreign sales (% on total sales)

Total purchases (% on total sales)

Outsourced activities (% on total sales)

Main product

Please describe the main activity of your firm at the end of 2012

LEGAL FORM

The company is:

- an individual firm
- a partnership
- a corporation
- a cooperative, a producer association, a consortium
- part of an *enterprise group*:
 - in this case the firm is the head office ____ or a subsidiary __ of the group?
 - in which country is the head office of your group located? ____
- other: specify

NUMBER OF EMPLOYEES

(average full-time equivalent)

a) permanent employment (at the end of 2012) _____

b) seasonal employment (additional to the permanent employees, full-time equivalent) _____

c) total: 1-9 10-49 50-99 100-249 250-499 more than 500
 _____ _____ _____ _____ _____ _____

AGRICULTURAL AREA (in hectares) _____

INFORMATION ON THE FIRM HEAD

- Age: Year of birth _____

- Qualification _____

- Primary School
- Professional Institute
- High school diploma
- Bachelor degree

In these schools was given a specialization in agricultural matters? YES NO

SERVICES THAT ARE LARGELY ACQUIRED OUTSIDE

- Administration and Accounting
- Technical assistance
- Subcontracting processes
- Marketing
- No significant service
- Other (specify)

QUESTIONS (FOR FIRMS)

Questions should focus on two items:

A) the *business model* of the firm and its evolution over time;

B) the type and intensity of innovations that were realized in practice and that are now projected for the future

A. With regard to the business model

To bring out the competitive position of the interviewed firm, questions should be made in order to obtain information on the sources of its competitive advantage, i.e. on its "business model". To investigate the firm's business model, the points to touch are:

- 1. The firm's history and the business idea*
- 2. Present competitors and competitive advantages*
- 3. Market and main innovations of last three years*
- 4. Types of knowledge (codified or tacit, transferable or not) and quality of human capital*
- 5. Business climate*
- 6. Supply chain and business of stable collaboration (firm networks)*
- 7. Finance*
- 8. Culture and education*
- 9. Use of ICTs: ERP, website, e-commerce, social networks*
- 10. Cost and operation control*
- 11. Handicaps, tools and policies that characterize the local context*
- 12. The future: evolution in action and suggestions for promoting consistent and significant flows of innovation*

B. With regard to the type and intensity of innovations

1 - *Your firm has been affected by significant changes in the last 3 years?*

For example, it has:

- increased the quality or the value of its products
- introduced new products or services
- invested to innovate machinery, equipment or structures
- strengthened the commercial phase
- made no significant change

REPLY

2 - *With regard to the type of products or services that are proposed to the market, your firm in the last 3 years has (for example):*

- changed its main product
- increased the level of specialization
- introduced new lines of activity
- expanded the existing factory or built a new one
- opened new complementary services
- made no significant change

REPLY

3 - *With regard to technology, your firm, over the past three years, has:*

(For example)

- upgraded or renewed its machinery or other technological devices
- introduced new production techniques
- invested in ITC (computer, internet, control software or network relations)
- made no significant investment

REPLY

4 - *With regard to the organizational network your firm has (for example):*

- expanded the firm size
- increased professional collaborations
- delegated certain services or competencies to external firms
- boosted sales channels (direct sales, factory outlet, e-commerce, etc.).
- create a network organization (cooperative, consortium, alliance, entrepreneurial association, etc.).
- made no significant change

REPLY

5 – *In order to realize these changes, his company relied on the following financial sources: (for example)*

- self-financing
- new equity capital
- additional capital provided by new members
- increased bank debt or new bonds
- public funds

REPLY

6 - *Thinking innovations or major changes in the last three years, from what source of ideas and experiences your action was mainly stimulated?*

For example:

- we made up everything ourselves
- we had an helpful collaboration with suppliers or customer
- we received an useful external support (by public institutions, professional advice, etc.).
- we could imitate processes or products from other companies
- We have innovated only to adapt our system to the rules that have occurred over time

REPLY

7 - *Did you use the help of someone to project and organize innovative changes? For example, the help of:*

- Professional consultants
- Producer Associations
- Specialized suppliers

- Public technological services

REPLY

8 - *Are you planning to introduce innovations in the next 3 years?*

For example:

- We intend to add new products or service
 We will improve the machinery or technology of our factory
 We plan to strengthen the commercial phase
 We do not intend to introduce significant changes

REPLY

9 - *In your opinion, what will be the most important obstacle to overcome for achieving the innovation project you have in mind?*

For example:

- High risk
 Funding difficulties
 Generational turnover or missing skills inside the firm
 Weak confidence with new technologies or markets
 Lack of support by public institutions, producer associations or local professional services

REPLY

3.3 The empirical surveys on the patterns and paths of innovation

The surveys on the patterns and paths of innovation in different regions of the APP4INNO confirmed the validity of the theoretical conceptualization derived from bibliographic surveys, that was presented in the preceding pages.

There are, however some important features that allow us to "situate" the conceptualization of the general idea of innovation patterns and paths in the different contexts of the APP4INNO regions.

The most important specificities of each regional system are:

- a. the prevailing model of development, that can be more or less open to contacts with the outside;
- b. the presence or absence of public agencies, incubators, service centers or professional consultants that can offer their consultancy, specialized facilities, additional resources or capabilities to local producers;
- c. the leadership of some strong actors in the supply chain, which can drive innovation processes;
- d. the weight of incentives and public support to innovation;
- e. the presence or absence of co-operative structures or consortia that allow small businesses to overcome the economic, intellectual or financial limitations due to their insufficient scale;
- f. the presence of institutional constraints that limit its scope for action of the innovations or directing in certain (pre-determined) directions.

The development model that has emerged in the various national, regional areas obviously has a decisive influence in encouraging or discouraging certain lines of innovation.

In Italy, for example, the specific innovation model - that prevailed so far – is essentially based on two cornerstones:

- the district capitalism, *which clusters, in very limited areas, hundreds or thousands of companies within the same industry. Local clustering results from the proliferation of new initiatives, that rely on the previous ones, that derive from imitation process or utilize the local pre-existing specialized services;*
- the supply chains of medium-sized industrial enterprises, *which – Italy - are about 4,000.- Each of these firms outsources a great part of the supply chain processes and functions, many of them in the local system. Almost 80% of the value produced and sold to customers is due to external sourcing of materials, energy, components, process subcontracting, knowledge, services etc. These vertical chains are partly inside the district, but partly are trans-territorial.*

A model of the development of this kind, as highlighted in the WP3 case histories, promotes the use of innovations and their local propagation (through imitation or collaboration in the supply chain), because - thanks to the interactions with the skills and capabilities that are pre-existent in the area - the capital that must be invested to create competitive skills in various fields can be significantly reduced.

In fact, these skills can be, on the one hand, acquired by imitation, and, on the other, obtained by taking advantage of the specialists (suppliers, workers, professionals) who work for other companies in the district.

Imitation processes, that are favored by physical proximity, provide excellent access to knowledge and inventions of others, but - on the other hand - limit the value of innovators' knowledge and inventions, because these will quickly be imitated by local competitors.

The district economy, in this way, becomes a system that is very suitable to the local development of a vast and complex system of *micro-innovations* (or niche innovations) which are rapidly imitated by local competitors. Consequently, the district system expands and remains competitive thanks to the internal spread of good ideas. An innovation model of this kind can go ahead relying on its own strength, but – in its starting years – can be successful only in those fields where there are no major barriers to access to external technical and commercial knowledge. Not in all sectors, therefore, but only in some of them.

