COMMUNITY FORESTRY AND SHRIMP AQUACULTURE IN MEXICO: SOCIAL AND ENVIRONMENTAL ISSUES

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Since January of 2000, I have had the opportunity to work on two projects related to natural resource management in Mexico. The first is a project on Shrimp Aquaculture (shrimp farming), largely focused on the area around the Gulf of California. I did this project working as a consultant for the World Wildlife Fund. This project was to document the social and environmental effects of shrimp farming, with the main focus being to document trends in the industry (DeWalt, Ramírez, Noriega, and González 2000).

The second project was to do a mid-term evaluation of the Community Forestry Project (known by its Spanish acronym as PROCYMAF), a World Bank effort focused mainly in Oaxaca. One main purpose of this work was to look at the impact of the project on community organization and community enterprise development in the forestry communities receiving training and technical assistance from the program. The second goal was to do a comparative evaluation of PROCYMAF with the Mexican-government-sponsored Forest Development Program (known by its Spanish acronym
PRODEFOR) to assist the government in determining the relative value of the two programs (DeWalt, Guadarrama, and Betancourt 2000).

What I would like to do in this paper is the following. First, I would like to place these two important areas of natural resource management in the context of how they have developed in Mexico. In particular I want to examine them in terms of their relationship to the cooperatives and ejidos, the beneficiaries of the agrarian reform in Mexico. Second, I will talk briefly about how the neoliberal reforms of the Carlos Salinas and Ernesto Zedillo governments changed the rules of action in both the aquaculture and forestry sectors, creating both new challenges and new opportunities for the agrarian reform beneficiaries. Third, I will summarize my analyses of how agrarian reform beneficiaries are faring under these new rules – and finally venture some guesses about what the future might bring for continued involvement of cooperatives and ejidos in management of shrimp aquaculture and community forestry enterprises in Mexico.

A Panorama of Forestry and Shrimp Aquaculture in Mexico

After the Mexican Revolution, many indigenous and peasant communities were given nominal ownership of forest resources in many parts of the country (Bray 1997). Approximately three quarters of the country’s 55 million hectares of forest are under communal ownership by 8,000 forest ejidos (agrarian reform communities) and indigenous communities. In actuality, although indigenous and peasant communities had legal usufruct rights over the forests, the state granted concessions to exploit the timber
resources to vertically-integrated private and parastatal concerns. Local community “owners” received only a small stumpage fee and sometimes worked as wage laborers (Taylor 2000:143). Thus, the forestry sector in Mexico for most of the 20th century was dominated by state and private concerns that exploited the forest resources. These concerns were subsidized by government investment in physical and technical infrastructure and protected by high tariffs from foreign competition (Zabin 1998; Taylor and Zabin 2000). The concession system encouraged the unsustainable exploitation of forests and created incentives for agrarian reform beneficiaries to convert forest land to agricultural and livestock uses. The result was a loss of 30% of forest resources just between 1970 and 1990 (Merino 1997:141). Current deforestation rates were still estimated to be about 680,000 hectares per year in 1997 (World Bank 1997:2).

A similar situation was created with regard to marine resources. After the Mexican Revolution, the cooperative/ejido sector in Mexico was given the exclusive right to capture, cultivate, and process the most desirable seafood species including shrimp, oysters, lobster abalone, octopus, and squid. The Mexican government established fisheries production cooperatives in the 1930s with the goals of increasing living standards of rural fishermen, augmenting food production, and generating export income (McGoodwin 1980:39;1987). Fisheries cooperatives, however, had to work within constraints established by a paternalistic government structure that attempted to establish when, where, and how resources were exploited. The government dictated tenure rights to near-shore fishing resources, and was supposed to provide the technical assistance, credit for equipment and infrastructure, and processing and marketing facilities for both
the near-shore and high seas fishing cooperatives. These production cooperatives were especially important in northwest Mexico on the Gulf of California. A substantial high seas fishing fleet was established in Mazatlán, Sinaloa and in Guaymas, Sonora to exploit the resources, particularly shrimp and sardines, of the Gulf. These fishing fleets were dominated by private capital that established largely fictitious associations with cooperatives, as well as by a notoriously corrupt parastatal processing and marketing firm.

