

# Proposals for innovation and improvement of the quality of life in caprine pastoralist communities of subsistence in the Monte Desert, Argentina

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## Abstract

In a satisfactory alliance between the main environmental policy organizations and the academy, the National Observatory on Land Degradation and Desertification (ONDTyT) is created. The ONDTyT provides information regarding status and trends of land degradation/desertification in order to promote prevention and mitigation measures used for advising public and private decision-makers in Argentina. It is based in the development of 17 Pilot Sites that constitutes the local level network, providing bio-physical and socio-economic indicators of land degradation.

In this network the pilot site of the Monte, the largest dry region of Argentina (Lavalle desert, Mendoza), aims to improve the living conditions of native communities dedicated to subsistence goat farming, located below the poverty line. Precipitation ranges from 80-100 mm/year, strongly affecting productive activities. The proposal includes innovative traits in an area whose natural resources have been devastated. It is framed within a conception of rural territory development generating sustainable development strategies of rural indigenous communities, improve the status of the ecosystem through an integral management of natural and cultural resources, and improve socioeconomic conditions of inhabitants, compatibilizing ecosystem regeneration with investment in infrastructure and services, diversification of productive activities and generation of employment.

An interdisciplinary group designed the proposal and the integrated desertification assessment in the fields with active community participation through their knowledge, land and livestock. The pilot case can be replicated throughout the territory. The work combines participatory and integrated methodologies, showing that the Observatory is a successful example of partnership building between the political and scientific-technological sectors in Argentina

## Introduction

Smallholder pastoralist systems in Argentina are affected by desertification / land degradation and the threats of climate change (Corso et al, 2019). These threats become a great challenge for communities that are submerged in poverty and suffer from the lack of attention of government policies. They not only face the loss of environmental goods and services, but the deterioration of their livelihoods and the exodus and migration of the affected populations, expelled towards the periphery of the urban centers, becoming there even more vulnerable sectors.

To mitigate this situation, it is necessary to find consensual strategies to recover these rangeland socio-ecosystems and incorporate them sustainably into production circuits, improving the quality and quantity of their water and forage supplies, looking for adapted species, the health of the herd, genetics to improve milk production, as well as the productivity of the fields, access to health and improving essential infrastructure and services. All these strategies implemented with special consideration to gender and transgenerational equity.

These proposals can only be successful if they are sustained in a participatory process, of co-construction of knowledge, in a multisectoral partnership between local communities and native peoples, local governments and the scientific sector.

In Argentina, an important tool to achieve these objectives was the creation in 2011, of the National Observatory on Land Degradation and Desertification (ONDyT). On the basis of the LADA project (2003-2011), that successfully addressed the problem of land degradation in Argentina, the Secretariat of Environment and Sustainable Development, the National Scientific and Technical Research Council, The Argentine Institute for Arid Lands Research, the National Institute of Agricultural Technology and National Universities designed and implemented the ONDYT. This intersectorial / interdisciplinary organism provides information regarding the status, trends and risks of land degradation and desertification in order to propose and promote prevention and mitigation measures that will be used for advising public and private decision-makers in Argentina, and also for raising awareness and educating society in general (Abraham et al., 2019). The system for Monitoring and Assessing Land Degradation and Desertification is based in the development of 17 Pilot Sites that constitutes the local level network, representing almost all of Argentina's ecosystems. It provides local field data: monitoring and assessing of bio-physical and socio-economic indicators of land degradation ([www.desertificacion.gob.ar](http://www.desertificacion.gob.ar)).

In this network the representative pilot site of the Monte, the largest dry region of Argentina, located in the Lavelle desert, Mendoza, aims to improve the living conditions of native communities dedicated to subsistence goat farming, located below the poverty line. The restrictive precipitation ranges from 80-100 mm per year, strongly affecting productive activities. Presenting the participatory local development experiences developed on this site, its replication capabilities and the lessons learned is the objective of this article.

## Methods and Study Site

In a multisectorial effort, an interdisciplinary group of technicians and researchers took part in the design of the proposal and the integrated desertification assessment in the fields. The beneficiary community participates in co-design of the project, fieldwork and construction, through their work and contribution of their knowledge, their land and livestock. The Municipality of Lavelle supports the development of infrastructure, equipment and services (roads, water supply, materials, etc.)

The work combines diverse methodologies: participatory assessment procedures, integrated resource assessment, thematic mapping, participant observation, remote sensing analysis, field control and establishment of measurement plots, after the motto: "living with the desert" rather than combating it. The work methodology has been published on several occasions (Abraham 2003, Abraham et al., 2006). and is based on the design of a participatory procedure where, starting from the identification and prioritization of problems and objectives, we obtain and evaluate desertification indicators, and on the grounds of the shared knowledge of the system, and of the desertification processes affecting it, all actors together design the impact hypothesis and the intervention actions. The intervention strategy is based on an attempt to optimize the local production by incorporating techniques allowing the capitalization of knowledge and traditional practices, with the goal to generate a high impact on the diversification and quality of production, and reduce the factors of pressure on the territory, mitigating and slowing down the desertification processes.

