



THE CONTEXT AND ITS EFFECT ON THE OUTPUTS OF AN PROJECT AGRICULTURAL INNOVATION

El contexto y su efecto en las salidas de un proyecto de innovación agropecuaria

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RESUMEN. Within the developing framework of the international project “Dissemination of Participatory Plant Breeding in Cuba, a program to strengthen Local Agricultural Innovation (LAIP) Phase III” and as part of the monitoring and evaluative tools, a methodology was prepared to assess the influence of local context on project impacts. The methodology and results from its performance in 2013 were appraised in 42 municipalities where the project was implemented, evaluating socioeconomic context effects and the measures for reducing any negative impact to the utmost, prioritizing positive effects to make planned impacts effective. Although such contextual elements are beyond the project action, its knowledge enables to read the sustainability of actions within short, medium and long-term periods. In turn, results offer the possibility of preparing a coherent plan of actions that ensures its resilience and identifies strategies according to local government priorities. In all cases, its effect was evaluated by four gradients (no influence, slight influence, medium influence and high influence) in each indicator; regarding the updated economic model of Cuba, the most important indicators chosen by participants were marketing, local market and agro-tourism.

Key words: monitoring and evaluation,
anthropogenic influence, communities

RESUMEN. En el marco del desarrollo del proyecto internacional Diseminación del Fitomejoramiento Participativo en Cuba, programa para fortalecer la Innovación Agropecuaria Local (PIAL) III Fase, y como parte de las herramientas de monitoreo y evaluación se elaboró una metodología para evaluar la influencia del contexto local sobre los impactos del proyecto. Se presentó la metodología y sus resultados, estimando el desempeño del año 2013, valorado en 42 municipios donde se implementó el proyecto, se evaluó el efecto del contexto socioeconómico y las medidas a delimitar para disminuir al mínimo los efectos negativos. Estos elementos del contexto, si bien escapan al accionar del proyecto, su conocimiento permitió dar una lectura a la sustentabilidad de las acciones en el corto, mediano y largo plazos. A su vez, los resultados brindaron la posibilidad de elaborar un plan de acciones coherente que garantice su resiliencia y la identificación de estrategias, en correspondencia con las prioridades de los gobiernos locales. En todos los casos, en cada indicador se evaluó su efecto en cuatro gradientes (sin influencia, leve influencia, mediana influencia y alta influencia), en relación con la actualización del modelo económico de Cuba, los indicadores más importantes según los participantes fueron la comercialización, el mercado local y el agroturismo.

Palabras clave: monitoreo y evaluación,
influencia antropogénica, comunidades

INTRODUCTION

Context is a term derived from the Latin word *contextus* that refers to everything surrounding an event^A, either physically or symbolically (1).

Therefore, starting from the context, a fact can be interpreted or understood; it can be defined as

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^A Definición de contexto - Qué es, Significado y Concepto, [en línea] 2015. Disponible en: <http://definicion.de/contexto/> [Consulta: 18 de diciembre de 2015].

a set of circumstances that condition a fact, that is, a group of things that interlace or interweave under circumstances surrounding a certain reality with mutual influences among themselves (2). The diagnosis of an agricultural context is aimed to clarify the relevant relationships between the structural variables of a popular agriculture knowledge system and the structural variables of rural local development, as a basis to promote the agro-food productive dynamic transformation pretended to be achieved in the project. The context consists of a series of circumstances that enable or impair project development.

Either individuals or groups who have a direct participation in the experience are involved in any developing process, which refers to those who personally take part in the decisions and actions of a given experience. Likewise, it is important to identify other actors who have a remarkable influence on the experience, despite they are not part of the group of direct actors, since they control those decisions or actions affecting the developing experience quite immediately. Systematization should consider both types of actors' criteria and viewpoints.

Every local developing experience is a social process; this means that development is a process in which different actors or social agents are met and related, each one with his own prospect or point of view about the systematized developing process (3). This statement is important, because such diverse social agents will have different views, opinions and interpretations of each of the other model components. In general, context models are appropriate for people to have a more or less adequate and relevant representation of their contextual environment (4).