In Italy these sectors were selected among the mechanical, alimentary, fashion, furniture: all “light” industries, where many small firms – connected by the district relationship – can compete with bigger ones, relying especially on the flexibility of products and behaviors, plus a certain amount of entrepreneurial creativity.

For this reason, this is not a model that properly works in those fields where big investments are required in prior learning or R&D and where competition is based on some kind of fundamental innovations that are difficult to achieve and require a long payback time.

Competitive advantages, in a district context, are achieved and upheld in a very particular way. At the local level, imitation is easy, but its *reciprocity* allows several competitors to remain on the market, focusing on *micro-partial innovations*, which will remain exclusive for a few months.

In the relationship with external competitors, the barrier that protects the competitive advantage of local producers is mainly due to the informal nature of the knowledge, that is to the personal interaction that propagates informal knowledge in the proximity circuit. Those competitors who do not have a local settlement have limited chances to intercept new ideas that emerge inside the district or take advantage of the better or more reliable capabilities that are locally available. Consequently, the competitive advantage from innovations is lost rapidly in the comparison with domestic competitors, but it can last longer with respect to the external ones.

In recent years (post 2000), this well-known Italian model of innovation - referred to above - showed substantial defailances. A process of repositioning on the business market has begun and innovations have become more difficult and challenging, focusing on high quality, original solutions, better customer services, and – above all - a greater content of generative knowledge.

Therefore, innovation processes became less spontaneous and widespread, and required major changes in business models and enterprise organization. Nowadays, the most important changes concern the tendency to work in network, in order to expanding the operation area out into the world. This aim is achieved by increasing firms' presence abroad and by acquiring a wider range of products and services from international suppliers. Moreover, the most dynamic companies have made significant investments abroad, or have straightened their brand and their international retail chain. In order to sustain the consequent growth of skills needs and capital, companies have experimented agreements and collaborative approaches of various kinds, and have begun to accept new members and managers in the structure of the traditional family business.

However, single innovation actions are not enough. All these steps are useful if local innovation systems succeeds to go beyond the threshold of the micro-innovations spread as a whole.

Generally, to achieve this result, some *additional* resources and pushes are required. These can be provided by strong interaction or relationships with *large customers*, national or international, who commission research, machines, and solutions that are far from the standard solutions. Or can be provided by high tech firms or centers, that have a plant or some service facilities in a local system.

Besides, as the survey made in Veneto showed, innovation in situated context can be fostered by local public or mixed (private/public) initiatives that offer services and innovative skills, such as *public agencies* for technology transfer and *incubators* for startups (like Vega), *test, consultancy and certification laboratories* (similar to those in Agropolis), high skill educational or creative processes (leading universities, art or craft laboratories, communication, design and fashion experimental centers etc.). In some cases - not all – these driving axles have given a precious edge to the innovative process situated in Italy, and its local systems.

The surveys that have been realized in Veneto have also assigned a strategic role to entrepreneurial associations and to local chambers of commerce, that have a long and active tradition in this country. In some cases, producer associations and chambers of commerce have established major service centers (like Acrib), whose competences and capabilities were placed at the disposal of the innovation needs of district or local firms. There are also cases in which the many firms (of the same sector) have been associated to the aim of encouraging and lobbying on public regulation of their activities.

Important elements in the success of the innovations were the ability to specialize and gain access to a wider market, often with the use of specialized communication resources or the web (site, CRM, e.commerce). Equally important were the ability that some firms have actually proven to network or to organize themselves into consortia and other forms of collaborative action.

3.4 The definition of the fields of action for the new approaches through three Focus Group – act. 3.2

The focus Group Technique

A focus group is a research tool used to reveal relationships among the group participants and to elicit their opinions and views on a specific topic. The participants of a focus group are very different from one another. The task of the moderator is to bring out these differences in order to discover important solutions/results pertaining to the topic under consideration. Organized as a group interview, the focus group is guided by a moderator who follows an outline (which can be highly or loosely structured) to stimulate and foster interaction among participants.

The focus group should meet for no less than 90 minutes and no more than 120 minutes. If the research involves more than one topic, a series of focus groups should be planned with the same group of participants.

Focus groups are normally run by two people: a moderator who leads the discussion and an observer who notes

the relational dynamics of the group.

The moderator must have the following qualities:

- Ability to manage both the 'leader' and 'followers' (among the participants);
- Ability to raise thought-provoking questions;
- Ability to involve more reserved participants in the discussion;
- Ability to remain impartial regarding the ideas/solutions that are proposed;
- Ability to maintain a calm atmosphere in order to avoid partisanship and arguments.

The objective of the focus group is not for the moderator to solve the problem/issue, rather the goal is to have the participants in the group propose solutions.

The moderator of a discussion group must keep the conversation on track. He or she must ensure that everyone participates in the discussion, encouraging the more reticent and introverted participants to speak and paying attention to those who are hesitant to participate.

A useful technique to promote participation by those who are more reserved is to reiterate prompts that arise during the discussion. The moderator should intervene if the debate becomes stagnant or if someone is monopolizing the discussion, preventing others from expressing their opinions.

Group discussions should not be approached as a one-on-one conversation between the moderator and each participant in turn. Instead, opportunities for discussion and interaction among participants should be promoted.

The moderator must first emphasize that there are no correct or incorrect responses and that all responses are interesting – the objective is to discover their opinions, whatever they might be. In addition, the leader must be capable of remaining absolutely neutral – his or her opinion must not be apparent as this could invalidate the results of the focus group.

The moderator can modify the extent of his/her role as leader depending on the aim of the research, the topics being addressed and the make-up of the group. Ideally, a continuum can be envisioned in which at one extreme the moderator's role (after stating the topic of research) is to stand back, observe the group and take notes. This role is used when observation of the interpersonal dynamics of the group is more important than any information that emerges from the focus group.

At the other extreme, the moderator's role is to formulate precise questions posed in a predetermined order and to assume a leadership position in the group dynamics (determining who can speak and when). Usually the role of the moderator lies between these two extremes, gently guiding the discussion in the desired direction and jumping in when necessary to keep the discussion going. The order of the topics to be addressed cannot be rigidly established ahead of time, but must follow the natural development of the discussion.

In summary, the main tasks for the moderator of a discussion group are to:

- Guide the conversation in the desired direction;
- Encourage discussion among participants;
- Facilitate the participation of everyone present;
- Avoid letting the discussion be dominated by a 'leader';
- Maintain a neutral position;
- Avoid expressing his or her own opinions and judgments.

The focus group must have at least 6 participants and no more than 13 (the optimum size is 8 people). A smaller group may have a negative impact on group dynamics, while a larger group often hinders the participation of people who have opposing views or are less adamant in their opinions, preventing all participants from fully expressing their ideas. The participants are selected based on a series of specific traits, implying a certain degree of similarity with respect to region, character and psychological aspects, and have the ability to interact well with others. The participants must possess a stronger sense of collaboration and a higher level of seriousness than is required for merely filling out a questionnaire. The project team should build the group to suit the research objectives. The participants must be similar in terms of their ability to interact and their suitability for the topic of discussion. In general, it is best to avoid creating conditions that may prevent communication and inhibit the participation of certain people (e.g. different levels of education). The discussion is generally led by a moderator. Depending on the situation, the moderator can assume a strong leadership role or provide a series of prompts and tools that encourage the participants to take charge of the relational and interrelational aspects.

