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Rural and technological innovations in the new model for development

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Social and technological innovations in the new development model for rural territories

Carlos Julio Jara¹

Abstract

This article advocates the need to promote social innovation in the rural world, in a context of participation and solidarity, with the aim of guiding processes of productive diversification alongside social inclusion policies, such as the conservation, restoration and rational use of natural resources. In Latin America, the central governments have shown growing political will to apply rural development strategies that seek to “territorialize” public policies so that local governments, together with the social stakeholders, can democratically define their own management models and sustainable development priorities. Certainly, a country’s greatest potential and wealth lies in its own people. Therefore, this document proposes to reexamine the value of the people’s accumulated know-how, promote access to knowledge and support the creativity and innovative talent of the social grassroots and the local communities settled in the different territories. This implies establishing an inclusive system for processing social initiatives.

¹ Director of Sustainable Rural Development of IICA, carlos.jara@iica.int

Key words: *social innovation, creativity, social fabric, rural territories, sustainability, sustainable rural development.*

Mega-trends and distorters of the rural world

In a context of multidimensional crisis, filled with uncertainties and enormous territorial imbalances, it is urgent to define common strategies for the sustainable development of agriculture and rural life. These strategies must be innovative, inter-sectoral, inspired by new-generation concepts, new paradigms and ethical principles, capable of positively influencing the international contexts, according to changing territorial dynamics.²

In this sense, the world economy constitutes an interdependent whole. The current global financial crisis has weakened the economic structure built in recent years and has changed a number of strategic variables, such as the flow of remittances to national economies, credit restrictions, the freezing of foreign and national investment, and the decline in growth, all of which modify development prospects.

Nearly all the countries of the region now operate in a highly unstable context. There are no orthodox solutions for the current cycle, though it is clear that the alternatives must not focus solely on profitability, which would further

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increase inequality and social exclusion, weaken the national community, create political ruptures and produce environmental degradation.

We are sailing in chaotic, uncertain and stormy seas. Strategically navigating



² A crisis exists in the traditional models of interpreting the rural world. There is a risk of continuing to do more of the same, because that is what is dictated by common sense. The system of “modernizing” ideas that has helped us to change the “reality” of agriculture is called into question. We are challenged to redefine innovation itself and particularly its institutional framework, the game rules defined by a particular system of power. We need a change of paradigm in the scientific-technological policies that have led to the compartmentalization of reality. There are emerging situations and contexts that must be explained in another way, for which the old theories are no longer useful.



► *The current global crisis forces us to change our perceptions of agriculture, of rural territories and small farmers' organizations, understanding these as drivers of a process of inclusive and sustainable growth, seeing their potential to reduce hunger and unemployment and to adapt, at the territorial level, to unforeseen changes in the environment.*

through these implies redefining national development priorities, revaluing the agricultural sector and the heterogeneous rural worlds. The current global crisis forces us to change our perceptions of agriculture, of rural territories and small farmers' organizations, understanding these as drivers of a process of inclusive and sustainable growth, seeing their potential to reduce hunger and unemployment and to adapt, at the territorial level, to unforeseen changes in the environment.

Although agriculture now plays a more important role, the contexts, territorial configurations and cultural influences are so diverse and changing, that there is no single model of innovation and technology transfer that is universally valid. We are challenged to rethink our actions and our institutional arrangements.

Agriculture is not the sum of primary products, but rather an historical framework of multiple social relationships, production systems and livelihoods, institutions, cultural

patterns, knowledge of cultivating the land, connections with the natural milieu, market links, among others. In general, innovation is not only the result of applied research – efficient, profitable and capital-intensive- but is the outcome of social creativity, a manifestation of collective intelligence.

Innovation must provide useful and sustainable solutions, not only to the production-related demands of farmers, but also to the complex and multifunctional needs of local communities. For this reason we must listen to and value the initiatives and accumulated knowledge found in “territorialized” communities, support autonomous small-scale peasant (*campesino*) production systems and respect their cultural characteristics.

Given the complexity and heterogeneity of the territories in which small-scale family farmers are immersed, there are no innovation systems capable of responding in a timely and appropriate manner to the immense variety of rural, agricultural and non agricultural demands. Each territory has complex challenges, processes of change, intercultural dialogues, a set of variable patterns. It is therefore necessary to encourage open systems of dialogue, exchange and mutual learning, and to build bridges between scientific progress, communication-information and local knowledge. Coordinated groups of local producers in the territories must find solutions to their changing problems, based on new types of “*know-how*”.