In any developing experience, there are elements directly controlled by process actors. Such elements can be planned and conducted by process actors, who are able to control them. However, in the same way, there are external elements called contextual factors that are not controlled by process actors, but they have a direct influence on their decisions and actions. No developing process is performed in an empty space without external influences. Market situation, economic policy, social and political stability, public infrastructure staff and quality, people's educational level, legal and administrative rules, as well as climate change conditions are all examples of contextual factors, that positively or negatively determine

what local communities can do and their resulting actions. If systematization does not describe or analyze these contextual factors and their influences on the developing experience, it will be an incomplete exercise.

Consequently, this study enabled to evaluate contextual effect in 2013, where LAIP project is implemented through a methodology, assessing the possible measures with the results from 42 municipalities in ten Cuban provinces where it is implemented, to make planned impacts effective.

MATERIALS AND METHODS

Once a system was approved to be able to use a practical tool for assessing contextual effects on LAIP's innovation processes, it was grouped into five observation fields (Table I):

- ◆ Updating Cuban economic model by selecting three indicators for this important contextual factor out of the nine proposed by members (1 to 9)
- ◆ Local seed production
- ◆ Seed price
- ◆ Other input and output prices
- ◆ Climatic change effects related to climate (drought, rainfall, cyclones and fires) and pest occurrence in animals and plants

Although these contextual elements are beyond the project action, its knowledge enables to read action sustainability within short, medium and long-term periods. In turn, results offer the possibility of preparing a coherent plan of actions that ensures its resilience and identifies strategies according to local government priorities. Its effect was evaluated in each indicator by a scale of four gradients (no influence, slight influence, medium influence and high influence).

The scale was aimed at observing clearly defined specific aspects in each indicator, trying to reach the possible comparison of its effect among indicators, as it is a convenient way to register in time the influence of each one; all indicators were evaluated in ten provincial sensitizing workshops towards the end of 2013 by project managers, project producers and municipal as well as provincial LAIP's officials. Group analysis provided data that allowed each municipality to identify the most related variables with its current situation (2013) and assess its possible project impact.

Table I. Observation fields, category and evaluative scale for contextual diagnosis

Observation fields	Evaluative scales
	3, 2, 1, 0, -1, -2, -3
Economic model updating	Categories
	1 Marketing
	2 New cooperative forms
	3 Redesigned local marketing
	4 MINAG restructuring
	5 Farm agro-tourism
	6 Scientific center rearrangement
	7 Wholesale input market
	8 Subsidies and credits
	9 Tourism sales
Local seed production	10 Local seed production trend
Seed, other input and product prices	11 Seed prices
	12 Other input y product prices
Climatic change effect (catastrophes and meteorological events)	Evaluative scales
	0, -1, -2, -3
	13 Long drought periods
	14 Intense rains
	15 Hurricanes
	16 Grazing and forest fires
	17 Disease effect on plants
	18 Disease effect on animals
Scale and gradient used to measure effect	
Scale degrees	Gradient
0	No influence
± 1	Slight influence (S)
± 2	Medium influence (M)
± 3	High influence (H)

In turn, the qualitative assessment enabled to prepare the baseline for contextual monitoring and identifying possible project actions to help local problem solution. So, the case "what has been done for the Central Region" (provincial teams from Villa Clara and Sancti Spiritus) was presented in a group exercise performed during the II National Workshop of + and - held on December 12, 2013.

RESULTS AND DISCUSSION

Results from ten provincial workshops confirmed their acceptance and usefulness. In addition, the most favorite categories for contextual monitoring were identified as well as people's perception of the current situation in each territory and their possible project impact (Table II). Producers, technicians and some local decision-makers participated in these workshops, who not only strengthened the aspects evaluated, but also the working experience with farmers pertaining to different organizing forms of production along the country; besides, they confirmed their knowledge, critical and good intentional ability, supporting the view

that there are strong revitalizing activity reserves in the sector and may have contextual experiences (5).

