The Interplay Between Local and Project-Based Innovation Processes in Rural Development –
Towards a Conceptual Framework

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Abstract

This paper is a review of the available literature, to explore development theories, project management processes and rural innovation, and to offer some proposals on how to make rural development projects more attuned to innovation processes. An important limitation of the paper is that it is conceptual rather than empirical. It draws on a wide body of literature including innovation studies, project management, rural development, cognitive psychology, and system theory to examine the differences between the respective features of project management and innovation processes. The ideas grounded in the paper are twofold. First, rural development professionals can greatly learn from the experience of innovation management in the business sector if they make the effort to reflect and adapt that experience to the rural world in developing countries. One expected gain from this is new insights that can help towards a greater professionalization of innovation support in development projects. Second, in light of experience in both contexts, despite the wide gap between the respective rationales of project planning and management, the non-linear nature of innovation processes and the complexity of rural development contexts, projects can still support innovation if they adapt their design, procedures and leadership styles.

Keywords: *Development project, project management, rural innovation,*

The Search for New Models in Development Innovation

The failure of projects and other R&D organizations to support innovation in developing countries has come increasingly to the fore in at least three important areas: policy making, higher education and rural extension.

In research policy, both national and international, there is a growing concern for the relevance of government innovation policies, when these exist. Poole (2006) notes the 'policy inconsistency' which creates "conflicting tendencies between a standardising 'international development architecture' and the need for focused, flexible responses to context-specific challenges and opportunities defined by rural poorest". As a result, policy has often an "urban bias" and does not address the needs of the rural poor, especially since innovation diffusion may be blocked in rural areas because of specific bottlenecks (higher cost of capital, lower skills, and higher age). Innovation in rural areas does take place, but "there has been a limited, slow and incomplete convergence of informal farmer innovation with the research efforts of formal systems, and with mixed results" (ibid). It is therefore difficult to address rural innovation with top-down or sectoral policies.

In higher education, African institutions have long been seen as simple means of training human resources and producing knowledge, not specifically as important actors in innovation. There have therefore been debates about their actual role in promoting development processes. Increasing calls have been made to mobilize their research and teaching capabilities, engage into entrepreneurial

education, to become a source of technology, and support to the creation of new enterprises. "Triple Helix" models of University – Industry –Government partnerships have been proposed for that purpose[2]. These models are meant for Universities to contribute to economic and social development and become an active leader and innovator (Etzkowitz and Dzisah, 2007).

In rural extension, for a long time meant to be the main conduit through which innovation is channeled, the problems faced have also been listed many times: domination by inefficient public services, inadequate funding for recurrent costs, insufficient technology, poor links to research, limited farmer participation, limited understanding of markets' needs, top-down attitudes of management, poor extension staff quality, and weak evidence of impact. As a result, extension programmes have been increasingly decentralized, towards a greater responsibility of local government[3]. But these attempts have also faced difficulties: political capture of extension by local politicians, little funding, poor capacity in management and delivery, etc. As Swanson (2008) puts it, "in the emerging global agricultural economy, the top-down, technology-driven extension system no longer appears to be an appropriate model. If public extension systems are going to be effective in improving rural livelihoods, then they must change their focus, structure and approach". No singleextension model can be advocated that is universally relevant, but rather mixed public and private systems of advisory services, demand-driven and accountable to local user groups should be encouraged and coordinated.

All these criticisms point to the "disconnect" between policy, education and extension and the development needs, and attempt to develop models to "reconnect" them. These new models are inspired by the same principles: flexibility of design and rules, bottom up rationale, leadership through facilitation and advice rather than instruction and transfer of technologies. As a medium to operationalize these new models, projects are a central mechanism whose capacity to do so has, surprisingly, been relatively little explored. The interactive and networked nature of rural innovation processes has largely been recognized, but little attention has been paid to its implications for project management.

The main purpose of this paper is to explore the respective rationales of innovation processes and project management, to compare and contrast them, before drawing some conclusions and offering suggestions on how to make rural development projects more attuned to innovation processes.

Projects and Innovation: Two Fields Kept Apart in Rural Development

Both innovation and rural development projects have been the object of considerable interest from all sides: research, development policy, management, management strategy, business economics, project methodology, etc… Yet very little research has been done on how the two intermesh in rural development. The issue of how well projects deal with innovation has gained importance over the last decade, mainly in the project management literature. As Keegan and Turner (2000) rightly argue, the link between innovation and projects should be obvious: "project based firms deal with change as a matter of their daily commercial reality and … customer orientation is always a strategic concern. What better context in which to examine innovation?" Similarly, Fillipov and Mooi, (2010)

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[2]In Africa, this call has come notably from the NEPAD, and relayed by higher education networks like ANAFE and RUFORUM who developed projects to promote entrepreneurship and innovation in universities

[3]Few countries –most notably Ethiopia- maintain a national system of extension.

emphasize that "project management is the engine for implementing new ideas, and all projects may involve a certain degree of innovation and creative effort, depending on the definition of innovation".

Exploring the interplay between projects and innovation processes is not easy, if only because there is a diversity of projects, and a diversity of understandings of innovation. There is a need, first, to define these two concepts, and highlight the ambiguities around them by clarifying the general development theories that underscore them. These theories sometimes infuse them with an ideological stance that makes them unnecessarily complex and often remove the necessity of action to levels higher than those in which most innovation and project professionals operate, making perspectives of change even more remote.

In rural development, projects are a mainstay of the literature. Many criticisms have been leveled at the project "format", yet the issue of the articulation of agricultural and rural innovation and project management has been remarkably rare. The recent shift of development thinking to innovation systems approaches makes it all the more interesting, as projects are the form most likely to put these approaches into practice. Exploring this articulation is bound to be complex. Manydevelopment projects are within the range of Rural Extension (RE) –Research and Development (R&D) domains. Yet, as Filippov and Mooi (2010) point out, "R&D projects should be distinguished from innovation projects… Innovation is a non-linear process, not necessarily technology-led and may not necessarily result from formal R&D investments. Innovation is the exploration and exploitation of new ideas and recombination of existing knowledge in the pursuit of sustained competitive advantage. Besides, both innovation and R&D projects by their nature differ from conventional projects". In light of this difference, one can perhaps say that for the most part, rural development projects are not so much "innovation" projects as delivery or transfer of technology projects.

What is a Project?

In the project management literature, projects are often contrasted with "non-project" organizations. In the former, employees from different departments of an organization are brought together to work on a particular project, singly or in teams. They report and are accountable to both their department head and to the designated project manager. Under the latter, there are a range of organizational structures whose common feature is that they are not designed around projects. The traditional model is that of the 'functional organization', in which work is based around functions – like manufacturing, accounting, human resources, etc…- not projects. Public organizations are often typically functional organizations. In-between these two, there are hybrid models that combine project and non-project organization types, under a *matrix* structure. Functional organizations are important in supporting innovation because, ideally, their continuity provides for the 'enabling environment' needed by innovation processes.

An important preliminary step in exploring the issue of innovation in the context of projects is, as Blindenbach-Driessen and vdEnde (2006) remind us, to make a distinction between different types of projects. The authors quote a generic definition by Nelson, which captures all the diversity of projects. "A project is an endeavor in which human, financial and material resources are organized in a novel way to undertake a unique scope of work, of given specification, with constraints of cost and time, so as to achieve beneficial change defined by quantitative and qualitative objectives". Within this broad definition, they identify three types of projects.

Project-based organizations (PBOs) are those where the functional organization has become completely obsolete, without formal functional coordination of activities. "Such an organization is entirely dedicated to one or more projects... and the needs of projects outweigh the functional influence on decision-making". In rural development, one can assimilate PBOs to most projects[4], where the project itself is the organization with its own staff, and the latter ceases to exist at the end of the project. But it is useful perhaps to make a distinction here between PBOs that chose to structure and manage their activities into projects, and those that perform projects for others under contract.

Project-led organizations (PLOs) still have some characteristics of functional organizations, "since there is some coordination of functionally equivalent activities". In rural development, these types of organizations can be represented by organizations whose activities are entirely funded by one or several projects, ie, many NGOs and even to some extent public research organizations which have insufficient public funding.