In most of our countries, the structural order of the rural milieu remains polarized. It is profoundly affected by

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problems arising from “*minifundismo*” (small holdings) and the concentration of land ownership. With the myth of universal modernization, the productivist concepts, methodologies and practices derived from the paradigm of the “green revolution” were disseminated or reproduced.

Conventional science, with its simplified view of the situation, limited to the explicit material order and to profitability, has led us to multiply the risk of error. Technical progress would lead us toward a growing competitiveness, reflected in low wages, low investment in quality education and a negligent use of natural resources. It was assumed that the mere increase in agricultural production and productivity would lead to progress, without mobilizing the social energies of small-scale farmers so that communities would feel responsible for the development of their own territories and outcomes.

The sector’s response to the challenge of competitiveness has essentially relied on the generation of technologies and techniques applied to the physical and biological aspects of agriculture, while in some measure ignoring social, cultural and environmental aspects, which complement a set of social or “soft” technologies that enrich the social fabric. However, we have not known how to combine the rationale of production methods and techniques with the social and cultural demands of communities in the territories (Touraine 1998).

That vision overlooks the fact that sustainable innovation is essentially a process of collective creation, which springs from proximities, from contacts

and also from the power of negotiation (Bohm 2002).

The institutional framework for agriculture, including the technological innovation and research systems, as perceived by most stakeholders, is very far from functioning as a system of inter-related subsystems. We do not know how to coordinate the various institutional systems. Institutional discoordination, internal incoherence and cognitive dissonance prevail, which translates into inefficiency, inconsistency and tends to reproduce political ruptures by sustaining islands of power and influence that eventually manifest themselves as conflicts.

It is not difficult to perceive the inter and intra-sectoral fragmentation and the bureaucratic nature of the management systems. Democratic life, social integration, quality, institutional efficacy and respect for cultural diversity are the main values affected.

There has been a negative perception of the creativity of peasant farmers, of those who are still immersed in rural life. We recognize that many of the social and productive needs of the poorest farmers were not satisfied by the prevailing free market model. It is necessary to reconfigure our strategic interests in the area of technological innovation and transfer, to make changes in terms of what the institutions involved have to offer and what rural society and productive organizations

demand, more at the territorial level than at the level of individual farms.

Creativity is always alive in the social fabric of the rural milieu. We must have confidence in the skills developed by *campesinos*, over generations, to adapt to change. Local knowledge exists, even though the actors of rural communities

are not conscious of their abilities. All practices that translate into cultural responses to contextual demands express the accumulated *know-how*. Territorialized rural communities will adopt sustainable development processes only if they can create and provoke the emergence of innovations with sufficient speed and adaptability. Local companies will remain in the markets only if they can develop knowledge and use technologies more quickly than their competitors, but within cooperation networks³. The challenges to be met are diverse and unexpected, and therefore local communities must be capable of providing creative, dynamic responses.



Social innovation

In the context of a new political approach to the development of agriculture and rural life in the Americas, it is essential to pursue and re-invest in a new process of technological development and social innovation. It is necessary to adjust to the dynamics of a new era, to the new pace of scientific and technological change, to the contexts of open trade and economic crisis, to new production scenarios, to the threats of climate change and the depletion of natural resources, to the decline in sectoral investments and to the negative impacts of an “oil-dependent agriculture.” All this requires environments that facilitate mutual learning, communication and exchange in society, increased organizational capacity and active participation in public life.

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3 Networks do not define objects but rather are a metaphor of the social sciences that enables us to visualize the plurality of processes and the set of relationships that are “woven” and that organize themselves through the will of the actors involved, thereby articulating structures that are usually dispersed.

Nowadays there is greater political awareness of the need to expand opportunities and access to knowledge and innovation for the traditionally excluded segments of the rural population. Democracy and the social movements are gradually creating the social conditions that seek to guarantee the right to inclusive, profitable and sustainable rural development. There is also awareness of the enormous social and ecological debt to be paid. This is a task fraught with conflict that requires new paradigms and approaches to deal with the complexity of the agricultural and territorial structures. It also requires systemic thinking that takes into account the different rationales and interests of a broad range of stakeholders, together with ethical values that prevent us from taking social and ecologically irresponsible decisions.