Exploitation of fishing resources on the Gulf became further complicated during the early 1970s. As the Mexican population grew and demands of peasants for access to agrarian reform land increased, the government began encouraging settlement of the sparsely populated coastal regions. Hundreds of new agricultural ejidos were established on marginal coastal lands that were formerly national property. The people on these ejidos had their desire for land satisfied, but little of this land was suitable for agriculture. The result was that many of these people turned to fishing, thus competing for scarce resources with longer-term residents of the coastal areas (McGoodwin 1987:221). This problem was particularly acute in the states of Sinaloa and Sonora where substantial numbers of new ejidos were established in the 1970s.

Although it has long been recognized that Mexico had many areas appropriate for aquaculture, little development of the sector occurred before the 1990s. The major reasons for this were the land tenure system that left most of the appropriate areas in the
hands of cooperatives and ejidos, as well as the laws limiting the exploitation of shrimp, clams, abalone, and other potentially-cultivable species to the agrarian reform sector.

**Changing the Rules of the Game – Neo-liberal Reforms**

Mexico made significant changes to its Forestry Law in 1992 and issued implementing regulations for the law in 1994. This legislation was designed to remove the federal government from direct intervention in the forestry sector. Responsibility for forest management, conservation, protection and improvement was transferred to forestland owners and producers with the state and federal government responsibilities becoming normative and supervisory. Technical assistance services would no longer be directly provided from government resources. The net result of these changes was to leave a substantial portion of the nation’s forest resources in the hands of poor communities, but without the resources to properly manage these holdings (World Bank 1997:8-9). It was within this context that the federal government created PRODEFOR and the World Bank and the government of Mexico created PROCYMAF to provide resources to help indigenous communities and ejidos develop sustainable uses of their forests.

In 1992, Mexico acted to stimulate the development of aquaculture by changing both Article 27 of the Constitution that deals with land tenure and the Fisheries Laws. In 1992, the government declared an end to agrarian reform and began the process to privatize ejido land, giving full property rights to those who had been working the land
(see DeWalt and Rees 1994). By privatizing the land and allowing a land market for ejido land to develop, the government hoped to stimulate more productive investment in, and the modernization of, agriculture. Purchases of coastal land for aquaculture also became possible. The modifications to the Fisheries Law in 1992 included the following key provisions (this section is based on DeWalt 1998:362):

1) Removed the restrictions that permitted only the cooperative/ejido sector to cultivate and process high-value seafood species;

2) Provided greater security for investors by extending the maximum aquaculture concession authorized by the government from twenty to fifty years, and allowed for these concessions to be transferred to other parties; and

3) Encouraged private investment in aquaculture by making clear that ejido lands could be accessed through joint ventures with ejidos or directly purchased from ejidos.

The net effect of these changes was to provide new possibilities and incentives for the private sector to become involved in aquaculture. The dynamism of aquaculture reflects the effects of these legislative changes and fiscal reforms. The number of shrimp farms nearly doubled since 1992 to an estimated 393 in 2000. About 25% of Mexican shrimp is now produced on farms rather than wild caught on the high seas or in lagoons and estuaries.

Thus, in both the forestry and aquaculture sectors, we have seen substantial changes in the last decade. The paternalistic and controlling state apparatus has been
removed. The technical assistance once provided by the state has disappeared and communities and enterprises are now expected to secure such assistance from private sources. Production of forest products and shrimp, and the processing activities have essentially been opened to a much greater participation of private capital.

**Agrarian Reform Beneficiaries and the New Laws**

What have been the effects of these changes on the agrarian reform communities that have been involved in exploitation of forest and coastal resources?

The indigenous communities in Oaxaca now have much greater control over their forest resources. The PROCYMAF project of the World Bank has taken an innovative and risky approach to assisting these communities to both diversify their use of the forest and to manage these resources in a sustainable way. The project has focused heavily on building social capital within and among the forestry communities in order to give them the tools to better manage natural resources. In the mid-term evaluation of PROCYMAF in Oaxaca that I did with Fernando Guadarrama and Jose Luis Betancourt, we found that the project has a socially-conscious, dedicated staff who are working well with communities. Although most are trained as forestry engineers, they are working extraordinarily well in thinking about means for diversifying sources of income from the forest as well as in developing methods for natural resource conservation. The project has moved well beyond just establishing better means for timber production.
The social participation that PROCYMAF has promoted has probably been one of its most important accomplishments. The continual contact that the personnel from the program have had in numerous community assemblies, the number of meetings of regional Natural Resource Committees that have been promoted, and the quantity of other forums and meetings that have been accomplished is truly impressive. PROCYMAF is building a program that is likely to have a great long-term impact on the communities because it is working to strengthen the organizational capabilities of communities as well as to assist in diversifying sources of income from forest resources.