Business Projects (BPs) are those projects that are "executed by order of a specific external client"… "they offer unique solutions to each client… who typically initiate a business project, define the specifications, provide financial resources, and at the end benefit from the deliverables… they are managed autonomously primarily bounded by the contractual agreement with a client". Although this business orientation is not as marked as in the corporate sector –at least not to the point where development projects can be labeled "business" projects- perhaps this is the form towards which some projects, most notably in value chain development, are moving[5].

Projects are almost by definition temporary organizations, whose activities revolve around achieving pre-defined results within their lifespan. By contrast, non-project organizations are permanent entities, whose functions are assumed to be the running of continuous processes, which are potentially more favorable to the long term, iterative nature of innovation processes. But in the context of rural development, the move away from a model of core funding by most international aid agencies, and the generalization of project competitive funding, has largely contributed to a "projectification" of development activities. This is not only in time-bound innovation projects, but also in the running of public organizations' functions, especially in those countries more reliant on international aid. This observation suggests two major issues. One is the influence of projectification on the nature of organizational structure. Public organizations lose their 'pure' functional structure to become de facto 'matrix' organisations where employees may be at the same time part of their organisation's functional group and part of a project –or even several projects-, possibly answering to more than one command structure and, more likely, to different incentive systems. A second issue is the capacity to support innovation processes. One could think, optimistically, that the imposition of a short term, discontinuous, project rationale is in itself a means to enhance innovativeness in the performance of public functions. But when and if this happens, it is at the expense of the long term

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[4]At least to most rural development projects as they were used to be designed up to the eighties. There is now a diversity of PBOs depending on the country's policies, which impacts on the project's autonomy. In some countries, project personnel are seconded by a Ministry Department and accountable to it. In "partnership" projects, whole sets of activities are implemented by public or non-governmental agencies, not by project staff per se.

[5.] An example of this move towards a business format is Mali Biocarburant SA (MBSA), a private company with small farmers as shareholders (another shareholder is the Dutch Royal Tropical Institute), set up with Dutch government aid. MBSA aims at integrating Jatropha to existing farmer's production systems, and provides technical assistance to farmers through a network of field staff.

stability and continuity that are essential to creating "the enabling environment" needed by innovation. Thus those very organizations that are meant to create and maintain the right environment for project innovation are themselves suffering from an unstable and discontinuous environment.

In this paper, for the sake of simplicity, we will only consider product innovations –especially technologies and technological packages - and project-based organizations, what is indeed usually meant by "development projects"[6].

What Is A Development Project?

A project could be typically defined as a collaborative enterprise, involving various inter-related activities that are carefully planned to achieve a particular goal. These activities are carried out within certain limitations -such as a fixed period of time and resources- by teams within or across organizations, whose members may or may not have worked together before. In this sense, projects can also be considered as temporary social systems set up to achieve a specific goal within the context of broader social, cultural and economic systems which define and influence their performance. In rural development, projects cover a very wide range of themes –agricultural productivity improvement, building of rural infrastructure, rural health, natural resource management, agricultural marketing, etc…- and project types and strategies –integrated rural development, participatory development, etc…

An emerging field in the project management literature, inspired by complexity theory, deals with 'complex adaptive systems' projects and their management (Remington and Pollack, 2007; McEvoy et al, 2016; Edson, 2012; Carlos et al, 2017; Hall and Clark, 2010)[7]. This type of projects have, typically, features such as more or less independent, interacting elements that require integration, several stakeholders, a dynamic environment (political, economic, cultural) and they promote various new or unproven solutions. With most 'partnerships projects' in rural development, these are common features, that easily qualify them as complex projects[8]. With complexity, the likelihood of misalignement between stakeholders' perceptions, interests and politics can increase overtime. This requires seeing the project as a complex adaptive system and project leadership as requiring specific management skills, no longer based on the rationale of control and linear strategies, to make the project more capable of adapting to a changing environment.

Development Projects and Their Critics

Development projects are instruments whose design and implementation are guided by their donors' policies. They have therefore been the object of numerous critiques. These can be divided into three categories, ranging from a broad questioning of "development" itself as the goal pursued by projects,

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[6.] There are also "development projects" in business management, aimed at the development of new products and services with the objective to bring them on to the market. These are what is usually referred to as "innovation projects".

[7] Remington and Pollack identify 4 types of complexity in projects: Structural (management of a great diversity of interconnected tasks and activities), technical (interconnection between multiple interdependent solution options), directional (ambiguity related to multiple potential interpretations of goals or objectives, more specifically in projects entailing political and cultural change, and temporal (changing environmental or strategic direction outside the control of the project team).

[8.] Turner and Cochrane (1993) used goal clarity and method clarity to work out a matrix-like typology of project complexity, from type 1 (both goal and method well defined) to type 4 (both not well defined). It does not take much to classify all rural innovation projects as the most complex type.

to the shortcoming of projects as a "method" of intervention, to project methodologies –either their formulation or their strategies.

The Critique of "Development" as a Concept

The critique of development is as old as the concept itself, coming most notably from anthropologists. As Smyth summarizes, "the relationship anthropology has with development is perhaps the most intimate out of all the social sciences. The concept of 'development' was central to early anthropological understandings of what differentiated the supposedly 'primitive' cultures, which its disciples studied, from the 'advanced' cultures, which they hailed from". But since the 70s, this critique has been led by a diverse group of radical academics[9], indifferently labeled "post-development", "post-structuralist", "post-modernist", often strongly influenced by the writings of the French philosopher Michel Foucault, and tend to see development as mere "discourse" that creates the "object" it pretends to describe, by constructing and ordering the reality in which it seeks to intervene (Nustad, 2001) – in this case development. Having been created through discourse, development then takes on a life of its own: it organizes itself, develops institutions, concepts, specialized language, experts, etc… , which turns it into a "development industry" whose institutions have entrenched interests, to keep the industry going. The more radical authors see "development" as merely a continuation of the colonial project, based on the idea of trusteeship –it is the role of the developed nations and, alternatively, the national State and elites to develop the 'under-developed' , others as an objective set for 'under-developed' countries to forestall the threat of communism after the Second World War[10]. At its most radical, development is sometimes seen as a means for the developed world to guide and control the Third World by setting objectives, imposing concepts and models, advancing values, opening markets, gaining political influence, etc... In this view, academics play an important role because their writings create and justify the rationality which underwrites the development vision and the world order it reflects (Hobarth, 1993).

In the context of this broader critique, development projects are viewed as the instrument through which power relations between North and South are played out, and attempts to put the discourse into practice are made. Concepts such as "grassroots development", "participation", "gender", "empowerment", etc… are but the successive products of the development industry, around which development experts reinvent the discourse and keep the development market alive. Although no post-development critique has been leveled at innovation (to our knowledge), there is no doubt that the current focus on innovation and innovation systems in rural development thinking will be seen simply as a variation on the discourse of development.

The Project Method Critique

The critique of projects under whichever label –participatory, integrated, etc…- as a medium for development is well known. Without being as radical as the post-development critique, it sees projects as arbitrary, inequitable and somewhat contrived modes of interventions, with sometimes harmful impacts. Their negative environmental impacts have been often criticized, especially in the case of large infrastructural projects, including by the biggest donors.

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[9] For a review of these critiques see Nustad (2001) and Sellamna (2000)

[10] Reference is often made to President Truman's inauguration speech in 1949 as the founding moment of "development", whereby the modernization of the USA is set as an example for under-developed countries to follow.

A further critique of rural development projects is that, because of the resources they concentrate for a short time, they frequently produce clientelism, turning intended beneficiaries into petitioners rather than active participants in development. "Such projects are dominated by elites, and both targeting and project quality tend to be markedly worse in more unequal communities" (Mansuri and Rao, 2004).

The Project Design Critique

Critiques leveled at the way projects are designed have mostly focused on the Logical Framework Approach (LFA)[11]. Chambers and Pettit (2004) summarize these critiques by stating that the project design has a strong control orientation that discourages innovation and learning, and reinforces unequal power relations. The poorest and less articulate people are rarely involved in project formulation.