Table II. Priority and trends granted by 42 municipalities participating in the exercise during the contextual evaluation

With regard to economic model updating, the most selected observation fields were: marketing, local market and agro-tourism with 92,9; 69,0 and 38.1 % respectively of all municipalities that chose them among nine categories. This preference is logical, since LAIP project has enabled to increase agricultural diversity and yields in towns (6), so that it is interesting to know legislations on such a tricky subject, now interspersed, according to participants' criteria, by supply imbalances between urban and rural areas, with hiring problems (it does not cover demands), limited capacity of local industries to absorb total production and the absence of a wholesale input market. The remaining observation fields did not exceed 34 % and preferences were located in the provinces closely linked to it.

The analysis of scores granted and its qualitative basis revealed various interesting aspects.

Tabla II. Prioridad y tendencia otorgada en la evaluación del contexto por los 42 municipios participantes en el ejercicio

Observation field	Category	Municipalities prioritizing categories		Granted priority	Positive trend			No influence		Negative trend		
		Amount	%		S +1	M +2	H +3	0	S -1	M -2	H -3	
Economic model updating	Marketing	39	92,9	1	10	3	1	3	6	13	3	
	New cooperative forms	8	19,0	6	3			2		3		
	Local market	31	73,8	2	7	4	4	5	9	1	1	
	MINAG restructuring	14	33,3	4	4			1	4	3	2	
	Agro-tourism	16	38,1	3	2	3		1	4	2	4	
	Scientific center rearrangement	8	19,0	7			1	1	2	2	2	
	Wholesale input market	7	16,7	8	2				1	2	2	
	Subsidies and credits	2	4,8	4						2		
	Tourism sales	1	2,4	5		1						
Local seed production trend		42	100,0		20	5	1		8,0	5	3	
Seed, other input and product prices	High input prices	33	78,6					2	11	9	11	
	High seed prices	9	21,4		9							
Climatic change effects	Rainfall and drought periods	42	100,0					5	11	18	8	
	Plant and animal diseases	42	100,0					9	18	14	1	

The gradual economic model updating in agricultural sector does not yet make changes visible; therefore, 55 % municipalities considered that marketing still has a slight negative influence on the possible project outcomes, whereas 57 % agreed that a redesigned local market has a slight positive influence. However, some provinces believe that these gaps can be profitable for the project, particularly with regard to local market, in order to strengthen alliances with agricultural strategies in each territory and to provide food security. At present, it is required to think over and evaluate agricultural research course within the paradigmatic context of sustainability and competitiveness towards a rational and controlled use of natural resources.

On one hand, 67 % municipalities consider that our economic model changes, as related to MINAG's structuring and the impossibility of farm agro-tourism, have negative influence on the project spread over all effect scales (-1, -2 and -3).

On the other hand, 62 % municipalities (26 of them) consider that there is a positive trend, although with slight influence, towards establishing local seed production. At present, there is a tendency for local seed production, a category enhanced by a recently approved legislation on preferential prices, which will encourage its production and sale.

However, 74 % municipalities (31 of them) consider that there is a negative trend towards high seed and input prices in all effect scales. Only 21 % consider positive the high prices recently established to seeds.

Then, 88 % municipalities (37 of them) consider that there is a negative climatic trend in 2013 (drought and heavy rain periods) spread over all degrees of influence whereas five municipalities point out this year without negative influence.

The contextual evaluation has to be complex and multidisciplinary (4). As a result of the adjusting and structural change processes in regional and urban economies, some local responses have faced globalization challenges, which have led to new action formulae in cities and regions based on social consensus and promoted by civil society (7); this is strengthened when establishing that regional and local development increasingly depend on a set of intangible assets, where the qualification and training of human resources about local initiative management, the regional and local development planning as well as territorial analysis have become a necessity to global competition and have increasingly taken the center of this process^B.

^B Urquiza, I. Desarrollo local en el contexto internacional actual [en línea]. Monografias.com, 18 de diciembre de 2015, [Consultado: 18 de diciembre de 2015], Disponible en: <<http://www.monografias.com/trabajos33/desarrollo-local/desarrollo-local.shtml>>.

Concerning climatic change effects, such as climate and pest occurrence during the evaluated period (January-December, 2013), it was assessed that although there were no hurricanes, both disasters and weather events are considered a medium-to-high negative trend. Meanwhile drought and heavy rains occurring in different periods delayed seedings and affected economically important food crops as maize, cassava and rice in some areas. In addition, some forest fires are also noted in the central and east mountainous areas of the country. Thus, climatic changes affect location context^B.