Focus groups consist of four main stages:

1. Warm-up – The most crucial stage, it determines whether or not the focus group will be successful. Since the moderator and observer are often viewed with mistrust and perceived as intruders, it is best to lighten the atmosphere by taking a friendly approach. The moderator begins to structure the conversation around the topic, encouraging participants to speak by taking turns going around the table and using other methods. The participants are asked to think about a fairly general theme that is then narrowed down and guided in the desired direction, following the rationale and ideas of the participants and analyzing the meaning and content of their statements to reveal the critical issues.
2. Establish a rapport – During this stage, the climate in the group is studied. It is therefore a good idea to ask questions relating to the main topic that will be of common interest and elicit shared opinions (e.g. for a focus group with participants from management, discuss the organization's mission, values and culture).
3. Consolidation – During this stage, issues that elicit stronger responses will normally arise. It is important to let the group point out these critical issues, but keep the participants calm in order to avoid conflicts and prevent the focus group from becoming a place for venting problems that centre on personal rather than professional issues.
4. Cool-down – The fourth stage involves winding down the meeting. At this point, if the technique was applied correctly and appropriately, the participants should be in perfect harmony with the moderator and place their trust in him/her. To avoid disappointing the expectations of the participants, it is best to gradually wind down the focus group, letting the conversation drop off naturally.

All of the information that emerges during the group discussion must be processed and interpreted. The degree of

processing may range from a simple narrative description to a full transcript of the recording, depending on how the information will be used. Since a focus group is by definition a discussion centred on a particular topic, it can be used as part of a process or a study, and can be utilized during different stages and for various purposes, including: to define operational objectives; to identify fundamental objectives in order to formulate a project; to study the reaction that certain types of people will have to a project that has already been planned; and to evaluate all stages of a project, for future research or to study processes.

Regardless of the objective, the most rigorous form of analysis involves producing a complete transcript of the recording of the focus group. The recording can be transcribed manually or with the aid of a computer. With respect to manual transcription, it is important to attribute each statement to the correct participant. In other words, if the person producing the transcript does not know the participants of the focus group well, he or she cannot identify the person who is speaking. For this reason, the process of recording and transcribing the meeting must be organized in advance. At the beginning of the focus group – after the moderator introduces himself/herself and explains how the meeting will be run, including the fact that the discussion will be recorded for information processing purposes – the moderator should therefore ask each participant to state his/her name and professional position (or other descriptive information). The observer collaborating with the moderator should assign a number (or letter) to each name. He or she should then draw a diagram of the table and use these numbers to mark the location of each participant. When a person begins to speak, the observer should write down the person's number and the first few words spoken. This will make it possible to attribute each statement to the correct speaker in the transcript. When listening to the recording, it will be possible to attribute the different opinions to particular participants. The diagram of the table is useful because it is difficult to remember each person after a single introduction. Obviously, this suggestion is only necessary if the researchers do not know the people participating in the focus group.

APP4INNO Focus Groups

The PPs focused the specific operational domains and targets (fields of action) in which to apply the approaches setting up in action 3.1, in order to avoid the provision of general services remaining on a only superficial promotion of competitiveness of agriculture. The fields of action correspond to transversal topics in relation to the traditional agricultural sectors, being indented to be applicable in typical productions, characterizing locally the involve territories. They focused on the strengthening of the visibility of intangible value of agriculture and its products and in the promotion of modalities to rationalize the agricultural production processes.

In each region n. 3 focus groups were organized by the partnership.

The methodology of Focus Group (to be used for WP3/act 3.2) is designed to select and apply the strategies and tools to boost innovation that are judged most effective for the App4Inno project. To this end, the project has programmed to investigate three critical fields of action for each PP:

- 1) The binomial agricultural SME & consumers;
- 2) The binomial agricultural SME & industry of processing of agricultural products;
- 3) The binomial agricultural SME & distribution of agricultural products.

Each of these themes were discussed, in the Focus Groups, referring to:

- innovations in products;
- innovations in the processes;
- innovation in supply chains (re-shaping, extending, re-positioning);
- innovation in the eco-system (driving ideas, mutual interaction, institutions).

The target group of participants included mainly agricultural SMEs, but also all the stakeholders that have an influence on the agro-firms and all the actors that express ideas and interests suitable for the theme to be discussed in the specific Focus Group: entrepreneurs, managers, supplier, customer, researcher, opinion leaders, policy maker etc.. The sample that each PP choose for this task cannot be statistically representative, due to the small numbers involved. So, the sample ought to be formed by a certain number of people, selected with the aim to enrich interaction and introduce some critical ideas or competences in the discussion.

The primary topic of discussion have been mainly the following:

FOCUS GROUP 1 - The relationship with consumers

The relationship between the farms and the final consumer of the supply chains in which agriculture provides products and raw material has always been one of the more visible weaknesses of agricultural producers, with respect to the other actors of the supply chains. In fact, as the markets are extended in space and time, the farmers - with some exceptions – lost the control of the distributive channels and the direct contact with the recipients of its products. Consequently a typical farmer underwent:

- a) reduction of his bargaining power in the supply chain;
- b) the fall of his profit margins, also in the presence of high consumer prices;
- c) difficulties in the interaction to understand the demand for innovation, arising in the world of consumption. This demand is perceived only through the mediation of the agro-industry, wholesalers or retailers;
- d) serious difficulties in expanding his markets, for example, toward emerging countries, due to the poor ability to interact with consumers who have a different cultural background and different needs
- e) weak recognition, by the consumer, of the added value the agricultural enterprise can create with strategies aimed at reinforce quality, brand, certification, the symbolic relationship with the place of origin, the creation of meanings enjoyed by specific categories of consumers, personalized interaction with individual consumers, buying groups, community sense etc..

Today there are conditions to bring farmers near to the consumer world and to do so at international level, not only at local or national one. In fact, the ICTs for the first time allow even small businesses to operate in extended and extremely flexible networks of communication and cooperation. In addition, industrial customers and commercial users are both very interested in interacting with all partners of the supply chain – including agricultural firms - in order to design innovative or customized products for final consumption.

Themes treated in the discussion:

- The current situation and its critical points;
- Possible changes and preferences among the different alternatives: tools and services that could support the change;
- Which is the position of different actors of the supply chains and which are the main differences between their various groups?
- Collaborative processes in progress and possible alliances for the future;
- Institutional rules that may help or hinder these changes;
- Some projects that could be suggested to policy makers and some critics to the present situation: things to do, things not to do.

Have been invited businessmen from small and medium agricultural enterprises and consumers, meaning people who regularly purchase agricultural products for home consumption.

FOCUS GROUP 2 - The relationship with industry of processing of agricultural products

The collaboration between farmers and agro-industrial enterprises that utilize their products is critical to:

- a) co-design innovations of mutual interest with industry players in the agro-food industry, in the bio-fuel products, in vegetable fiber transformation, in the chemistry that uses agricultural inputs etc..;
- b) improve the quality and customization of the inputs purchased from mechanical, chemical, ICT, communication, advertising and so on;
- c) cooperate with the industry to create an eco-system more efficient and more responsive to the needs / opportunities of agricultural enterprises;
- d) establish arrangements for a fairer distribution of co-produced value.

In the past, this collaboration was insufficient, because the different parts of the supply chain defined their identity as part of a conflictual relationship.

So far, the strong dimensional differences have not helped to develop a spirit of collaborative interaction between agriculture and agro-industry. Many farms still work for industrial customers that have a much larger size or are multinational firms. The same goes for the inputs that are purchased by farmers from the producers of machinery, fertilizers, seeds, software, etc..

Today, however, farmers could remedy this weakness in organizing networks among themselves and, possibly, with the industry, in order to initiate processes of co-innovation that are in the common interest.

