

**Lessons from the Equator Initiative:
The Community-Based Enterprise of Nuevo San Juan, Mexico**

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Chapter 1: Introduction

1.1 *Research Justification*

Some of the most important efforts in the path of finding sustainable ways of using natural resources and providing solutions to the socio-economic problems of highly impoverished areas are the ones canalized through the Equator Initiative. The initiative was created to support community systems that address needs of both environmental protection and development at the grassroots level in countries in the equatorial belt (Timmer and Juma, 2005). The Equator Initiative has identified a large number of locally designed indigenous/local enterprises that combine development and conservation objectives. Some critics of these kinds of indigenous/local enterprises argue that conservation and development objectives cannot be linked and that it is too ambitious to believe that biodiversity can be used and at the same time conserved (Redford and Richter, 1999). However, there is still the need to analyze more deeply what are the contributions of these communal enterprises. There is also a need for learning whether such apparent incompatibility between conservation and development comes as a result of external drivers such as the market economy (MA, 2005), and/or is due to the lack of the appropriate institutions to canalize the community efforts, to bring about and reinforce the required cross-scale linkages, and to help the enterprises to absorb changes and reorganize (be resilient) over time.

To carry out the above-mentioned analysis, the experience of the indigenous Purhépecha in Nuevo San Juan, Michoacán, was taken as a well-suited example. Nuevo San Juan enterprise operates a community-based forest management system in Mexico, and was a winner of one of the 2002 Equator Initiative Prizes (Timmer and Juma, 2005). The community of Nuevo San Juan has created an enterprise that is trying to promote the sustainable management of a temperate forest. It represents a case of integration of conservation and development objectives, backed by strategic partnerships, that can contribute to dealing with the complexities of, and promoting, sustainable development.

1.2 *Purpose of the Research*

The purpose of the research was to identify and analyze the characteristics of the Nuevo San Juan community-based resource management system (CBRMS) and how institutional and organizational cross-scale linkages support of the system.

1.3 *Objectives*

1. *To describe key characteristics of the self-organization of the CBRMS of Nuevo San Juan.*
2. *To identify drivers that help or hinder the development of the Nuevo San Juan system, including policies for poverty reduction and environmental protection.*

3. *To identify and analyze the institutional and organizational cross-scale linkages between Nuevo San Juan and other organizations and how these linkages affect the local management system.*

1.4 *Methodology*

During the fieldwork in the community of Nuevo San Juan, discussions were held with representatives of the communal enterprise about the procedure and methods to gather information. Taking into consideration the interest of local institutions, and availability of comuneros¹ and of community members² in general, the research methods adopted were semi-structured interviews and participant observation. In coordination with persons at the management level, the heads or deputies of the enterprise's productive areas were interviewed. The initial findings of this first set of interviews, together with the findings from formal interviews and informal discussions with other players at the local and regional level, contributed to an understanding of the local and regional context, to reshape the research focus, and to identify key informants and important secondary sources of data. Further interviews helped to build understanding of the different processes that give life to the enterprise, the role of leadership, the importance of external help in the development and consolidation of the enterprise, and changes in the enterprise over time due to endogenous and exogenous drivers.

The categories of interviewees included founders of the enterprise, persons currently linked to the enterprise, consultants currently and previously linked to the enterprise, comuneros working with government agencies and NGOs, academics, representatives of government agencies, and general community members. In total approximately 65 persons were interviewed in more than 70 informal and semi-structured interviews, and two group discussions were carried out.

The findings presented in the present report are based on the information collected through the above-mentioned interviews and documents provided by the comuneros and the enterprise, except when referenced.

1.5 *Theoretical Background*

1.5.a *Self-Organization*

Social and ecological systems are complex in nature. Holling (2001) explains that the complexity present in social-ecological systems does not emerge from random interconnections among the components and factors of these systems, but is the result of a few controlling processes. Holling indicates that there is an inherent self-organization in

¹ Comuneros: members of the indigenous group whose list was officially recognized under Presidential resolution in 1991. The Presidential resolution recognizes the land rights of the comuneros.

² Community members: refers to persons living in the municipality, this includes comuneros, their family members, owners of private property and foreign settlers.

complex systems that is able to adapt depending on varied influencing factors. Similarly, Waltner-Toews (2004) defines self-organization as the process by which progressively organized cycles of negative and positive feedbacks, developed as a result of the energy and information entering and leaving the system, allow the system to build the required structures to adapt and survive over time. In Holling's (2001) perspective, the system's mechanisms for self-organization are the key to its sustainability. The reduction of natural variability and diversity (biological and human) in the system, therefore, reduces the capability of the system to adapt to change caused by disturbance of various degrees. In this regard, the self-organization and adaptability of social-ecological systems suffer when human action minimizes their natural variability and diversity.

Self-organization is an attribute that contributes to the resilience of the system. Walker et al. (2004, p. 3) define resilience as "the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks". Berkes et al. (2003), expanding on the importance of considering the whole to be much more than just the sum of its parts, explain how resilience is an emergent property of the system that cannot necessarily be understood by analyzing the system's components. The study of self-organization then is extremely relevant to understanding how flexible and adaptable the social system, ecological system or social-ecological system is when dealing with unpredictable conditions.

1.5.b Cross-scale Linkages

The processes taking place in ecosystems and the scales at which they occur must be identified to properly analyze the system. Furthermore, it is necessary to identify the subsystems nested in the system to understand the whole (Berkes et al., 2003). In complex systems interventions may vary strongly depending on the scale at which they are applied. Management systems designed for the species scale differ radically from the ones applied to ecosystems or landscapes. The documented negative impacts of management decisions taken based on the needs at a single scale suggest the need for the design of management institutions involving more than one scale. The design of institutions linking various scales, therefore, is vital to address factors influencing or being influenced by more than one scale of time and/or space (Berkes, 2002).

Authors such as Ostrom (1990) and Berkes (2002) have recognized the importance of studying the institutional linkages between different scales and the dynamics of these linkages. Robust common property regimes have often been characterized by nested institutions and sub-systems that constitute part of the social-ecological system's structure for self-organization and, therefore, contribute to the resilience of that system. These local level systems or regimes can be positively or negatively impacted by the processes initiated at higher levels, depending on factors such as the speed of change produced by the processes and the characteristics of the social-ecological systems, including the resources they manage (Berkes, et al., 2002). There is no doubt that analyzing the impacts of interventions is important when studying common property regimes such as community-based resource management systems. Such analysis could help in the design

of interventions to strengthen holistic management of ecosystems and the societies depending on them.

In addition, because uncertainty is an inherent characteristic of complex systems, the institutions guiding the management of these systems need to be studied in detail to analyze the way that they deal with uncertainty and adapt to change. Numerous community-based institutions, embracing diversity and validating human presence in ecosystems, have applied approaches such as adaptive management. These institutions have been interacting with and adapting to interventions from other, usually larger-scale institutions, with many of them unable to survive these interventions. It is time to give attention to the community-based institutions of this sort that still exist to comprehend their systemic vision of the environment and to learn from them key features in the art of managing complexity and uncertainty.

1.5.c *Drivers of change*

Other important forces influencing social and ecological systems are external drivers of change. Under management practices guided by a systems view, the identification of these forces is extremely important, but not always easy to achieve. The Millennium Ecosystem Assessment (MA) (2005) explains how the modification of ecosystem services and attributes and the consequent impact on human well-being are a result of both deliberate and unintentional human actions. Therefore, the understanding of the forces causing these changes is crucial to designing interventions that enhance positive impacts and minimize the negative (MA, 2005). The MA (2005, p. 86) defines *drivers* as “any natural or human induced factor that directly or indirectly causes a change in an ecosystem. These drivers can be endogenous or exogenous depending on scales of time and space. However, by their nature, many drivers are difficult to define and to classify. The MA also distinguishes between direct and indirect drivers, the former being those that clearly affect ecosystems and their services, and the latter being those that affect direct drivers. The major categories of global driving forces used by the MA are demographic, economic, socio-political, scientific, technological, physical and biological drivers. The MA explains that these drivers seem to be exogenous because their current condition cannot be influenced directly, with the changes taking place in them mostly resulting from cumulative effects of decisions taken at varied scales. However, when these drivers are seen with a longer perspective, it is easier to see how they can be or are influenced by deliberate human decisions.

The identification and understanding of these exogenous and endogenous ecosystem drivers is an extremely important research area for the promotion of sustainable development. This topic is particularly relevant when studying community-based resource management systems. Frequently, assessments of the successes or failures of many of these systems are based on the effectiveness of their institutions to maintain healthy relationships between humans and ecosystems; however, it is not always evident that even well-founded common property regimes have been seriously undermined or have disappeared due to exogenous drivers. Such drivers, similar to the cross-scale

linkages and self-organization of community-based systems, deserve to be researched further.

1.6 Study Limitations

For this study it has been assumed, based on secondary sources, that the Nuevo San Juan case represents a successful community based system whose institutional arrangements and structures can contribute, as a living example, to promoting institutions able to foster sustainable development and conservation. Based on this assumption, no large efforts were made to find, during the research, detailed data to demonstrate the success of the system in reducing poverty and protecting biodiversity. Some of this kind of information has already been documented (eg. Chávez et al., 2003; González et al., 2003; Monroy et al., 2003; Sánchez et al., 2003; Sosa, 2003; Torres et al., 2003; Garibay and Bocco, 2003; Fregoso et al., 2003; Pego, 1995).

The study and analysis of the research is based primarily on contributions from community members linked directly and indirectly to the Nuevo San Juan community-based system and some of its key allies. The field research was not designed to provide a comprehensive enumeration of all the possibly relevant characteristics of the social-ecological system, but to give a synopsis of key components of the system and their relevance over time.

Chapter 2: Research Background and Study Area

2.1 *Mexican Socio-Political Context*

The laws regulating the use of natural resources and particularly forest resources in Mexico have given life to the different processes of use, appropriation and management of resources and lands, most of them with detrimental consequences for rural communities. Merino (2004) describes how the Mexican constitution for the nineteenth century favored the appropriation and unsustainable exploitation of forest resources through the absolute right given to private property, where the interests of private national and international companies trumped the interest of communities fully dependent on these resources. In the twentieth century, she indicates, the constitution of 1917 vested ownership of the land and its resources in the state, where these could pass to private or communal hands through government concessions. The parameters established in Article 27 of the 1917 Constitution were the starting point for subsequent governmental actions and legislation to restore or provide land to peasants and communities and for regulations, which continue to this day, limiting access to and exploitation of natural resources, including land. Among the laws created was the Forest Law of 1926, which established the requirements to exploit forest resources. These requirements were quite high for rural communities and ejidos³ without the technology or access to economic resources needed to fulfill the requirements, but at the same time they put the exploitation of communal forest resources in communal hands (Caro, personal communication, 2005; Merino, 2004). Because of the requirements established in the Forest Law, numerous communities were forced to rent their land to private enterprises with scarce long-term benefits. Subsequently reformed and created laws made varied positive and negative contributions to change the situation of forest communities. These reforms passed from the provision of concessions to private companies enforced through the Forest Law of 1940 to an open recognition and support to the local management of forest resources stated in the Forest Law of 1986 (Merino, 2004). See Merino, 2004 for detailed information on legislation and its impact on ejidos and communities in Mexico.