Moreover, 79 % municipalities (33 of them) consider that there is a negative trend towards disease occurrence in 2013, divided into slight and medium influence degrees and there are nine municipalities that estimated this year without any negative influence on the observation field.

Although pests and diseases are not so critical in animals and plants, in every territory they keep their influence with viral diseases and fungal complexes in crops as tomato, tobacco, taro and rice. In addition, there are some diseases affecting pigs.

With regard to the action plan evaluated to have a positive influence on project actions, Table III shows the case study of provincial teams in Villa Clara and Sancti Spiritus, who planned a group of actions, among which are: a) those related to economic model update, prioritizing a set of elements (promoting local minindustries, getting better definitions in contractual agreements, improving awareness on wholesale market significance, making analysis of the bottlenecks along value chains) that enables to change project beneficiaries' way of thinking. Based on these aspects, endogenous growth models characterize that both the accumulating rate of productive factors and growth rate depend mainly on decisions taken in a specific and particular economic environment and that, in the long term, growth is the result of an endogenous economic process, considering there is an imperfect competition (7). Then, when analyzing those locations, the purpose is to make the economic adjusting changes flow more easily and project impacts are more evident on beneficiaries.

In relation to local seed production trend, a slight positive effect was assessed when stepping up actions by proposing strategies for seed production,

promoting local seed banks and enhancing synergies with related institutions (SAVE, research centers and others). Taking this factor into account, some results give particular elements characterizing its performance (4): producers have a high working capacity and real commitment with a better agricultural situation that allows upgrading higher levels of cooperation, coordination and synergy establishment when managing territorial and national agricultural development, so as to achieve a more efficient local seed production within the medium and long-term periods.

Regarding climatic change effects, there was an agreement to work more on the introduction of varieties adapted to high temperatures, drought and technologies that respond to these changes, as well as to make feasible and aware of this subject training with linked agencies from Multi-actor Management Platform, among other LAIP's actions.

What has been discussed so far is closely related to endogenous development; in this sense, endogenous growth models allow a better approach to local problem assessment (8). To understand growth processes at a territorial level, it is nice to know that these processes depend on territorial actors' perception that takes investment decisions on these territorial environmental conditions to enhance their capital. In addition, various actors state that it is necessary to clarify the relevant relationships between structural variables of people's agricultural knowledge system and structural variables of rural local development, as a basis to encourage the agro-food production dynamic transformation of the town (9, 10, 11). The identification and development of resources and potentialities of community members are necessary to be capable of being empowered and solve their problems, as well as to manage themselves with a critical view of what they are and what they can be, overcoming limiting obstacles^C.

Although forest areas have been extended as a result of government-managed reforestation programs, there is a substantial plant diversity loss for livestock, particularly of high forage value, and weeds have invaded more than 39 % total area, due to a poor management of grazing areas and lack of animal density (12).

^C Pérez, R. D. A. *Empoderamiento y resiliencia en el contexto de pobreza* [en línea]. Monografías.com, 18 de diciembre de 2015, [Consultado: 18 de diciembre de 2015], Disponible en: <<http://www.monografias.com/trabajos-pdf4/empoderamiento-y-resiliencia-contexto-pobreza/empoderamiento-y-resiliencia-contexto-pobreza.shtml#ixzz3LLbY945Y>>.

Table III. Baseline and actions in the provinces/municipalities from the central part of the country