PROCYMAF has been most successful in enhancing social capital among the communities that were already better organized and more capable before the project began but, as PROCYMAF staff have gained more experience and become more confident in their program, it is beginning to create social capital in more resource-poor communities. PROCYMAF has also been successful in improving social capital through the improvement of community governance by encouraging formation of community councils. Beyond the level of the community, there is evidence that PROCYMAF and SEMARNAP have played an important role in strengthening regional and state-wide organizations in the forestry sector in Oaxaca.

Overall, the program has helped to incorporate more communities into forestry production; increased the amount of forest under management from 500,000 to 650,000 hectares in the past five years; assisted communities to gain SMARTWOOD certification for about 90,000 hectares of forest; helped increase timber production from a little over
400,000 to more than 660,000 cubic meters per year; promoted diversification so that communities do not depend only on timbering; provided technical and environmental training for both community members as well as technical service providers; and strengthened the organization of communities, regional and state forestry groups.

Because the indigenous communities in Oaxaca continue to have a substantial amount of solidarity, and because the forest resources are communal, we have not yet seen any moves to privatize and sell off land and forest resources. While substantial problems exist in many communities because of the poor quality of the remaining forest and the lack of infrastructure to support timber operations or alternative enterprises like ecotourism, water bottling, orchid production, or mushroom collecting, at the very least people in the communities now have a greater opportunity to profit from their resources and their labor.

In the shrimp aquaculture sector, the changes in the laws have created a boom in investment in farms and in production, particularly on the east coast of the Gulf of California. There are now approximately 20,000 hectares of ponds in production and as of 1998, shrimp aquaculture had created approximately 8000 new direct employment opportunities and was generating about 128 million dollars for the nation’s economy.

Agrarian reform communities have benefitted from this boom. Because of the historical legacy of the agrarian reform, the cooperative/ejido sector controls some of the most desirable areas for shrimp pond development. The coastal salt flats, deserts, and
marshy lagoons they were somewhat cynically allocated have turned out to be a valuable resource. To be sure, these communities find it difficult to secure the substantial resources necessary to invest in the construction of ponds, water supply and drainage canals, pumps, and other infrastructure to develop aquaculture. Nevertheless, they have benefitted in the following ways.

First, about 80% of the 400 or so shrimp aquaculture farms are still operated by the cooperative/ejido sector. Most of these farms are quite rustic in terms of their infrastructure, but there are some notable exceptions. In both Sonora and Sinaloa, there are aquaculture parks in which several ejidos and cooperatives have banded together to secure loans to build a common infrastructure. One of the most successful cases is the Union de Ejidos Acuicolas del Sur de Sonora which secured resources from the state of Sonora and several federal programs (FONAES, BANRURAL, FIRA) to build three aquaculture parks. In 2000, 17 ejidos/cooperatives with 605 members had 1052 hectares of ponds. They were generating profits sufficient so that the average member was receiving over $4000 per year in income.

To be sure, this is the exception. Although 80% of the farms are operated by agrarian reform communities, they only produce about 48% of the farm-raised shrimp in the country. Many ejidos and cooperatives produce very little shrimp and there are many ponds that have been abandoned by them.
The second way in which the agrarian reform sector benefits is that they have been receiving very good prices for land they sell or lease. Private producers who want to get into the business generally have to negotiate with ejidos or cooperatives in order to gain access to suitable land. I have documented quite a number of cases of land sales around the Gulf of California. Land rights are being sold for between $860 and $1600 per hectare. In other cases, private producers lease land for periods of 10 years, giving a percentage of the gross proceeds to the individuals or ejidos from which they lease.

A third manner in which agrarian reform communities have benefitted is through what are called Associations of Participation. This is an increasingly common method in northwest Mexico. Associations of Participation typically take the form of individuals from the private sector who invest resources in developing an aquaculture enterprise on lands of the ejido/cooperative sector. Portions of the enterprise or aquaculture park are operated by the members of the cooperative/ejido sector that controls the property rights. The private sector operates the other portion of the park.

Thus, in contrast to other Latin American countries in which shrimp aquaculture has become the exclusive province of the private sector, in Mexico substantial portions of the industry are still benefitting the resource-poor individuals who were agrarian reform beneficiaries.