The critique of the linear nature of project formulation emphasizes the false assumption of "scientific validity" of the project, notably the "problem of attribution" –can we attribute all outputs to the project's activities? Scott-Smith (2013), for example, argues that "success is usually defined in terms of project objectives, and is explained by the project's inherent qualities. Projects are seen to succeed because they have a set of universally-good characteristics, which can be replicated in different contexts. This includes having the right kind of aims, articulating objectives in a certain way, setting up the right kind of organizational structure, using the right kind of implementation plans, and so on".

Project design has also been criticized for its gradual complexification overtime. Lavigne-Delville (2012) for example notes that the LFA's emphasis on specific tools and procedures, on management and accountancy rules, was motivated by donors' wish to keep control over increasingly complex actions and over the use of finances. This reduces flexibility and imposes the project's own rigidity onto all stakeholders. The attempt to lessen power concentration into the hand of project management (decision making, technical and financial power) was to move on to a "service providers" model –often labelled 'partners'- did not improve the situation as it made the institutional set-up, coordination, contractual arrangements even more complex.

A further critique in this strand, perhaps related to the previous one, is the inability of project management to adapt the design to reality. Biggs and Smith (2003) for example point out the "paradox" of a failure to learn in projects. Although project design guidelines state that the project cycle better be viewed as a learning cycle, thus the need for project design to be reviewed during implementation and adapted to on-going events, this is not easily done in practice. Despite new projects being designed on the basis of lessons learned from previous projects, design 'improvements' fail to induce learning during implementation. "Many projects are haunted by the same recurring problems".

This inability to learn is not restricted to rural development projects[12]. It points to problems more deep-seated than project organizational design. These deep-seated problems may be the treatment of uncertainty and the inability of project management to deal with it, an issue discussed later.

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[11]. For a good overview of the critique of the LFA, see Hummelbrunner (2010).

[12]Swan et al. (2010) for example note the consistency with which organisations fail to learn from projects and their tendency to 'reinvent the wheel' every time, repeat mistakes and fail to transfer lessons from one project to another. They

What is Innovation?

Innovation has stimulated a considerable amount of research since the Second World War. A simple search on the internet yields thousands of results. Yet this wealth of information adds to confusion, as the concept is defined in multiple ways with varying emphases on a number of dimensions across disciplines, units of analysis, professional domains, geographical scales, organisational contexts, etc… Some ideas are however shared by most innovation specialists.

First, innovation is "something new", but this "something" can range from a product or a technology, to a process, a form of organisation, a new opportunity, etc…[13] Innovation is different from invention, but that "invention" can be a minor improvement of something already existing, or indeed the replication (imitation) of something existing in another context. Sometimes invention and innovation can be so closely linked that it becomes difficult to distinguish one from another. Innovation is not simply about the creation of new products but also new processes; these processes may be "technological process innovations" (leading to new products) or "organizational process innovations" (leading to new ways to organise things). But these organizational innovations are not limited to the process of production within a given unit (factory, farm, institution), they may concern entire economic sectors (industry, agriculture, services). Indeed, some of the most radical societal changes have been brought about by such economic sector – wide innovations.

Second, capacity to innovate is not limited to scientists or industrialists, nor is it a privilege of scientific knowledge. There are local innovations, based on local, non-formalised, knowledge. But local innovation processes are overlooked in the search for new solutions. Three reasons are: that these innovations are mostly incremental and go unnoticed; that there is little knowledge sharing, due to lack of documentation and isolation; and researchers often stress the importance of market or economic outcomes of innovations when local innovations may not have a noticeable market impact.

Our understanding of innovation and innovation processes shapes the way we analyse them and, consequently, our strategy to support them. Yet research and development understanding of innovation has considerably changed overtime, and mental models of innovation have evolved from simple, linear models to more complex, systemic models. Rothwell for example identifies five generations of innovation models, ranging from "linear models"[14] to "coupling" models, "integration" models and "system models".

Conceptual models of innovation have therefore moved from simple, linear, ideas on to more complex constructions that recognize the "messy" nature of innovation and the role of many actors up and downstream. Innovation is now recognized as an iterative process, in which there are 'loops',

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[13]Van de Ven notes that both technical innovations (new technologies, products, and services) and administrative innovations (new procedures, policies, and organizational forms) are included in this definition. He adds that some prefer to keep technical and administrative innovations distinct, but that making such a distinction often results in a fragmented classification of the innovation process, because most innovations involve new technical and administrative components. Referring to the work of Ruttan and Hayami (1984), he points out that many technological innovations in agriculture and elsewhere could not have occurred without innovations in institutional and organizational arrangements.

[14]Models in which innovation is seen as the outcome of 'need pull' (demand driven) and, second, "technology push" (supply driven) which prevailed until the seventies.

trials and errors before getting to the final outcome -and this outcome is sometimes not exactly the one originally aimed at.

These conceptual changes–originating in industrial innovation thinking and spreading to other fields- have been greatly influenced by changes in the markets in which industrial firms operate (economic growth, industrial expansion, more intense competition, inflation, unemployment and resource constraints): from the post-war belief in the power of scientific and technological breakthroughs to solve society's problems (technology push), to the demand of expanding markets (need pull), to the realization that innovation requires adaptation of technology supply to market demand and, finally, that innovation is part a 'system' larger than what one organization can achieve.

Consequently, the role of research and development (R&D) from being conceptualized as the main source of innovation and often organized separately from other departments has also gradually changed. Considered first as sole source of innovation, it was linked to other functions, specially marketing (to respond to market needs), then integrated into the whole organization, recognizing the need to innovate also in organizational processes and not only in products, to finally be encompassed in wider networks that extend outside the organization.

In rural development, there have been similar conceptual changes, with the realisation that "agricultural change is not just about adopting new technologies; it entails complex interactions among multiple actors and a range of technical, social and institutional factors" (Cullen et al, 2014). Although not exactly in the same terms, but under the same broad economic influences, rural innovation processes have been successively conceptualised as a linear 'transfer of technology', 'pipeline' or 'treadmill' model, a 'participatory technology development model', a 'farming system research and extension' model, a 'participatory learning' model, etc….The role and contribution of projects and actors operating outside the formal Agricultural Research and Development (ARD) sector has been recognized. Under different names, the same central idea remains: an integrated and dynamic systemic model of rural innovation is made necessary by the changing nature of agriculture because, increasingly, farmers are facing complex issues (sustainable resource use in the face of climate change, demography; demand for product quality and standards; increasing market competitiveness, etc…). These new challenges (collective management of natural resources, chain management, collective marketing and input supply, organization building) transcend the level of individual farms and force us to move to a model of co-innovation in new, dynamic and interactive multi-actor networks / platforms that encourage collective learning and a pooling of resources for knowledge and action. The current emphasis is on approaches that facilitate the emergence of context-specific solutions, building on farmers' innovation practices rather than centrally-imposed blueprints. Consequently, strengthening local capacity to constantly innovate and adapt to changing economic, natural and political environments becomes important. Innovation processes become therefore also social learning processes meant to enhance the innovation capacities and knowledge bases of stakeholders and of the local, regional and national innovation systems.

Innovation Processes and Project Management: An Uneasy Relationship

The relationships between projects and innovation are multi-faceted: projects may be considered as a medium for innovation, and as institutional innovations in themselves. Indeed the same could be said of development projects. Even if they have no commercial objectives, their oft repeated objectives such as participation, farmers' orientation, etc… strongly link them up to innovation processes either as proponents of innovation packages to their target groups or as support to ongoing innovation processes. Depending on how loosely "innovation" is defined, all projects can be considered "innovation projects". In so far as innovation is associated with "change", and since all projects aim at introducing change, all projects can be labeled "innovation projects" one way or another.

From a process point of view, inter-institutional and cross-functional projects, by confronting different sources of knowledge and leveraging different skill sets, are assumed to encourage creativity and spur on innovation. A condition for this is non-bureaucratic project methodologies and experienced project managers that do not stifle this creativity.