Baseline	Economic model updating	PIAL's actions	Effects to be reached
Marketing evaluated by -2 to -3 effect			
-Minindustrial limited installed capacity	- To encourage local minindustries		Higher product aggregate value
-High prices (inputs and products)	- To enable legal advice (contracts)		Women's jobs
-Production loss and delivery to other municipalities	- To influence by Multi-actor Management Platform (MMP) on wholesale input market		To cover all steps from value chain
	- Productive chain works of products with loss		
Local market evaluated by -1 to -2 effect			
-Not every product are offered of Local Agricultural Innovation (IAL)	- IAL product survey		High offer diversity to consumers
Lack of sanitary licenses	- Training to prepare cost cards		To get licenses for increasing offer diversity
- Insufficient sale management	- Synergies with public health (in MMP)		
	- Training in marketing strategies		
Farm agro-tourism evaluated by -1 to -3 effect			
- Bureaucratism	- Sensitizing the government with project potentialities from this area		To break restrictions and find bottleneck solutions
- Potentialities are not exploited	- Synergies with other projects and institutions		
Local seed production trend evaluated by +1 effect			
Formal system deficiencies of local seed production potential	To propose strategies for gamic and agamic seed		To reach local quality seed production
	- To encourage local seed banks		
	- To potentiate synergies with linked institutions (SAVE, research centers and others)		
Seed, other input and product prices evaluated by the same trend of + and -			
Seed price promotes local production	- To involve local government to put wholesale input markets into practice		Wholesale input market opening
Input and product prices			
Climatic change effects. Catastrophes and meteorological events			
Long drought and intense rain periods evaluated by -2 to -3 effect			
- Damage to all events	- To introduce varieties and technologies facing water and salinity stress		To improve food sovereignty of locations
	- To invite forest institutions to take part in fire-prone places		
	- To enable and sensitize training on this subject with linked organisms in MMP		
Plant or animal diseases evaluated by -1 to -3 effect			
- Some animal and plant pests	- To sensitize crop protection to participate in MMP		To reach pest reduction and higher food sovereignty of locations
- Higher input prices than chemicals	- To potentiate training, production and use of bioproducts		
	- Integrated crop and pest management		
	- Training producers on meteorological events		

It is said that in agriculture, especially livestock, the problem is not reforestation itself or sowing what is fashionable, but to care for the soil, plants and animals based on plant genetic resources evaluated at the local level, that enable to meet people and animal needs or requirements and that are resilient systems to mitigate climatic change. According to research studies (13), low population density is no longer a big agricultural problem in Cuba, but the cooperatives, farmers and new producers, who are the main responsible for food production, so thousands of them has been joined.

The free access strategy to LAIP diversity supports measures to reduce climatic change effects; it is emphasized that agrobiodiversity fairs, the introduction and evaluation of tolerant species to drought conditions in Cuba pursue the fundamental purpose of helping, through participatory varietal selection, maintain and increase biodiversity of species and varieties from economically interesting farmers' crops, so that household consumption and marketing needs are met, as sources of income of new resources.

Therefore, it is important to think about local development and constraints that remain to be solved; this way of assessing contextual influence on local innovative projects is a useful and significant tool. Moreover, some aspects deserve priority attention, such as the current extensionism system that should be reoriented towards local problems; the environmental service payment is an urgent need, not only related to measures for soil improvement, but also to enhance plant and animal diversity. It is essential to outline a strategy to be used and to take advantage of inactive areas, as well as to sow local seed banks for replacing human and animal food imports. Without a strategy for producing the needed seed, it will be difficult to achieve, since it is necessary to implement strategies according to the situation of each province and municipality, aimed at addressing food security and mitigating climatic change effects on agricultural sector, besides evaluating if contextual influence on local innovation can be useful.

It is important to have creative and innovative projects that may identify, formulate and solve social and productive problems, based on systemic methodologies that take the context into account, solve problems systemically and are sustained in time facing difficulties supported by life ethic project (14).

CONCLUSIONS

- ◆ It is important to reflect on local development and the limitations that still remain to be solved; this way of assessing the influence of context on local innovative projects is a useful and important tool.
- ◆ It is a priority reorienting the current system extensionism with focus on local issues, payment for environmental services is an urgent need not only related rules for soil but also in favor of plant and animal diversity.
- ◆ It is imperative to draw strategy for the use of extensionism and take advantage of idle areas, as well as the planting of local seed banks to substitute imports of human food and animal. Without a strategy for the production of seed needed, it will be difficult to achieve, it is necessary to implement strategies according to the situation of each province and municipality, aimed at addressing food security and mitigate the effects of climate change on the agricultural sector and valuing the influence of context to local innovation can be useful.

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