How can we respond to the technological demands of small farmers in the context of a free-market ideology that has virtually abandoned them to their own fate? By promoting social innovation and the application of *campesino* intelligence to complement the efforts of the State and the private sector, in order to develop a comprehensive solution. We are challenged to facilitate - politically and culturally - the emergence of dynamic social innovation at the grassroots level of society. It is possible that the capacity to adapt, adjust, recover and learn something new and useful through

By promoting social innovation and the application of campesino intelligence to complement the efforts of the State and the private sector, in order to develop a comprehensive solution.



Technological innovation, which is part of social innovation, is essentially a cognitive, individual and collective expression. Its multiplication and social transmission, its resonance in the territories, occurs through dialogue, shared learning and the attitude that we can almost always learn from another person or community.

dialogue and participation, is much more important than the demand to produce a new productive “material.”

Our societies need to activate democratic processes that help unblock relations that impede the creative flow: to use different sources of production and dissemination of knowledge with sensitivity and intelligence; to be respectful of the cognitive skills of rural communities; to consider the intercultural fabric as a social resource that encourages creativity. Because, “the more ecologically and ethnically diverse the processes, the more options they seem to have to withstand the ecological and social crises and, at the same time, be creative and innovative” (Villasante 2002).

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The sustainable development of territories requires critical actors familiar with complex thought, multicultural dialogue, capable of influencing decision-making processes and producing a culture of citizenship. There is an urgent need to value the creativity of local knowledge, to systematize the accumulated experience and to recognize skills as manifestations of social intelligence (Schvarstein 2004).



It is urgent to build inter-institutional dedication and commitment and to imagine management models that can deal with complexity. We must gradually move away from the mechanistic, vertical, lineal, deductive, dependent paradigm.

The current situation of the global food production system and the uncertainty of climate change force us to define a new system of innovation, consistent with the development of a sustainable agriculture, which requires a new type of thinking - systemic, complementary, relational, multidimensional and ecological.



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At regional level, many institutions are involved in technology innovation, research and transfer efforts. However,

most of these centers continue to cling to the notion of quantitative growth, with its emphasis on productive efficiency, and do not regard themselves as a network of complementarities, something that generates uncertainty and hierarchical relationships. It is therefore urgent to build inter-institutional dedication and commitment and to imagine management models that can deal with complexity. We must gradually move away from the mechanistic, vertical, lineal, deductive, dependent paradigm.

Developing creativity for social innovation in rural territories

There is a clear lack of coordination between sectors, programs and government bodies linked to technology development, “transfer” and innovation. The situation is very fragmented and efforts to communicate knowledge are very disconnected, dispersed, farm-oriented, confined to demonstration parcels or exiled to the research centers, almost impotent, due to the inflexible, simplistic and disjointed approaches used to address problems that are essentially interdependent, inter-sectoral, multidisciplinary.

Once again, we are challenged to connect different sectors, to contemplate the numerous links between the different dimensions of territorial reality, to develop inter-thematic approaches. Social and technological innovation for the development of rural life necessarily involves sustainable development proposals with a territorial approach.



It is also useful to know the actors that dominate and control, and discover the mechanisms they use to create blockages that stifle creativity and freedom.

This implies interaction between science and small-scale farmers, spaces for participation, access to information and a horizontal management model.

Faced with the fragmentation and discoordination of the sector's institutional framework, we need to examine the inter-institutional links in detail, but mainly, identify a key institutional actor capable of uniting the different organizations, activating networks and coordinating efforts to encourage the emergence of learning communities. The paradigm of agricultural and rural innovation must be re-directed toward the territories, in order to establish links and connections between and among different agents and stakeholders - public and private - and to open a dialogue between various types of knowledge. It is also useful to know the actors that dominate and control, and discover the mechanisms they use to create blockages that stifle creativity and freedom.

Strategic decisions aimed at promoting institutional change to strengthen technological innovation in the agricultural sector and rural territories depend, in good measure, on the scientific capital, mobilized talent, available capacities and the incentives existing within the institutional framework. However, such decisions mainly rely on the political will to promote changes in the social grassroots,

increase public spending and facilitate the flow of information and communications between research institutes, rural communities and territories. The components of the new system exist, but are fragmented, disarticulated and devalued. Such components serve no purpose unless they are organized into networks and can stimulate local creativity. It is necessary to work at all levels.

Similarly, adjustments in the management model are urgently needed in the short term to activate changes in the internal institutional contexts, set new priorities, respond to the demands of the "invisible" social segments and facilitate synergies that will enhance new efforts and new products.

The hope is that the communities themselves will be the leaders of innovation, through their social practices. However, our westernized society often has a negative perception of the creative potential of small-scale family farmers.