2.2 *The Region of the Meseta Purhepecha⁴*

The Meseta Purhepecha, identified as one of the two main natural regions of the State of Michoacán, is a region characterized by pine-oak forests and large populations of indigenous peoples, which have had the collection of resin as one of their main economic activities (Merino, 2004). The changing government administrations and changes in land use rights caused significant changes in this region, with a shift from the appropriation of communal land by the government during the administration of Porfirio Diaz in the second half of the nineteenth century, to the provision of land for large numbers of communities and ejidos at the beginning of the twentieth century. These legislative changes, especially in the Agrarian Law of 1915 and Article 27 of the 1917 Constitution, which directly addressed the recognition and entitlement of communal land and resource

³ Ejidos are defined by the Mexican Agrarian Law of 1992 as legal entity with land ownership rights.

⁴ Except when referenced all the information under this section has been provided by interviewees.

property rights, had their maximum expression at the national level during the administration of Lazaro Cardenas, who as President distributed land to communities and to dispossessed and poor peasants through the entities of Ejidos⁵ and Agrarian Communities.

At the level of the State of Michoacán, Cuauhtemoc Cardenas, first as Forest and Fauna Sub-secretary and later as the state governor, from the mid 1970s to the mid 1980s, spurred the communal exploitation of forest resources by authorizing ejidos and communities, some of them without official documentation of their property rights, to use and manage their resources. This support given to communities and ejidos from the state, inspired many communities to organize themselves to exploit their resources in a systematic way, among them the community of Nuevo San Juan.

2.3 The Nuevo Parangaricutiro Municipality

Located in the western part of the State of Michoacán at an elevation of 1880m., the municipality covers 234.31 km², of which the communal land comprises almost two thirds. In 1995 there was an estimated population of 14,637 inhabitants (Encyclopedia Municipalities of Mexico 1999). in the municipality. Current estimations indicate a population of about 16,000 persons, with about half of them being comuneros and their family members. The rest of the residents in the municipality are members of surrounding ejidos, private property owners and outsiders. Many comuneros and their families live in the communal land, but most of them reside in the capital of the municipality.

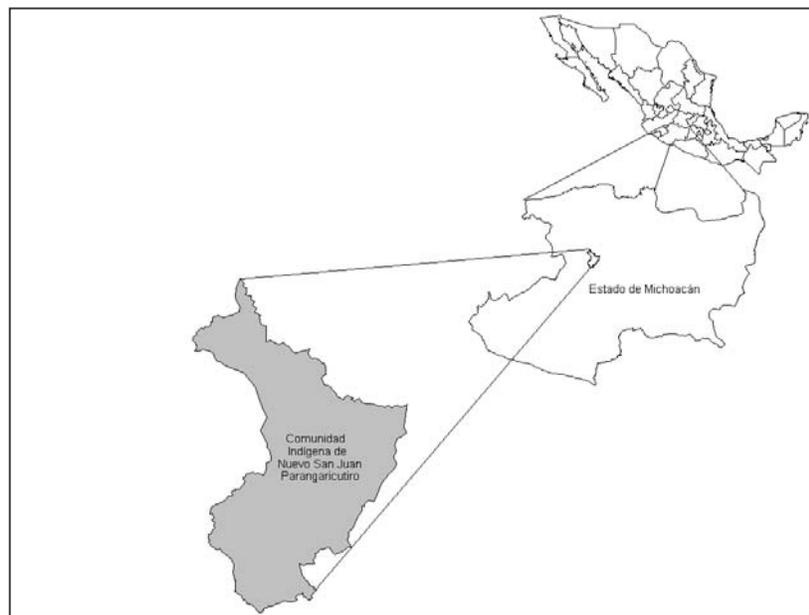
Among the economic activities taking place in the municipality, forest exploitation represents the largest activity and is almost entirely carried out by the communal enterprise; this is followed by avocado farming, cattle raising and commerce respectively. Other agricultural activities take place such as maize farming but do not have a significant economic impact in the municipality. Timber extraction by the communal enterprise accounts for 75% of local economic growth and is the primary source of employment in the municipality.

2.4 The comuneros of Nuevo San Juan

Nuevo San Juan is one of the Mexican rural communities that kept secure documents from 1715 where the Spanish king recognized their property rights. They were originally settled inside their communal land, but an eruption of the Paricutin volcano in 1943, which destroyed the community together with approximately 1500 ha. of forest, forced the community to move outside the perimeter of the communal land. The comuneros settled in Los Conejos, a property located beside the communal land. Interested in

⁵ The Mexican constitution from 1917 institutionalized the Ejidos, together with communities and private property as legal property-owning entities. Numerous communities did not have documents to demonstrate ownership of the land, and many others had documents from the time of the colonialism that required verification and authentication processes established in the Agrarian Law from 1915; therefore large numbers of communities used the entity of Ejidos to acquire property rights over their lands during the administration of Lazaro Cardenas.

exploiting their timber, the community led an organizational process, together with other communities and ejidos that gave birth to the Union of Ejidos and Indigenous Communities Luis Echeverria Alvarez (UECIFOMET) at the end of the '70s. After three years of operation, the members of the Union had differences of opinion and leadership problems that resulted in the Union's dissolution at the beginning of the '80s. At this time San Juan, one of the communities advocating for radical changes in the management of the Union, was ready to organize itself independently to exploit its forest. In this way, in 1982 the comuneros from San Juan through key leaders started to envision the communal enterprise⁶ and make it a reality. During the '80s the community did not have official recognition of their property rights; however, the leadership that united the dispersed comuneros, that gave life to the communal enterprise, and that contributed to its consolidation, was key to achieving official recognition through a Presidential Resolution in 1991 (See Figure 1 for a map of the location of the communal land).



Source: Velázquez et al., 2003.

Figure 2. Communal land of San Juan Nuevo located on the Northwest of Michoacán in the central region of Mexico.

At the community level the comuneros of Nuevo San Juan are organized based on the requirements established in the Agrarian Law, which is based on Article 27 of the Mexican constitution. The Law regulates matters such as land use and ownership, local institutions, and rural development in general. See Figure 1 for a diagram of institutions

⁶ Communal enterprise is understood as the process by which the comuneros started to *collectively* use and manage the forest resources from their communal land. The communal enterprise comprises many productive areas to take advantage of timber and non-timber forest products.

from Nuevo San Juan. The institutions⁷ heading the consultation and decision-making processes of the comuneros from San Juan are:

- The General Assembly. Formed by the community members enlisted during the communal census carried as part of the process of acquisition of government recognition of the land tenure rights. The official list of members of the General Assembly is included in the Presidential Resolution of 1991. The General Assembly acts as the prime consultative body. Among its main functions are the election of the members of all the other communal institutions; making the major decisions on internal rules, land distribution, legal agreements and contracts; and evaluating the financial reports of the various areas of the communal enterprise;
- The Commissariat, which is formed by a president, a secretary and a treasurer with their respective deputies, is in charge of the execution of the decisions taken in the General Assembly and of the representation before authorities and other entities of the group of comuneros. The Commissariat also enforces the local rules among comuneros and coordinates administrative procedures related to the General Assembly. Moreover, administration and finance reports of the communal enterprise are presented to the General Assembly through the Commissariat.
- The Monitoring Council is constituted by a president and two secretaries with their respective deputies. It is in charge of monitoring the actions of the Commissariat and reporting them to the General Assembly; it also assumes the administrative responsibility of the Commissariat whenever it is unable to do it. In the case of San Juan the Monitoring council has as one of its primary functions the field monitoring of the communal forest.
- A Communal Council, which is formed by representatives of the different neighborhoods of San Juan that are elected or reelected by the Commissariat. It is the institution added by the comuneros to make the consultation and decision-making processes more time-efficient. The Communal Council filters all the information coming from the enterprise, the Commissariat, and the Monitoring Council to the General Assembly.
- Management, which is formed by a Manager and its deputy. The manager is in charge of the enterprise. All the coordinators of the different productive areas report to the manager.

⁷ The term institutions is being used to define the local bodies in charge the administration and representation of the comuneros of San Juan and the communal enterprise. The description of the institutions' functions is based on the parameters established in the Mexican Agrarian Law.

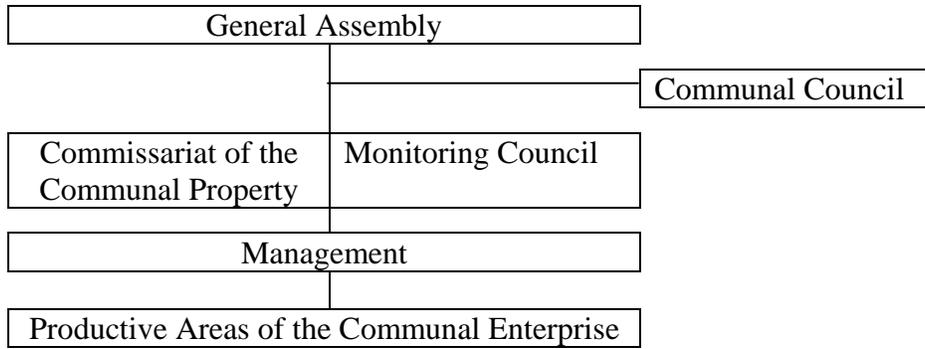
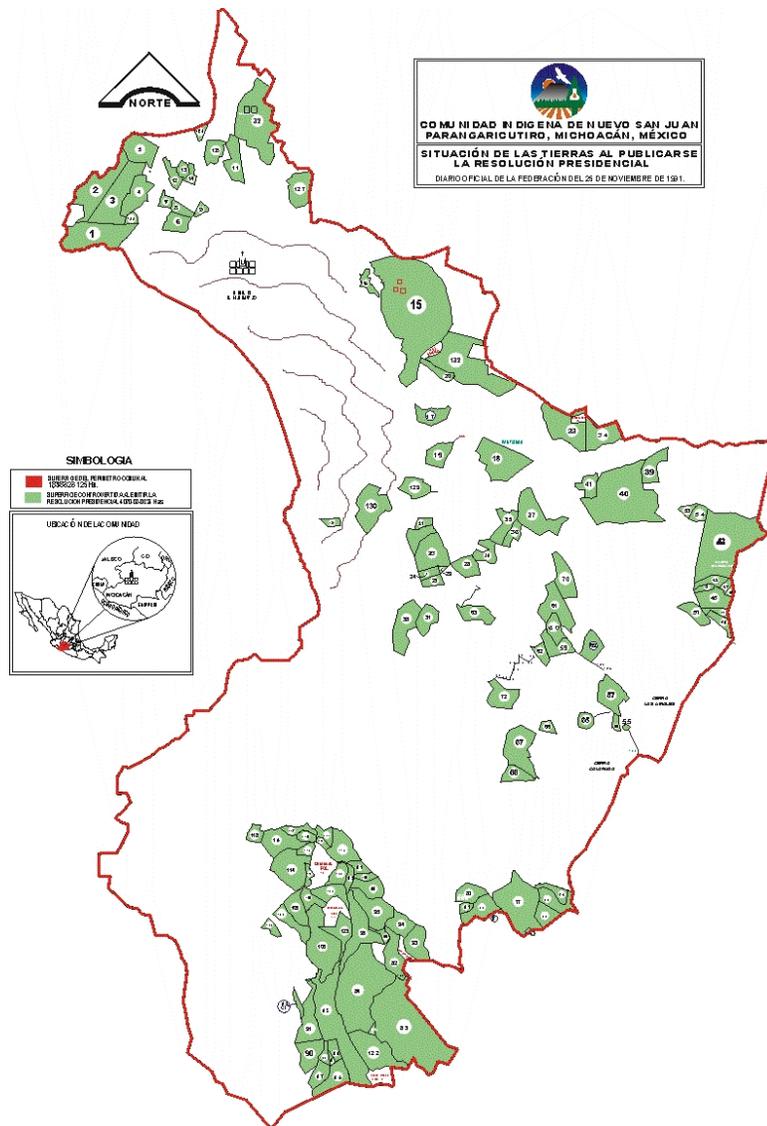