The Monte Phytogeographic Province makes up an arid diagonal that crosses the country with all gradations of aridity. This ecoregion, devoted to raising cattle and livestock, is the driest of cattle lands in Argentina. Agriculture is confined to areas under intensive irrigation, the winemaking 'oases'. Both types of land use are responsible for a great part of the degradation, evidenced not only by biodiversity loss and deforestation of native woodland, but fundamentally by the poverty of the people, most of them subsistence goat herders who still remain in non-irrigated drylands in extremely critical survival conditions (Abraham et al., 2009)

The experience is settled in the locality of "El Junquillal" (Lavelle, Mendoza) in the heart of the monte desert, with a subsistence economy based on goat production, and by their dependence for equipment on distant urban centres. The desert has lost its natural and social capital, which was used for building wealth in the oasis. Over time, it has offered valuable resources such as mesquite woodland and grasslands, which have been overexploited (Abraham & Prieto, 2000). The present pastoral activities mostly include raising small livestock for the production of meat and manure. The climate is arid and precipitation ranges from 80-100 mm per year, which strongly affects productive activities. The territory exceeds one million ha, with indigenous communities, with a population reduced by migration and poverty to only 3500 people (0,5 inhabitant/ km<sup>2</sup>), grouped in small settlements (hamlets built with adobe bricks), with more than 31% of their basic needs unsatisfied, and an illiteracy rate of 8.20%, entirely devoted to subsistence goat production (Rubio et al., 2017; INDEC, 2010), The population self identifies as being of Huarpe ancestry, and the

productive activities they perform are related to a subsistence economy destined for self-consumption. The experience is focus on a small huarpe community called “Pinkanta”, of around 40 families. Eleven families of this community formed the “Kanay Ken” Cooperative with the aim to participate with IADIZA and the Municipality as beneficiaries of this project. People expect the project allows them to improve their quality of life through productive diversification and improvement of their fields, earning higher income to rise above the poverty line, taking on the challenge that the desert can be productive and sustainable. This cooperative and the demonstrative experience is a pilot case that can be replicated throughout the territory, nucleating other scattered communities.

## Results

The initiative emerged in 2002 as the result of international cooperation. IADIZA, Spallanzani Institute and the Desertification Research Centre (Univ. Sassari), done the feasibility study and start working on raising awareness and empowering of local communities. With the support of the UNCCD Global Mechanism, a research-action programme was designed to generate strategies for local development and production diversification to combat desertification and poverty. The proposal leans on three pillars (natural, economic and socio-cultural components) and, through local development, aims at achieving a better land use, improving and diversifying goat production, reducing livestock pressure and increasing producers’ income. Combines original aspects of desertification assessment and monitoring, recovery and management of degraded lands for forage production, adaptation to global change, optimization of water resources, revegetation, establishment of nurseries, herd sanitation, design of Demonstrative Productive Units (DPU) directed to production diversification (healthy goat milk and by-products), capacity building in the local population and government, stop migration through business opportunities and youth employment, training of specialized technicians, promotion of producers’ associations and technical assistance for product trading.

The proposal includes innovative traits in comparison with the strategies implemented thus far in an area whose natural resources have been devastated. It is based on the acknowledgement of the rural environment potential from a surmounting perspective of the assistance and compensatory approach. It is framed within a conception of rural territory development that aims at competitively and sustainably agriculture, articulating a rural territory with dynamic markets. Its goals are to generate development strategies for a sustainable development in rural indigenous communities in the desert, improve the status of the ecosystem through an integral management of natural and cultural resources, and promote improvement of the socio-economic conditions of dryland inhabitants. It takes into account the compatibilization of ecosystem regeneration and investment in infrastructure and services, transformation and diversification of productive activities and generation of employment and increase in revenue. (Abraham et al., 2015).

A significant change would be encouraged by moving the people out of the poverty line, and in reducing the pressure of the stocking rate, would also promote improvement and recovery of the fields. The experience implies a profound change in traditional extensive livestock management: with only 28 goats coming into the system of the DPU, the profit obtained is equal to that generated by 200 goats in the current kind of livestock use. The system would need only 56 goats to double the monthly income of the family group, versus the more than 400 goats with the current model. Other activities related to the utilization of the area natural resources, such as the production of brooms from collecting rattan (“junquillo”), manufacturing ecological bricks with local materials for the construction of DPU, genetics improvement of goats to keep the rustic and produce better and more quantity of milk, nurseries of native species with low water requirement for revegetation of degraded areas, etc. Training, community empowerment and local government interests are the factors that ensure that the enterprise keeps running at the time when IADIZA withdraw the project. The community has learned and achieved without intermediaries establish links with national and local agencies to access projects that keep this line.