Much thought has been given to the question of how to encourage the development of endogenous social and technological innovation as an essential component of territorial development. The idea is that innovation can flourish - as in fact it does, on a daily basis in society - from its own grassroots. The hope is that the communities themselves will be the leaders of innovation, through their social practices. However, our westernized society often has a negative perception of the creative potential of small-scale family



farmers. This negation of “the other” is clearly manifested in discrimination against campesinos, indigenous people, black communities and women. Many development models are contaminated by the patriarchal system.

In order to foster changes in these perceptions, we must invent ways of actively organizing local interactions, conversations, sharing of good practices. In the context of territorial planning and the implementation of productive projects, we must create learning and problem-solving environments. We must release the intellectual contents that have remained confined by elitist perception that new knowledge only emanates from experts. We must identify the obstacles that hinder exchange, interaction and the emergence of an active interculturality, to promote greater creativity in society.

Social creativity transcends the limits of technological innovation and grows in the measure that ordinary citizens feel open, free, sensitive and aware of the risks and opportunities of the context. Imagine a social environment in which all communities within a territory interact in their socio-cultural context, a networked society whose social fabric expresses a kind of collective consciousness, capable of unifying its diversity. This framework of connected processes is consistent with and encourages the emergence of differentiated solutions.

For this reason, the proposed approach to technological innovation is a process based on a set of coordinated activities, events or components, aimed at producing a specific effect and sustaining

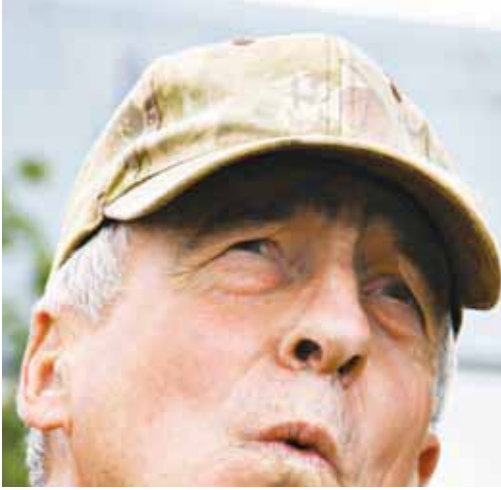
it over time. Constant dialogues promote social innovation and a “re-evolution” in emerging orders and structures (Bohm 2002).

Local creativity cannot be promoted and social innovation cannot flourish when there is a mechanical imposition of models, no matter how many “products” come out of the laboratories. Mediocrity is reproduced when freedoms are limited, when there are no opportunities for dialogue or learning, or informal farmer-to-farmer exchanges.

The political-ideological positions that permeate society block creative dialogue, reproduce disagreement and mistrust. We deal with intangible and complex aspects that cannot be registered by instrumental rationality. Field agents must be prepared to facilitate these encounters and elaborate a synthesis of best practices resulting from this plurality.

This is not only a matter of establishing a closed system of innovation that translates into a set of hierarchical elements directly or indirectly associated with the production of knowledge. Rather, it involves continuous processes of dialogue and mutual learning that produce solutions capable of spearheading new processes, of self-organization.

We can imagine the possibilities of creating continuous learning environments in territories where small-scale peasant agriculture predominates, where communities have the capacity to define their own agendas and organize research in a participatory manner – and above all, guarantee their own food security and obtain better



A technological innovation that does not consider issues such as gender perspective, the generation of employment, the need to redistribute incomes or the preservation of cultural identity, must be considered unsustainable, non-inclusive.



income levels, in environments that are open, interdisciplinary, intercultural, dialogical, participatory.

The demand for innovation among local communities composed of poor, multi-active farmers is complex and transcends the technological dimension. In other words, it is not only a problem of transferring validated technologies to small farmers to increase their productivity levels. It is also a matter of increasing the density and quality of the social fabric, supporting the process of associativity, facilitating the emergence of cluster economies, expanding and strengthening the value chains, democratically developing territorial scenarios for agricultural and rural development, which are sustainable, competitive and inclusive. Beyond the productive aspects, communities have

a wide range of common demands, particularly the development of new institutions.

The collective learning of a validated technology must also be a process of building social cohesion, of rescuing and valuing local agricultural knowledge, of care and consideration for the human networks present in the territory. A technological innovation that does not consider issues such as gender perspective, the generation of employment, the need to redistribute incomes or the preservation of cultural identity, must be considered unsustainable, non-inclusive. The social and political legitimacy of strategically defined scientific and technological activities will essentially depend on their practical attention to the needs and demands of the population, and particularly of the poorest groups.