Figure 1. Organigram of Communal Institutions of Nuevo San Juan.

The Presidential Resolution of 1991 for Nuevo San Juan recognized an area of 18,138 ha. of communal land belonging to 1,229 comuneros. Of this land, 4,354 ha. were identified, in the same document, as private property (See Figure 2 for a map depicting the private property in the communal land). Under these circumstances, the Presidential Resolution bestowed communal land rights, but also left to the comuneros to solve differences with the families opposed to communal ownership of their land. Most of the families belonging to the private property sector are avocado farmers who at times developed strong political ties at the state level. The comuneros, in the interest of recovering the entitled communal land, have engaged themselves in a search for agreements with the families owning private land, but appealing, whenever necessary, to judiciary processes to recover parcels of land.

Currently the comuneros of San Juan have been able to recover something more than 1000 ha. of land through legal and direct agreements; through judiciary sentences they have reacquired 834 ha. and also through judiciary sentences they have lost about 562 ha. The remaining land is in the process of restitution. In recovering the communal property, the comuneros have searched for expert advise from local and foreign lawyers.



Source: Communal Enterprise of Nuevo San Juan. 2005.

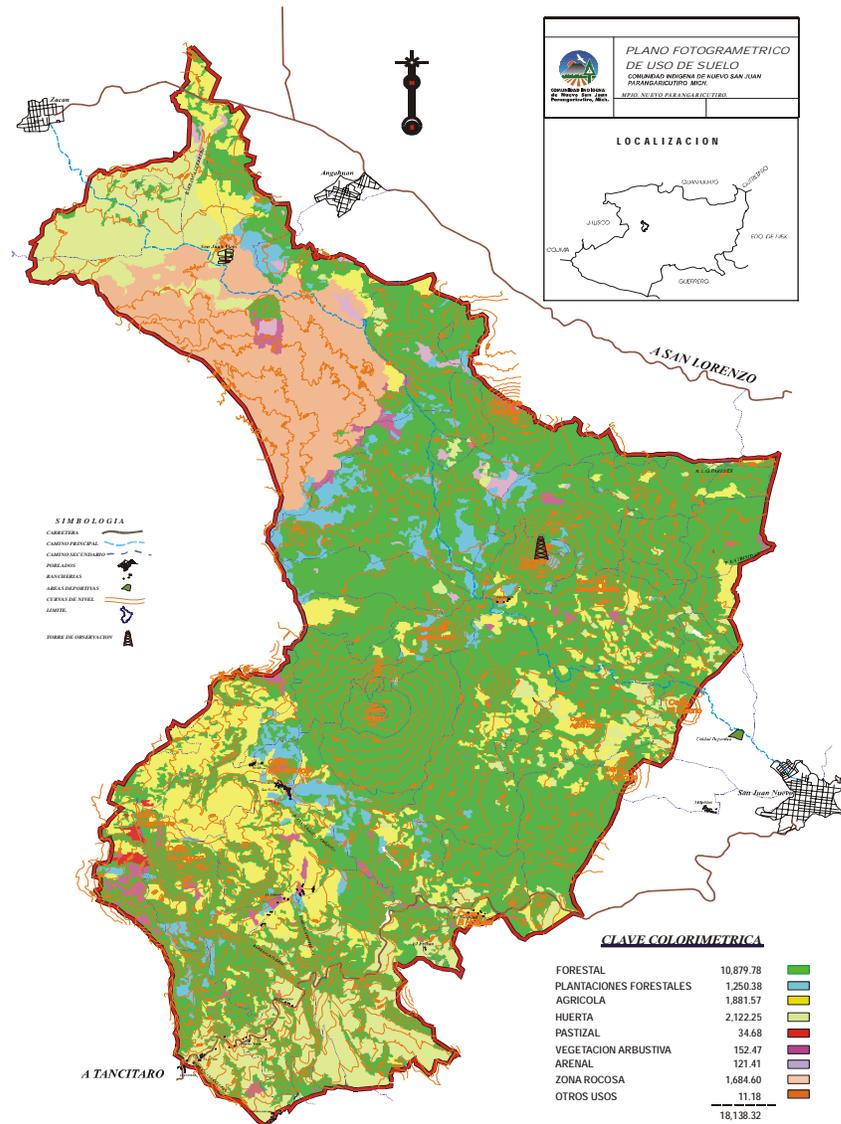
Figure 2. Private property polygons in the communal land at the time of publication of the Presidential Resolution in 1991.

2.5 The Nuevo San Juan enterprise

The enterprise of the comuneros of Nuevo San Juan, Michoacán is a community-based organization established in the early 1980s with the aim of promoting development through the use and management of forest and non-forest resources. When the enterprise began it gave employment to approximately 100 comuneros. Presently it has approximately 600 direct employees who are receiving the social benefits established in the Mexican legislation. There are also approximately 89 persons in the non-timber related adjunct areas of the enterprise, and approximately 700 indirect employees and thousands of beneficiaries. The current annual sales are over US\$10 million dollars for an exploitation of about 70,000 m³ of wood per year. The communal forest management

system in Nuevo San Juan has received national and international recognition for its vertical integration of forest production (use of product and byproducts), scale of operations, innovative management system and use of profits, among others.

As part of the land use strategy, the comuneros, with the help of researchers from different institutions, but especially from the Autonomous University of Mexico, have classified the communal land based on landscape and vegetation features (See Figure 3 for a map representing land use). Based on their Forest Management Plan, there are 11,695 ha. of forested land and 6,443 ha. without forest cover. The management plan, which is fully science-based, allows them to make systematic extractions of timber and manage for future availability of tree stands. It also allows them to diversify productive activities.



Source: Communal Enterprise of Nuevo San Juan. 2005.

Figure 3. Land use in the communal land of Nuevo San Juan.

Chapter 3: Research Findings

3.1 *Community organization*

3.1.a *Origins of the project*

The intensive timber extraction during the 1800s and the first half of the 1900s undertaken by private companies without tangible benefits for most community members, as well as the consciousness of the need to be drivers of their own development, impelled the comuneros of Nuevo San Juan to start an organizational process that eventually gave birth to a communal enterprise. There has been an unequal distribution of wealth, and unequal socio-economic development taking place in rural communities in Mexico because of factors such as the following: changing paradigms in the different government administrations, which at different points in time have established contradicting land tenure and resource management policies; the lack of support to communities to manage and exploit their natural resources; and the excessive power given to the private sector and to the private property sector to appropriate and exploit communal resources. These factors have also been some of the key triggers of the awakening of the comuneros and the strengthening of their communal institutions for resource management.

Particularly in San Juan, the eruption of the Paricutin volcano that took place in 1943 triggered the interest of the comuneros in protecting their communal land. To this interest was added the emerging leadership among some of the highly literate comuneros who tired of adopting a passive attitude towards the individually owned enterprises that were unsustainably exploiting their forest resources. These leaders decided to organize the comuneros to oppose the “mining” of resources that was taking place. In this manner, in 1982 after less than successful attempts to team up with other ejidos and communities to exploit the forest resources, the community took action, extracting and selling wood at a small scale. The initiative thrived so much and the commitment was so strong, that soon after their productive activities started with the help of key partners, the comuneros acquired an industrial sawmill and started developing large-scale forest exploitation.

The communal enterprise, whose leaders developed linkages with some key individuals in the private sector and other important individuals in the state government, acquired some capital through the selling of dead wood (wood left by illegal cutting and from infected trees, mainly), with permission granted by the federal government. In the middle of 1983 the enterprise acquired what would become the heart of its operations – the industrial sawmill, and at the same time received permission from the government to extract timber. Currently, the enterprise comprises more than 20 productive areas, many of them using non-timber forest products, and it is the only communally owned enterprise in the State of Michoacán that has its own Department of Technical Forest Services, which ensures that the enterprise is able to develop forest use and management plans in agreement with the Mexican Forest Law. (See Table 1 for details on the productive areas of the communal enterprise).

Table 1. Productive areas of the communal enterprise through time

Productive Areas of the Communal Enterprise		Period of Creation		
		During the 80s	During the 90s	After 2000
Areas	Sub-areas			
Sawmill				
Chipper				
Molding and Furniture factory	Finger joint dept			
Maintenance	Automotive dept.			
	Industrial dept			
	Welding workshop			
Drying stoves	Drying patios			
	Stoves			
Supplying Area				
Spare parts depot				
Secondary timber products				
Industrial and forest monitoring				
Resin plant				
Charcoal (from Oak)				
Broom and mop factory				
Board of directors				
Legal representatives office				
Marketing office				
Accounts office				
Accounts receivable				
Human resources office				
Documentation				
Inventory				
Cash				
Computers office				
Management office				
Tech. Forest Services Dept. (DTF)				
Storage and distribution of Fertilizers				
Communal store				
Productive projects	Farming program			
	Orchards			
Water purification				
Fruit packaging				
Ecotourism				
Training				
Cable Tv				

3.1.b Leadership and key people

i. Individuals

At the local level, leadership has played a unique role in the formation and consolidation of the enterprise. Particularly, the vision of some individuals gave life and shape to the enterprise. Among the most important leaders have been the Communal Representative elected at the end of the '70s and the community Commissioner for the Forest Exploitation from about the same time, who together were able to create the vision, organize dispersed comuneros and attract the local stakeholders – organized by cooperatives⁸ of family-enterprises such as family-owned sawmills, cooperative of truck owners, cooperative of light track owners, etc. – to work together to form the communal

⁸ The cooperatives are the local interest groups organized based on type of family businesses. These groups have a high level of organization directed to obtaining increasing benefits from the communal enterprise.

enterprise. These leaders also made the most important steps in the process that brought the official recognition of the comuneros and their communal land in 1991.