For example, a dynamic force in this perspective can stem from restaurants and hotels: directly or not, they acquire farm products or manufactured food and transform them into a service. Often into an high price service. But, for this, a common interest for high quality emerges.

Brands, transformation techniques, quality upgrading and export market are, for example, fields very suitable for vertical cooperation.

Some agricultural enterprises are trying to realize experiences of vertical integration in their supply chain, upstream or downstream. They can be successful in this strategy if expand their proprietary boundaries, try to cooperate with other farmer, enter a process of stable division of labour with agro-industry.

Themes treated in the discussion:

- The current situation and its critical points;
- Possible changes and preferences among the different alternatives: tools and services that could support the change;
- Which is the position (on these themes) of different actors of the supply chains and which are the main differences between their various groups?
- Collaborative processes in progress and possible alliances for the future;
- Institutional rules that may help or hinder these changes;
- Some projects that could be suggested to policy makers and some critics to the present situation: things to do, things not to do.

Have been invited businessmen from small and medium agricultural enterprises and small and medium agricultural products processing enterprises.

FOCUS GROUP 3 - The relationship with distribution of agricultural products.

Nowadays, distribution - especially large distribution - has a strategic position in the supply chains of all sectors. And the agricultural sector is no exception.

For several reasons:

- 1) distribution – for farmers - is a link to downstream markets (consumption), but also a barrier that separates the world of the agricultural enterprise from that of consumption;
- 2) large distribution uses this key position – the capability to open or close certain markets - to accumulate bargaining power in the value chain, inducing the formation of rents in its favor;
- 3) the distribution – either large distribution or small retail - is not always interested in promoting the upgrading of the quality of the products and in testing new production possibilities. In some cases, especially for small retailers, traditional culture defines the business, while the capabilities or the attitude for innovation and risk investment remain missing or scarce;
- 4) the globalization of agricultural markets weakens the position of local farmers, that often distributors put in competition with foreign products at low cost.

Farms of larger size are able, in certain markets, to create their distribution channels, to make arrangements with local distributors, to support the brand with heavy communication investments. But the majority of farmers do not have these possibilities.

However, when farmers begin to increase the quality and customization/ differentiation of their products, it is possible to find some distributors that are interested to acquire it and collaborate. In fact, only special products can have a power of attraction on final consumers. Then, another chance stems from creating collaborative networks

among farmers to have greater bargaining power and a more extended distribution system, with proprietary or controlled channels.

Themes treated in the discussion:

- The current situation and its critical points;
- Possible changes and preferences among the different alternatives: tools and services that could support the change;
- Which is the position of different actors of the supply chains and which are the main differences between their various groups?
- Collaborative processes in progress and possible alliances for the future;
- Institutional rules that may help or hinder these changes;
- Some projects that could be suggested to policy makers and some critics to the present situation: things to do, things not to do.

Have been invited businessmen from small and medium agricultural enterprises and large-scale distributors that operate in the catering and retail sectors, as well as local markets that collect and distribute agricultural raw materials.

3.5 Focus groups: some evidence about supply chain relationships directly discussed by the players

The focus groups conducted in Wp3 showed, in different regions of APP4INNO project, the crucial role that relationships within the supply chain have regarding innovation processes in agriculture.

The relationship between consumers, food processors, distributors and farmers is critical for several reasons.

First of all, in the agricultural sector, there are very different levels of technical modernity, process rationalization, and commercial investment.

On the one hand, a significant proportion of farmers still adopt traditional ways of cultivation, with low productivity levels and bargaining power (in the market).

In Veneto, for example, the share of companies that – according with their answers - do not innovate, and adopt behaviors inertial, exceeds 50%, and, although it is declining, is a problematic feature. In fact, the persistence of a great number of inertial producers "plasters" land ownership structure and maintain the technical solutions that were inherited from the past. In addition, these traditional producers depend entirely on who provides the equipment, seeds, fertilizers, pesticides whenever these modern devices are used in their production.

As any innovations derive almost entirely from the outside, the traditional producer suffers each novelty instead to be its promoter. The relationship that these producers have with other actors in the supply chain is extremely weak, because of the great physical and psychological distance from the final consumer. As a matter of fact, this

distance leaves a free hand – and a corresponding bargaining power - to food processors and distributors in the value chain, weakening the position of farmers.

In these conditions, the path of the simple technical modernization (hard innovation in machines, chemical devices, etc.) is not sufficient to induce active and creative habits in farmer behaviors. Some kind of soft innovation (in organization, human capital, markets, sale channels etc.) is required.

On the other hand, in almost all regions there are some multinational big companies that integrate agricultural activity in their supply chain, together with food processing and direct distribution to the final consumer. Over time, these companies have modernized agricultural production and processing industry, and have, in parallel, invested heavily in distribution and marketing, as they control in several ways - brand, communication, distribution channels - the relationship with their potential consumers.

The relationship between pre-modern and modern producers, and between farmers and vertically integrated manufacturers or distributors is often conflictual. In fact, the first use the unbalanced bargaining power to their advantage, and this premise allows them to dictate prices and determine the quantity / quality that are available for other agricultural producers.

But, in this respect, there are different situations, depending on the region.

In some regions, the competition of external big agro-producers - that invade the markets and crush prices against local producers - depresses disposable incomes and discourages investment in innovation. Against this form of social Darwinism that damages the weak part of the supply chain, many actors of the WP3 focus groups call for measures aimed at reducing or controlling these external influences.

But the problem does not arise equally in all regions: in some areas, competition from modern manufacturers – even if they are external players - can be a stimulus to innovate the quality of local production, and give a reason to encourage research collaboration and more effective division of labor in the supply chain .

In this kind of problem, large retailers and modern food processors play a role similar to that of large integrated agricultural producers, because they separate the agricultural producers from final consumption. On one hand, their intermediation creates a growing distance between farmers and final consumers; on the other hand, they also reduce the share of consumers that cater to local production (through a short supply chain).

Focus groups have highlighted two possible answers, as they suggested to:

- a) defend the local markets and the short chain from the intrusiveness of "global" products, imported from afar;
- b) increase the quality of local products and differentiate their varieties, in comparison with the standard market. In this case, external manufacturers, distributors and consumers can contribute to local innovation, whenever they recognize local quality, granting an appropriate price to farmers.

Therefore, this second path assigns an important role for agro-innovation to distributors and food processors. The farmer may in fact need the collaboration of actors that operate downstream in the supply chain to identify new products and new varieties that can be recognized and appreciated by consumers. Over time, this process of learning and differentiation, along the supply chain as a whole, can induce many farmers to develop their own brand and their own distribution channels, often in collaboration with distributors and food processors.

For example, in Italy, a line of evolution of this kind has been successfully followed with regard to wine, oil, traditional flour, some varieties of fruit, etc.. In these fields, we can observe a significant evolution in terms of differentiation, relationship with the land (traceability, brands of origin and quality), investment in science and technology, exploration of new opportunities and channels in the sales market. So, many farmers were able to increase the quality, the sales and their income from the investments made in innovation.

A similar evolution is more difficult in sectors, such as meat, because the standards are imposed by slaughtering operators. A phase of the supply chain that is tightly regulated and highly concentrated. But an evolution towards innovative behaviors was difficult - until now - also in those areas where there is a prevailing mass production (corn, soy, etc.), because this kind of production is based on standard techniques and undifferentiated products.

In several focus groups, farmers have highlighted the potential new uses of their products, which today may have value as ecologically clean products, bio-food or bio-fuels. In these cases, the new product quality can be appreciated by the end user if the supply chain is organized in such a way as to make transparent and reliable information on the differences of origin.