Toward a new model of technological innovation in rural territories

There is general consensus that access to national and international markets depends increasingly on the capacity to compete, at all levels, in order to innovate, validate and disseminate technical progress, which is rapidly aggregated into the production system. This is a relative truth, naturalized by the economic, cultural and institutional circumstances of hegemonic thought.

The increased profitability of the productive sector has been interpreted as the direct result of the rational management of information and knowledge and of technological innovation that systematically creates greater competitive advantages. However, it is not totally correct to equate profitability with competitiveness. The first is an indicator of growth in a company or a chain; true competitiveness is not based on a win-lose system, but on synergy, complementarity, quality and harmony with the dynamics of the context.

In recent decades, hopes for the growth of the agricultural sector have mainly focused on policies that promote the competitive insertion of agriculture in the markets. The market has become the determining factor for the generation of knowledge and innovation. There is a tendency not to research anything that has no market prospects or is considered unlikely to prosper. Free trade has been seen as the most appropriate incentive to encourage business initiatives and develop the capacities of farmers. Open



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borders and deregulation have also been instrumental in providing agricultural producers with access to capital goods and technologies, and contributing to a change in traditional production patterns or practices.

The essential premise of the paradigm that underlies conventional approaches, perceives innovation as an act whereby farmers receive and apply the results of research. The more efficient we become –with the help of science and technology– the more prosperity and progress we can attain, and the more competitive the countryside will become. Technological innovation was not considered a process of collective creation, through the sharing of heterodox knowledge, or as a process-based phenomenon comprising diverse learning patterns capable of generating creative experience.

The capacities of the institutions involved in technology transfer have been limited, encapsulated in the old paradigms that mainly sought to change the attitudes of *campesinos* or farmers. The model stagnated, remaining focused on the transfer of validated information, on the adoption of innovations produced by scientists working in laboratories, on providing practical advice to peasant farmers or smallholders to improve their processes, advice on specific production




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problems and, from time to time, joint analysis of the advantages of a particular material tested. Everything, except communication, shared learning, the creation of social monitoring spaces or the development of sustainable agriculture supported by associativity.

The results of scientific research have, for the most part, ceased to be public goods and are protected by intellectual property rights, patents, licenses, pay-for-access mechanisms. Mercantilist thought constantly reminds us that without the monopoly of knowledge, supposedly, nobody would create anything. This perception led to an exclusive model of technological development, whose agendas were not aimed at resolving the social and production problems of small family-based farmers, or those with the least access to assets. As a result, new and old problems have been compounded: food security, the problems of hunger, the rupture of the social fabric, low levels of productivity and the aging of the rural population, among others.

There is no doubt that increased productivity based on technological innovation is a factor that promotes competitiveness in business and territories. The current paradigm asserts that if we add other key variables to this equation - such as investment, access to basic infrastructure and services, business modernization, value chains, market intelligence, access to information etc., we would be in a better position to resolve the problems of poverty and social exclusion. However, this recipe is not viable at present, due to the rising cost of inputs and fuels, the lack of liquidity in the financial system and the generalized insecurity of land tenure, among other factors. The chains suffer from a lack of solidarity.

Thoughtful observation of rationally-constructed rural change and an evaluation of the application of this productivist equation confirm ambivalent impacts and produce a range of socially skewed outcomes. The benefits of scientific research are not distributed

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equitably, which widens the internal and external gaps. The current agricultural and rural context reveals obvious contrasts, being configured as a hybrid sector that combines “marginal” agricultures and “competitive” agricultures.

The benefits and advantages of modernization efforts (green revolution, drip irrigation, biotechnology, transgenic crops, food security and food safety, among others) have been concentrated in the segment of modern business-oriented farmers, who constitute a dynamic, profitable and politically influential sector. Competitive markets have mainly favored medium-sized production units, linked to value chains with good market prospects. The techniques applied sought to ensure greater regularity and homogeneity in the supply and quality of agricultural products.

In rural territories deprived of advantages or in those incapable of successfully tackling the challenges of open markets and competitiveness, stagnation set in with serious social consequences. The sectoral modernization strategy applied in predominantly agricultural territories excluded large segments of small farmers. In general, this process turned its back on family-based peasant agriculture –on

the smallest and most vulnerable of the *campesinos*– who form a heterogeneous and variable collective in the different territories.