The differences between project management processes and innovation processes are well documented in the business management literature. Some of the main reported barriers to innovation are the one-off and short duration of projects, the lack of collaboration within projects (between various teams) and with outside organizations, as well as the challenge of innovation management. These are perhaps best summarized by Fillipov and Mooi (2010): "the interplay between innovation and projects is dominated by the ideas on how to correctly manage projects, rather than how to effectively manage innovation. In other words, the attitude towards managing innovation projects remains mechanical in nature as traditional project management approaches are applied to innovation projects". This idea is similar to what Van de Ven (1986) called the human problem of managing attention, "because people and their organizations are largely designed to focus on, harvest, and protect existing practices rather than pay attention to developing new ideas. The more successful an organization is the more difficult it is to trigger peoples' action thresholds to pay attention to new ideas, needs, and opportunities". In projects, as in any other organisation, most individuals are efficient processors of routine tasks. They have very short spans of attention, and lack the capability to deal with the complexity inherent in innovation processes. In rural development, such lack of attention can be expected to be even higher when the project includes many organisations as 'partners', and when these same organisations are themselves involved in several projects.

Likewise, groups' and organisations' ability to deal with this complexity can be limited by problems of inertia, conformity and incompatible preferences. This is similar, in group dynamics, to the "group think" effect[15] whereby groups can become less creative than individuals, and more resistant to change. The implication is that without the intervention of leadership, structures and systems focus the attention of organizational members to routine, not innovative activities. This is well illustrated

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[15]. Group think occurs when there is a strong pressure to conform. Group members try to minimize conflict and reach a consensus decision by suppressing dissenting opinions and refusing to examine alternative viewpoints. In this case, the group becomes less innovative than individuals.

by the experience of Multi-Stakeholder Platforms (MSPs), often initiated by donors and run as "projects". MSPs are the operationalization of innovation system thinking, with its emphasis on the importance of networking between heterogeneous actors, collaboration between them and collective action in the innovation process. Platforms are meant to provide a means to formalize collective learning among actors, and as a result to reshape relations and institutions (Swaans et al, 2014). As such the idea seems to be common sense. Yet, as many experiences show, collective action –when it occurs- may not be conducive to innovation. As Brouwer et al. (2013) point out "putting the right people in one room or space does not automatically generate an inclusive and equitable process and does not automatically produce more effective and sustainable solutions". Innovation, in development projects, agricultural advisory services or in technology development, requires also personal, organizational and institutional change. Organizational culture, leadership, free flow of information, shared interests, common visions are also necessary. In the absence of an enabling environment, the innovation process is blocked and organisations may remain simple arenas where existing power relations are played out and the status quo maintained. As Darbas and Sumberg (2013) say, "the focus on achieving consensus may act to inhibit radical or disruptive innovation".

Ison et al. (2014), based on the experience of Australian aid programmes, conclude that, beyond projects and platforms, "systemic learning is required as a routine element of development investments if multiple actors are to engage usefully in processes of innovation and change". In this process of change, leadership is critical to achieve impact.

As presented in the Table below, other differences pertain to issues like time, process, objectives, risks and costs.

Table 1: Differences between project processes and innovation processes

	INNOVATION PROCESSES	PROJECT PROCESSES
TIME	Long, undetermined	Short, planned
PROCESS	Iterative, improvised, exploratory	Planned, linear, managed
OBJECTIVES	Undefined or loose objectives	Clearly defined, contractual objectives
RISK	High risk, risk management through continuous strategizing	Low risk, risks reduced at the project preparation stage
COSTS	Value / costs difficult to estimate ex-ante	Value / costs defined before the start of the project
MANAGEMENT	Creative process, coupled with uncertainty and a need for slack resources	Driven by the search for precision, accuracy and optimal use of resources
RATIONALE	Complex / chaotic, circular, formal and informal, personal relations and social networks	Mechanistic, linear, cause and effect, formal, institutional and functional relations

Given these differences, Blindenbach-Driessen and vdEnde (2006) note the reluctance of managers to develop innovations within business projects. Moreover, they point out that for innovations developed within business projects, the application of traditional linear project management practices have a negative impact on the success of these innovative activities. Perminova et al. (2008) add that "the traditional approach to project management still puts a lot of emphasis on assuring conformance to time, budget and scope constraints. Considerations, such as continuous improvement, customer-centric thinking, and reflective learning are often left behind... and the real difficulty project managers meet is making an optimal choice among the alternative actions, which requires knowledge about outcomes of preceding activities".

Innovation, Projects and Risk

Given that the future entails uncertainty, it is reasonable to postulate that uncertainty is inherent in any innovation process[16]. These processes consist of, and require, action to be taken under conditions of uncertainty (Jalonen, 2012). A main issue in attuning innovation and project management processes has therefore to do with dealing with the uncertainty brought by innovation processes into the linear and risk avoidance logic built into project design. In any project, this uncertainty is not confined to internal –project- events, but includes environmental events, like lack of information, ambiguity, characteristics of project parties, trade-offs between trust and control mechanisms, and varying agendas in different stages of the project life cycle (Atkinson et al., 2006). The minimization of risk in development projects is central to the project design. It is embedded in the formulation of the project itself, notably in the systematization of the 'assumptions' rubric of the Logical Framework matrix.More indirectly, it is also built into the systematization of the LFA itself. In a competitive funding system, when donors have to choose between dozens, if not hundreds, of project proposals, they seek project formulations that are comparable, not only in the application template, but also in the project structure[17].

Uncertainty and risk are not synonymous concepts, although in general terms one can argue that risk is a form of uncertainty. The general literature on the subject defines uncertainty as a situation where it is hard to define or predict future outcomes or events because of insufficient information or knowledge, especially in complex systems, where multiple actors interact over long periods of time. Therefore uncertainty cannot be measured in quantitative terms because there is no basis for calculation. By contrast, risk is the outcome of an action which may not yield the expected results, but through internal or external factors that are known and whose impact can be measured and possibly minimized through preventive measures. "A risk is categorized as having an impact, while an uncertainty may or may not have a known impact…both terms include both positive and negative possibilities" (Krane et al, 2012).

The treatment of risk and uncertainty is important in innovation projects because it highlights three major contradictions in innovation policies.

The first is political, expressed by Osborne and Flemig (2015) when they say that public policy expects innovation to solve society's biggest problems; yet at the same time it predominantly seeks to minimize or avoid completely all risks. In rural development projects, these risks do not relate only to environmental uncertainties, time or budget, but also to the risks inherent in promoting local capacities and enhancing social learning, as distinct from promoting organizational or technology diffusion.

The second is strategic. Attempting to avoid or control an inherent feature of innovation (uncertainty of processes and outcomes) means either hampering it or depriving oneself of its benefits (Böhle,

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[16]Flemig et al (2015) aptly note that innovation, by definition, is uncertain in both process and outcome. They quote Tidd and Bessant's (2009) estimates that about 45% of innovation projects in the private sector fail while over 50% exceed their initial budget and/or timeline.

[17.]One is often told not to try to be 'original' in the formulation phase of a project as it may be detrimental in the project selection phase, but keep creativity to the implementation phase once funding has been secured.

2011). It means preventing negative things from happening but also preventing the chance of innovation itself happening and of learning from mistakes.

The third is methodological and relates to "the wide-spread belief that the uncertainty will decline as the project proceeds", when in fact each subsequent phase of the project necessitates more and richer information to avoid other risks (Filippov and Mooi, 2010). Attempting to avoid risks may therefore turn into an endless process of risk avoidance strategies that come with their own risks.

The distinction is also important because it highlights the issue of the relevance of the project risk management approach. As Edkins et al (2013) point out, if project management's role is to make sure project requirements (time, budget, scope) are met, who establishes those requirements in the first place? This question raises the issue of the management of the "front end" of projects, an issue dealt with later.

Who's Managing Whom? The Mule's Path in Rural Development Projects

A preliminary story to illustrate the point made here is that of the « mule's path ». The story originates from the author's own experience of researching social organisation in Algerian state farms in the 80s. The subject was power relations between agricultural workers' informal organisation and the state's centralised planning and management system. The widely held assumption was that –as state farms- decisions were made by the State and executed through a command and control structure. When asked about who makes the important decisions, one of the workers' representatives answered: "*Things didn't change much after independence. Thirty years ago I used to work for a big landowner in my native village. The owner lived in town and came only occasionally to check on how his farm was doing. We knew how he wanted his visits to be organised – quick and to the point-, and we prepared for them. Since we knew that he would hardly get off his mule, we prepared very well the plots along the mule's path. We cleaned and weeded the fields. So he was always happy with what he saw. Nowadays we do the same. Whenever we have to deal with state bureaucrats and controllers, we send out the message to all farm workers: "prepare the mule's path!". We make sure they see what they want to see, and they hear what they want to hear. Except that the mule is now a Peugeot car and the path a tarmac road*".