The experience shows that is possible to promote an integral development in order that communities at risk become able to support themselves with dignity, in health and prosperity, considering basic principles such as recovery of cultural guidelines, identity, knowledge of traditional lifestyles, creativity to associate those guidelines with new possibilities derived from the knowledge of ecosystem structure, functioning, and production capacity, highlighting dryland environments and their socio-cultural aspects of food production and consumption and innovation in the production alternatives for a healthy diet and a decent life, by applying technological advances adapted to the needs and requirements of the community.

The initiative is integrated, involving environmental, social and economic dimensions, so that during these years the results have increased impact in and outside the community. The case was a LADA pilot site and currently is a pilot site of the National Observatory of Land Degradation and Desertification, which ensures high visibility and potential for replication in areas with similar problems.

## **Discussion [Conclusions/Implications]**

Current results indicate that dialogue and joint work among population, local governments, research institutes and national / international financing agencies are of great importance for the coherence, depth and continuity of actions to combat desertification. It is necessary to work in interdisciplinary teams that go beyond the fragmentary visions of scientific specialties. Experience indicates this as the best way to work on mitigating the adverse consequences of desertification and reach its invisible causes, transcending isolated cases to tackle complex and dynamic problems at territory scale. Dialogues with local populations must exceed consultation levels, generating active processes of empowerment and equality in terms of decision making. Systematic work with populations affected in their rights denotes the importance of attending, in the short term, to the possibilities of social reproduction of the groups, solving their unmet basic needs. Only thus will environmental, social and economic balance be possible.

This is an experience that takes more than 20 years of development, with great ups and downs. At this point, we can reflect on the lessons learned. In an initial effort, the model was developed in a project based on an in-depth study of the system, both in its biophysical and socio-economic dimensions, collecting from the beginning the co-construction of knowledge of this complex system with the active participation of all actors involved. This derived in a complete prefeasibility study that guided over time the partial actions that were implemented. Perhaps this is one of the first lessons: having a complete vision of what you want to achieve and assuming that it should be gradually implemented. This partial implementation has its causes in the difficulty of obtaining complete and sustained financing and in the lack of incentives from the science and technique system to achieve the continuity of the interdisciplinary teams and the execution of local development proposals. As is normal in practically all areas of research, the system focuses on financing actions that have viable results for the system, promoting projects where the focus is on publishable results rather than on developing successful experiences in the field. Over time, young researchers opt for more individual works where they are recognized the leading role that is often lost in the evaluation of interdisciplinary proposals and that are committed to the long term. This work and the experience acquired implied the strong decision to actively participate in the change of these evaluation systems within the national science and technique organization, CONICET, convinced that only in this way would this type of work have acceptance and a future among young scientists, subjected to a scientific and traditional evaluation of their scientific productions. After years of work in the evaluation commissions of the science and technology system, we have contributed to their flexibility and even though there is still a long way to go before they are considered competitive products, it can be affirmed that at this stage local development actions that imply changes and innovation in the quality of life of local communities, with an interdisciplinary and multisectoral approach, are appreciated and valued in the evaluation of researchers. This is an important incentive for the continuity and renewal of work teams.

Another important effort to which we contributed on the basis of this experience was that, in the belief that only the multi-sectoral effort could sustain these proposals, we contributed to the creation and consolidation of the ONDyT that ensures the institutional sustainability of this and other pilot sites like this, throughout the country and through time. The Observatory and the work of its management committee have been key in the scientific contribution, in the continuity and in the visibility of this proposal.

On the other hand, local communities have urgent and immediate needs, do not support more expectations that are not quickly met, and when there is a discontinuity in financing that means the postponement of the proposal, they must dedicate themselves to the strategies that have traditionally meant them ensure their survival and social reproduction. This project started with the contribution of international cooperation, initially the GTZ (now GIZ), which abandoned funding when Germany decided to focus its efforts on reunification. Then the UNCCD Global Mechanism and the Italian Cooperation provided strong support, which was discontinued when the crisis of the Argentine foreign debt bondholders affected mainly Italian investors and the cooperation decided to abandon the effort in Argentina and focus on Africa. At that point, significant progress had already been made on the ground, with great awareness among the community and

local governments, which in practice meant the necessary incentive to continue with partial actions, with a great effort to obtain specific financing. It is worth reflecting in this process on the large projects in which we participate, financed by the IDB or the GEF. In both cases, the bureaucracy and the complicated rules for financing execution determined that few resources reached the community. On many occasions, it had to be spent on external consultancies that did not contribute to the territory and only justified the life of the project itself. It is demonstrated that these efforts cannot depend solely on international cooperation, which has its own dynamics and objectives.

Finally, the community itself was empowered by acquiring the skills to manage their own projects, without IADIZA intervention, requiring only technical support if necessary, and something that seems basic, but represents the true value of these works for all: not abandoning not even when everything seems in vain, and to continue contact with the community, even if it is through small and sporadic actions while financing is tirelessly managed to continue. Checking that the long-term objectives have been met even partially, and seeing that there are positive changes in the reality of these communities, making their needs and demands visible, constitutes the greatest incentive to always continue one step forward with the process.

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