The social groups with the least assets were “intervened” politically using “one size fits-all” solutions, some of an assistential nature. Rural development was synonymous with programs to “combat” poverty, which targeted particular segments and products that were economically promising. The persistence of poverty and migration are probably the most painful expressions of the social failure of this “mis-development” model.

Although the public sector has responsibility for providing knowledge as a public good, much of this effort has been undertaken by the private sector which, in some countries, even defines the research and development agendas and strategic needs in this area. Supposedly, the dissemination of new knowledge among the agents in charge of innovation makes it possible to increase productivity, and therefore, competitiveness; through feedback, this changes the economic-productive context in which these agents operate.

However, the appropriation of any innovation presupposes, in addition to the traditional transfer mechanisms, new forms of social organization and the inclusion of technological, political and social components. Innovation will not be effectively adopted unless it includes some aspects of the pre-existing cultural fields. Part of the old heart must beat in the new heart that is implanted.

It is well known that the growth of agriculture in LAC in recent decades is largely the result of the expansion of the production frontiers, a process that devours land and releases carbon. We also know that in Latin America and the Caribbean (LAC) more than US\$10,000 million dollars are invested annually in science and technology, with around 96% being concentrated in Brazil, Mexico, Argentina, Venezuela and Cuba.

Technological innovation processes - their adaptation, dissemination and adoption - have traditionally been conceived according to reductionist notions, and rationales based on economic principles, but not necessarily on environmental and social ones. We cannot claim that investment in modern science and technology has translated into solutions that promote sustainable development and social inclusion.

“Interventions” carried out by extension workers in rural territories focus almost exclusively on the search for greater productivity in certain “commodities” or “chains,” from a mechanical vision of development. In general these do not apply methodologies of intercultural dialogue, and their rationality denies gender differences, fragments the production system and loses sight of the links with the environment.

The appropriate course of action is to bring the explicit knowledge resulting from research closer to the implicit knowledge of local actors, who participate in many ways, generating and disseminating knowledge and articulating the different learning processes. We need a socially-

aware understanding of the capabilities of science and technological innovation, and of the benefits of its inclusive and sustainable use, an essential factor for overcoming the complex and changing problems of local communities.

We must democratize the dissemination of scientific knowledge and expand local spheres of innovation. This means assessing the production segments that are excluded from the innovation process, without which the legitimacy of the investment in science and technology is weakened. The generation of endogenous knowledge provides leverage for sustainable rural development, strengthening good governance by becoming consolidated as a politically and socially valued activity.

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New management model for technological and social innovation in response to local demand

The proposal for a new management model for technological innovation is rooted in the demands expressed by the inhabitants of local communities. In rural territories populated mainly by poor *campesinos* who farm on hillsides, and who have been historically excluded



from the structure of opportunities, the proposal aims to create the necessary capacities, environments, incentives and interactions that will enable these groups to define their social demands, including those related to technological innovation, visualizing potential territorial scenarios.

A holistic proposal that seeks to redefine the institutional framework of the innovation system must consider various components. Undoubtedly, it is necessary to strengthen the technological and scientific capacity of the national innovation system. Greater efforts must be made to reflect on the epistemological order that produces and reproduces the reductionist simplification and specialization. Communities must learn how to communicate their priority demands to the scientific community, in order to improve their practices and performance. Scientific knowledge must be responsive to the real problems faced by countries and territories. This presupposes a collective pedagogical effort, an exercise in critical thinking, in order to increase our ability to take stock of the specific needs and conditions in the territories.

The ability to innovate beats in the hearts of the people when there is an environment for discussion, awareness of the context, motivation and sensitivity. What do we do? Do we strengthen the national agricultural research institutes (NARI)? Do we support local research, awakening local talents and creativity? Do we maintain the old patterns, with their limitations and obstacles to social innovation, thereby increasing relations of dependence? Do we seek a greater symbolic equity in the communications between

researchers and rural organizations? The answer is not one approach or the other – it is essentially everything together. This implies strengthening social intelligence and developing competencies to process the complexity.

This management model presupposes the emergence of a new model of sustainable rural development, rooted in intersectoral methodologies with a territorial approach. In such contexts, society will be able to strengthen itself democratically to influence its own development. The technological dimension plays an essential role in efforts to achieve sustainable rural development, but this mainly takes the form of collective learning, new models of social management, sustainable use of natural resources, and of a sufficient production of healthy and nutritious foods, together with conservation of ecosystems, capacity building, contextualized technology transfer and the design of sustainable practices.