A more and more important path of innovation is marked by some new finalizations of agricultural work, such as:

- farmers' contribution to sustainability of localized ecosystems (with reference to land, water, natural and biological landscape, social and cultural tradition);
- renewable energy production;
- agro-tourism, as complementary activity of farm facilities and production.

Associations, cooperatives and consortia of agricultural producers can play a decisive role in promoting innovations, whenever they give the agricultural actors a role that is not yet inertial or adaptive. As in several focus groups was highlighted, there are many cases in which it is the public regulation that hinders innovation, reducing the possibility to experiment new varieties and solution and excessively linking agricultural processes to standard that are not strictly required by the requirements of quality, transparency and food safety. To remove these constraints, or to turn them, the producers may join in order to have the critical mass that is needed to support new rules and structures of the sector.

Innovation processes, in these contexts, have an important prerequisite: the traceability of the production and distribution steps in the supply chain, and the corresponding transparency of everything that happens at each stage of the chain, so that the final consumer can recognize the variety of product that better appreciates and rationally decide their value.

Transparency is not only technical, but also communicative: every important step has to be associated with a meaning, which - depending on the case - can give it more or less value. Unfortunately, this aspect is still poorly

manned by agricultural producers, owing to cultural reasons but also because a communicative effort requires an additional investment than in the past.

The dynamic between the different variables considered is different, however, in the regions concerned by the project, each of which has specific details that have emerged in local focus groups.

In focus groups held in Veneto, for example, many of the participants underlined the decisive role that - from the point of view of farmers - can have quality differentiation and communicative process, provided they are supported by food processors and distributors, in order to make quality differences recognizable by the final consumer. Separator filters that standardize the quality have the opposite effect, making differentiation difficult and costly. This happens, as we have seen, with too restrictive rules or too centralized control (the case of slaughters). On the contrary, the development of brands of origin and quality (DOC, DOP, etc..), together with the traceability of the supply chain, become the means through which a remote dialogue between consumer and farmer can be established.

The strengthening of associations, consortia and collaborative relationships descends directly from that goal. But farmers can only in exceptional cases arrange direct forms of sale or processing for their products: it may happen in some special cases: for example, it is the case of cooperative wineries or of the direct sales of fresh milk. But also the so-called "farmers' market", allow producers and consumers to directly exchange local products, reducing the distances of today prevailing markets.

This evolutionary line looks for the direct producer-consumer relationship, that integrate or shorten the supply chain. But it may work only in some special cases. For most of the markets an equivalent result can be obtained through collaborative strategies, creating an active cooperation in the supply chain. Some farmers can join some distributors and some food processors to differentiate and communicate product quality to final consumption.

An important question concerns the so-called commercial brands (private labels) that assign the initiative to distributors, even when the agricultural production and food processing is entrusted to others. These latter - in their individuality - disappear in the eyes of consumers. On the contrary, agricultural producers could usefully attend the affirmation of quality brands of their chain, as a result of shared differentiation strategies. In these cases both the brands that transparency / traceability of the different contributions could be managed together, by farmers, food processors and distributors.

4. THE PURPOSEFUL RESULT: TEN CRITICAL POINTS AHEAD

4.1 Lack of innovation culture

Entrepreneurial culture, which predisposes to innovation and risk, is the result of modernity. Within the context of pre-modern society, innovation was subject to compliance with tradition and productive practices depended upon skills that were handed down from previous experiences.

The cultural break with this historical legacy has taken place at different times in the various sectors of the economy and in different countries.

First of all it was made in industrial countries and, in particular, in the factory context. Manufacturing early developed a mode of production – the mechanical factory – that was totally artificial compared to the previous conditions of the natural productive environment. In the factory, relations became impersonal, the methods were standardized, and the environment was re-designed in order to manage a low degree of complexity. Variety, variability, and uncertainty were eliminated or rigidly controlled, and this led to a break from the traditional anthropology: the ways of thinking and living were not yet the same.

In agriculture, the introduction of machinery and certain other products of modern technology (fertilizers, seeds, pesticides) did not have the same dramatic impact, as in manufacturing.

The reasons are many, repeatedly mentioned in the survey and focus groups of WP3.

The first and most important reason is the condition of *greater isolation* that is usually experienced by the farmer (in the country) than the manufacture entrepreneur and worker (in large or small towns).

The lack of transport infrastructure and communication technologies (ICT, first of all) aggravates this initial condition, for which the farmer feels far from both the other actors in the value chain (laboratories, suppliers of machinery or chemicals, food processors, distributors and consumers) and the cultural life of modernity, in urban spaces. He lives in a condition of scarcity of information and has only episodic exchange of experiences with people and companies that are a few tens of kilometers away. Consequently he cannot early perceive and understand the innovations that are designed to be successful, and follows the instructions of buyers (distributors, food processors) and of industrial suppliers (machinery, fertilizers, seeds, etc..).

Due this context, his innovation practices generally are strictly dependent on other, even if there are some exceptions to this rule (farmers' startups, niche and quality innovators, multinational agro-manufacturers or distributors, vertically integrated companies that join different cultures in the same value chain).

All the studies report that a consistent share of agricultural sector is formed by inertial firms, that have no attitude, or a very scarce attitude, to innovate (Veneto Agricoltura 2012, pp. 74-83).

This kind of cultural closure with respect to modernity reduces the potential value of possible innovations, because it:

- prevents the *access* to novelties and new opportunities;
- inhibits the *creative experimentation* and the consequent innovation path;
- reduces the value *multipliers* to the local/traditional loop.

However, for some time to come, it may be able to maintain a certain degree of *control* upon traditional production techniques and local market, at least until the barrier that separates them from the open space of modernity can hold out.

The remedies to this situation are in progress, but the pace of the change is too slow, in many situations. Each year, a lot of marginal non-innovative firms are eliminated by market competition or by demographic factors (retirements). A share of available lands are acquired by more dynamic and large companies. Schools and the generational turnover among young and old does the rest.

But, as all PPs surveys and focus document, this is a good lever to act, but is not sufficient: tools and services have to be directed to the aim to renew agricultural culture, professional practices and social way of life.

For example:

- a) an integrated information system that could connect all the actors of the APP4INNO members and actors, spreading information and relational contacts;
- b) interpersonal and training networking, experience exchange and contamination;
- c) national open information systems for agricultural sector;
- d) specialized consultancy, especially if it is deployed in rural areas;
- e) individuation and diffusion of the best practices in the sector (through benchmark circles, focused checks, innovation vouchers);
- f) investment in material (logistic) and immaterial (ICT) infrastructure to weaken the barrier of distance and cultural isolation.

A relevant role, in this direction, is assigned to human capital renewing and value chain interconnecting, which is discussed in the following paragraphs.

4.2 Low quality of professional skills and available human capital

From an agricultural region to another, the quality of the available human capital is very different because of the speed and length of the historical *exodus* of farmers from traditional agriculture. The exodus continues, but the presence of workforce of advanced age, fond of traditional culture methods, is still very different from country to country.

Not all cultures and methods of cultivation and processing that have been handed down by tradition have to be considered outdated. Some of these hold fans and estimators scattered in the modern markets, local as well as

international. They love and search for niche products or quality brands, that may be recognizable by their origin and rarity.

But this relationship between traditional producers and their (new) potential markets must be re-constructed, and cannot be based only on the defense of "short chain" or direct sales (from the farmer to the final consumer), occurring in the local area. Local sales are precious because they retain old varieties and traditional growing methods, but have very limited multipliers (n). So, their economic valorization depend upon a re-thinking of their economic and commercial features.

