

SUSTAINABLE LIVELIHOODS ANALYSIS: A CASE STUDY OF A MEXICAN RURAL COMMUNITY

Nina Perez-Izadi and Miranda Cahn

Nina Perez
ninaperez@clear.net.nz
14 West Belt
Lincoln, Christchurch

Mandy Cahn
Cahn.sha@xtra.co.nz
Applied Management and Computing Division
P.O. Box 84
Lincoln University
CANTERBURY

ABSTRACT

Using a ‘sustainable livelihoods’ approach (DFID, 1999), this paper describes the impact of the project ‘Water and Life’ on a rural community of the Mexican semi-arid region. The project has brought about significant changes in the community through rainwater harvesting techniques, such as increasing the availability of water and the introduction of orchards and a vegetable garden. However, the project has neglected the traditional livelihood strategies of the community and has failed to reduce the vulnerability of the community or assure its long-term food security. The study shows that vulnerability could be reduced by support of traditional livelihood’s strategies, increased coordination of formal groups, the training of women and youth, and active participation of beneficiaries in the project planning and decision-making.

INTRODUCTION

Arid and semi-arid regions make up 52% of Mexico’s total land area, farming is especially difficult and poverty is common (CONAZA, 1999). These areas receive little public investment or official support, and lack an integrated policy for development. Institutions act independently in their approach to aid and development projects.

Whether ‘sustainable development’ has occurred as a result of the diverse range of projects and programmes is uncertain. This paper describes a rural community in Mexico. It explores whether or not a project implemented in the community has enhanced and developed sustainable livelihoods, leading to sustainable development.

In the last decade, the term ‘sustainable livelihoods’ has been used to describe the integration of poverty reducing strategies, sustainable development, participation and empowerment processes into a framework for policy and project analysis and planning. (UNDP, 1999; DFID, 1999; IISD, 1999; Korten, 1996; Loubser, 1996).

In general a livelihood is sustainable if “it can cope with, recover from and adapt to stresses and shocks, maintain and enhance its capabilities and assets, and enhance opportunities for the next generation .”(Hoon, Singh and Wanmali, 1997, p. 5)

The achievement of sustainable livelihoods is extremely challenging in arid and semi-arid communities, which are constantly exposed to shocks and stresses, and where assets and resources are minimal. Such communities usually rely on complex and diverse livelihood systems that use a wide range of family resources in an effort to reduce the risks associated with living near subsistence (IISD, 1999). Many projects that foster development fail to recognise the complexity of arid and semi-arid livelihoods and only concentrate on the improvement of certain assets and structures.

Negative impacts or failure to achieve development goals can easily happen if planners do not take a holistic view of the processes by which people achieve their livelihoods and consideration of how the project will impact on the whole community. In addition, active participation of beneficiaries in their own development is of paramount importance.

THE PROJECT 'WATER AND LIFE'

Various projects have used rainwater harvesting techniques as a means to foster the development of arid and semi-arid regions in Mexico. Though most of the rainfall patterns in these regions are erratic, total rainfall is considerable. Harvesting this rainwater can provide water effectively at times of low rainfall and at a relatively low cost. The project 'Water and Life' aims to introduce a new water culture that will improve the life quality of subsistence farmers in arid and semi-arid regions. The project selected the community of San Felipe as the first community to receive the new rainwater harvesting technology.

San Felipe is a small community of 73 inhabitants. It is one of 106 communities of the Doctor Arroyo municipality and is situated in the state of Nuevo Leon. Doctor Arroyo has a population of 37,363 and an area of approximately 438,220 hectares. Most of Doctor Arroyo is semi-arid, with an average rainfall of 302.2 mm (INEGI, 1995). One of the features of this region that makes it particularly vulnerable is that there are no rivers or permanent streams and much rainfall is lost to run-off or evaporation. Before the project, San Felipe's main sources of water for human and animal consumption were five ponds, one salted well, one spring, and one faulty rainwater harvesting system of 500,000 litres. As is common in this area, ponds supply water for 2.5 to 3 months of the year but are dry for the remaining 9 or 10 months (Velasco-Molina and Carmona-Ruiz, 1984).

The project 'Water and Life' began in January 1996 and has brought about significant changes to the community. One of its major achievements has been to provide the community with three rainwater harvesting systems with a storage capacity of approximately 1.2 million litres. Some of the other important outcomes have been:

- Two orchards, of 174 peach trees and 107 plum trees respectively, that use rainwater harvesting techniques.
- A vegetable garden of 0.05 hectares.
- The construction of a kindergarten that can catch rainwater from the roof and has a storage capacity of 7,500 litres.

One of the project's indirect benefits has been the generation of a relatively regular source of income for the households. The local men have undertaken construction work on the project and are paid a minimum wage. Moreover, some of them have received training for the construction of the systems and the vegetable garden. Also the households have received temporary aid through monthly food handouts, a supply of medicine, and occasional donations of clothes, chickens, toys and other items.

This project has not employed a participatory approach, rather it has been designed by the project staff and the community has been only involved through passive consultation.