In this proposal, public institutions must play the role of facilitators, supporting processes to generate knowledge and providing technological assets in areas where the market is incapable of doing so. Different institutions, together with local governments, would have the role of encouraging farmers to develop and adopt new practices as well as inclusive,

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sustainable organizational models. Demonstration is not only for organizations or farms, but for the entire territory. We must promote the emergence of unconscious forms of learning on the part of the territories themselves⁴.

Similarly, the authorities must become aware of public perceptions regarding the role of science, technology and innovation. Perceptions are the translations of images and social interests that are usually reflected in policies. Mistaken perceptions generally lead to mistaken policies. If we perceive that the deterioration of *campesinos'* living conditions is the result of a cultural determinism, the *campesino* will continue to be seen as a client, but not as a citizen.

At the same time, it is important to decentralize research, recover ancestral knowledge and formulate territorial projects that bring together scientists, teachers, extension workers, associations, political authorities, consumers and social movements, among others. It will

4 Steven Johnson (1992) argues that “Learning is one of the activities that we habitually associate with conscious knowledge, such as falling in love or crying at the loss of a relative. However, learning is a complex phenomenon that occurs simultaneously at various levels... But learning does not always depend on awareness. Our immunological system learns throughout our lives, building a vocabulary of antibodies that evolves in response to the threat of invasive microorganisms... We do not come into this world predisposed to combat the chickenpox virus; our bodies learn to do it along the way, without any specific training... The body learns unconsciously, and the same occurs with cities, because learning does not only involve being aware of information; it is also a question of storing information and knowing where to find it”.

 *Beyond the formal organizations, local stakeholders create a field of interactions in which joint learning, innovation and feedback can occur.*

be necessary to train a new generation of facilitators capable of developing leadership in the territory, opening up spaces for democratic dialogue and mechanisms for the coordination of different stakeholders and sectors. Territories must recover their planning capabilities, starting with the coordination of cantons and municipalities, involving civil society in decision-making on plans and projects that benefit everyone.

Innovation for the sustainable development of rural territories essentially has to do with developing people's abilities and skills to renew and improve the rural world in which they live. This occurs mainly through dialogue, in everyday conversations. The spaces for discussion –committees, councils, boards, clubs, meetings, festivals, and local forums–produce the necessary social and political reconstruction that makes it possible to activate social innovation processes, based on free communication. Beyond the formal organizations, local stakeholders create a field of interactions in which joint learning, innovation and feedback can occur.

The idea is to encourage local interactions so that these lead to new scales of learning and knowledge, allowing for the emergence of socially inclusive,

environmentally sustainable and at the same time dynamic innovations. The experience of learning changes people and the collective intelligence flourishes through increased contacts between agents and cognitive systems, which allows for the establishment of a learning and innovative organization. According to Assman (2002:160); “a learning organization is one in which the people involved attempt, at all levels, individually and collectively, to increase their capacity to achieve the results they seek.”

It is not just a question of farmers in a specific territory perceiving an idea as new and applying it to the productive sphere. The main idea is to socially encourage the emergence of new ideas in the rural territory, promoting discussion, mutual learning and shared testing, thereby facilitating creativity, with social and ecological awareness. The endogenous and sustainable construction of social change implies not only the emergence of new elements expressed in explicit dimensions of reality, but also - and simultaneously - the recovery of components or parts of local knowledge, of implicit dimensions, similar to the pre-existing ones.

In arguing that social innovation –beyond technological aspects–should be dynamic, we affirm the idea that we are confronted with a chaotic and unpredictable reality. In poor countries, the rural worlds and their agricultures operate within a broader context marked by instability. We are experiencing a period contrasted by very diverse and uncertain trajectories, which constantly redefine the relations between the endogenous and the exogenous and which promote the acceleration of changes.

The main idea is to socially encourage the emergence of new ideas in the rural territory, promoting discussion, mutual learning and shared testing, thereby facilitating creativity, with social and ecological awareness.



Thus, innovation is the result of conversations that link emotions, thought and will, an equation that leads us to imagine the new, to emotionally opt for change. This facilitates transformation, the leap forward, which requires local policies of a comprehensive and territorial nature to allow for the coordination of agents and actors.

For this it is necessary to integrate the local community and local businesses into the territorial context in which they are immersed. It is also necessary to integrate the different types of knowledge, not only those rooted in science, but also those based on local knowledge and empirical practices, in order to create trans-disciplinary domains.