Subsequent administrators of the enterprise and communal representatives during the first decade contributed also to the cohesion of the comuneros and to the diversification of economic activities in the enterprise and in the community. The administrations and representatives during the second and third decade of the enterprise have played varied roles that have ranged from being passive in terms of innovation, expenditure and reinvestment of profits to being very bold, from being passive in finding partners at different scales to being quite proactive and from managing profits well to managing profits in a doubtful way.

The younger generations among the comuneros and some of their family members have taken over the administration and management of most areas of the enterprise since its second decade. However, the communal representation continues to be primarily in the hands of the senior comuneros.

At the state level, one of the key persons was an entrepreneur that gave support to the comuneros by paying them for their timber before it was delivered and by vouching for them to a sawmill manufacturer to get the sawmill constructed in the community.

Another important role was the one played by Cuauhtemoc Cardenas, who as Forest Subsecretary and later, as governor of the state of Michoacán, gave open support to communities to exploit their resources by providing the required legal permissions to do so. Also, some other persons in the forest secretariat facilitated the process of getting permission by giving basic information and being flexible in the process of providing permissions. During this period, bureaucratic obstacles for communities to get permission to exploit resources were minimized.

ii. Key organizations:

Among the organizations that made key contributions to the communal enterprise in its initial stage were:

- Servicio de Extracciones Forestales SEF (Timber Extraction Company), a private company founded by the engineer Salvador Mendez and one of his colleagues. This company, based on the comuneros' request, was part of a partnership with the General Assembly (the principal institution of the comuneros established by the Agrarian Law) to start extracting timber and dead wood in 1981 when the community's forest was being exploited by the UECIFOMET. This partnership helped the comuneros to acquire basic road infrastructure and equipment to do the extractions; SEF also vouched for SJN before other organizations and enterprises whose support – in the provision of services without payments in advance – contributed in part to the construction of the sawmill and helped in the capitalization the enterprise to carry out the necessary activities to deliver forest products.

- Celulosa y Papel de Michoacán – Cepamisa (Paper Company of Michoacan): Based on the recommendation given by SEF, the activities of extraction of cellulose materials of the enterprise were financed. This financial support helped the enterprise to invest in infrastructure and equipment.
- Santander Serfin Bank: The bank provided the first credit to SJN, which was used to invest in road equipment, infrastructure and to operate the enterprise.

Researchers played important roles mostly during the second decade of the enterprise. In some important cases, such as the link the community has with the Autonomous University of Mexico (UNAM), such roles have been decisive in the self-organization and adaptive management of the enterprise to deal with exogenous drivers of change (market economy, rationalization of management processes, competitiveness, etc).

The affiliation of the comuneros to the Institutional Revolutionary Party also contributed to the establishment of other strategic partnerships, to the formation of alliances to overcome pressure from private land owner, and to facilitate some flow of government funding to the enterprise, the comuneros and the community.

3.1.c Funding and other resources

i. If there was funding for initial community organization, who provided the funding?

The process of community organization that led to the creation of the communal enterprise was carried out without the use of external funding. Between 1976 and 1979 some of the comuneros together with leaders from other communities and ejidos took the first steps to organize themselves and form the UECIFOMET. At the end of the 1970s, during the process of deterioration of the Union, due to mismanagement, the comuneros of San Juan that had participated in the process of formation of the union as well as others who got involved after, all of them represented in the General Assembly, elected a new Communal Representative and decided to leave the Union. The Communal Representative then made contacts with the Timber Extraction Company SEF knowing that its director was a native of NSJ, to invite him to work with the community. Both of them, the Communal Representative and the director of the company, consequently lead the community organization process that gave life to the communal enterprise. The resources the comuneros generated between June 1981 and July 1982 through the sale of dead wood brought 1,006,000 pesos. These funds, in combination with the resources generated from the first timber extraction and the support of SEF between 1982 and 1983, made possible the acquisition of the industrial sawmill. In addition, a small amount of money provided by the corn farmers from the community, together with active participation of key interest groups in communal labor, contributed to the development of facilities and the starting of operations. Similarly, with part of the resources mentioned above and advances of funds provided by Cepamisa, other costs such as electrification for the enterprise and the chipper machine were covered.

ii. If there was capacity building, including training workshops, who funded it?

SEF provided basic training in the management of timber to start the enterprise's operations as part of the partnership with the comuneros. However, because of the long-term experience in timber management of a large number of families among the comuneros, many of them were already prepared to perform their tasks.

The manufacturers of the sawmill also provided basic training to the comuneros. In addition, some of the allies in government offices such as the Forest Subsecretariat and the Rural Development Department provided technical support and information on application procedures for forest exploitation permits and required general documentation.

iii. If there were initial investments, who funded them?

Among the initial investors were SEF and Cepamisa. SEF provided a lot of in-kind support and Cepamisa provided monetary advances for the enterprise to start operations. Later on, some banks and the government became important investors in the enterprise.

iv. If there was funding for offices, office personnel, vehicles, etc., who funded them?

SEF provided key personnel together with the comuneros. The road construction machinery and other heavy equipment were acquired with the help of SEF. The land for the construction of the headquarters of the enterprise was given for free by an ejido, after the comuneros manifested their interest of using it for their plans. Some of the equipment such as chainsaws were provided by families owning sawmills (small scale machinery). Similarly, trucks to transport the timber were provided by some families belonging to the trucks cooperative of the community. Some months after the enterprise started operations, flows of money became available to buy trucks and other equipment for the enterprise.

v. Human resources for initial organization (in-kind work as opposed to money)

Most of the key interest groups among the comuneros, organized by cooperatives, participated actively in the establishment of the enterprise. These cooperatives, especially the sawmill owners and truck owners gave a lot of in-kind work. SEF also provided personnel to start operations. Some people at the Forest Subsecretariat also gave basic information on documentation to apply for forest exploitation permits.

A large number of the outsiders that provided some help to the community – on required documentation, etc. – developed contacts with Nuevo San Juan through the active role it played when affiliated to the UECIFOMET. Other contacts, such as the one with SEF, happened because of the link of one of the founders of SEF with the community's key leaders. Subsequent support came as a consequence of the numerous successes of the community in acquiring legal status and in managing the communal forest.

3.1.d Knowledge

i. Sources of knowledge: local/TEK and/or outside knowledge

The main body of knowledge used to put the enterprise in place and make it function was science-based. The processes to handle timber, in agreement with the legislation and the market, required specialized technical knowledge. On the other hand, local knowledge had a role to play in aspects such as the direct management of tree stands, in dealing with communal issues and the comuneros, law enforcement agencies and outsiders in general.

ii. If there is local knowledge and if relevant, who holds this knowledge?

Since the comuneros from Nuevo San Juan have been interacting with the forest and its resources for many generations, there is local knowledge on natural processes of the forest, its management and environmental conditions in general. Moreover, the comuneros have had in place for many generations particular farming systems and resin tapping activities; therefore, there is also a body of knowledge on this area. In addition, there is local knowledge on institution building processes, particularly, in the form of local multistakeholder bodies, which seems to be closely linked with traditional religious practices/festivities and customs. The knowledge on institution building, farming systems and forest management is held by both males and females; however, it seems that such knowledge is being applied mostly by males. In the communal enterprise, all of these areas of the local knowledge have been applied in varied levels through time. In particular, the area of institution building made strong contributions to the successful formation and first ten years of strengthening of the communal enterprise.

iii. If there is outside knowledge used in the project, was there capacity building (education, training, knowledge exchange)? Who was involved in providing capacity (e.g., other communities, NGOs, Gov't, universities, researchers)?

Because of the need of satisfying the requirements of the market, of the scale and type of forest extraction and of being highly productive in a competitive environment, the comuneros appealed to scientific knowledge. The professional knowledge held by some of the local leaders was also key to methodically proceed in the process of community organization and in the search for official recognition of the communal property.

Most knowledge used to put the productive processes in motion came from the professionals provided by/or through SEF to train comuneros to rationalize the forest exploitation process. The professionals at the Forest Subsecretariat also provided key technical information and training.

It was during the second decade of the enterprise that well-built linkages and interactions developed between the enterprise and academic institutions, NGOs and government agencies at higher levels.

3.2 Cross-scale linkages

3.2.a Identification of main stakeholders

i. Regional administrative level: municipality, district, etc. as appropriate

The main stakeholders at the municipal level are comuneros or family members of the comuneros. These local stakeholders are grouped based on economic activities. Most of these groups, also identified as the community interest groups, are highly organized and some of them existed even before the creation of the enterprise. As can be expected, some interest groups hold more power than others, for a given period, in decision-making processes, depending on the elected members of the communal institutions and the administrator of the enterprise. Among these groups we find:

- Family-owned sawmills cooperative: Many member of this group of family-enterprises existed before the creation of the enterprise. This is one of the cooperatives with increasing membership. This increment in membership is due to the compensation system from San Juan for ex- members of communal institutions. The compensation system consists of conceding preferential provision of wood in small sizes to the ex-members that wish to have their own sawmills. This group holds the strongest political power and also strong economic power.
- Trucks owners cooperative: This group also existed before the creation of the enterprise, and it also holds some political power.
- Light truck owners cooperative: As with the above-mentioned cooperative, some were there before the enterprise was formed. They also hold some political and economic power.
- Ranchers Cooperative: Even though the practice of having some cattle in combination with a farm has been there for a long time, this interest group is relatively new among the Nuevo San Juan enterprise stakeholders.
- Avocado farmers cooperative: This is the group holding the strongest economic power due to the large national and international avocado market.
- Peach farmers cooperative: A relatively new interest group increasing its economic power.