A first problem in assessing the relationship between project processes and innovation processes in rural development is therefore how to treat the issue of intentionality. The complex world of rural development is very different from the neat and tidy structures of corporate management. Whatever the project management intention, it does not impose itself on the local population. The latter can adapt and divert the project's resources, messages and technologies to fit their own needs, regardless of the project's original intention, while the project follows its own planned route as a "mule's path". For the project, it becomes therefore a question of unintended innovation. Mongbo (1995) spoke of the "dismembering" of development intervention in Benin whereby, in practice, programmes undergo a process of transformation to adapt them to local criteria and preoccupations. A good case in point is farmers putting project technologies to use for other purposes. A well-documented case is that of *MucunaPruriens*, which was introduced by a Dutch funded project as a means of restoring soil fertility in the South of Benin, widely adopted by farmers for another reason, its ability to smother and suppress *ImperataCylindrica*[18]. Couty (….) notes other cases of conflict between farmers' and developers' strategies, with technologies intended for agricultural

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[18]See Manyong et al. (1999) and UNDP (2001)

intensification in West Africa put to use by farmers with an extensification objective. Other examples known to the author are a series of equipment given by the Algerian government to farmers as part of their re-housing in modern "socialist villages" in the eighties, whose usage was diverted: small washing machines meant for washing clothes and reducing women's workload, but used to churn whey and curds; large plastic containers meant for household refuse collection used to store cereals, etc…

This interaction –and potential conflict- between project-led innovation and user-innovation represents a challenge to the analysis of the role of projects in innovation as project processes can be conflated with innovation processes. Failures of the former are assumed to be failures of the latter, when in fact projects can fail in their objectives but succeed in spurring on local innovation processes. Conversely, projects can hamper innovation not because their own objectives failed but because their activities interfered with or obstructed on-going local innovation processes. This is where management strategies aimed at minimizing risks to the achievement of project's objectives[19] may also maximize or reduce users' potential for innovation. It is therefore necessary to have a broad vision of innovation processes that integrate not simply the project's objectives –as defined by the project's designers- but also users' objectives into the analysis (Akrich, 1998).

Such broad vision should integrate the fact that innovation processes are intermingled with power processes. Innovation processes need space –fora for discussion, exchange and decision making-, but power shapes the boundaries of this space, and determines who has access to this space and what is possible within it. At all levels of the innovation system, social groups fight over resources or try to protect their entrenched interests, with little participation of marginalized groups. As Cullen et al (2014) note, "power shapes institutional arrangements which create differentiated access to and control over resources. This, in turn, can create differentiated outcomes of innovation and development processes".

At the local level, specifically, individual or institutional 'gatekeepers' can be both an entrance point – acting as knowledge brokers and innovation champions- and a barrier –using their power and influence to block the process. Projects attempting to foster innovation –through setting up fora such as innovation platforms, farmers' groups, etc…- may succeed in creating them but fail in addressing the underlying issues causing the weak actor linkages and power imbalances in the first place (ibid, p 261).

To promote innovation, projects must therefore find ways to empower less powerful actors while at the same time creating space for inclusive innovation processes. This requires changes in the formulation of the projects themselves, in project management procedures as well as in the wider role of projects in their social and political environment.

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[19]A risk is defined as "an uncertain event or condition that, if it occurs, has a positive or negative effect on a project's objectives" by the Project Management Institute's (PMI) "Guide to the Project Management Body of Knowledge: PMBOK® Guide".

Making Development Projects More Innovation-Friendly

Conceptualization of rural development has since the late sixties adopted systemic analyses, and increasingly moved up to ever higher system thinking to deal with innovation: from cropping and livestock systems, to farming systems, to agrarian systems, to knowledge and information systems, and more recently on to innovation systems[20]. Concomitantly, it also moved away from individual actors, to theorize and target abstract collective actors (labelled "stakeholders"). While these higher levels of conceptualization may have yielded useful insights, they have undoubtedly failed to translate into convincing added value in terms of action.

Rural Development Projects: The Need for Realism and Pragmatism

Many development professionals have asked themselves about whether there will ever be an end to development projects, and what would happen then. Yet in sixty years of development aid, projects have become a pervasive feature of the North-South mode of cooperation, to the extent that development can almost be equated with projects. McEvoy et al (2016) for example note that since the declaration of the Millennial Development Goals in 2000 development aid has increased, with a fragmentation and duplication between donors and a propensity towards project proliferation. Projects cannot however be associated exclusively with development aid. They are likely to remain a mode of organization even in national interventions, public or private. A first step is therefore to be realistic: we have to accept that projects are here to stay, under one form and name or another[21]. We cannot ask a cat to stop being a cat. Projects are projects and there are some parameters that in all likelihood will not change. They are time bound. They have finite funding. They are accountable to whoever is funding them.

Strengthening innovation capacity requires that we reconsider our thinking, not through vain claims to a new "paradigm change" again[22] but through a return to basics. One such basic principle is that if project promoters are serious about supporting innovation processes, then it is the project that should adapt to the complexity of those processes and not the other way around. Another basic principle is that development thinking should "land", stop dealing with people as ever higher conceptual aggregates and rediscover individual actors and their potential creativity and change. A third principle is that it is changes in relationships between people that bring about wider changes, through change in practices, in rules and, ultimately, in institutions. These individual changes result from changes in values, beliefs and perceptions, and bring about innovation. These principles should be the grounding of projects aimed at enhancing local innovation processes.

The main argument presented in the remainder of this paper is that, to support local innovation, rural development projects should strive to create a virtuous circle of collaboration by working closely with local actors to build social capital and trust, and avoid following the "mule's path". This requires, first of all, being creative at the project design stage, paying attention to the front end of

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[20] These ever increasing planes of conceptualization can be considered either as a consequence of failure of lower levels of thinking (to some extent a form of renunciation) or as a gearing up of the development industry, as post-development critics would have it.

[21]This also means thatwhatever we think about governments or their programmes, they are not going away; they will continue to rule, initiate and implement some form of development planning, including projects.

[22]Post-structuralist critics of development would probably see the 'paradigm change' argument as yet another discourse, regularly used to renew the development industry in times of crisis, with the same results.

innovation, making room for flexible design and adapted management, providing leadership in support to creative individuals and working on the project environment to give political legitimacy to these ideas.

Focus on Learning by Actors to Create a Virtuous Circle

As Swan et al. (2010) point out, the importance of projects as sites for learning, both within projects and from projects to the wider organizations has been recognized by research, but these two levels of learning tend to be conflated. Little attention has been paid to the processes linking learning within projects to learning in the organizations, perhaps assuming that the first one leads naturally to the other. In rural development this has serious implications on the ability of institutions to carry on innovation processes once the project is over. Indeed projects are often seen merely as a temporary source of funding by the organisations engaged in their implementation, not as instruments of change, least of all change in the organisations themselves.

An important insight from Swan et al (2010) is that project learning is different from team learning. This is because project teams do not benefit from the continuity and cumulative effects afforded to functional teams; their social interaction is time-bounded, their activities are non-repeatable, one-off tasks, all with formal objectives. Additionally, they have little time to build the trust needed for the exchange of tacit knowledge. Project teams are a temporary assemblage of people who may have little in common in terms of goals and personal motivation and, indeed sometimes little willingness to learn from each other. Two issues emerge from these differences. The first is the absence of a mechanism to support the transfer of learning from the project on to its member organisations. This is the issue of the organisational embeddedness of projects (Lawrence, Hardy and Phillips, 2002), the extent to which learning becomes institutionalized in a field wider than the short lived project and acts as a source of innovation.

The second is the effect of projectification of functional organisations on learning. Projectification – noted earlier- refers specifically to development organisations –especially public organisations- including government administration being supported by externally-funded projects. This raises an interesting question: what type of learning is generated by these projects and does it feed into and influence the host organisation [23] ? This question is worthy of systematic research to understand barriers to organisational learning. One can only hypothesize, based on experience, first that there is no formal mechanism to document this learning and translate it into adaptations of organisational rules, routines and practices, and, second, that there is little coordination –let alone alignment- between different projects housed by the same organisation, but funded by different donors.