We must know and understand how the innovations generated in the territories emerge and multiply. It is not so much a matter of finding incentives for creativity and social innovation, but rather of discovering the blockages that prevent the emergence of creative intelligence (Bohm and Peat 1988).



► It is also necessary to integrate the different types of knowledge, not only those rooted in science, but also those based on local knowledge and empirical practices, in order to create trans-disciplinary domains.



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How do we activate that creative drive that leads to innovation? How do we unblock the institutional rigidities that prevent creativity from flourishing among local communities? How do we ensure that the collective attention focuses on the search for answers and generates new types of “know-how”? We have so much to learn and to observe in the relative reality that resides, essentially, in our

perceptive consciousness. Sustainable development will be the result of the sum of consciousnesses manifested in the social fabric, unconsciously. By increasing our capacity to “notice”, to be aware, we expand the possibilities of generating new realities, by synchronicity. By remaining enclosed in the same paradigm, it will be difficult for us all to become, little by little, creators.

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Résumé / Resumo / Resúmen

► **Innovations sociales et technologiques dans le nouveau modèle de développement dans les territoires ruraux**

Le présent article plaide en faveur de la nécessité de favoriser les innovations sociales dans les milieux ruraux, dans un cadre de participation et de solidarité, afin d'orienter des processus de diversification de la production, menés de concert avec des politiques d'inclusion sociale, notamment en ce qui concerne la conservation, la récupération et l'utilisation rationnelle des ressources naturelles. Il existe en Amérique latine une volonté politique croissante de mettre en œuvre, à partir des gouvernements centraux, des stratégies de développement rural qui permettent de « territorialiser » les politiques publiques, afin que les gouvernements locaux, de concert avec les acteurs sociaux, puissent démocratiquement définir leurs propres modèles de gestion et leurs priorités en matière de développement durable. Indéniablement, le potentiel et la plus grande richesse de tout pays résident dans son peuple. C'est pourquoi il est proposé de revaloriser les savoirs accumulés et de miser sur la créativité et le talent innovateur des peuples et sur l'accès aux connaissances, à partir des bases de la société et des collectivités locales établies dans les divers territoires. Cela suppose que soit mis en place un système inclusif de traitement des initiatives sociales.

► **Inovações sociais e tecnológicas no novo modelo de desenvolvimento dos territórios rurais**

Este artigo trata da necessidade de serem impulsionadas inovações sociais no mundo rural, sob um contexto de participação e solidariedade capaz de orientar processos de diversificação produtiva juntamente com políticas de inclusão social, como a conservação, a recuperação e o uso racional dos recursos naturais. Na América Latina há uma crescente vontade política para concretizar, a partir dos governos centrais, estratégias de desenvolvimento rural que permitam “territorializar” as políticas públicas de modo que os governos locais, junto aos atores sociais, democraticamente, possam definir seus próprios modelos de gestão e prioridades de desenvolvimento sustentável. Não há dúvida de que o potencial e a riqueza mais importante de qualquer país são o seu próprio povo. Por isso a proposta é revalorizar os saberes acumulados, apostar na criatividade e no talento inovador dos povos e no acesso ao conhecimento, a partir das bases da sociedade e das comunidades locais que habitam os diferentes territórios. Isto pressupõe estabelecer um sistema inclusivo de processamento das iniciativas sociais.

► **Innovaciones sociales y tecnológicas en el nuevo modelo de desarrollo en los territorios rurales**

El presente artículo propone la necesidad de impulsar innovaciones sociales en los mundos rurales, dentro de un marco de participación y solidaridad, capaces de orientar procesos de diversificación productiva de la mano con políticas de inclusión social, como la conservación, recuperación y uso racional de los recursos naturales. Existe en América Latina creciente voluntad política para concretar, desde los gobiernos centrales, estrategias de desarrollo rural que permitan “territorializar” las políticas públicas, para que los gobiernos locales, junto a los actores sociales, democráticamente, puedan definir sus propios modelos de gestión y sus prioridades de desarrollo sustentable. Con toda entereza, el potencial y la riqueza más importante de cualquier país lo constituye su propia gente. Por ello se plantea revalorar los saberes acumulados, apostar a la creatividad y el talento innovador de sus pueblos y el acceso al conocimiento, a partir de las bases de la sociedad y las comunidades locales asentadas en los diversos territorios. Esto supone establecer un sistema incluyente de procesamiento de las iniciativas sociales.



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