Among other local stakeholders we find the Municipal Presidency and other government agencies. These government stakeholders have intermittent linkages with the communal enterprise depending on the elected political party, because the communal institutions of Nuevo San Juan are also the branch of the Institutional Revolution Party (PRI) at the local level. Currently the Democratic Revolution Party (PRD) is in power, which makes the links between the enterprise and the administration very weak to nonexistent. Another important group of local stakeholders is comprised of landowners. Some of the families in this category have been engaged in legal battles with the lawyers of the communal enterprise to gain the right to keep their property as private and exploit it for themselves. Most of the legal processes have been resolved in favor to the comuneros rather than the landowners; however, since the radical political changes that have taken place at the

federal, state, and community levels, the comuneros have lost a few large extensions of communal land. These most radical changes relate to the passing of power from the 70 year old hegemony of the PRI to diverse administrations that have included the National Action Party (PAN) at the federal level and the PRD at the state and local levels.

- ii. State/provincial level, national, including national NGOs and international, including international development agencies*

Some of the important stakeholders at higher levels are represented in Table 2.

3.2.b Institutional linkages related to the project

- i. Key horizontal institutional linkages (i.e., linkages across space and sectors, such as networking with other community groups, NGOs, development agencies, etc.)*

The communal institutions of Nuevo San Juan act as the branch of PRI at the local level. This political identification has allowed the comuneros to have strong linkages with the local government administration since its foundation until recently. Most if not all of the PRI candidates to the Municipal Presidency are nominated by the communal leaders and have been people in important positions in the enterprise. Once they are elected, government economic support to some of the enterprise's productive processes often becomes stronger. Currently, however, the PRD is in power, which makes the links between the enterprise and the administration very weak to nonexistent.

Linkages developed with other national and international rural communities are facilitated by federal agencies, organizations such as the Rigoberta Menchu Foundation and the World Bank. The function of these linkages is mainly capacity building for visiting communities, who use the Nuevo San Juan enterprise as a model to imitate (See Figure 4 and Tables 2 and 3 for details on linkages).

- ii. Key vertical institutional linkages*

Vertical linkages of the enterprise became stronger after the comuneros' land ownership rights were recognized by the Presidential Resolution in 1991. Key linkages that existed when the enterprise started were primarily with individuals at the state level rather than with organizations and agencies per se (See Figure 4 and Table 3 for details on cross-scale linkages of the communal enterprise). Currently, Nuevo San Juan has many linkages, and the flow of resources resulting from these linkages has contributed to the diversification of productive activities in the enterprise. Just a few of these linkages are indicated in Figure 1. Most are with government agencies and are mainly related to fundraising.

Because the enterprise is used as a model, some comuneros have been given the opportunity to work with government agencies and NGOs. These opportunities have been used by the enterprise's directive body to create and establish linkages with the

organizations where these comuneros work. Therefore, having key linking persons is one of the strategies of the enterprise to keep strong vertical linkages.

San Juan has also used the help of consultants from some of the organizations linked to for developing proposal to raise funds, receiving training and adopting new technology into productive activities. In this way, the enterprise is also developing strong linkages with individuals in key organizations.

Table 2. Some stakeholders at the state, national and international levels and the level at which they actively interact with the enterprise.

Please note that the order of the organizations in this list has nothing to do with the strength of the linkage.

Organizations	Municipal	State	Federal	International
WB (World Bank)			X	X
RM (Rigoberta Menchu Foundation)			X	
CNC (National Peasant Confederation)	X	X	X	
SRA (Agrarian Reform Secretariat)	X	X	X	
CDI (National Commission for the Development of Indigenous Peoples)		X	X	
Fonaes (National Fund of Enterprises in Solidarity)			X	
Semarnat (Environment and Natural Resources Secretariat)		X	X	
Conafor (National Forest Commission)		X	X	
Procymaf (Forest Resource Conservation and Management Project)		X	X	
Coinbio (Biodiversity Conservation Project)		X	X	
SEDESOL (Social Development Secretariat)		X		
SEF (Timber Extraction Company)		X		
Cepamisa (Paper Company of Michoacán)		X	X	
Sedragro (Agricultural and Livestock Development Secretariat)		X	X	
Sagarpa (Rural Development Subsecretariat)	X	X	X	
CFEM (Forestry Commission of the State of Michoacan)		X		
UNAM – CIECO (Centro de Investigaciones en Ecosistemas)		X	X	
AG Municipal Government Agencies				
PM (Municipal Presidency)	X			
CL Local Cooperatives	X			

X	Level at which institution is based
	Level at which institution is actively linked to the NSJ enterprise

Table 3. Key organizations and functions of their linkages with the Nuevo San Juan communal enterprise.

Organizations	Aim of the Organization ⁹	Linkage over time	Functions of linkages
WB (Banco Mundial) World Bank	To provide financial and technical assistance to poverty reduction and development projects in developing countries mostly through government agencies.	Started in the mid 1990s. Provides support through gov't agencies	<ul style="list-style-type: none"> • Innovation and knowledge transfer. • Training and research. • Fundraising • Access to markets
FSC (Consejo de Manejo Forestal) Forest Stewardship Council	Provides certification of forest management plans throughout the world	Started in the mid 1990s. Regular, important linkage	<ul style="list-style-type: none"> • Certification
SRA (Secretaria de la Reforma Agraria) Agrarian Reform Secretariat	To provide land tenure security by facilitating territorial planning and by regulating rural property. To design public policies to foment integral agrarian development.	Very strong and old linkage.	<ul style="list-style-type: none"> • Regulating. • Fundraising. • Legal Support.
CDI (Comision Nacional para el Desarrollo de los Pueblos Indigenas) National Commission for the Development of Indigenous Peoples	To coordinate, promote, support and evaluate programs, projects and strategies oriented to achieve the integrated development of indigenous peoples and the protection of their rights.	Old and important linkage	<ul style="list-style-type: none"> • Fundraising.
CNC (Confederacion Nacional Campesina) National Peasant Confederation	One of main representatives at the national level of the Institutional Revolution Party, who is in charge of promoting political ideologies and ensuring voters' support	Very old and strong linkage	<ul style="list-style-type: none"> • Political Networking. • Business Networking: access to capital
RM (Fundacion Rigoberta Menchu) Rigoberta Menchu Foundation	To promote indigenous rights. The organization works as a link between indigenous communities and resources (financial, technical, etc.)	Linkage started after 2000. Currently very strong.	<ul style="list-style-type: none"> • Innovation and knowledge transfer. • Institution building. • Training and research.
Semarnat (Secretaria del Medio Ambiente y Recursos Naturales) Environment and Natural Resources Secretariat. *Part of Semarnat	To facilitate the protection, restoration and conservation of ecosystems, and environmental goods and services to support their sustainable use and development.	Very old and strong linkage.	<ul style="list-style-type: none"> • Resource monitoring. • Forest exploitation permits provider • Fundraising • Technical Support
*Conafor (Comision Nacional Forestal) National Forest Commission	To develop and promote initiatives to conserve and restore forest resources. It is also the agency in charge of the application of the policy on sustainable forest development.	5 year old important linkage.	<ul style="list-style-type: none"> • Technical Support. • Fundraising. • Access to markets
*Coinbio (Proyecto de Conservacion de la Biodiversidad por Comunidades Indigenas. Mexico). Indigenous and Community Biodiversity Conservation Project in Mexico	To conserve areas of high biodiversity by strengthening and promoting community conservation initiatives on communally owned lands.	Relatively new program and linkage. Key linking person facilitates interactions	<ul style="list-style-type: none"> • Fundraising.
*Procymaf (Proyecto para la Conservacion y Manejo Sustentable del Recurso Forestal en Mexico) Forest Resource Conservation and Sustainable Mangement Project	To assist ejidos and communities in priority regions to generate local development by improving the management of forest resources.	Relatively new linkage. Key linking person facilitates interactions.	<ul style="list-style-type: none"> • Fundraising. • Training. • Technical Support.
SEDESOL (Secretaria de Desarrollo Social) Social Development Secretariat	To design and coordinate the Mexican social subsidiary development policy.	Intermittent, old linkage.	<ul style="list-style-type: none"> • Fundraising
Fonaes (Fondo Nacional de Empresas en Solidaridad) National	To support indigenous, communities and urban producers efforts on	One-time linkage, facilitated by key	<ul style="list-style-type: none"> • Fundraising.

⁹ Source: Published documents on the Organizations.

Fund of Enterprises in Solidarity	productive projects and employment-generating social enterprises.	linking person	
SEF (Servicio de Extracciones Forestales) Forest Extraction Company	Private company created to provide forest exploitation services to ejidos and communities with approved forest resource use plans.	Key linkage in the formation of the enterprise	<ul style="list-style-type: none"> • Technical Support • Business Networking: Access to markets
Cepamisa (Celulosa y Papel de Michoacán) Paper Company of Michoacán	State owned enterprise dedicated to the production of paper.	Key and very old linkage	<ul style="list-style-type: none"> • Business Networking: Access to markets; access to capital.
El Palacio de Hierro (The Iron Palace company)	Department store dedicated to the sale of varied goods ranging from perfumes to furniture and home facilities.	Old and very strong linkage	<ul style="list-style-type: none"> • Business Networking: Access to markets.
Sedragro (Secretaria de Desarrollo Agropecuario) Agricultural and Livestock Development Secretariat	To promote the integrated and sustainable development of the forest, agriculture, and livestock sectors.	Old, Intermittent linkage.	<ul style="list-style-type: none"> • Fundraising.
Sagarpa (Subsecretaria de Desarrollo Rural) Rural Development Subsecretariat	To promote the capitalization and economic strengthening of primary production units through the investment in capital goods and the use of professional services for rural development.	Old, Intermittent linkage.	<ul style="list-style-type: none"> • Fundraising.
CFEM (Comision Forestal del Estado de Michoacán) Forestry Commission of the State of Michoacan	To promote the sustainable use and conservation of forest resources by providing technical and financial support, monitoring of management programs, etc.	Old and regular linkage	<ul style="list-style-type: none"> • Technical Support. • Resource Monitoring.
Red estatal de Ecoturismo comunitario (State Network of Community Ecotourism)	A community-based organization aiming at building channels of financial help between the government and communities and ejidos to promote environmentally sustainable ecotourism activities.	New organization where the enterprise is a founding member	<ul style="list-style-type: none"> • Fundraising. • Business Networking: access to capital.
UNAM-CIECO (Centro de Investigaciones en Ecosistemas) Center for the Study of Ecosystems	To develop human resources, promote scientific research and disseminate knowledge.	Intermittent linkage started in the mid 90s.	<ul style="list-style-type: none"> • Training and Research. • Technical Support
Universidad Michoacana de San Nicolas de Hidalgo (San Nicolas de Hidalgo University of Michoacan)	Academic institution aiming at the development of human resources and the dissemination of knowledge	Intermittent, relatively new linkage	<ul style="list-style-type: none"> • Research.
AG (Agencias del Gobierno) Municipal Government Agencies	Varied objectives on biodiversity protection, forest management, water bodies management, etc.	Very old and Intermittent linkage	<ul style="list-style-type: none"> • Fundraising. • Political Networking.
PM (Presidencia Municipal) Municipal Presidency	Ensure well being of Municipality, including the promotion of economic growth, education, health, etc.	Very old and intermittent linkage	<ul style="list-style-type: none"> • Fundraising. • Political Networking.
CL (Cooperativas Locales) Local Cooperatives	Generation of profits for owners and their families	Very old, intermittent and permanent linkage depending on cooperative's type	<ul style="list-style-type: none"> • Bussiness Networking: Access to market and capital.