 The mechanism should ideally be provided by the participating organisations themselves. Since it often is not, a major challenge for a project aiming at ensuring sustainability of local innovation processes is therefore not to assume that paths exist already for the transfer and local embedding of project learning but to build them itself as part of its strategy. This means ensuring that lessons

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[23]Undocumented experience suggests that within this mixed system, project agents have to reconcile the requirements of both project and public bureaucracy worlds; they favour the project world for its resources –including incomes- and the public administration world for career prospects: loyalty to their hierarchy, job security, conformance to strict rules and regulations. In fact their status as project agents depends on their not questioning those rules and regulations that are often hurdles for innovation.

drawn from the project are systematically put on the agenda of the member organisations and influence their strategies, processes, methods and routines.

1. *Breaking Away From the Tyranny of Imposed Formats*

Critics of development projects, reviewed above, have highlighted projects' shortcomings, ranging from the very notion of « development » meant to be the purpose of projects to the project format and project linear design. The first critique has been examined elsewhere (Sellamna, 2000). What concerns us here is the project design issue, as it seems particularly relevant in the case of innovation. This is because of both the very nature of innovation processes, and the diversity of innovation types and local situations. Innovation processes do not follow linear processes; they are interactive, networked, and unpredictable. In addition, local situations and development problematique can be very different from one project to another. It stands to reason that no single project format can cater for all the diversity. An important step is therefore to allow for diversity in project formats and move away from the LFA.

Two notions are of considerable relevance: making partnerships an option rather than an obligation, and allowing for greater tolerance to uncertainty.

Plenty of evidence –and theory- suggest that innovation is better achieved through a collective endeavour, with several actors contributing. Yet this collective endeavour should not be formatted as a project's contractual obligation, to access funding. Collective innovation is different from an imposed "partnership", especially when project designated partners are either bureaucratic or little responsive public organisations, or ill-defined and little representative farmers organisations, sometimes functioning themselves as or through projects[24].

Trust is important and this is rendered more difficult to achieve when relationships have to develop in a "business-like" project context, short time, with partners we have not chosen ourselves. These partners may approach the project very differently, with different sets of interests[25]. These differences may indeed lead to richer collective learning, but if differences between organisational members can be both a source of creativity and innovation, they can also trigger conflict and misunderstanding (Marshall, 2006) for which the short duration of a project does not allow resolution. In rural development projects' calls for proposals, there is an implicit assumption that multi-stakeholder settings are, by themselves, a necessary and sufficient condition for joint learning and innovation. Yet, as Marshall points out, in such settings, there is little agreement between researchers about what the precise relationships are between difference, cohesion, knowing, and learning. Some argue that multi-stakeholder settings allow the convergence of shared mental models which increases intersubjective understanding and reduces conflict, thus allowing for more effective interactions. Others, in contrast, suggest that cognitive diversity in groups leads to 'enhanced decision-making outcomes by considering a wider range of possible alternatives, thus allowing for the emergence of new insights'. Others still argue that the effects of group diversity are dependent on intervening conditions such as task type and degree of interdependence.

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[24]Often it is not clear whether project designers –including policy makers- identify project partners according to their competency in innovation support, to a bureaucratic rationale of professional area of authority, or simply to a rationale of 'equitable' distribution of project resources.

[25]Personal experience in several projects shows that, member organisations' rationale often ends up being one of "ticking-off" contractual activities to fulfil their own obligations.

However, while innovation processes are also learning processes, this learning is expected to result in innovation, it is not an end in itself. Learning should be approached instrumentally (as a means to an end) and not ideologically (as an end in itself)" (Guijt, 2007). An imposed 'multi-stakeholder' format, however well-meant, may therefore cause a project to collapse under the weight of badly thought-out contractual obligations through conflict over diverging visions, interests and allocation of scarce resources. Insights from research in open innovation seem to validate the freedom to choose partners. Bengtsson et al. (2015) for example found that "the depth of collaboration with different partners … is positively related to innovation performance, whereas the number of different partners and size has negative effects" and that "the knowledge content of the collaboration moderates the performance outcomes and the negative impact of having too many different kinds of partners". They conclude on the value of "selective collaboration strategies".

For projects, risks are a fact of life, and as Perminova et al. (2008) put it, "uncertainty can be regarded as one of the characteristics of evolution: if you do not have uncertainty, you do not have any evolution". But this does not mean that risks and uncertainty are necessarily increasing, nor that they have negative consequences. Changes are qualitative rather than quantitative; and they can produce problems as well as opportunities.

This holds true for rural innovation. Klerkx et al. (2010) argue that "innovation is dependent on the outcome of the interactions between many self-organizing actors, which makes it a highly unpredictable process". This uncertainty of outcomes is caused by both external factors (economic, political) and internal factors (behaviour of actors) and induces positive and negative interaction cycles of uncertainties for innovators.

The management of uncertainty is the core of innovation management. Böhle (2011) points out that "to promote innovation, it is …necessary to acknowledge uncertainty as an aspect of innovation. It should not be seen as a deficiency that needs to be removed, but as potential to be harnessed''.

Writing from the perspective of complex systems theory, Hall and Clark (2010) draw their conclusion: "if policy engages with complexity—and we believe there is no choice other than to do so—it will need to focus much more on strengthening capacities and processes in order to better cope with unforeseen change. This is innovation capacity".

However, embracing uncertainty "does not mean that innovation today should (again) be left up to creative personalities or based on reliance on general scientific progress. To promote innovation, management of innovation is essential. However, a different approach to uncertainty is required, one which does not aim to remove it altogether, but rather to cope with it" (Böhle, 2011). For rural development projects, this has implications for the types of management and the profile of leadership. These are outlined next.

2. Flexible Design and Adapted Management

The conflict between innovation processes and project processes suggests that projects themselves must change towards more flexibility in their management principles and their organisational design to better support demand-driven innovation. Insights from complex adaptive systems and management theory both give indications on the way to go. As Guijt (2007) argues, "donors must be more rigorous in aligning their espoused values with the protocols and systems they use".

Change is important in three areas:

-A first area is the organisational structure of the project itself, through which management processes operate. For this, Keegan and Turner (2002) call for the evolution of the traditional project management towards more informal, organic management of innovation. Such move can help create time, space and creativity for innovation. It implies a higher tolerance for slack resources and greater levels of redundancy. This notion builds on Burns and Stalker's (1961) notion that 'organic' organisations display features different from those of 'mechanistic' (traditional) organizations, and are more conducive to innovation. They are flexible, lack the rigid procedures and communication constraints of mechanistic organisations, they allow a free flow of knowledge, which makes them more adaptive and responsive to changes in their environment.

-A second area is the ability of project members to respond to change. Hall and Clark (2010) argue that emphasising process and capacities opens up a new range of options for supporting innovation and change. This suggests a different role for policy. "Whereas in the past policy was seen as a way of orchestrating socially useful innovation trajectories, … the role of policy (should) be to identify emerging nascent capacities and support them". An important capacity, as part of the management of uncertainty, is the ability to see opportunities brought about by changes in the environment, and not focus solely on threats. This new role should also be reflected in donors' and policy makers' Monitoring and Evaluation principles to allow project members learning and risk taking. As Guijt (2007) puts it, "donors, by and large, favour a mode of M&E that is rooted in fears of non-compliance of agreements based on a development model that is considered predictable. In practical terms, donors need to rethink the principles on which they base their models of evaluation and learning".