LIVELIHOOD STRATEGIES AND THE PROJECT

The project has increased the availability of water as a resource and introduced two new livelihood strategies, the orchards and the vegetable garden, into the community. However, when analysed by a 'sustainable livelihoods' approach (DFID, 1999), it appears that the project can only partially satisfy the needs of the community and cannot reduce the vulnerability of the community markedly. Whether the new water culture will improve the life quality of subsistence farmers in the long term is questionable.

Domestic Use of Water

One of the rainwater harvesting systems was already built and was repaired by the project in 1996. This source of water was previously used for human consumption, but since being repaired has been used only for the vegetable garden. The other two new systems are used for the orchards. One of the project's priorities has been to build a system with a capacity of 200,000 litres, exclusively for human consumption. However,

because it is twice as expensive as normal systems, sponsorship has not been obtained. The people of San Felipe currently use water from the spring for domestic needs. Except during a severe drought in May 1999 when the spring dried and the community were permitted to use water from the rainwater harvesting system as an emergency measure. It is important to recognise that without the rainwater harvesting system built by the project, the inhabitants would have been forced to leave the ejido during the 1999 drought. However, for three years the project has restricted the community from using a reliable source of high quality water for their own consumption and instructed them to use water of lesser quality.

Traditional Agriculture and Livestock

San Felipe's most common farming activity is rainfed agriculture, while the grazing of livestock, mainly goats, is also practised. Produce from rainfed agriculture is intended for self-consumption, but production is severely affected by the erratic rainfall pattern resulting in only 3-4 successful harvests in every ten years. Livestock also suffers from a lack of reliable sources of water and recurrent droughts. The project has not supported these traditional activities. It is clear that the community of San Felipe has limited control over the rainwater harvesting systems and the use of water for their traditional strategies. Although community authorities have been consulted, it has been the project leaders who made the final decisions.

Other Traditional Strategies

Since employment is occasional and food production uncertain, survival often depends on the extraction of a natural fiber called 'ixtle' and the harvest of seasonal wild resources such as dates, 'cabuche,' and 'mezquite.' Utilising these natural resources requires considerable skill. These skills are slowly being lost as money is earned more easily by working for the project. Another important source of income is remittances from individuals who migrate temporarily to nearby cities or the U.S.A. Both sources of income are irregular and unreliable due to seasonality, low wages, risk, and poor management.

Orchards and Vegetable Gardens

The orchards and vegetable garden, the strategies introduced by the project, do not provide staple foods or on-going food security. The orchard's potential to become an income-generating source is hindered by the following aspects.

- Due to the severe droughts, rainwater harvesting techniques have prevented the trees from dying but the orchards have not yielded well.
- Orchardling is very risky due to frosts and hail.
- San Felipe has a very limited infrastructure that could support successful orcharding.
- There is a high possibility that a considerable amount of the harvest could be lost due to post-harvest problems such as lack of proper storage, means of distribution and a set market. Lack of resources and training make processing, such as preserving and drying, uncertain.
- Seasonal income is spent immediately and so will not ensure food security for the remaining months.

DISCUSSION

The coordinator of the project has realised that rainwater harvesting techniques could be more effective if they were used to support traditional livelihood strategies such as rangeland, wild resources, and cattle breeding. Future activities are pointed in this direction. If however, had investments been used for these strategies originally, the project would have enhanced the traditional livelihoods and significantly reduced the vulnerability of San Felipe community.

The project has been successful in providing training for the adult men of the community. However, local institutions and organisations lack the networks and contacts with the donors and wider institutions, making it impossible for the community to repair or build new systems without the aid of the project 'Water and Life'. Youth have been excluded from the training. The systems will not last more than 30 years, which means that the benefits of these systems will disappear if future generations are not trained.

Women have been passive participants of the project. This passiveness is partly because the project staff is male, and the traditional protocol does not allow men to interact with women. In addition, the community's

traditional way of life completely excludes women from the decision-making. One example of how women's needs have been neglected has been the vegetable garden. The vegetable garden is a strategy to provide food for the community. Although women prepare the food and cater for the household needs, it is presently men who decide what to plant, and the vegetables are shared between the local men. Moreover, women were not trained for the vegetable garden, only men.

Nevertheless, the quality of life has indeed improved significantly since the project started in 1996. Women say that hunger has disappeared from the community since the project began and that there is no need to extract 'ixtle' anymore. However, this improvement is mainly due to the temporary income from construction work and the monthly food handouts. Neither the rainwater harvesting systems, the orchards, nor the vegetable garden have significantly contributed to reducing the vulnerability of the ejido or improving its food security.

CONCLUSIONS

Water is an essential asset for the Mexican arid and semi-arid regions, however, in the case of this project, an increase of this natural resource has not lead to sustainable development through improved livelihood strategies, reduced vulnerability or long term food security.

This study has shown that for in order to achieve sustainable development leading to secure livelihoods, support and improvement of traditional livelihoods needs to take priority over the introduction of risky strategies foreign to the community. Moreover, consideration of present livelihoods strategies, community 'capital' and vulnerability is essential.

The study showed that projects can assure sustainable development by including beneficiaries as partners in planning and decision making rather than through passive consultation. The study highlighted that support of the community's social capital through improved participation of women in decision-making, increased coordination of formal groups of the community and the training of women and youth could significantly reduce the vulnerability of San Felipe.

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