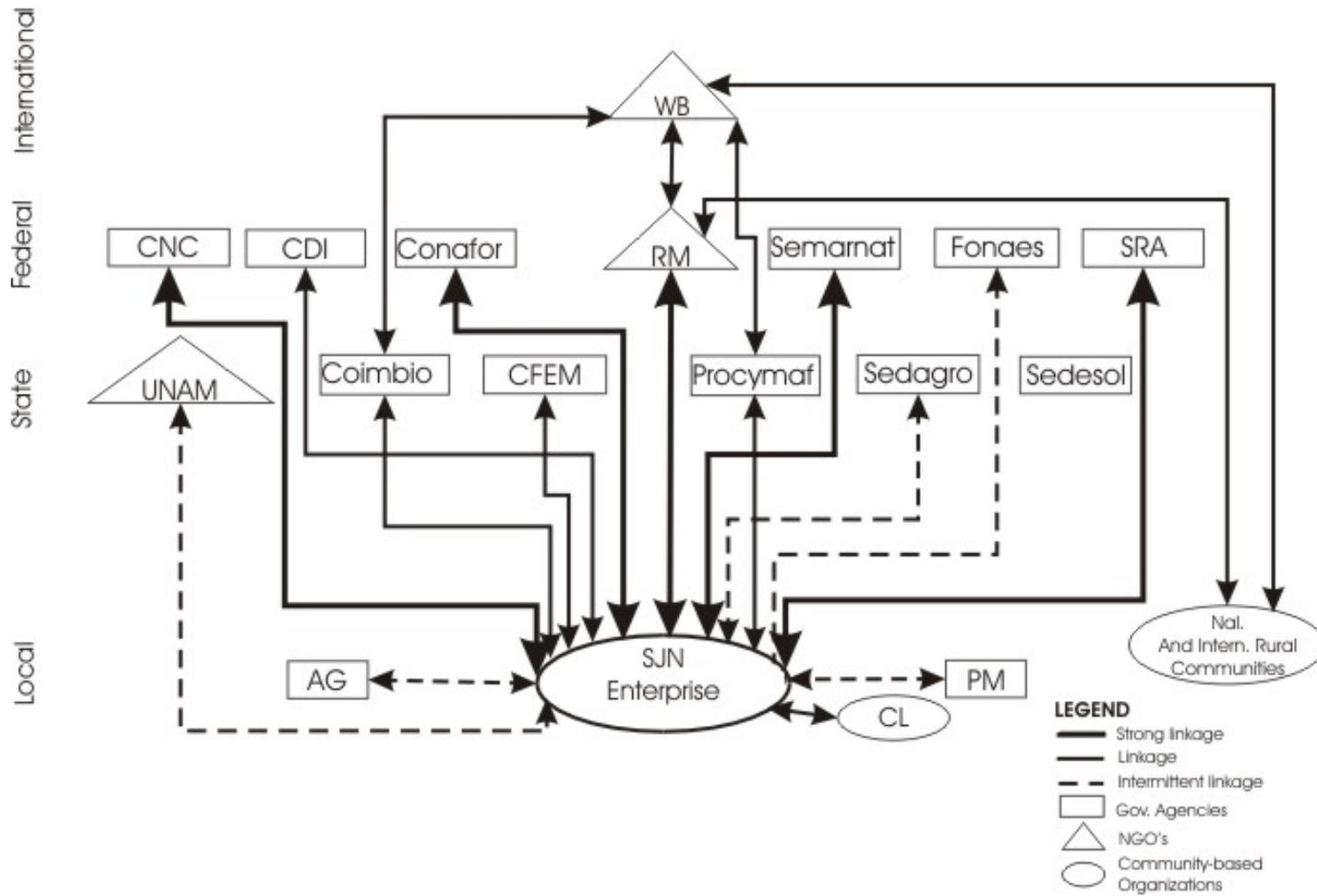


Figure 4. Representation of some of the cross-scale linkages in the Community-Based Resource Management System in Nuevo San Juan. For acronyms see Table 2 and 3.

iii. How do the policy environment and market conditions impact the project? (e.g., policies, legislation, political space for experimentation)

The Nuevo San Juan communal enterprise built strong foundations during its first decade. However, the changes that have been taking place since the '90s have forced the enterprise to change its strategies to survive. One of the most important aspects in the changing political environment was the establishment of the Free Trade Agreement in 1994. The abrupt invasion of cheaper wood products brought by this agreement, together with the competition with highly mechanized private enterprises and timber coming from forest plantations, caused a reduction in the enterprise's profits of almost 20% in the years subsequent to the agreement. The response of the enterprise to this challenge was the search for partnerships to receive training to systematically diversify and mechanize productive activities. In this respect UNAM through CIECO made large contributions, helping the enterprise to train human resources in GIS and to identify and map, using satellite data, the geography and resources on the communal land. CIECO also supported the comuneros' efforts to create new productive activities such as ecotourism.

Between 2001 and 2002 Mexico had a fiscal reformation through which changes to taxes on profit were made. The new legislation has located communal and indigenous enterprises under the same taxation conditions as private enterprises. This redefinition of communal enterprises, which aim at the common well being, unlike the maximization of profit of the private sector, has created a large debt for the enterprise that increases each year. As a response to this new challenge, the enterprise has reorganized its productive activities in such a way that the areas related to primary processes are divided from the areas where industrial transformation of resources takes place. This reorganization caused the reclassification of activities related to primary processes as "integrated development" (which is tax exempt) and those related to secondary or industrial processes as "forest exploitation", for which the enterprise needs to pay taxes. The reorganization has not saved Nuevo San Juan from paying taxes, but has significantly reduced its annual taxes. This response to the fiscal reformations have been influenced and supported by professional consultants from the community and from outside.

In addition to the fiscal reforms that took place during the present administration, new programs such as the Programa de Atencion a Focos Rojos (Attention to Conflict Zones Program), which began in 2003 and, which has been coordinated by the Agrarian Reform Secretariat (SRA) in partnership with other secretariats, have been important. This program oversees areas of the country where land tenure conflicts have exploded or have the potential to explode. Due to the long-term legal battles that the comuneros from San Juan have had, since the official recognition of their communal land in 1991, with small landowners interested in keeping the land as private property, the comuneros appealed to SRA to recover some of the communal land that is still in private hands. With the help of this program, the comuneros have been able recover some of the land that was recognized and conferred through legal battles, but could not be exploited due to the animosity of the private property owners.

The comuneros and the enterprise have been able to attract support because of the large and successful productive process being undertaken by the enterprise. However, changes in which political parties have been dominant at the federal, state and municipal level have hindered some of the potential support that Nuevo San Juan could appeal to. The comuneros' success has happened in the face of political stagnation at the community level, because they continue identifying themselves with the Revolutionary Institutional Party (PRI).

In general, some individuals from partner organizations and the consultants hired by the enterprise, some of them comuneros, have identified both positive and negative aspects of legislative changes and have been able to help the enterprise to adapt and often become stronger. However, the persistence of many of the communal leaders of Nuevo San Juan in identifying themselves as members of a political party have set the masses of comuneros on a fixed, non-adaptive position on relation to politics.

iv. What change (if any) did the project trigger in government legislation or policy?

The emancipation of the comuneros from San Juan to lead their own development has inspired, and even supported through training, the development of local initiatives from indigenous and non-indigenous forest communities from Mexico and Central America.

3.2.c Unusual interactions among organizations and agencies

i. Are there any unusual interactions among gov't agencies, NGOs, development agencies, etc., that impact the project positively or negatively (e.g., competition over gov't department jurisdiction, or NGOs competing over funding)? What motivates these linkages? What are the drivers of positive or negative interactions?

The political stand of the comuneros as the branch of the PRI at the local level has made other groups such as the private property sector to identify themselves with the opposition party PRD as a way of gathering support to prevent the comuneros from achieving their objectives. The PRD won the last elections in the Municipality, thereby causing a rupture between the local administration and the enterprise. Because of this separation between the local government and the comuneros, the current administrators and representatives of the comuneros appeal directly to the state and federal government whenever they identify programs of interest or potential support. This particular situation, which has happened just a couple of times since the creation of the enterprise, brings about a tense environment between the comuneros and non-comuneros in the Municipality and between the local government agencies and the enterprise, with each side trying to find legal ways of defeating or stopping the other.

3.3 Biodiversity conservation and environmental improvements

3.3.a Conservation or improvement of target resources

The main objective of the community-based resource management system of San Juan is the preservation of the forest as a common good whose adequate management can generate income for the comuneros and their families. To achieve that objective the enterprise has in place management/preservation programs targeting tree stands, hydrological resources and some particular mammal species.

As the foundation of the enterprise, the comuneros have developed a Forest Management Plan that aims at the preservation of the forest through natural regeneration and reforestation. During the rainy season the comuneros involved directly and indirectly with the enterprise and their families engage themselves in reforestation activities in addition to the facilitation of natural generation. The reforested areas are the ones where timber extractions have taken place – without a successful natural regeneration – and the areas cleared by the eruption of the Paricutin Volcano in the '40s. They also have a preservation program for riverbanks. The forest areas around riverbanks are exempt of the annual plans of timber extraction.

Culturally, the comuneros of San Juan and other communities have performed hunting activities of white-tailed deer at various times including during the celebration of some of their local traditional festivities. Such uncontrolled and regular hunting has caused the depletion of the species' population. After 1994 when the community started a partnership with the UNAM, scientists identified the problem and proposed a conservation project to protect the species, which started in 1996. The conservation project consists mainly of breeding the species in semi-captivity to increase the population, to support the ecotourism activities, and to sell some individual animals to other communities. In addition to the conservation activities previously mentioned, occasionally one or more of the management areas of the enterprise engage themselves in some conservation activities for other resources, based on the availability of government resources to support the activities.

3.3.b Changes in resource state

Even though the forest has been classified as a Pine-Oak forest, the comuneros only reforest using pine. So, reforestation is visible in many areas but some patches of the communal land seem to be changing to a monocrop of pine.

The forest exploitation, as has been documented by researchers from UNAM during the last decade, is affecting the overall biodiversity of the forest notwithstanding the reforestation activities. The reasons identified are basically related to the management of tree stands to increase productivity (basing cutting on tree age and condition; clearing branches to increase the probabilities of having prime quality wood; promoting the matching on age of tree stands, etc.).