Nowadays, most of the products and skills derived from the tradition can survive and develop if they are technically revised, made recognizable with appropriate markings and certifications, placed on large markets, where they can find consumers willing to pay a price premium for the relationship with the origin and tradition. All these steps rarely can be delegated to the skills of human capital available in agriculture, in contexts that are strictly related to the tradition. A new human capital is required.

The quality of human capital is one of the essential condition to have access to knowledge and "good ideas" that emerge a very large system, comprising the local cluster, the specialized sector, the extended value chain, but also in the trans-national world of science and technology, consumer behavior, connective services etc..

An investment in learning and human capital training is essential also to foster creativity, in producing good ideas, and in extend their re-use multipliers. But also the maintaining of control on the exploiting flow of these ideas requires a distinctive quality of human capital, that prevent imitation and the standardization of individual and territorial differences.

In order to correct this lack, many levers can be actuated.

First of all, it is important to replacement the people and the generations: young entrepreneurship and startup programs can be considered as priority actions to which the WP4 platform must provide a range of appropriate tools and services.

Besides, we have to invest on worker instruction and training. Also in the agro-industry, as in manufacturing, a good level of instruction is today a necessary precondition for mastering formal languages, such as science, engineering, computer science, accounting, management, organizational procedures, legal rules. These languages, that cannot be learned by practice only, require to invest in education of the workforce and to apply lifelong learning to the work experience.

This kind of re-organization implies a big change in the relation between agricultural activities and the human capital, which presides over them. In fact, formal languages are required in modern agricultural business, if firms want to establish reliable relations of exchange and cooperation with partners who are at a distance, and with whom you need to share projects, investments and increasing risks.

ICT training, from this point of view, is one of the fundamental requisites of global communication and exchange, also for an agro-industrial modern firm. Nowadays a larger and larger part of value chain relations can be managed

on line and web skills are required also for executive tasks, to organize global sourcing, e-commerce experiences, extended networking and open communication of the distinctive qualities of each enterprise.

4.3 Deficiencies of scale

Usually, the average size of agricultural firms is very low, due to the historical lag in land concentration process, in comparison to what happened in manufacturing activities, after industrial revolution.

This structural feature has a relevant impact on innovation capabilities and performances. Even if distributed agricultural activity can be viewed as a starting condition for (future) sustainable uses of land, present farmers conditions are strongly dependent on the small size of firms, that is often associated with a gap in modernization, networking and productivity.

So far, in agriculture, *small size continues to be a problem*, more than a resource, even if there are some innovative experiences that arise from the bottom (startups, young people entrepreneurship, single successful intuitions).

Also political events, in the post-communist era (1989-2000), have pushed forward property fragmentation in many countries, even if the situation is radically changed during the last years.

The lack of an appropriate scale is one of the recurring findings in surveys and focus groups examined in this Report. It gives rise, almost always, to the contrast between *few big players* (multinational corporations, distributors and food processors that are integrated downstream, large national enterprises) and an indistinct mass of many small business units, with little capacity for innovative action.

The presence of a large number of farmers in low productivity, which lower the average size and - remaining in activity - prevent the concentration of landownership, is reported by several PPs. Also the European Agricultural Policy (CAP) has partially contributed to this outcome, as many subsidies were provided to small farmers, regardless of their level of innovation and productivity. In this way, CAP has indeed delayed their exit from the market: a socially useful result, but economically burdensome.

To overcome the size gap, profound changes are necessary in market structures: property concentration, growing of the most dynamic firms, cooperation and association among firms, political or managerial linking of the evolutionary trajectories of independent regional firms are the trends that can remedy size deficiencies.

4.4 Vertical fragmentation of the supply chain

In manufacture, the vertical integration of the supply chain has taken place during the twentieth century, with the rise of Fordist paradigm of production. Each fordist producer assumed a large size not only horizontally (turnover, volumes) but also vertically, building a self-sufficient system for all the phases and functions of the production cycle (from raw materials to final consumption). The producer of cars, foot, furniture etc. tried to get the direct

control of the entire production cycle, but also of downward functions: the brand, the commercial channels (stores), the communication to final consumer (advertising).

Subsequently, in the period 1970-2000, this model of complete vertical integration moved back, but the outsourcing of activities almost always concerned with material production (machinery, components, processes). On the contrary, the direct control over the relationship channels with consumers was maintained and increased (brands, stores, advertising, strong influence on the distribution).

In agriculture, however, we had another story. As shown by the surveys and focus groups devoted to this topic (relationships with consumers, distributors, with food processors), so far the agro-industrial supply chain remained vertically dis-integrated. There are some exceptions to this rule: some distributors and food processors have internalized the agricultural production; some large corporations internalized their own entire cycle, including cultivation in large farms.

But these examples of vertical integration remained, so far, exceptions: only few farmers have the resources and the competence to expand upward (manufacturing) or downward (distribution) their production cycle. Rather they suffer from the imbalance in bargaining power that results from the vertical integration of the few big competitors that adopted this business model.

The vertical dis-integration of the value chain has, for farmers, an heavy consequence: they are reduced to the role of raw material producers, that have little or no contacts with the final consumer.

Distributors and food processors take advantage of isolation of farmers in the initial stage of the chain, and posit a barrier - very difficult to get over - between farmers and final consumers. In this way, they can gain an advantageous position because, thanks to the internal prices to the chain (**p**), they are able to capture most of the surplus generated by the innovations that occur over time.

As a matter of fact, the barrier that separates farmers from consumers causes two types of damage, which are very relevant:

- a) farmers can not contribute, with their intelligence and ability, to make innovations that consumers will then be able to appreciate and reward. Consequently, innovations of products and their meaning are delegated to distributors and food processors, which can acquire undifferentiated raw materials from farmers. The result is that farmers are unable to capture a fair share of surplus, and suffer for low prices that during some periods do not cover the costs of production. There are sectors of agricultural production where this is no longer true (such as wine, oil, special flours, organic products etc..), But in most agricultural sectors, product and quality differentiation is made by food processors (with their brands) or by distributors (with the so-called private labels);
- b) consumers find it difficult to recognize the - more or less good – quality of raw materials that are contained in the differentiated products, that can be bought at the supermarket. And, therefore, they do not pay it, encouraging farmers to compete on the ground of price and quantity, rather than through innovation and quality.

This underlying condition, which is absolutely disadvantageous to farmers, has led to many attempts to change. So far, these attempts with some (partial) results:

- c) first of all, many farmers or associations of farmers tried to “shorten” the supply chain, developing *direct relationships* between consumers and farmers. The more common model, in this direction, is that of the “farmers’ market”, in which there are direct sales from farmers and a consumers in a local system. In this short chain, the distribution is exerted directly by the farmer and food processing is limited to the most obvious transformations (for example milk cooling) or traditional treatments. In some cases, are used vendor’s machines for the automatic distribution of products derived from agriculture, without any other intermediate steps. However, there is a lot of legal, commercial, healthy, and fiscal obstacles to this type of direct sale, which makes the direct relationship difficult and costly. Besides, we must consider the very limited sale and value potential (n is limited to the local market and this greatly reduces the surplus that can be generated by this method of integration of the supply chain);
- d) a second way to break the barrier between consumer and farmer passes for the creation of consortia, cooperatives, inter-firm networks, or private concentration of farms (with an increase of scale). These horizontal concentration increases the size of the productive organism, but have a major impact also in the vertical chain because it *increases the bargaining power* of farmers, or allow them to *internalize* some functions of food processing and distribution. In other cases, the horizontal concentration allow farmers to make *convenient arrangements* with food processors and distributors. It may result in a mutually advantage, because – in this new condition - the farmer overcome the barrier of upward isolation, in the value chain, and is fully re-introduced into the circuit of quality and innovation. This condition makes the raw agricultural product not yet standard, but a basic material that can be innovated and differentiated, according with client and customer demand. Following this path, the attention of innovative farmers can be devoted to search new variants, which sometimes are completely new but, in other cases, they recover and enhance the tradition or local environmental features.