-A third area is the project's openness to its social environment, to help exploit networks effects. Projects should encourage and support informal relations outside member organisations to avoid the shortcomings of over-embeddedness which create a "project insular mentality" detrimental to learning. Here too, research shows that "project organizations operate in environments where innovation depends significantly on the ability to integrate different but interrelated knowledge bases. These knowledge bases include individuals who are located outside organizational boundaries and have no formal relationship with the organization, but are connected socially to project workers" (Staber, 2004). Staber adds that "project workers embedded in cohesive work-related social structures outside the organization tend to be more innovative in their project work than workers lacking such networks". Writing on rural producers cooperatives in Scotland, Tregear and Cooper (2016) say that "networks and collaborations … exhibit a balance between rich internal social relations on the one hand, and a multiplicity of open, outwardfacing connections to external actors and institutions on the other … This balance may be facilitated by collaboration 'boundary spanners', whose particular role it is to make the connections between internal and external networks". Murdoch (2000) similarly writes that "trajectories of industrialisation in the food sector may be undermining some of the latent, trust-based relations that exist in rural areas" but … such (learning for innovation) networks … are more easily constructed in areas that have retained a loose and flexible industrial structure, based upon a large number of small production units".

3. **Giving More Attention to the Front End of Innovation**

The innovation management literature has recently put more emphasis on the pre-project phase. In the business world, this "fuzzy front end" of innovation –that is the exploratory stage of the innovation process where product strategy formulation, opportunity identification, idea generation, idea selection and concept development take place- is when decisions about new product development are taken. Innovation researchers identify this phase as a weakness because "it

strongly determines which projects will be executed, and furthermore the quality, costs, and time frame are to a large extent defined here" (Herstatt et al. 2003). This phase offers therefore opportunities for improvements in the initiation and unfolding of the innovation process and the support the project can bring to it.

While the context of 'product development' in corporate management and that of rural innovation are not similar, the issue of front end activities in rural development projects remains valid[26]. Rural innovation projects, although dealing with different types of innovation, should equally pay greater attention to the front end and proceed systematically, especially since rural innovation projects are often about trying to implement relatively simple and intuitive solutions to complex and not easily discoverable issues. One important reason is that, like any organisation, projects' success depends on the quality of their preparatory phase and the degree to which that phase results in well-defined project and products aimed at.

Current practice offers little or no clear indications on the way to go. However, a review of the literature on the subject yields useful insights.

-Experience in agriculture and elsewhere shows that innovation results from borrowing, and improving on what is borrowed, rather than invention. The ability to exploit external knowledge is therefore an important component of innovative capabilities. A first issue is the project's capacity to learn, a critical issue for any organisation aiming at supporting collaborative innovation. This is what Cohen and Levinthal (1990) called 'absorptive capacity', the ability of an organization to recognize the value of new external information, evaluate it, assimilate it and apply it[27]. Absorptive capacity is both the capacity to assimilate existing knowledge and the capacity to create new knowledge (problem solving capacity). These are a function of the level of prior related knowledge. Other research findings suggest that learning is cumulative: learning in one task may influence and improve the learning of another task. In short, an organization's absorptive capacity depends on the capacities of its individual members and their ability to communicate across external boundaries and between internal groups. This requires that the organisation changes its routines, perhaps also its organisational structure and culture, to facilitate open innovation processes (Vanhaverbeke, 2008). An important final idea, most relevant to rural development projects, is that organisations differ in their ability to acquire, assimilate and use external knowledge since absorptive capacity is specific to each organisation as it is built overtime (path-dependency) based on its specific organisational routines. These differences in absorptive capacity explain why some organisations are better than others in collaborating with other partners in supporting innovation. Their internal research and assimilation capabilities allow them to better exploit external knowledge.

An obvious lesson from innovation projects is the limits of the project format discussed earlier. This limit pertains to the difficulty to initiate and build up absorptive capacity if it is not already there, especially in project partner organisations. This may be a difficult task for a project to do, yet

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[26]One of the differences between the two contexts is that in corporate management one of the main front end activities is to define as precisely as possible the product to be developed in subsequent phases, which is not always possible in rural development. It stands to reason that a short-lived project cannot afford to spend too much time identifying innovation options, working out and testing methodologies, negotiating with "stakeholders", etc… The front end would be the point at which the central concepts of the project are validated, opportunities identified and methodologies defined.

[27]Zahra and George (2002) elaborated on the concept by emphasizing the distinction between 'potential' absorptive capacity –the ability to value and acquire external knowledge- and 'realized' absorptive capacity –the ability to leverage the absorbed knowledge and put it to productive use.

improving the absorptive capacity of project member organisations is at the heart of open innovation and a crucial step in the shaping of a virtuous circle of development innovation. One of the best things a project can do is to help transform its member organisations by making them aware of their potential absorptive capacity and help them turn it into a realized capacity by building their staff's external networks and tooling them with methodologies to exploit new knowledge.

-A second issue is the definition of products aimed at by the project. Project contexts are so different as to make attempts at generalisation misleading. At one end, in standard project formulation procedure, this is typically done through report reviews, interviews with officials and farmer groups, diagnostic studies, needs assessments, etc…, sometimes using tools as linear as problem and solution trees. At the other end, more complex projects involve a long procedure of consultations between partners leading the project and between donors and public decision makers. Such complex projects often involve formal partnerships with one organisation in the lead role.

Two assumptions are often underlying the rationale of such projects. One, hinted at earlier, is that the presence of valuable and diverse partners is in itself a source of external sources of knowledge that will support innovation, when in fact the inflow of new ideas into the project is neither an automatic nor easy process (Vanhaverbeke et al, 2008). This is the case especially when these member organisations are of a large bureaucratic type, and burdened by complex regulatory procedures. The second is Van de Ven's 'segmentalist' logic that underlies projects dealing with issues as complex as innovation, described earlier. The issue here is one of excessive focus on the role of institutions during the project formulation phase, rather than on individuals' potential for creativity. This issue is dealt with later.

The front-end of innovation should pay more attention to two crucial aspects of the project and find a balance between them.

One is to define correctly the problem meant for the project to solve and the possible innovation pathways (technologies, processes, organisational forms, etc…). As idea generation and concept development are typical tasks of the front end, besides the need to systematize activities to enhance project efficiency, there has to be sufficient room for creativity (Herstatt et al, 2003). This room for creativity is provided by making sure there is enough learning space and leadership. In terms of attuning innovation "demand and supply", project formulation should be informed by the notion that "innovation is a continuous process of planning, acting, reflecting and readjustment" which "implies that the learning agenda should be dynamic and needs to continuously adjust in response to opportunities and problems that emerge over time and are context specific" (Kilelu et al, 2014). This is in contrast with the fact that donors require conformity and precision in project formulation for purposes of verifiability and comparability between candidates. This potential for conflict between two logics is well summarized by Herstatt et al (2003) when they say that "at the beginning of the innovation process, the degree of freedom in design and influence on project outcomes are high, whereas costs for changes are low. This front end advantage is limited by the fact that the amount and certainty of information is low compared to later stages of the innovation process. Hence, sound decisions cannot be made unless necessary information is gathered during the course of the innovation process".

A second aspect is to identify creative individuals, and methods to support innovation processes, and counter-balance the excessive focus on institutions. The point made here is that project member organisations aiming at promoting rural innovation cannot do so unless they themselves are open to

innovation and do not display some innovative behaviour. It is difficult to be part of the solution when one is part of the problem. When projects reflect on ideas and processes, it is usually during formal evaluations and experience documentation workshops, when it is often too late. There is a strong point to be made for organising search events before the project starts, to identify innovation options, people and other resources (within or outside project member organisations) with the capacity to advance innovation processes.

Ultimately, "innovation depends on the generation of creative, new ideas….organisations should consider multiple interventions that take into account the individual, the group, the organization, and the strategic environment when selecting interventions intended to enhance creativity" (Mumford, 2000). For project teams to be innovative there must be an organised process that allows members to generate creative ideas, process them, prioritise them and implement those with promise. Mumford notes that creative solutions are most likely to arise when (a) people actively search for key relevant facts, (b) seek to identify anomalies or inconsistent observations, and (c) examine a variety of different concepts particularly concepts relevant to long-term goals that might be used to organize this information.

4. Leadership in Support to Creativity and Innovation

In rural development as elsewhere, there is a fundamental paradox between project management standardization –one-size-fits-all- and project uniqueness (Werner, 2011; MacEvoy et al. 2016), and this is all the more striking in innovation projects. Innovation is, first of all, a human endeavour, based on individual and collective creativity, open and efficient communication. Creativity here means the process of generating novel ideas or solutions to complex problems as well as their implementation. Facilitating this process is typically the role of the project leader. Mumford (2000) notes that one way a leader can influence creativity and innovation is by making a tangible contribution to the work done by his organisation. However, quoting Mintzberg, he adds that "given the demands made on leaders …it is difficult to see how they can find the time needed for true creative thought".