**Future Prospects**
Thus, these two cases show that the legacy of Mexico’s Revolution continues over 80 years later. Agrarian reform beneficiaries have control over some important natural resources – the oak-pine forests of Oaxaca and the shrimp farming areas of the Gulf of California and other coasts of the country. What is interesting from my perspective is that the real benefits of these regions for agrarian reform beneficiaries were not unlocked until the neoliberal reforms of the early 1990s. Perhaps the most important of these reforms was the withdrawal of the paternalistic state from its attempts to control the production and marketing of these natural resources. The state’s involvement in everything from providing technical assistance, to allocating concessions over exploitation of the resources, to development of parastatals to process the products, and parastatals to market them was disastrous for all concerned. All of these provided ample opportunities for corruption, disincentives for producers, and diversion of benefits away from those nominally in control of the resources. What are likely future scenarios?

First regarding community forestry: I agree with Peter Taylor about the challenge currently facing Mexico. He stated that: “[Neoliberal] reform in Mexico’s forestry sector will be counterproductive economically, socially and environmentally if it undermines peasants’ capacity to organize effectively for sustainable management of their resources. Experience throughout the world suggests that neither top-down, repressive state enforcement nor privatization has proved effective in promoting forest conservation where trees and large numbers of poor people exist side by side. If peasant foresters are eliminated as effective actors in the forestry sector, sustainability is likely to suffer. In Mexico, peasant-based organizations are the arena where the economic, social,
and environmental problems of forestry are most visible. Such organizations may well be the source of solutions that deal most effectively with the complex, multifaceted issue of sustainability (Taylor 2000:271-2).”

The World Bank’s community forestry project, PROCYMAF, has been attempting to build those peasant-based organizations. Unfortunately, it is apparent that the project is facing considerable opposition in Mexico, particularly as it contemplates expanding to other areas of the country. There are two views in Mexico about how government support to the forestry sector ought to be provided. One view holds that communities and ejidos need to be independent and to adapt to the current global market situation. In this process, everyone recognizes that there will be winners and losers, with some well-organized and resource-rich communities successfully developing competitive timber operations and perhaps diversifying their resource base. Direct subsidies to acquire private technical assistance and improve forest management are seen as the most politically expedient and economically efficient solution. The second view sees most indigenous communities and ejidos as requiring more assistance in developing community social capital that will be capable of managing both timber operations and the potential diversification into new enterprises such as eco-tourism, water bottling, orchid production, etc. This perspective does not believe that most communities are yet capable of contracting private technical assistance providers to give them the kind of expertise and advice they need. Those who espouse this position believe that a program like PROCYMAF in Oaxaca, that provides promoters who work with intensively with
communities, is required to develop the human capital and social organizations needed to make communities competitive.

My guess is that the first of these views will prevail. Communities and ejidos will be left to survive or die according to their current ability to adapt to the global marketplace. Unfortunately, these communities will not be afforded the considerable subsidies and the protective tariffs that benefited the private producers and parastatals in the past. A few well-organized communities may succeed in their community forestry efforts, but most will fail. Eventually, the forest resources of these communities will probably end up in the private sector where they will be exploited by individuals and corporations for the benefit of a few.

In the aquaculture sector, there are even greater hurdles for agrarian reform producers. We are in the early stages of what can only be called the domestication of shrimp. Producing shrimp in ponds is akin to producing chickens or pork under industrial conditions. Large numbers are raised in small spaces and fed with specially blended shrimp chow. Serious disease problems are already plaguing the industry, and selective breeding has already begun to try to identify shrimp that grow more quickly, have a better presentation in the marketplace, and that are more disease-resistant. All of these suggest that the same processes that have occurred in agriculture and in other livestock pursuits will be repeated in the shrimp industry. Ever-greater capital will be needed to do the research and production necessary to remain solvent. Thus, more and more of the appropriate land will eventually end up in the hands of private producers.
Although a project was created several years ago that would have made available resources to develop more aquaculture parks for agrarian reform producers, the World Bank and Mexican government mutually agreed to suspend the Mexico Aquaculture Project in early 2000 (see DeWalt, Ramírez, Noriega, and González 2000). Of the $40 million allocated for the project, only about $1 million were ever spent. One of the primary reasons why the project was never implemented was that the Mexican government was unhappy with the subsidized resources that were to be provided to resource-poor producers.

Thus, although some rules of the game have changed, the agrarian reform sector is still suffering from the politically exclusionary policies of the Mexican state. Paternalism and corruption have been replaced by the neoliberal attitude of sink or swim. Unlike the private producers and state-owned enterprises who benefited from government subsidies and protective tariffs over the past several decades, the ejidos and cooperatives are expected to mobilize their own resources and capital to make the leap into 21st century competitive capitalist enterprise. While a few may succeed, the majority will be unable to do so.

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