The line of vertical integration or collaboration (between farmers, distributors and food processor) is obliged, with no credible alternatives to an agriculture that wants to compete on quality and not just on price or quantities (most of the PPs of APP4INNO think so). But is very difficult to realize, because the main players are not accustomed to (vertical) collaborative work.

If this is the starting point, it is necessary to put in place the unifying power of some form of recognized leadership among farmers, distributors and food processors. The leaders that could change the situation are many:

- *entrepreneurial associations*, when act as chain integrators;
- *public policy makers*, that choose this path of agricultural modernization;
- *inter-firm networks, consortia, cooperative firms* that emerge and organize (vertically) the chain;
- *multinational firms, large distributors or food processors*, that negotiate a stable collaboration with some farmers, on the basis of a quality differentiation.

4.5 Weakness of local clusters

Clustering is the more frequent remedy to isolation and small scale of non-agricultural business (manufacturing and services). An industrial district is often originated by the propagation of the same idea and model of business, that is largely diffused and imitated in a very limited area. So many specialized suppliers, systems integrators, service providers and professionals of the same industry localize their activity next to each other.

The industrial or agro-industrial firm that works inside a districts has many advantages, in comparison with a firm – of the same sector - that operates in isolation. First of all, it has an advantage in the access – at low cost and in short time – to external knowledge, through imitation of the local winners, or utilization of the same specialists or the same workers.

Very different degrees of access capacity distinguish, for example, what happens in technological districts, in territorial clusters or industrial parks, from what happens elsewhere.

People that can live and work in an environment that is rich in knowledge and experimental learning, has the possibility to understand innovative ideas and practices that emerge nearby. Or they can quite easily find the expertise and specialized services that are used to develop their innovative insight. Thus, cluster attract foreign buyers and have a high level of creativity and good relationships with suppliers and clients.

But, for various reasons (cultural and economic), agricultural situation is distant from cluster model of territorial and networking organization. So, the promotion of agricultural clustering is very diffused among the regions of APP4INNO:

- in many regions, *associations* or *policy makers* support clustering processes, with some results, but not very relevant;
- the same objective is proposed, in some other cases, by local cooperative, consortia, private/public initiatives and various forms of inter-firm collaboration.

Clustering is an ongoing process, but its rate - in comparison with what happened in the manufacturing or service districts - is slowed by several reasons:

a) the low weight of the *new firms* in a sector - such as agriculture - where there is a strong decline of firm population, with few births and many exits. What remains, tend to rationalize the old order, it does not creates a new one;

b) the suspicion that slows interpersonal contacts and the division of labor between firms, even if they are close on the same place;

c) the low weight of the innovations introduced in each agricultural districts which, as we have said, are often only innovations concerning mechanical tools and raw products. These changes are largely driven from the outside (by the manufacturers of devices, fertilizers, seeds, upstream, and by food processors or distributors, downstream). If

innovation is of external origin, and is not sufficiently "weightily", there is little room for processes of imitation and creation of new businesses in the local cluster.

Clustering can go ahead and make all the advantages that accompany it, only if the innovations - in agriculture - will become more *self-generated* by the farmers, or at least created *in collaboration* with other actors in the value chain (co-innovation of products, devices, and meanings), starting with a greater differentiation of the agricultural output (quality, variety, flexibility, brands and so on). It 'a slow transformation, which, however, must be supported by a decision, also using the tools and services of WP4 platform.

4.6 Access barriers to technological innovation

One of the distinctive features of agricultural sector, compared to manufacturing and services, is the fact that, in the past, innovation focused mainly on *technical tools* (mechanical devices, fertilizers, scientifically selected seeds etc.). By this way, the innovation path became hetero-directed (by non-agricultural firms and ideas).

Today, things are changing, because the agricultural product began to be affected by *new expectations* both of intermediate clients (food or raw material processors, distributors) and of final consumers, as recent technologies are changing the very nature of agricultural cultivation and the destination of its outputs.

New trends and destinations are emerging. For example:

- bio-fuels (after the energy crisis)
- organic, clean and eco-sustainable products, in response to a strong wave of consumer or political demand
- products that are certified according to strict health requirements
- products that are derived from the scientific selection of varieties or genetic manipulation, with new qualities and use destinations.

Some of these trends can in fact be observed in the results of the WP3 empirical investigation and the connected focus groups, but, so far, they have not changed the quality and destination of the main agricultural productions, but have highlighted the importance of creating a strong link between:

- the *scientific and technological knowledge* (R & D laboratories, certification), which are often concentrated in large cities;
- and the *dispersed processes* of agricultural production, that are localized in the country.

There has always been a significant distance between these two poles, and this has greatly reduced the opportunities for self-generated innovations in agriculture. Consequently, the possibilities of an everyday, continuous, use of technological services were severely compressed.

But the distance, that still exists, has to be greatly reduced, if you – day by day – have to meet health standards that are scientifically codified. Or if you have to certify the processes of cultivation and processing. Even if you have to find new outlets for the use of the land (including facilities for renewable energy, or non-conventional uses

of land or water), the distance between agricultural business and scientific research appears as a heavy obstacle, that needs to be passed quickly.

As a matter of fact, in all the regions of APP4INNO, there is a growing attention to creating a closer link between the practices of agricultural cultivation and the scientific-technological system (testing and certification laboratories, technological consulting services, research and development trials for new products or processes, startups on the field of frontier technologies). Some steps in this direction are in progress, even if the situation - in this respect - is very different from region to region.

In order to move toward this goal, the widespread adoption of an *ICT network and common codes of communication* - as has been said in the interviews - can be a powerful accelerator for bringing the scientific-technological system to the everyday practices of firms in the agro-industrial chain. Also a growing role of *associations* and *inter-firm networks* could foster this process of distance reduction, that – nowadays - is essential for propelling innovation in the agricultural sector and in its value chain.

4.7 Lack of recognition of the quality of products and services offered

One of the most valuable resources in the innovation process is the selecting capability that comes from the intelligence of the consumer.

If the consumer is passive - as happens in situations where the production is handled by large companies of mass and standard production (fordist model) - the whole innovation cycle moves from upstream phases of the supply chain, i.e. from the technological laboratories of R & D and from the marketing and advertising offices of large manufacturing companies. In such a context, the producer of the raw material that are used to feed this process does not have a great space to intervene in industrial evolution, introducing alternatives or solutions of its own. He or she is simply a follower.

Every factor that leaves the consumer in this state of passivity reduce the possibilities for farmer innovations, and reduces its role to that of a raw material supplier.

The situation, however, changes dramatically if the consumer begins to have an active interest in the quality and the meanings of products and services they buy and consume.

Today, for various reasons, this is increasingly the case. The problem is rather that rarely consumers are able to recognize the qualities and meanings of a product that - unlike the industrial product – often is sold in undifferentiated manner and without special packages. The same applies to situation in which a product is purchased by the consumer with the brand and the qualifications laid down by the food processor (with his brand) or by the distributor (with his private label). In both cases, it is very improbable that consumers may know something about the upstream process that produced the raw material that has been transformed by manufacturers and then sold by distributors.