In business firms, innovation has been studied with respect to strategy, structure, climate, dissemination practices, group interactions, and individual performance capabilities. Conspicuously absent from the list of potential influences is leadership (Mumford et al, 2002). The same absence is true in rural development. It has not always been the case[28]. While the concept of project leader remains current in corporate management literature, "leadership" has become somehow discredited in rural development jargon, perhaps because of some –real or imagined- autocratic and hierarchic connotations, as if somehow the leadership of one person precluded the contribution of others. Interestingly, Mumford et al (2002) note that the discounting of leader influences on innovation may have to do with a romantic conception of the creative act, where ideas and innovation are attributed to the heroic efforts of the individual. In this view leaders are more a hindrance than a help: thus the autonomy of individuals, their expertise, their creativity act to neutralize or substitute for leadership. Since the emergence of innovation systems thinking, and more generally of soft system thinking, in the rural development agenda over the last two decades, the role of "facilitation" has been emphasized. Like so many other concepts in development the term 'facilitation' has somewhat turned into a new orthodoxy, used mechanically, with different meanings, to the point where sometimes it means nothing in particular, perhaps even "leadership".

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[28]One has only to remember the emphasis on leadership and leaders' personal characteristics in agricultural extension science in the 60s.

Project coordinators are rarely selected on the basis of their competence in innovation support (or indeed on the basis of their knowledge of innovation processes), but rather on their previous experience of project management. Similarly, project staff is usually hired on the basis of their experience of project work and their competencies in one topic or another. Thus project personnel is often dominated by people whose experience is grounded in past projects' practice.

Managing innovation projects requires a special form of leadership that cannot be limited to a classic 'project management' model or, in rural development, a "project coordination" one. Prabhakar (2008) notes that "project managers face difficult task of both fostering flexibility, adaptability and the acceptance of change as a permanent state, and providing support for team members to enable them to live with a process they may experience as stressful and disorientating".

The specificity of leadership in innovation has to do with the way the leader deals with uncertainty and its consequences (decisions with insufficient information, setbacks in the innovation process, etc…). In such circumstances, a leader cannot stick to rule-based and routinized tasks. "Deviations have to be made when setbacks are experienced and reflected upon, a process which leads to learning in terms of modifying beliefs, mental models and knowledge, which eventually results in active problem-solving behaviour" (Oeij et al, 2017).

One of the most difficult tasks in analysing project processes is to determine what 'leadership' is and who the 'leader' is. In project parlance, "coordinator" has gained currency as the person in charge of the overall management of the project[29], at the expense of old terms like project manager or project director. Is 'management' the same as 'leadership'? A commonly accepted difference is that leadership is about establishing a direction for an organisation, working out a vision, building and managing teams, while management is about drawing plans for the short term, assessing performance and solving problems as they emerge[30]. In view of the earlier discussion about the difficulties of project management in dealing with innovation processes, there is clearly a need for a specific leadership function –as distinct from management and coordination- to be fulfilled, by organising it systematically and not letting it up to serendipity and the likelihood of charismatic behaviours[31].

There are limits on the ability of a project leader to stimulate creativity among project staff and organisation members, on top of his other tasks. Mumford and Licuanan (2004) explain that a

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[29]See Sellamna (2015) for a discussion of the ambiguities surrounding the role of the project coordinator.

[30] More fundamentally, Cavaleri and Reed (2008) explain that management, with its emphasis on goal achievement, rational decisions and control of behaviour is rooted in hard system thinking, while leadership may be more amenable to a soft system perspective. Accommodating project management and innovation processes in dynamically complex systems such as innovation projects means therefore that project management systems must accommodate both hard and soft system approaches.

[31] For example, one can think of leaders emerging in the informal organisation 'shadowing' the project's formal organisation, and performing leadership roles either beneficial or detrimental to the project. Building on Stacey's concept of « shadow system », Halpin and Hanlon (2008) argue that this informal network of relations existing outside the rules prescribed by the legitimate organisational system harbours so much diversity of thought and creativity that formal leadersshould tap into it to promote innovation. One important reason for that in a short-lived project is that an informal network is capable of maintaining more and stronger links among its members compared with those employed by the formal system (ibid).

leader's own creativity depends on that of project members. Since creative people tend to be intrinsically motivated, a project leader's problem is "less a matter of engendering motivation than creating conditions where extant motivation will be channelled into the task at hand and directing and structuring what is a challenging ill-defined task" (ibid). For this, the type of creativity expected from him is different: a leader's creative contribution is to evaluate others' ideas, combine, reshape and reform them to stimulate a process of creativity. At the level of the project, he designs and builds up structures that enable project members to learn and reflect together and cultivate their creativity.

To do this, project leadership requires not only communication and technical competencies but also good thinking skills. These are more than what can be expected from one person working alone, and they need to be built and strengthened through collective training. Two areas are important in light of the previous observations: consolidating individual and collective competencies through reflexive practice and improving the absorptive capacity of member organisations.

A priority for innovation project leaders is to initiate and strengthen a culture of innovativeness. A project, like any organisation, develops behaviour to protect itself from threats. This is what Argyris (1999, 2006) calls defensive routines, ie, "any policies or actions that prevent the organisation from experiencing pain or threat and simultaneously prevent learning how to correct the causes of the threat in the first place". The risk of these routines is that over-protection, however unintended, views negative feedback as a threat, and prevents learning. As the representative of the organisation, the leader himself can develop defensive behaviour and become an obstacle to learning and innovation (Ollila, 2000). Individual and collective reflection[32] helps reveal these routines and change behaviour.

An important insight in the relation between action and reflection is Schön's notion of reflection-in-action (1983). Professionals, including leaders, build up a repertoire of actions, ideas, images from past experience, which they draw from when confronted with a situation. They engage with the situation without necessarily a full understanding of things, following an implicit 'theory-in-use' as distinct from the 'espoused theory' which they may verbally convey to others (Smith, 2001, 2011). This makes exploring these repertoires through reflective practice essential for project staff, to make sense of experience, review their practice, connect with their feelings and explicit their theories, as a step towards strengthening their capacities. "The act of reflecting-on-action enables us to spend time exploring why we acted as we did, what was happening in a group and so on. In so doing we develop sets of questions and ideas about our activities and practice" (ibid).

Between small and innovative organisations, donors favour often large organisations because they are assumed to have more 'fire power' (staff, procedure, authority, network, etc...) to achieve impact. These organisations are also less innovative.

For a time-bound innovation project, the mobilization of knowledge –internal and external- is crucial. The open innovation perspective (Chesbrough, 2003) is especially relevant for rural development projects aiming at supporting innovation. The perspective emphasizes the importance of combining internal and external knowledge flows in the generation of innovation. A pillar of open innovation is Cohen and Levinthal's (1990) notion of 'absorptive capacity'. This capacity can be apprehended at two process levels: *internal knowledge interactions* within organisations, whose practices and dynamics are part and parcel of organisational routine and *external interactions between organisations*, which enables them to attract external knowledge and use a number of assimilation mechanisms to integrate such knowledge into the innovation processes (Castro Spila et al. (2010).

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[32]A good definition of reflection by Ollila (2000) is "compartmentalizing experiences into meaningful parts, labelling them and constructing connections between them".

These insights into the importance of external knowledge give indications on capacity needs for staff and organisations involved in the project. First of all, *intelligence and search capacities* to scan and survey existing knowledge, in order to identify the relevance and potential of new information. Second, *learning capacities* that enable new knowledge to be captured and fixed. This means an ability to interpret and evaluate what is different and original in the new knowledge, to accumulate and assimilate new knowledge. Third, *capacities for problem solving*, for facilitating creative solutions to new or unexpected problems and taking advantage of them. This means taking knowledge on board and integrating it into the organisation's routines and processes, to draw tangible benefits for the new knowledge.

Providing staff with tools for scanning the environment, interpreting the information and formalizing it should be a first preoccupation of project leadership. Building these three sets of capacities (acquisition, assimilation and exploitation of new knowledge) should be planned at the front end of project design.

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