Vegetation patches around riverbanks may be the most biodiverse on the communal land because of the way these riparian areas are protected from any forest use and management activities. The white-tailed deer species have been reproducing in semi-

captivity. Every time the population rises in number, some individuals are sold or provided for different events.

3.4 Poverty reduction

3.4.a Indicators of poverty reduction

Currently the enterprise provides direct employment to about 600 persons, all of them receiving the social benefits established in the Mexican legislation. There are also approximately 89 persons in the enterprise's non-timber related adjunct areas, not less than 700 indirect employees (these mostly composed of the cooperatives of trucks and of light trucks, cooperative of sawmills, resin collectors, etc., which are all family-enterprises owned by comuneros) and thousands of beneficiaries.

The communal enterprise buys resin from San Juan and surrounding communities, giving also a source of income to comuneros from other places. The immigrants to the community benefit through the boost to commercial activity at the local level, which accompanies the increase in family income. In the Municipality of Nuevo San Juan street kids and beggars are very uncommon – everyone seems to have at least a minimum income to survive. It is also true that some particular families of comuneros, depending on the economic activity they are engaged in, for example owners of sawmills, avocado farmers, etc., are wealthier than others. Apparently, without reaching extremes, there is a clear social stratification among the comuneros, ranging from the most wealthy comuneros having some or many family members occupying important positions in the enterprise to the most humble comuneros, whose income consists basically of the sale of the small quantities of resin they are able to collect and/or the money they receive per cubic meter of wood from the exploitation of the piece of communal land they take care of/hold.

3.4.b Improvements in community well-being

There has been a large and evident impact on the social, economic and physical development of the comuneros, their families and the settled foreigners. The community has passed from being a place without basic road infrastructure, schools, primary health care or other services, to being a municipality with around 16,000 inhabitants, almost a third of them immigrant settlers, with primary and high schools, basic road infrastructure, water and sanitation systems, proper housing, active commercial and other economic activities, among other things. Most of these positive changes have been seriously influenced by the partnerships between the local administrations and the enterprise and by the income generated through the enterprise, whose rate of direct and indirect employment has increased from approximately one hundred persons in 1982 to more than 1000 person in the present time. The enterprise moreover, has occasionally subsidized some of the comuneros to get higher education at the state level and also occasionally

works as a guarantor for women's groups, avocado and peach farmers, etc. applying for government subsidies, economic and financial help.

3.5 Detailed analysis of community-based conservation (CBC)

3.5.a Mechanisms, dynamics, drivers

i. Analysis of catalytic element that made the initiative work

The strong leadership of some few empowered comuneros, whose level of education helped them to identify the relevant tasks to promote community development and whose group initiative gave life to management institutions able to foster development and promote common well-being were key to achieving community organization and empowerment. Through the discussions with founders of the enterprise it was easy to see the vision of such local leaders and the way they inspired the formation of institutions by sharing time and information, building trust and by allowing to the assembled comuneros to guide and lead key decision-making processes. This initial community organization becomes even more significant when one considers the challenge of a policy environment not very supportive of communal resource management initiatives. Furthermore, the identification of key partners contributed greatly to the success of the communal enterprise and the establishment of its strong foundation. Last but not least important was the mindset of the comuneros in establishing a communal enterprise with a growing rate of employment and profits. That is to say, they were searching for the common well-being but with the mentality of private entrepreneurs. Their outlook and careful planning allowed them to have their own Technical Forest Services Department to design the forest exploitation and management plans – required by the Forest Law – in the fifth year after starting their timber extractions. This very important step, together with the partnerships they developed to pay in-kind for the construction of the first areas of the enterprise, helped in the capitalization of the communal enterprise. Prior to the establishment of the Technical Services Department, the comuneros had to hire consultants to design their management plans, as all other forest indigenous communities in the state still do.

ii. Decision-making process (e.g., participatory, transparent, responsible)

The community organization process in Nuevo San Juan started through the leadership demonstrated by some key individuals. Among the most important contributions these individuals made was the building of institutions able to foster successful decision making processes. Initially, some leaders were able to gather some of the scattered comuneros through the forest product extraction activities carried out during the time the community was part of the Union of Ejidos and Indigenous Communities Luis Echeverria Alvarez (UECIFOMET). However, it was not until after the election of the Communal Representative and the Commissioner for the Forest Exploitation – during the withdrawal of the community from the UECIFOMET – that the comuneros assembled in increasing numbers as a consultative body. These increasing assembled comuneros were the ones who, with the help of the leaders, took the important decisions that gave birth to the

enterprise and subsequently consolidated its foundation. Even though there were challenges in gathering and creating the vision of a communal enterprise, the leaders' systematic efforts finally yielded fruits. Since then, during the early '80s and until the early '90s, the institutions driving the decision-making process have been the General Assembly with the support of the Communal Council. Since the middle of the '90s, at times the decision-making processes seem to have been strongly driven by some of the elected individuals in the administration and the representative, who use the interaction with the highest institution– the General Assembly – as a way of legitimizing decisions already taken. In general, the current feeling among many comuneros is that their role during the General Assemblies is no longer to contribute directly in consultation and taking decisions, but rather now is merely to approve the decisions previously taken.

Another important aspect of the consultation and decision-making processes taking place at the institutional level in Nuevo San Juan relates to the roles played by the different institutions. At the beginning of the enterprise, the elected heads of the administration and representative differentiated their roles and agreed to not interfere but to consult or make suggestions to each other. Such an arrangement allowed each head to carry out activities efficiently and make steady progress in their common objectives. This arrangement among local institutions is another of the characteristics which some comuneros feel has been diluted since the mid '90s.

iii. Conflict-management mechanisms

Unlike Ejidos, in communities ideally there is no private property but rather individual/family landholders who carry out their subsistence activities on the land but being aware that the land belongs to the community as a whole. The Mexican legislation in the early twentieth century allowed comuneros to register pieces of communal land as private property after inhabiting it peacefully for no less than ten years. Because of this contradictory policy environment, which recognized communal land ownership rights at the same time as allowing individuals to privatize the land, a large number of people, among them comuneros from Nuevo San Juan, registered pieces of the communal land as private property. In most instances the transformation of communal land to private property took place because of the need of demonstrating ownership to authorities in order to be entitled to use and manage the forest resources in such lands. At the time of enactment of the Presidential Resolution in 1991, there were 133 pieces of land registered as private property, comprising something more than 4,000 ha. of the 18,138,323 ha. identified as communal land. (See Figure 2 for a map depicting the private property inside the communal land).

In this context, one and perhaps the most important mechanism the comuneros of Nuevo San Juan used to try to placate conflict was the establishment of a verbal agreement between the communal enterprise and the comuneros holding/taking care of the communal land on one hand, and some private property owners on the other. This agreement includes the recognition of the land holding rights that families possess and the land holding inheritance rights of the descendents of the families, under the condition that the families will abide by the local rules, respect the decisions of the local

institutions, and allow the enterprise and only the enterprise to exploit the forest present on the land, with the families receiving in return a payment per cubic meter of timber. This agreement was well accepted by all comuneros landholders, but rejected by some families owning private property, whose members have opted for legal battles, which in most cases have been resolved in favor of the communal enterprise and the comuneros.

Another conflict situation that Nuevo San Juan and many other communities that still have forests left have faced is clandestine timber extraction. This is a particularly important issue in San Juan since the surrounding communities have depleted most or all of their forest resources. In the past, the comuneros dealt with it by apprehending the violators and presenting them to the authorities, committing them to stop or be arrested; they have also patrolled and used guns to scare violators, resulting in some deaths.

At the end of the '70s and beginning of the '80s during the process of organization of the community, some of the most important conflicts the comuneros had to manage were with private enterprises and some government agencies. As with many other communities, the private sector was exploiting patches of forest in San Juan in partnership with private property owners, who used their land titles to get permits to exploit the forest. The comuneros tired of not receiving benefits from their forest and decided to stop the companies' activities. Among the most important actions they led were the taking control of roads to stop loaded trucks. Most warnings given by the comuneros successfully scared those in the private sector traditionally linked to extraction of forest resources. These actions increased the tense and often-conflictual interactions the comuneros have had with private property owners.

In a similar manner, the comuneros on some occasions have appealed to force to ensure they are heard and receive from the government what they are entitled to by the legislation. Their actions have included, but have not been limited to, the surrounding of a government office and mass mobilization to advocate for specific petitions.

iv. Conflict resolution and enforcement

The differences that the comuneros have with most landowning families still continue to this day. The comuneros have been able to recover some of their communal land through judiciary processes, but also have lost some of it through these legal battles. In some cases, the comuneros have been unable to enforce legal decisions and take control of land that has been granted to them. With some other families, the enterprise has been able to establish its verbal agreement, because, in most of these cases, the families don't want to engage in legal processes to expend large amounts of money and time.

The clandestine extraction of timber is another problematic situation that the comuneros have been able to reduce but not stop. They constructed a tower to monitor part of the boundary with the most conflictive surrounding communities. They also patrol constantly and have a communication system and good means of transportation to be able to come together to prevent extractions or capture violators. These recurring situations, such as the

tense relations the comuneros have with private property owners, do not seem to have an immediate solution.

As for the exploitation of the forest, since the early '80s the comuneros received approval to exploit their communal land, and now the communal enterprise has full approval from the government. With respect to the families owning private property, even though some of them have received permits to exploit the forest, because all road infrastructure inside the communal land is controlled by and belongs to the comuneros, it is too difficult for these families to use and manage the forest resources on their lands. Therefore, the only timber extractions taking place in the communal land are the ones coordinated by the communal enterprise.

3.5.b Learning and Adaptive Management

i. How did previous observations lead to project formation and development?

The experience acquired by the communal representative and the commissioner for forest exploitation through their previous interactions and work with other indigenous communities served to shed light on the legal process communities have to undergo to get official land ownership recognition and on the steps to guide a communal effort of use and management of forest resources. This experience guided the process of community organization at the end of the '70s and beginning of the '80s. Unlike most comuneros in San Juan – who had only basic education and experience mostly through local interactions – these leaders were professionals and already engaged in community work in other parts of the State. In summary, the vision of the leaders of an organized community did not come from the initial steps of the community organization process, but from their previous experiences and their professional skills.

ii. How was experience incorporated into subsequent steps of the project?