So, the need for closer interaction between the farmers and the consumers of their products is very present in the surveys and focus groups carried out in WP3 phase, in all regions of the APP4INNO project. This attention to consumer-farmers relationship focus on different (and convergent) matters:

- the need to foster the development of quality brands, origin labeling (as doc, dop etc. labels) and traceable and transparent paths, through the gradual development of local associations, operational protocols and quality certifications;
- the urgent need to make distinguishable the “short chain” local products (direct sales o local markets) from the products that are imported from outside and often offered at very low prices. Big traders or multinationals that operate in local systems regularly offer these products are offered in an undifferentiated way, even if – from the consumer point of view - they have little recognizable quality and origin. There are cases in which such mass and undifferentiated products turn out to be unsafe, even from the point of view of health. But, in any case, the comparison between local and low priced imported products often gives rise to unfair competition, to the detriment of local farmers;
- the growing of *consumer communities* or *collective buying groups*, that have the possibility to define new standard and contractual clauses, aimed at ensuring transparency and traceability, with processors and distributors;
- the greater and greater connection between agro-industry, food, quality of life, landscape beauty, that can be reached in new forms of *touristic experience*;
- the tendency towards *consumer education, experience and training*, that can be organized at school, in cooking solutions, in artistic or literary representations, or through specific events that are intended for the purpose.

Many farmers – as emerged in the surveys and focus groups - live this transformation, imagining it as something for the future, although the first signs of change begin to be visible everywhere.

But, meanwhile, they are concerned about the present, because they are trying to improve the relationship with the quality and consumers immediately. For example, they ask a support for *participation in trade fairs* and enter into a large network of *interpersonal relationships*, in order to go beyond the boundaries of local and traditional habits. Personal direct interactions are widely considered essential, also in international expansion strategies: public or associative support is needed, and WP4 platform could be useful, also in this perspective. A professional community of managers and entrepreneurs that can exchange knowledge and reciprocal engagements could break the isolation of which today suffer many small farmers. The same result can be expected for some initiatives that improve supplier-customer relationships (as CRM) or that allow external professional (consultants, temporary managers, trainers, researchers) to supply their competences and ideas to farmers through a deeper use of networking and ICT communications.

Innovation costs, and often requires a costly compliance with rules and bureaucracies that seriously hamper it. Also quality and safety requisites must be certified and they often need the respect of onerous production and source protocols. So, innovation strategies become sustainable in the long run only if each potential of value is thoroughly exploited by expanding the width of the basin of use of each of the innovations made.

In this sense, there is a strong local demand for *language training* and *infrastructures* (logistic and communication channels) to reduce the weight of the physical distance between the places of production and the destinations of sale or consumption.

In many cases, farmers ask for closer monitoring and reliable quality of the products processed in different markets, but - at the same time - wary of too many bureaucratic rules and documents. They need information and links to reach external markets, but are not ready to adopt a systematic ICT in their daily practice.

It is not easy to see what can be the more effective innovation path, in this context. WP4 platform can have a good impact in the daily practices of farmers if it agrees to move with patience, in this contradictory field. The more suitable solution, in such a context, is to give space to the ideas of the more dynamic and involved actors, with the aim to find an acceptable compromise between the urgencies of the present and the strategic opportunities for the future.

4.8 Difficulties in financing investments

Financial problems have always been a serious handicap in the modernization of agriculture. For different but convergent reason.

First of all, the fragmentation of ownership has made it difficult to resort to bank credit, forcing many companies to rely on a very limited self-financing.

Secondly, the available capital has been invested in the purchase of land, construction of buildings and buying of machines (as well as fertilizer, seed and other resources that are currently used for cultivation). Few investment opportunities were always available for intangible assets (knowledge, relationships, R & D, brands, communication etc..).

Today, however, funding practices, also in agriculture, are reaching a *turning point*, as the surveys and focus groups of WP3 testify. Firms are in need to frequently go beyond the traditional fields of investment and urgently need additional sources of funding.

But what and how?

Surveys and focus group gave some answers to this question.

First, in all the regions of APP4INNO, there is a considerable demand for micro-credit, and for the advisory services that are necessary to obtain micro-loans from banks and other institutions. In fact, small and very small production units cannot introduce any innovation without an additional offer of funding.

For this reason, public funds to support the ongoing transformation are necessary, even if they probably are not sufficient to reach the goal.

New forms of hedging the risk of natural disasters and unpredictable events are expected by farmers, in some regions.

European funds that support innovation are considered to be very useful to align business strategies with the new opportunities of our century, but – this is a common complaint – often there are significant delays in payment, due to the slowness of bureaucratic procedures.

All this, in the perspective of the innovative revolution to which the agro-industrial system is approaching, is clearly insufficient. Agricultural firms need additional risk capital and credits that can be supplied only if the relationship between finance and agro-industrial production will radically change. The basis of this change is that (additional) investments ought to be linked to the expected innovation potentials and performances, i.e. to the transformation not only of the single firm, but of the eco-system to which it belong.

The change of cultural habits, the growth of firm or network size, the better integration of supply chains, the emergence of recognizable quality and healthy differences are factors the can drive the modernization of agricultural funding for the next future.

4.9 Lack of governance and representation

The transformations that were outlined in previous pages cannot go ahead without a strong initiative of collective intelligence and organization.

Opinion movements, business associations, and other forms of advocacy and lobbying pressure can – perhaps - change present situation, which is described in dark or grey colors in most of the WP3 surveys and focus groups.

On the one hand, everyone is aware that, to launch major innovations in eco-agro-industrial system (and in individual companies), the active collaboration between farmers, other actors in the supply chain, consumers and the state is strictly required. None of the great innovations we have talked about - not even that of the new quality and new agricultural products - can happen if they are not actively designed and supported by this composite arc of forces and interests.

However, it is difficult to imagine that in the coming years we can start a revolution in political, social and cultural development of this weight and this extension.

Consequently, and pragmatically, it would be appropriate in our project to have goals that are achievable in the *medium range* without major modifications current balance: for example the creation of associations between producers, the development of vertical networks in supply chains, the search for a new collaboration path between finance and innovative investors. For this purpose, the creation of places for collective action, representation and support (regional chambers, innovation agencies) must become one of the priority, along the innovation path we can now design.

In the WP4 platform, these bridging institutions and forces – if they are present in the local society - should be involved in the construction of innovation projects. In fact, as we said, innovation process reach its maximum

potential of value and of change is, in the first instance, mobilize individual enterprises, but, immediately after, learn how to lean on the driving force of the social ecosystem, as a whole.

4.10 Absent or erratic field-proven policies

Perhaps the most serious problem, in this perspective - following the opinions of WP3 surveys and focus groups - is the observed detachment between the existing public policies and the general need for innovation, that begin to steer firms and business people, also in agricultural sector.

Often these policies are judged absent, erratic or scarcely effective.

There are cases in which the positive effect of public policies, local agriculture, is recognized and documented. But there are many other cases - and perhaps more - in which this effect is considered insufficient or negative. Besides, there are cases in which people detect counterproductive effects, which would be desirable to eliminate.

The same European policy (CAP) is subject to criticism, and, in fact, it is being reviewed. Local actors of our project highlight the need to develop, through public policies, an effective partnership about common objectives of innovation and the active creation of shared value. A bureaucratic and impersonal approach is not able to face the complex and changing problems that are involved in social and productive innovations.

The message is to reduce the distance – cultural and geographical - between the innovators that elaborate new designs, taking the risk of its future, and public institutions, that cannot remain neutral and distant, but ought to share the feeling with which the new world is day by day re-invented by the players on the field.

5. BIBLIOGRAPHY

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