The experience of the community leaders allowed them to identify the role and importance of local institutions, to take action to obtain official recognition of the comuneros' land tenure rights, and to take the necessary steps to carry out the resource use and management process. Ongoing experience has also served to improve productive processes, to increase the number of productive areas of the enterprise, to appeal to government and other funding, to identify key partnerships, to adapt to market challenges, to mechanize some resource management processes and many other things.

iii. How monitoring (e.g., rare species) informs the project

The Technical Services Department of the communal enterprise oversees, through feedbacks from landholders, through the monitoring activities of some sub-areas such as the disease control, and through field workers in general, the state of the forest and healthy conditions of tree stands. These same mechanisms, together with feedback from scientists, inform various management practices applied to the forest. Monitoring

processes are directed to maintaining timber yields and reducing clandestine timber extractions and forest fires.

iv. Barriers to CBC, and how the barriers were overcome

More than a community-based *conservation* project, Nuevo San Juan represents a community-based *management* project. There were no barriers to the management process per se, but rather to the community organization and communal forest exploitation in general. As has been mentioned above, the main barriers to community organization and forest exploitation came from private property owners, whose members did not want to give up their land titles and their total freedom to use and manage their land. The comuneros then took the necessary steps to obtain official recognition of their land tenure rights from the government to finish with that problem. However, even though the Presidential Resolution from 1991 did recognize the communal land tenure rights, it also left intact the rights of the small landowners with titled lands (private property) inside the communal property. Legal battles and particular arrangement with families owning land privately have helped to ease interactions; however, the problem has not been fully overcome.

v. Combining knowledge systems to solve problems

Problems in interactions with other interest groups, such as private property owners, government agencies and surrounding communities, necessitated the combination of knowledge on Law and general legislation together with local wisdom. The comuneros also made use of local and Western knowledge and TEK to deal with challenges at the institutional and managerial levels.

vi. Was there adaptive management (learning-by-doing) with the organization structure and/or with ecosystem management?

The silvicultural methods applied by the Nuevo San Juan enterprise, which are the same one established since 1984, aim at the regularization of the age of tree biomass to increase the productivity and timber yields over time. Even though maintaining timber yields through the regularization of ages of tree stands, and the reforestation of only pine species have both been identified – by scientists – as a dangerous practice that can lead to the loss of resilience and the serious reduction of biodiversity, the community has continued their management strategy in this area. In most other components of the forest management strategy, such as protection of water bodies, disease control, etc., there have been changes over time, which can be considered as adaptation of previous management practices.

The organizational structure of the comuneros of Nuevo San Juan has changed little during the more than 20 years since creation of the enterprise, even though it is currently a lot larger. For example, the enterprise's manager still carries the key management decisions of all the productive areas of the enterprise, maintaining a centralized

managerial strategy as it was at the beginning of the enterprise. Moreover, in other aspects, such as the political affiliation of the comuneros, few changes have taken place. The communal leaders continue directing the comuneros to identify themselves with the PRI and to remain faithful to the selected PRI candidates at the local, state and federal levels. In general, there is a reluctance to make modifications to institutional arrangements previously established but a willingness to make necessary changes to management processes based on what is requested by law or as a product of adoption of new technologies.

3.5.c Community benefits from biodiversity conservation and environmental improvements

The environmental benefits brought about by the communal enterprise's forest use and management strategy relate mainly to the preservation of forested areas over time. However, the forest is more homogeneous than before because of the reforestation with only pine species and the suppression of natural fires. Even though fauna and flora species, and biodiversity in general, are threatened by the silvicultural methods applied by the comuneros, still their systematic reforestation, water body and riverbanks protection, and fire management programs, among other activities, make large contributions to the preservation of the communal forest. This is clearly demonstrated by the clandestine timber extractions led by surrounding communities which have already depleted their forests.

The comuneros have received national and international recognition for their forest use and management strategies including: the Equator Initiative Prize from the United Nations for the reduction of poverty by properly using and managing natural resources; the Alcan Prize from the Alcan Group, for their sustainable natural resource management; the Ecological Merit Prize from the Mexican government, for their sustainable resource use and management; and the Prize for Successful Natural Resource Management Experiences from the Mexican government, for their innovative and diversified use and management of natural resources. The comuneros have also received state recognition for their forest use and management.

3.5.d Livelihood strategies, coping and adapting

- i. How did involvement in the project affect other livelihood pursuits, negatively (e.g., time, resources) or positively (e.g., synergies, increased capital)?*

The blooming of the productive activities in the communal enterprise has positively influenced the regional economy by generating wealth. This is clearly seen in the expansion of the commercial activity at the local level, the settlement of large numbers of immigrants that find job opportunities in the timber industry in the community, and the increase in capital of most comuneros and their families.

- ii. *How did the project affect the ability of households and the community to adapt to changes (e.g., markets)?*

The community-based enterprise has helped some of the cooperatives to reach national and international markets. However, because many of these cooperatives existed before the creation of the enterprise, the enterprise has just made their ability to deal with national markets stronger. The state of Michoacán is characterized by its exports of avocado and other agricultural and forest products to international markets. Therefore, there is a culture of dealing with markets from which Nuevo San Juan also benefited. Other social characteristics at the local level such as alcohol drinking, during religious and traditional festivities have increased because of the rise in family income, but did not emerge because of the establishment of the enterprise; most of these practices have been in the community for a very long time.

3.5.e *Resilience of communities, livelihoods and management systems*

- i. *Did the project add options (e.g., livelihoods, alternative management possibilities, new coping and adapting strategies)?*

The communal enterprise has been the engine of socio-economic growth at the municipal level. These improvements in the socio-economic conditions have contributed in a large way to the adaptations the comuneros and the Municipality have undergone because of a restrictive and often negative policy environment for forest exploitation and rural communities. Sources of livelihoods have increased as a consequence of the economic activity in the community. These alternative livelihood endeavors, in which many comuneros are engaged together with outsiders, are driven by their process of adaptation to satisfy new demands of the local and national markets; by their pursuing new programs of government support for women and rural development; and by their increased consciousness that there is a need for diversifying economic activities to avoid exploiting the forest unsustainably. This resilient character of the comuneros of Nuevo San Juan emerges as one of the most important products of their collective efforts to exploit their forest resources.

- ii. *Did the project create learning opportunities?*

The experience of Nuevo San Juan in forest resources management has offered many learning opportunities for national and international rural communities. Through some government agencies and organizations such as Rigoberta Menchu Foundation rural communities in Mexico have had the opportunity to learn, through visits to the enterprise, about some of the key elements contributing to success. Similarly, with funding from the World Bank, academic institutions such as the UNAM have organized, together with the comuneros, training programs for some rural communities from Central America.

iii. Did the project create self-organization opportunities?

The communal enterprise has inspired other organizational effort at the local level. Some of these efforts include women's self-help groups, farmers groups, etc. Moreover, the enterprise has served to vouch for some of these local initiatives to government agencies and NGOs providing funding for development. There are certainly other self-organization efforts of rural communities at the national and international level that have been inspired by the Nuevo San Juan case.

3.5.f Transferability of the lessons from this EI case

There are a number of lessons from the community-based resource management system of Nuevo San Juan that could be transferable to other rural communities.

i. Leadership

Local committed individuals can make a difference to change the socio-economic situation of impoverished communities. In the face of economic constraints and weak institutions, the leaders of the comuneros of Nuevo San Juan were able to pilot a community organization process that gave life to the communal enterprise and its guiding institutions. Although the level of education of these leaders had a large role to play, it was their open and transparent actions that led to the trust and cohesion of the majority of comuneros. Prior to the establishment of strong institutions, the comuneros had in place a very weak system of communal representation where the elected heads used their positions to improve their own financial situation more than the community's economic condition. The founding of trustworthy institutions with clear roles highlights as one of the key achievements of these leaders whose actions and attitudes brought together the powerful (people already organized with family owned businesses) and powerless (people without permanent means of subsistence) to work on a common goal. Neither money nor power, but rather inspiring actions were the forces leading the community organization process in Nuevo San Juan.

ii. Role of partnerships

A second and very important lesson from the Nuevo San Juan case relates to the strong and key linkages developed with individual and organizations. These linkages were the ones that permitted to put in place the first building blocks of the communal enterprise, to receive government required approval to start an ambitious forest exploitation venture and finally to establish regular channels for inflows of governmental and non-governmental funds for the comuneros and the enterprise.

Of particular interest is the strategy the communal enterprise and its institutions have used of keeping constant contact with comuneros working for governmental and non-governmental organizations, to develop strong relations with the organizations and to

access available funds for rural development, environmental protection and poverty reduction.

iii. Diversification of economic activities

The mindset of the comuneros regarding the need for diversifying productive activities is another aspect of the success and strength of the communal enterprise which could be reproduced elsewhere. Before the creation of the enterprise, resin collection, agriculture and intermittent timber extractions were among the main economic activities at the local level. While the enterprise had and still has timber extraction as the heart of its productive activities, it still focuses on diversifying economic activities. It has gone from relying almost exclusively on the use of timber and its subproducts, to managing a diverse range of activities: transforming raw materials, exploiting the potential of water resources, exploiting the potential of landscape features and some flora and fauna species, providing technical and other services, giving training to individuals and communities, serving as a channel for organized local groups (women, farmers, etc.) to receive government funding for productive projects, and others. Such diversification of productive projects is another fundamental factor that has allowed the Nuevo San Juan communal enterprise to broaden the possibilities of getting support and of surviving over time.

iv. Political affiliations

The comuneros of San Juan have had a long-standing linkage with the Revolutionary Institutional Party (PRI), whose hegemony lasted for about 70 years, since well before the creation of the communal enterprise. The communal institutions constitute the branch of the PRI at the local level. At the time of the creation of the enterprise such political identification opened some doors for the community to advance in their efforts to get approval from the government to exploit their forest. In the subsequent years, such affiliations produced a particular link between the local government administrations and the enterprise, where flows of money in both directions allowed improvements on the community's physical infrastructure and the enterprise's strengthening of some productive areas. At the present time, however, the current leaders of the comuneros maintain their position of belonging to the PRI under a political environment dominated by other political parties at all the levels of government, including the local.

v. Institution building

According to the elders an enterprise such as the one envisioned and put in place by the comuneros of Nuevo San Juan would have failed if the community institutions were not strengthened parallel to the productive processes. After the mid '70s communal leaders guided the comuneros to participate in the creation of the UECIFOMET. After almost 5 years of attempting to organize themselves together with other communities, Nuevo San Juan was ready to stand on its own and started leading the exploitation of its own resources. Although individuals more than institutions were the ones guiding most processes, their initiative to strengthen the local institutions was the means to achieve collective action and a long-lasting communal enterprise.

vi. Capacity building

The heads of the Communal Representatives and Management drew on the local skills – from the members of the cooperatives – to start the operations of the communal enterprise. They also directed efforts to train the comuneros on the basic skill to run the different productive areas. So, although in the enterprise at some points in time there were outsiders leading some aspects of the productive processes, their primary mission – based on the local leaders’ vision – was to train the comuneros under their command to eventually take over. Because of this set objective, the communal enterprise has become one of the experiences in Mexico – and maybe in the world – where a large-scale timber extraction takes place with a 98% of labor from the community. This is another important lesson from this initiative.

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